2021 Next-Generation MCAS and MCAS-Alt Technical Report

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Prepared by Cognia and the Massachusetts Department of Elementary and Secondary Education

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Chapter 1. Overview

1.1 Purposes of the MCAS and This Report

The Massachusetts Comprehensive Assessment System (MCAS) was originally developed in response to provisions in the Massachusetts Education Reform Act of 1993, which established greater and more equitable funding to schools, accountability for student learning, and statewide standards and assessments for students, educators, schools, and districts.

The Act defines the purposes of the MCAS in Chapter 69 of the Massachusetts General Laws as follows:

- Establish "whether students are meeting the academic standards described," in the state curriculum frameworks (www.doe.mass.edu/frameworks/current.html) ensuring that "such instruments shall be criterion referenced." (Ch 69, Sec 1I).
- Provide "a comprehensive diagnostic assessment of individual students" in the required grades (Ch. 69, Sec 1I);
- Support the annual publication of assessment results in all public schools, districts, and the state (Ch. 69, Sec 1I);
- Provide a "competency determination," defined as the requirement that all high school graduates have fulfilled a measure of the "mastery of a common core of skills and knowledge" in mathematics, science and technology, English, and history and social sciences. (Ch. 69, Sec. 1D);
- Set and activate goals for high standards of innovation, quality, and accountability in schools (Ch 69, Sec. 1B).

Additional tests and requirements have been added to the MCAS program to meet the requirements of the No Child Left Behind Act of 2001 and the Every Student Succeeds Act (ESSA) of 2015.

The purpose of this *2021 Next-Generation MCAS and MCAS-Alt Technical Report* is to document the technical quality and characteristics of the 2021 next-generation MCAS English language arts (ELA), mathematics, and grades 5 and 8 science and technology/engineering (STE) tests and of the 2021 MCAS-Alt, in order to present evidence of the validity and reliability of test score interpretations, and to describe modifications made to the program in 2021. A companion document, the *2021 Legacy MCAS Technical Report*, provides information regarding the technical quality of the legacy tests administered in 2021: the STE tests in high school.

Technical reports for previous testing years are available on the DESE website at www.doe.mass.edu/mcas/tech/?section=techreports. The previous technical reports, as well as other documents referenced in this report, provide additional background information about the MCAS program, its development, and administration.

This report is primarily intended for experts in psychometrics and educational measurement. It assumes a working knowledge of measurement concepts, such as reliability and validity, as well as statistical concepts of correlation and central tendency. For some sections, the reader is presumed to have basic familiarity with advanced topics in measurement and statistics, such as item response theory (IRT) and factor analysis.

In addition, this report provides technical evidence for how the MCAS is designed to fulfill the requirements of the Act described above, as well as federal requirements under ESSA for assessments in ELA, mathematics, and STE. The MCAS is designed to:

- Assess all students who are educated with Massachusetts public funds in designated grades, including students with disabilities and English learner (EL) students. (Historically,

Massachusetts has had an annual state participation rate over 98% across all grades, subjects, and assessments [see section 3.3.3]).

- Measure student, school, and district performance in meeting the state's learning standards as detailed in the Massachusetts curriculum frameworks. As described throughout this document, the MCAS tests are designed to measure the standards in the curriculum frameworks. The process for ensuring alignment to the standards begins with the test and item specifications and test blueprints, continues through the development process with rigorous review by educators and other experts, and culminates with the release of test information (including standards alignment) to students, schools, and districts.
- Provide measures of student achievement that will enable improvements in student outcomes. The scales and achievement levels for the next-generation tests are designed to indicate students' readiness to engage in academic work at the next grade level, and to provide information to parents and students if they are not on track.
- Massachusetts releases significant numbers of test items each year—and provides item descriptions, standards, and other related information for all test questions, whether released or unreleased—to help families and educators better understand how students are being assessed on the content standards and how instruction can be targeted to achieve better outcomes at the individual or aggregate levels.
- Report on the performance of individual students, schools, districts, and the state. Massachusetts provides comprehensive reporting on the results of individual students, schools, districts, and the state through reporting on achievement and growth to parents and families (Parent/Guardian Reports), and through dissemination of full results to schools, districts, and the public (see section 3.8 and section 3.9.5).
- Help determine ELA, mathematics, and STE competency for the awarding of high school diplomas. Students must achieve a passing score on the ELA, mathematics, and STE tests (or successfully file an MCAS appeal) as one condition for high school graduation (see the 2010 MCAS and MCAS-Alt Technical Report as well).

1.2 Organization of This Report

This report provides detailed information regarding test design and development, scoring, and analysis and reporting of 2021 next-generation MCAS and MCAS-Alt results at the student, school, district, and state levels. This detailed information includes, but is not limited to, the following:

- content descriptions of all tests
- an explanation of test administration
- an explanation of equating and scaling of tests
- statistical and psychometric summaries of the tests
  - item analyses
  - reliability evidence
  - validity evidence

In addition, the appendices contain detailed item-level and summary statistics related to each 2021 next-generation MCAS test and its results.

Chapter 1 of this report provides a brief overview of what is documented within the report, including updates made to the MCAS program during 2021. Chapter 2 explains the guiding philosophy, purposes, uses, components, and validity evidence of MCAS. The next two chapters cover test design and development, test administration, scoring, and analysis and reporting of results for the standard MCAS assessments (Chapter 3) and the MCAS Alternate Assessment (Chapter 4). These two chapters include information about the characteristics of test items, how scores were calculated, the reliability of scores, how scores were reported, and validity evidence of results. Numerous appendices are referenced throughout the report.

1.3 Current Year Updates

In 2017, Massachusetts began a transition from the legacy paper-based MCAS tests (administered since 1998) to next-generation MCAS tests that are administered primarily via computer and aligned with the most recent Massachusetts curriculum frameworks. The 2020 MCAS administration was intended to be a continuation of this transition with the introduction of the next-generation high school biology and introductory physics tests. However, due to the COVID-19 pandemic, no new next-generation tests were administered in 2020 or 2021. The next-generation high school biology and introductory physics tests were first administered in 2022.

Table 1-1 shows which MCAS tests were administered at each grade level in spring 2021 and whether the tests were next-generation (NG) or legacy (L) assessments. Legacy retests in grade 10 ELA and mathematics were also offered in spring 2021 and November 2021 for students in the classes of 2022 and earlier.

Table 1-1. Spring 2021 MCAS Tests Administered, by Grade Level

Content Area	Grade Level							
	3	4	5	6	7	8	9	10
English Language Arts	NG	NG	NG	NG	NG	NG		NG
Mathematics	NG	NG	NG	NG	NG	NG		NG
Science and Technology/Engineering			NG			NG	L*	L*

** Students may take one of four high school STE tests offered in biology, chemistry, introductory physics, and technology/engineering in grade 9 or grade 10. Additional information about these tests is available in a separate document.*

1.3.1 About the Next-Generation MCAS Assessments

On November 17, 2015, the Massachusetts Board of Elementary and Secondary Education (the Board) voted to endorse the use of next-generation MCAS assessments starting in 2017. The next-generation MCAS assessments include the following elements:

- high-quality test items aligned to the Massachusetts learning standards;
- item types that assess both skills and knowledge, such as writing to text in English language arts (ELA) and solving complex problems in mathematics and science and technology/engineering (STE);
- achievement levels that send clear signals to students, parents, and educators about readiness for work at the next level (including results at grade 10 that signal readiness for college and career);
- a full range of student accessibility features and accommodations; and
- both computer-based and paper-based test administrations, with computer-based testing as the primary method.

In 2021, all students in grades 3–8 and 10 took the next-generation assessments in ELA and mathematics and students in grades 5 and 8 took the next-generation assessments in STE. Computer-based administration was required for all content areas at grades 3–8 and for grade 10 ELA and mathematics, but paper-based tests were available as a test accommodation at all grades.

1.3.2 Background on the Transition to Next-Generation Assessments

The following are some key milestones for developing and implementing the next-generation MCAS tests:

- **2010**: Massachusetts joins PARCC, a multi-state consortium formed to develop a new set of assessments for ELA and mathematics.
- **2013**: The Board votes to conduct a two-year "test drive" of the PARCC assessments to decide whether Massachusetts should adopt them in place of the existing MCAS assessments in ELA and mathematics.
- **2014**: The PARCC assessments are field-tested in a randomized sample of schools in Massachusetts and in the other consortium states.
- **Spring 2015**: Massachusetts districts (including charter schools and vocational-technical high schools) are given the choice of administering either PARCC or MCAS to their students in grades 3–8. Approximately one-half of the students at those grade levels take the MCAS assessments, and about one-half take the PARCC assessments.
- **November 2015**: Former Commissioner Mitchell Chester recommends to the Board that the state transition to a next-generation MCAS that would be administered for the first time in spring 2017 and that would utilize both MCAS and PARCC test items. The Board votes to endorse his recommendation.
- **Spring 2017**: Next-generation MCAS tests are administered statewide in ELA and mathematics grades 3–8 for the first time. The tests include a mixture of MCAS and PARCC items.
- **Spring 2018**: The second administration of next-generation MCAS tests in ELA and mathematics grades 3–8. PARCC items are used only for a small number of items on the mathematics tests.
- **Spring 2019**: The third administration of next-generation MCAS tests in ELA and mathematics grades 3–8. The first administration in ELA and mathematics grade 10 and STE grades 5 and 8. The tests include only MCAS items, and PARCC items are no longer included.
- **Spring 2020:** Due to the COVID pandemic, MCAS tests are not administered.
- **Spring 2021**: The fourth administration of next-generation MCAS tests in ELA and mathematics grades 3–8. The second administration in ELA and mathematics grade 10 and STE grades 5 and 8.

1.4 Special Issues

The Department (DESE) made several changes to the test program during the COVID pandemic:

- All MCAS testing was cancelled in spring of 2020.
- Because many schools did not resume in-person instruction until spring 2021, and some schools were in the process of reopening during the testing window, DESE cut testing time in half by administering only one of two sessions to each student for grades 3–8 ELA and mathematics and for grades 5 and 8 STE.
- Students in grades 3–8 who still had not returned to in-person instruction at the time of testing were allowed to participate in online testing at home with remote proctoring.
- Equating procedures were used to maintain the MCAS testing scales after a skip year in testing and to ensure item difficulty estimates were rooted in pre-pandemic norms. This included using pre-pandemic item calibrations and scoring lookup tables to scale student performance whenever possible. For more technical details, please see sections 3.6.2 and 3.6.3 of this report for more details on the equating solution and IRT calibrations.
- Test participation rates declined in 2021. In grades 3–8, which allowed remote testing, participation rates remained above 95%. In grade 10, which did not allow remote testing, participation rates dropped to about 90%.
- Modified competency determination (CD) requirements were permitted for certain high school students, allowing them to earn their CD through successful completion of Department-identified high school courses. More information about the modified CD is available at www.doe.mass.edu/mcas/graduation.html and in Appendix A.

1.4.1 Administration of Single Sessions

In many schools and districts, students returned to in-person classroom instruction full-time in the spring of 2021, after a year of instruction often taking place in remote, at-home settings and/or hybrid remote/in-person settings. To reduce the testing time in grades 3–8, DESE administered only one session of the two-session ELA, mathematics, and STE tests to each student. Because the two sessions were not equivalent, students received different proportions of the content standards. The test forms were randomly spiraled to students such that each grade would have complete representation of the necessary standards at the aggregate levels, allowing for comparability to previous aggregate results. Student level interpretations were less reliable than in prior years due to the shorter test and other content-related considerations, but because the test forms were spiraled, content coverage was the same across student groups, classrooms, schools, and districts, allowing for comparisons and reporting across aggregated groups. As explained in section 3.7, student-level test reliability estimates were still at appropriate levels, with a decrease in the average reliability of the grades 3–8 tests from .91 to .84. For more information on the reliability of MCAS tests, please review Section 3.7 and Appendix M.

1.4.2 Remote Administration

Throughout much of the 2020–2021 school year, schools offered remote (and/or hybrid remote and in-person) instruction to increase physical spacing of students to reduce COVID transmission rates, as recommended by the Department of Public Health and other health organizations. In many schools and districts, remote instruction was prioritized until vaccines were more widely available in the spring of 2021, when the majority of students returned to full-time in-person instruction. A substantial number of parents exercised their choice to continue with remote instruction until the end of the school year, however, prompting DESE to offer a remote, at-home computer-based test (CBT) administration for those students continuing remote instruction in grades 3–8 in ELA, mathematics, and STE. The remote testing sessions were proctored by local educators using video conferencing software such as Zoom. Accommodations designed for CBT administrations were available and no paper-based (PBT) accommodations were offered for the remote administration. About 15% of students across all grades and content areas tested remotely in this administration.

Test results were evaluated across the two largest test administration types—CBT in-person and CBT at-home (remote) —and comparative results with respect to student-level reliability and differential item functioning statistics are provided in sections 3.5 and 3.7 of this report. Overall, the remote scores appeared reliable and valid for both student-level and aggregate reporting. However, DESE followed recommendations from the MCAS TAC to establish all psychometric statistics and testing trends using the CBT in-person results.

1.4.3 Maintenance of the MCAS Trend Results in 2021 after a Skip Year in Testing

The Department prioritized maintaining the MCAS testing scale after a skipped testing year in 2020. Prioritizing pre-equated models would potentially mitigate concerns regarding score shifts associated with the pandemic's impact on student learning. These procedures included the following:

- The use of pre-equated IRT statistics originating primarily from the 2019 test administration
- The use of the in-person CBT item statistics in all psychometric work
- Rigorous evaluation of several equating solutions that incorporated multiple evaluation criteria, including DIF analyses and evaluation of item and model fits

1.4.4 Reduced Rates of Testing Participation

The 2021 testing participation rates dropped from historic levels of 98–99% testing rates to observed rates that ranged from a high of 97% in early elementary school grades to 89%–90% in high school. Most of the high school students who did not take the test in the spring of 2021 took it in November 2021 via the MCAS retest.

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Chapter 2. The State Assessment System: MCAS

2.1 Guiding Philosophy

The MCAS and MCAS Alternate Assessment (MCAS-Alt) programs play a central role in helping all stakeholders in the Commonwealth's education system—students, parents, teachers, administrators, policy leaders, and the public—understand the successes and challenges in preparing students for higher education, work, and engaged citizenship.

Since the first administration of the MCAS tests in 1998, DESE has gathered evidence from many sources suggesting that the assessment reforms introduced in response to the Massachusetts Education Reform Act of 1993 have been an important factor in raising the academic expectations of all students in the Commonwealth and in making the educational system in Massachusetts one of the country's best.

The MCAS testing program has been an important component of education reform in Massachusetts for over 15 years. The program continues to evolve. As described in section 1.3, Massachusetts is in the process of transitioning from the legacy MCAS tests to next-generation MCAS assessments that

- align MCAS items with the revised Massachusetts academic learning standards;
- incorporate innovations in assessment, such as computer-based testing, technology-enhanced item types, and upgraded accessibility and accommodation features;
- provide achievement information that sends clear signals about a student's readiness for academic work at the next level; and
- ensure that MCAS measures the knowledge and skills students need to meet the challenges of the 21st century.

2.2 Alignment to the Massachusetts Curriculum Frameworks

All items included on the MCAS tests are developed to measure the standards contained in the Massachusetts curriculum frameworks. Each test item correlates and is aligned to at least one standard in the curriculum framework for its content area.

The 2021 next-generation MCAS tests were aligned to the 2017 Massachusetts curriculum frameworks for English language arts (ELA) and mathematics and the 2016 Massachusetts curriculum frameworks for science and technology/engineering (STE).

All learning standards defined in the frameworks are addressed by and incorporated into local curriculum and instruction, whether they are assessed on MCAS or not.

2.3 Uses of MCAS Results

MCAS results are used for a variety of purposes. Official uses of MCAS results from the next-generation ELA and mathematics tests in grades 3–8 and 10 and the next-generation STE tests in grades 5 and 8, as well as HS STE, include the following:

- determining school and district progress toward the goals set by the state and federal accountability systems,
- providing information to support program evaluation at the school and district levels, and
- providing diagnostic information to help all students reach higher levels of performance.

2.4 Validity of MCAS and MCAS-Alt

Validity information for the MCAS and MCAS-Alt assessments is provided throughout this technical report. Although validity is considered a unified construct, the various types of validity evidence contained in this report include information on:

- test design and development;
- administration;
- scoring;
- technical evidence of test quality (classical item statistics, differential item functioning, item response theory statistics, reliability, dimensionality, decision accuracy and consistency); and
- reporting.

Tables 2-1 and 2-2 summarize validity information for MCAS and MCAS-Alt provided in specific sections of this report. Note that some of these sections will point the reader to additional validity evidence located in the appendices of the report.

Table 2-1. Summary of Validity Evidence for the Next-Generation MCAS Tests

Type of Validity Evidence	Section	Description of Information Provided
Reliability and classical item analyses; scoring consistency and classification consistency by achievement level	3.4 Appendices G and H	Scoring consistency, interrater agreement, and scoring accuracy
	3.5 Appendices I and J	Classical item analyses
	3.7 Appendix M	Overall reliability and standard error of measurement by test; reliability by student subgroups
	3.7.5	Decision accuracy and consistency (DAC): estimates of accuracy for student classification by achievement level and for each achievement level cut score
Content-related validity evidence	3.2 and 3.9.1 Appendices B, C, and T	Test blueprints: item alignment to test blueprints and standards
Construct-related and structural validity evidence	3.9.2	Response process validity evidence
	3.5 to 3.7 Appendices K and L	Item response theory modeling; dimensionality; scaling; linking online to paper results; differential item functioning
Consequential validity	3.8 Appendices L, N, and O	MCAS reporting
	3.9.5	Supporting the valid use of MCAS data

MCAS-Alt assessment results are sometimes aggregated with other MCAS results. Therefore, validity information with respect to reliability and content-related validity provided for MCAS also pertains, to some extent, to the MCAS-Alt. In addition, MCAS-Alt also includes reliability and dimensionality characteristics specific to the alternate assessment, as described below in Table 2-2.

Table 2-2. Summary of Validity Evidence for MCAS-Alt

Type of Validity Evidence	Section	Description of Information Provided
Content-related validity evidence	4.2.1 Appendix C	Assessment design (test blueprints aligned to MCAS blueprints but with modifications made for the range and complexity of standards); descriptions of primary evidence and supporting documentation
Reliability and subgroup statistics and scoring consistency	4.4, 4.7.4, and 4.8 Appendices G, H, S, and T	Procedures to ensure consistent scoring; interrater scoring statistics
	4.5 Appendix I	Classical item statistics
	4.7.1 and 4.7.2 Appendix M	Overall and subgroup reliability statistics
Construct-related and structural validity evidence	4.5.3	Interrelations among scoring dimensions
	4.6	Item bias review and procedures

2.5 Next-Generation MCAS Achievement-Level Descriptors

The achievement-level descriptors (ALDs) used to define expectations on the next-generation MCAS assessments were established to identify students who are academically prepared for academic work at the next grade level. Massachusetts's *Meeting Expectations* level is also aligned to the level of academic work a student must perform to eventually be prepared for college-level work upon completion of high school.

2.5.1 General Achievement-Level Descriptors

The general ALDs for the next-generation MCAS tests at grades 3–8 and 10 are as follows:

Exceeding Expectations

A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations

A student who performed at this level met grade-level expectations and is academically on track to succeed in the current grade in this subject.

Partially Meeting Expectations

A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations

A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

2.5.2 Grade-Specific Achievement-Level Descriptors

The grade-specific ALDs provided in Appendix B illustrate the knowledge and skills students at each grade are expected to demonstrate on MCAS at each achievement level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because a student's work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

Chapter 3. MCAS

3.1 Overview

MCAS tests have been administered to students in Massachusetts since 1998. In 1998, English language arts (ELA), mathematics, and science and technology/engineering (STE) were assessed at grades 4, 8, and 10. In subsequent years, additional grades and content areas were added to the testing program. Following the initial administration of each new test, performance standards were set.

Public school students in the graduating class of 2003 were the first students required to earn a Competency Determination (CD) in ELA and mathematics as a condition for receiving a high school diploma. To fulfill the requirements of the No Child Left Behind (NCLB) Act, tests for several new grades and content areas were added to the MCAS in 2006. As a result, all students in grades 3–8 and 10 are now assessed in both ELA and mathematics, and students are assessed in grades 5, 8, and 9/10 in STE. In 2017, MCAS began the transition to a "next-generation" test that is administered primarily through a computer-based platform.

The MCAS program is managed by DESE staff with assistance and support from the assessment contractor, Cognia, and its subcontractor, Pearson. The next-generation computer-based tests were administered through Pearson's TestNav application. Massachusetts educators play a key role in MCAS through service on a variety of committees related to the development of MCAS test items, the development of MCAS achievement-level descriptors, and the setting of performance standards. The program is supported by a five-member national Technical Advisory Committee (TAC).

More information about the MCAS program is available at www.doe.mass.edu/mcas/.

3.2 Next-Generation Test Design and Development

In 2021, the MCAS next-generation operational tests were administered at grades 3–8 and 10 in both ELA and mathematics and grades 5 and 8 in STE. In 2021, the next-generation tests in ELA, mathematics, and STE were administered primarily on a computer with paper accommodations available. (Legacy tests—limited in 2021 to the high school STE tests and retests—were administered on paper. Additional information about legacy tests can be found in the *2021 Legacy MCAS Technical Report*.)

As a reminder, only one session was administered for each test at grades 3–8 in 2021. More information is provided in section 1.4 of this document, along with Appendix C, which provides the breakdown of item types and reporting categories by session. Information about test development and test designs for each content area can also be found at www.doe.mass.edu/mcas/tdd/.

3.2.1 Test Specifications

3.2.1.1 Criterion-Referenced Test

In 2021, the items used on the next-generation MCAS tests were developed specifically for Massachusetts. All items were aligned to content standards in the Massachusetts curriculum frameworks. These content standards are the basis for the reporting categories in each content area and are used to guide the development of test items. Items on the 2021 next-generation MCAS tests were coded to the 2017 Massachusetts curriculum frameworks in ELA and mathematics and the 2016 Massachusetts

curriculum framework for STE. All items were coded to at least one content standard and some were coded to more than one standard. In the next-generation STE tests, items were also coded to a science practice, if applicable. See section 3.2.4.1 for more information about science practices.

3.2.1.2 Item Types

The types of items and their functions, by content area, are described below.

English Language Arts (ELA)

- **Selected-response items (SR)** are worth one or two points and consist of the following:
- **Multiple-choice items** (computer and paper) make efficient use of limited testing time and allow for coverage of a wide range of knowledge and skills within a content area. Each one-point, multiple-choice item requires students to select the single best answer from four response options. Items are machine-scored: students earn 1 point for a correct response and receive 0 points for an incorrect or blank response.
- **Two-part, multiple-choice items** (computer and paper) have two parts. In the first part, students select the single best answer from four response options. In the second part, students select, from four response options, the evidence from the stimulus that supports the answer from the first part. (In some limited cases, item directions instruct students to select two correct answers in the second part.) The items are machine-scored: correct responses are worth 2 points, partially correct answers are worth 1 point, and incorrect and blank responses receive 0 points. Students who answer the first part incorrectly receive a score of 0; students must answer the first part correctly in order to receive 1 or 2 points.
- **Two-point, technology-enhanced (TE) items** (computer only) use computer-based interactions such as inline choice, hot spots, and drag and drop that require the student to choose from a range of options presented. The items are machine-scored: correct responses are worth 2 points, partially correct answers are worth 1 point, and incorrect and blank responses receive 0 points.
- **Constructed-response (CR) items** (computer and paper) are worth 3 points and are used only on the grades 3 and 4 tests. Students are expected to generate approximately one paragraph of text in response to a passage-driven question. Student responses are hand-scored and receive a score of 3, 2, 1, or 0 points.
- **Essays (ES)** (computer and paper) are on all tests in grades 3–8 and 10 and are text-based. Students are required to type or write an essay in response to a prompt which is based on the passage or passage set they have read. Essays are hand-scored and receive a score of 0–7 possible score points for grades 3–5 and 0–8 possible score points for grades 6–8 and 10.

See section 3.4 for more details on the scoring of CR and ES items.

Mathematics

- **Selected-response (SR) items (computer and paper) are worth one or two points and consist of the following:**
    - **Multiple-choice items** make efficient use of limited testing time and allow for coverage of a wide range of knowledge and skills within a content area. The items require students to select the single best answer from four response options. Items are machine-scored: students earn 1 point for a correct response and receive 0 points for an incorrect or blank response.
    - **Multiple-select items** require students to select two or more correct answers from a set of answer options. Students are typically instructed to select a certain number of options. There are typically five to six options to choose from. Items are machine-scored: students earn 1 point for a correct response and receive 0 points for an incorrect or blank response.

    - **Technology-enhanced (TE) items** (computer only) use interactions such as inline choice, hot spot, and drag and drop that require the student to choose from a range of options presented. These TE items are machine-scored. Items are machine-scored: students earn 1 point for a correct response and receive 0 points for an incorrect or blank response.
    - **Two-part items** have two parts (Part A and Part B) and are worth two points, each part being worth 1 point. They can be multiple-choice, multiple-select, TE, or a combination thereof. Items are machine-scored: students earn 1 point for each correct part and receive 0 points for an incorrect or blank response.
- **Short-answer (SA) items** (computer and paper) are worth one or two points and consist of the following:
    - **Short-answer items** are used to assess students' skills and abilities to work with brief, well-structured problems that have one solution or a very limited number of solutions (e.g., mathematical computations). The advantage of this type of item is that it requires students to demonstrate knowledge and skills by generating, rather than selecting, an answer. These items are machine-scored: students earn 1 point for a correct response and receive 0 points for an incorrect or blank response. For the paper versions of these items, students write their numbers in boxes and then complete a number grid, which is machine-scored.
    - **Technology-enhanced (TE) items** (computer only) use interactions such as fraction model or line plot that require the students to demonstrate knowledge and skills by generating an answer or selecting an answer from a wide range of options. These TE items are machine-scored. For one-point TE items, students earn 1 point for a correct response and receive 0 points for an incorrect or blank response. Two-point TE items are assessed in grades 4–8 and 10. For two-point TE items, there are two parts, and each part is worth 1 point. The two parts are scored independently from each other. Students earn points for 2 correct parts, 1 point for only 1 correct part, and receive 0 points for no correct parts.
- **Constructed-response (CR) items** (computer and paper) require students to solve problems and generate responses to prompts. Students are required to use higher-order thinking skills, such as analyzing and explaining, to construct responses. Some CR items include a technology-enhanced part, such as creating a graph or completing a model using drag and drop technology. Student responses are hand-scored. CR items are worth either 3 or 4 points.
    - **Three-point constructed-response items** are used only on the grade 3 test. Students are expected to solve problems and generate one to two sentences in response to a prompt. Student responses are hand-scored. Students earn 3, 2, 1, or 0 score points for these items.
    - **Four-point constructed-response items** are used on the grades 4–8 and 10 tests. Students are expected to solve problems and generate one to two sentences in response to a prompt. Student responses are hand-scored. Students earn 4, 3, 2, 1, or 0 score points for these items.

Science and Technology/Engineering (STE)—Grades 5 and 8

- **Selected-response (SR) items** (computer and paper) are worth one or two points and consist of the following:
    - **Multiple-choice items** make efficient use of limited testing time and allow for coverage of a wide range of knowledge and skills within a content area. The items require students to select the single best answer from four response options. Items are machine-scored: students earn 1 point for a correct response and receive 0 points for an incorrect or blank response.
    - **Multiple-select items** require students to select two or more correct answers from a set of answer options. Students are instructed to select a certain number of options. There are typically four to six options to choose from. Items are machine-scored:

students earn 1 point for a correct response and receive 0 points for an incorrect or blank response.
    - **Technology-enhanced (TE) items** (computer only) use interactions such as inline choice, hot spot, and drag and drop that require the student to choose from a range of options presented. These TE items are machine-scored. For one-point TE items, students earn 1 point for a correct response and receive 0 points for an incorrect or blank response.
    - **Two-part items** have two parts (Part A and Part B) and are worth two points, each part being worth 1 point. They can be multiple-choice, multiple-select, TE, or a combination thereof. Items are machine-scored: students earn 1 point for each correct part and receive 0 points for an incorrect or blank response.
- **Constructed-response (CR) items** (computer and paper) typically require students to process information about a scenario and to use higher-order thinking skills, such as analyzing and explaining, to construct responses to prompts (e.g., identify, describe, explain) about the scenario. The scenario information may include narrative descriptions, models, and data tables or graphs. Some CR items include a technology-enhanced part, such as completing a model using drag and drop technology. Student responses are hand-scored, and each item is worth either 2 or 3 score points. For two-point CR items, students may earn 2, 1, or 0 score points. For three-point CR items, students may earn 3, 2, 1, or 0 score points.

3.2.1.3 Description of Test Designs

The MCAS assessments contain both common and matrix items. The common items are administered to all students and count toward a student's overall score. Matrix items are either field-test items or equating items. Field-test items are tried out to see how they perform and do not count toward a student's score. Equating items are used to link one year's results to those of previous years and do not count toward a student's score. Equating and field-test items are distributed among multiple forms of the test for each grade and content area.

The number of test forms varies by grade and content area and typically ranges between 10 to 20 forms. Each student takes one form of the test and therefore answers a subset of matrix items. Common and matrix items are not distinguishable to test takers. Because all students are given matrix items, an adequate sample size (typically a minimum of 1,500 responses per item) is obtained to produce data that can be used to inform equating decisions and common item selection for future tests.

A computer-based test (CBT) common form and a paper-based test (PBT) common form were developed for grades 3–8 and 10 ELA and mathematics and for grades 5 and 8 STE. To create the PBT common form, technology-enhanced items on the CBT form were revised and made into paper-based items, typically multiple-choice items. The PBT items tested the same content as the technology-enhanced items on the CBT.

3.2.2 ELA Test Specifications

3.2.2.1 Standards

The 2021 MCAS grades 3–8 and 10 ELA tests, including all matrix items, were aligned to the following learning standards from the *2017 Massachusetts Curriculum Framework for English Language Arts and Literacy*.

- Anchor Standards for Reading
    - Key Ideas and Details (Standards 1–3)
    - Craft and Structure (Standards 4–6)
    - Integration of Knowledge and Ideas (Standards 7–9)

- Anchor Standards for Language
    - Conventions of Standard English (Standards 1 and 2)
    - Knowledge of Language (Standard 3)
    - Vocabulary Acquisition and Use (Standards 4–6)
- Anchor Standards for Writing
- Text Types and Purposes (Standards 1–3)
    - Production and Distribution of Writing (Standards 4–6)

The *2017 Massachusetts Curriculum Framework for English Language Arts and Literacy* can be found at www.doe.mass.edu/frameworks/ela/2017-06.pdf.

3.2.2.2 ELA Item Types

The grades 3–8 and 10 ELA tests used several item types, as shown in Table 3-1.

Table 3-1. ELA Item Types and Score Points

Item Type	Possible Raw Score Points	Grade Levels
Multiple-choice (SR)	0 or 1	3–8, 10
Two-part, multiple-choice (SR)	0, 1, or 2	3–8, 10
Technology-enhanced (SR)	0, 1, or 2	3–8, 10
Constructed-response (CR)	0, 1, 2, or 3	3–4
Essay (ES)	0 to 7	3–5
	0 to 8	6–8, 10

SR = selected-response, CR = constructed-response, ES = essay

3.2.2.3 Passage Types

Passages used in the ELA tests are authentic published passages selected for the MCAS assessment. Test developers, including DESE test developers, review numerous texts to find passages that possess the characteristics required for use in ELA tests. Passages must

- be of interest to and appropriate for students in the grade being addressed;
- have a clear beginning, middle, and end;
- contain appropriate content;
- support the development of a sufficient number of unique assessment items; and
- be free of bias and sensitivity issues.

Passages ranged in length from approximately 600 to 2500 words per passage set. Word counts are on a scale outlined in the passage specifications and are less at lower grades. Passage sets consisted of either a single passage or paired/tripled passages. Passages were selected from published works; no passages were specifically written for the MCAS tests.

Passages are categorized into one of two types:

1. **Literary passages**—Literary passages represent a variety of genres: poetry, drama, fiction, biographies, memoirs, folktales, fairy tales, myths, legends, narratives, diaries, journal entries, speeches, and essays. Literary passages are not necessarily fictional passages.
2. **Informational passages**—Informational passages are reference materials, editorials, encyclopedia articles, and general nonfiction. Informational passages are drawn from a variety of sources, including magazines, newspapers, and books.

In grades 3–8, each common form included three passage sets, with some forms containing two literary passage sets and one informational passage set, while other forms contained one literary passage set and two informational passage sets. In grade 10, each common form included four passage sets with three literary and one informational set. Across the forms, sets may be single, paired, or tripled selections.

The MCAS ELA test is designed to include a set of passages with a balanced representation, taking into account gender, race and ethnicity, and socioeconomic status. Another important consideration is that passages be of interest to the age group being tested.

Differences among the passages used at each grade level include the length of the passages (typically increases with increasing grade levels) and the degree of complexity (increasing sophistication in language and concepts as the grade level increases). Test developers use a variety of readability measures to aid in the selection of passages appropriate at each grade level. In addition, Massachusetts teachers use their grade-level expertise when participating in passage selection as members of the Assessment Development Committees (ADCs).

3.2.2.4 ELA Test Design

All items are coded to ELA framework standards. There are no stand-alone items on the tests; all vocabulary, grammar, and mechanics questions are associated with a passage set.

Students read a passage set and answer questions that follow. Question types include selected-response items, constructed-response items (grades 3 and 4 only), and essay items. Please see section 3.2.1.2 above for additional details on item types. Approximately 20% of the items were technology-enhanced items.

Test Design by Grade

Grades 3–4

The common portion of each test at grades 3 and 4 included three passage sets. Two of the common passage sets included eleven or twelve 1- or 2-point selected-response items plus one 7-point text-based essay item or one 3-point constructed-response item. The other common passage set included six 1-point selected-response items. Each test contained a total of 44 common points distributed across two testing sessions.

Grade 5

The common portion of each test at grade 5 included three passage sets. Two of the passage sets included eleven 1- or 2-point selected-response items and one 7-point text-based essay item and the other passage set included seven 1-point selected-response items. The test contained a total of 48 common points distributed across two testing sessions.

Grades 6–8

The common portion of each test at grades 6–8 included three passage sets. Two of the passage sets included eleven or twelve 1- or 2-point selected-response items and one 8-point text-based essay item. The other common passage set included seven or eight 1-point items. The test contained a total of 50 common points distributed across two testing sessions.

Grade 10

The common portion of each test at grade 10 included four passage sets. Three passage sets in the common portion included eight 1- or 2-point selected-response items and two of those three sets included one 8-point text-based essay item. The fourth common passage set included four 1- or 2-point selected-response items. The test contained a total of 51 common points distributed across two testing sessions.

Matrix

For grades 3–8, the matrix portion included two passage sets. In grades 3–4, one matrix passage set included eight to eleven 1- or 2-point selected-response items, and either two constructed-response items or one essay. The other matrix passage set included seven 1- or 2-point machine-scored items. In grades 5–8, one matrix passage set included eight to ten 1- or 2-point selected-response items and one essay item and the other matrix passage set included seven 1- or 2-point selected-response items.

The grade 10 matrix portion included two passage sets. One matrix passage set included eight 1- or 2-point selected-response items and one 8-point text-based essay item. The other matrix passage set included four 1- or 2-point selected-response items.

Table 3-2 shows the recommended testing times. MCAS tests are untimed; therefore, times shown in the table are approximate. In 2021, only one of the two sessions was administered to each student in grades 3–8; therefore, total recommended testing time is not provided for those grades.

Table 3-2. ELA Recommended Testing Times, Grades 3–8 and 10

Grade	Session 1 Recommended Testing Time (min)	Session 2 Recommended Testing Time (min)	Total Recommended Testing Time (min)
3	120–150	120–150	NA
4	120–150	120–150	NA
5	120–150	120–150	NA
6	120–150	120–150	NA
7	120–150	120–150	NA
8	120–150	120–150	NA
10	150	150	300

Common and Matrix Item Distribution

The grades 3–8 and 10 ELA tests were administered to a large majority of students on the computer with relatively few students taking the paper form as an accommodation. The paper form was derived from Form 1 of the CBT. Both forms had the same number of common and matrix points. Table 3-3 shows the distribution of common and matrix items in each 2021 ELA test, by grade level.

Table 3-3. Distribution of ELA Common and Matrix Items by Grade and Item Type

Grade and Test			Items per Form							
			Common				Matrix			
Grade	Test	# of Forms	SR (1 pt.)	SR (2 pt.)	CR	ES	SR (1 pt.)	SR (2 pt.)	CR[1]	ES
3	ELA	10	22	6	1	1	6–14	0–2	2	1
4	ELA	10	24	5	1	1	6–14	0–2	2	1
5	ELA	10	24	5	0	2	6–14	0–2	0	1
6	ELA	10	26	4	0	2	6–14	0–2	0	1
7	ELA	10	26	4	0	2	6–14	0–2	0	1
8	ELA	10	26	4	0	2	6–14	0–2	0	1
10	ELA	33	21	7	0	2	9	3	0	1

[1] *Each grade 3 and grade 4 matrix form contained either two constructed-response items or one essay item.*

3.2.2.5 ELA Blueprints

Table 3-4 shows the target and actual (in parentheses) percentages of common item points by reporting category. Reporting categories are based on the anchor standards in the 2017 Massachusetts curriculum framework for ELA.

Table 3-4. Target (and Actual) Distribution of ELA Common Item Points by Reporting Category

Reporting Category	Percent of Points at Each Grade (+/-5%)						
	3	4	5	6	7	8	10[1]
Language	25 (27)	25 (23)	25 (23)	25 (22)	25 (22)	25 (24)	25 (20)
Reading	65 (64)	65 (68)	55 (60)	55 (58)	55 (58)	55 (56)	55 (60)
Writing	10 (9)	10 (9)	20 (17)	20 (20)	20 (20)	20 (20)	20 (20)
Total	100	100	100	100	100	100	100

3.2.2.6 ELA Cognitive Levels

Each item on the ELA tests is assigned a cognitive level according to the cognitive demand of the item. Cognitive levels are not synonymous with item difficulty. The cognitive level provides information about each item based on the complexity of the mental processing a student must use to answer the item correctly. The three cognitive levels used in ELA tests are described below.

- **Level I (Identify/Recall)**—Level I items require that the student recognize basic information presented in the text. Examples of skills at this level include identifying main ideas/facts/details; recalling and locating details; identifying genre or setting; and identifying definitions, parts of speech, or functions of punctuation. Key words include identify, list, match, recognize, describe, and distinguish.
- **Level II (Infer/Analyze)**—Level II items require that the student understand a given text by making inferences and drawing conclusions related to the text. Examples of skills at this level include understanding the whole text (Big Picture)/generalizing; interpreting, making connections, visualizing, and forming questions; explaining a character's role/motives; determining whether an idea is fact or opinion; filtering important information and key concepts; and determining the meaning of a word in context. Key words include infer, analyze, describe, interpret, determine, conclude, explain, summarize, and classify.
- **Level III (Evaluate/Apply)**—Level III items require that the student understand multiple points of view and be able to project his or her own judgments or perspectives on the text. Examples of skills at this level include understanding another point of view; analyzing/evaluating an author's purpose, style, and message; arguing/defending a point of view with evidence from the text; using reasoning to determine an outcome; applying information from the text; and synthesizing elements of text(s) in order to create a whole. Key words include critique, evaluate, analyze, predict, agree/disagree, argue/defend, apply, synthesize, judge, compare, and contrast.

Each cognitive level is represented in the ELA tests.

3.2.2.7 ELA Reference Materials

The use of bilingual word-to-word dictionaries was allowed during both ELA tests only for current and former English learner (EL) students. No other reference materials were allowed during the ELA tests.

3.2.3 Mathematics Test Specifications

3.2.3.1 Mathematics Standards

The 2021 MCAS grades 3–8 and 10 mathematics tests, including all field-test items, were aligned to the learning standards from the *2017 Massachusetts Curriculum Framework for Mathematics*. The 2017 standards are grouped by domains in grades 3–8 and conceptual categories in grade 10, as shown below.

- Domains for grades 3–5
  - Operations and Algebraic Thinking
  - Number and Operations in Base Ten
  - Number and Operations—Fractions
  - Geometry
  - Measurement and Data
- Domains for grades 6 and 7
  - Ratios and Proportional Relationships
  - The Number System
  - Expressions and Equations
  - Geometry
  - Statistics and Probability
- Domains for grade 8
  - The Number System
  - Expressions and Equations
  - Functions
  - Geometry
  - Statistics and Probability
- Conceptual Categories for grade 10
  - Number and Quantity
  - Algebra
  - Functions
  - Geometry
  - Statistics and Probability

The *2017 Massachusetts Curriculum Framework for Mathematics* can be found at www.doe.mass.edu/frameworks/math/2017-06.pdf.

3.2.3.2 Mathematics Item Types

The 2021 mathematics tests included several item types, as shown in Table 3-5. Approximately 25–30% of the items were technology-enhanced items.

Table 3-5. Mathematics Item Types and Score Points

Item Type	Possible Raw Score Points	Grade Levels
Multiple-choice (SR)	0 or 1	3–8, 10
Multiple-select (SR)	0 or 1	3–8, 10
Technology-enhanced (TE) (SA or SR)	0 or 1 0, 1, or 2	3 4–8, 10
Two-part (SA or SR)	0, 1, or 2	3–8, 10
Short-answer (SA)	0 or 1	3–8, 10
Constructed-response (CR)	0, 1, 2, or 3 0, 1, 2, 3, or 4	3 4–8, 10

SA = short-answer, SR = selected-response, CR = constructed-response

3.2.3.3 Mathematics Test Design

Test Design by Grade

Grade 3

The common portion of the grade 3 test included thirty-six 1-point selected-response or short- answer items and four 3-point constructed-response items. The matrix portion included three 1-point selected-response or short-answer items and one 3-point constructed-response item. The test contained a total of 48 common points distributed across two testing sessions.

Grades 4–6

The common portion of the grades 4–6 tests included thirty-four 1-point selected-response or short-answer items, two 2-point selected-response items, and four 4-point constructed-response items. The matrix portion included two 1-point selected-response or short-answer items, one 2-point selected-response or short-answer item, and one 4-point constructed-response item. Each test contained a total of 54 common points distributed across two testing sessions.

Grades 7–8

The common portion of the grades 7–8 tests included thirty-four 1-point selected-response or short-answer items, two 2-point selected-response items, and four 4-point constructed-response items. The matrix portion included two 1-point selected-response or short-answer items, two 2-point selected-response or short-answer items, and two 4-point constructed-response items. Each test contained a total of 54 common points distributed across two testing sessions. Items in session 2 were developed to assess content where the students may need a calculator. These items were either calculator-neutral (calculators are permitted but not required to answer the question) or calculator-active (students are expected to use a calculator to answer the question).

Grade 10

The common portion of the grade 10 test included thirty-two 1-point selected-response or short-answer items, six 2-point selected-response items, and four 4-point constructed-response items. The matrix portion included eight 1-point selected-response or short-answer items, two 2-point selected-response or short-answer items, and two 4-point constructed-response items. Each test contained a total of 60 common points distributed across two testing sessions. Items in session 2 were developed to assess content where the students may need a calculator. These items were either calculator-neutral (calculators are permitted but not required to answer the question) or calculator-active (students are expected to use a calculator to answer the question).

Table 3-6 shows the distribution of common and matrix points on the 2021 mathematics tests, as well as recommended testing times. Since MCAS tests are untimed, the times shown are approximate. In 2021, only one of the two sessions was administered to each student in grades 3–8; therefore, total recommended testing time is not provided for those grades.

Table 3-6. Mathematics Recommended Testing Times and Common/Matrix Points per Test, Grades 3–8 and 10

Grade	# of Sessions	Session 1 Recommended Testing Time (in minutes)	Session 2 Recommended Testing Time (in minutes)	Total Recommended Testing Time (in minutes)	Common Points	Matrix Points
3	2	90	90	NA	48	6
4–6	2	90	90	NA	54	8–9
7–8	2	90	90	NA	54	12–14
10	2	90–120	90–120	180–240	60	24

The grades 3–8 and 10 mathematics tests were administered to a large majority of students on the computer with relatively few students taking the paper form as an accommodation. The paper form was derived from Form 1 of the CBT. Both forms had the same number of common and matrix points. Table 3-7 shows the distribution of common and matrix item types by grade level.

Table 3-7. Distribution of Mathematics Common and Matrix Items by Grade and Item Type

Grade	# of Forms	Common				Matrix	
		SR/SA/TE		CR		SRSA/TE	CR
		(1 pt.)	(2 pt.)	(3 pt.)	(4 pt.)	(1 or 2 pt.)	(3 or 4 pt.)
3	23	36	0	4	0	3	1
4	23	34	2	0	4	3	1
5	23	34	2	0	4	3	1
6	24	34	2	0	4	3	1
7	21	34	2	0	4	4	2
8	22	34	2	0	4	4	2
10	20	32	6	0	4	6	4

3.2.3.4 MATHEMATICS BLUEPRINTS

Tables 3-8 through 3-11 show the target and actual percentages of common item points by reporting category. Reporting categories are based on the Massachusetts curriculum framework domains.

Table 3-8. Target (and Actual) Distribution of Math Common Item Points by Reporting Category, Grades 3–5

Domain	% of Points at Each Grade (+/-5%)		
	3	**4**	**5**
Operations and Algebraic Thinking	30 (31)	20 (19)	15 (15)
Number and Operations in Base Ten	15 (17)	20 (20)	30 (30)
Number and Operations – Fractions	20 (19)	30 (30)	25 (26)
Geometry	10 (8)	10 (11)	10 (11)
Measurement and Data	25 (25)	20 (20)	20 (19)
Total	**100**	**100**	**100**

Table 3-9. Target (and Actual) Distribution of Math Common Item Points by Reporting Category, Grades 6 and 7

Domain	% of Points at Each Grade (+/-5%)	
	6	7
Ratios and Proportional Relationships	20 (20)	20 (20)
The Number System	20 (20)	20 (20)
Expressions and Equations	30 (30)	25 (24)
Geometry	15 (15)	15 (15)
Statistics and Probability	15 (15)	20 (20)
Total	**100**	**100**

Table 3-10. Target (and Actual) Distribution of Math Common Item Points by Reporting Category, Grade 8

Domain	% of Points at Each Grade (+/-5%)
The Number System and Expressions and Equations	40 (41)
Functions	20 (20)
Geometry	30 (30)
Statistics and Probability	10 (9)
Total	**100**

Table 3-11. Target (and Actual) Distribution of Math Common Item Points by Reporting Category, Grade 10

Conceptual Category	% of Points at Each Grade (+/-5%)
Number and Quantity	15 (15)
Algebra & Functions	35 (35)
Geometry	35 (35)
Statistics and Probability	15 (15)
Total	**100**

3.2.3.5 Mathematics Cognitive Levels

Each item on the mathematics test is assigned a cognitive level according to the cognitive demand of the item. Cognitive levels are not synonymous with difficulty. The cognitive level provides information about each item based on the complexity of the mental processing a student must use to answer the item correctly. The three cognitive levels used in the mathematics tests are described below.

- **Level I (Recall and Recognition)**—Level I items require that the student recall mathematical definitions, notations, simple concepts, and procedures, and apply common, routine procedures or algorithms (that may involve multiple steps) to solve a well-defined problem.
- **Level II (Analysis and Interpretation)**—Level II items require that the student engage in mathematical reasoning beyond simple recall, in a more flexible thought process, and in enhanced organization of thinking skills. These items require a student to make a decision about the approach needed, to represent or model a situation, or to use one or more non-routine procedures to solve a well-defined problem.
- **Level III (Judgment and Synthesis)**—Level III items require that the student perform more abstract reasoning, planning, and evidence-gathering. In order to answer questions of this cognitive level, a student must engage in reasoning about an open-ended situation with

multiple decision points, represent or model unfamiliar mathematical situations, and solve more complex, non-routine, or less well-defined problems.

Cognitive Levels I and II are represented by items in all grades and across item types. Cognitive Level III is best represented by constructed-response items; an attempt was made to include Level III items at each grade.

3.2.3.6 Mathematics Reference Materials

Rulers were provided to students in grades 3–8. Handheld rulers were provided to students taking the paper version of the mathematics test. Students taking the computer-based mathematics test had access to two separate computer-based rulers: a centimeter ruler and a 1/8-inch ruler; students were not permitted to use handheld rulers on the computer-based test.

Reference sheets were provided to students at grades 5–8 and 10. These sheets contain information, such as formulas, that students may need to answer certain items.

The second session of the grades 7, 8, and 10 mathematics tests was a calculator session. All items included in this session were either calculator-neutral (calculators are permitted but not required to answer the question) or calculator-active (students are expected to use a calculator to answer the question). Each student taking the computer-based grade 7 mathematics test had access to a five-function calculator and a scientific calculator during session 2 of the mathematics test. Each student taking the computer-based grade 8 and grade 10 mathematics tests had access to a scientific calculator, a TI-84 graphing calculator, and a Desmos graphing calculator during session 2 of the mathematics test. Students taking the paper-based mathematics tests in grades 7, 8, and 10 had access to comparable handheld calculators.

3.2.4 Science and Technology/Engineering (STE) Test Specifications

3.2.4.1 STE Standards and Practices

The next-generation STE MCAS tests for grades 5 and 8 were aligned to the standards in the 2016 Massachusetts Science and Technology/Engineering Curriculum Framework. In addition, Instructional Guidelines were developed to help clarify some standards and can be found at www.doe.mass.edu/stem/ste/.

The grade 5 test was based on the grades 3–5 standards and the grade 8 test was based on the grades 6–8 standards. The 2016 Pre-K–8 standards are grouped into the following four domains:

- Earth and Space Science
- Life Science
- Physical Science
- Technology/Engineering

In addition, the grades 5 and 8 next-generation STE MCAS tests assessed the science and engineering practices incorporated into the standards. There are eight practices included in the standards:

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data

5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

3.2.4.2 STE Item Types

The grades 5 and 8 STE tests included several item types, as shown in Table 3-12.

Table 3-12. STE Item Types and Score Points

Item Type	Possible Raw Score Points	Grade Level
Multiple-choice (SR)	0 or 1	5 and 8
Multiple-select (SR)	0 or 1	5 and 8
Technology-enhanced (SR)	0 or 1	5 and 8
Two-point (SR)	0, 1, or 2	5 and 8
Constructed-response (CR)	0, 1, 2, or 3	5 and 8

SR = selected-response, CR = constructed-response

3.2.4.3 STE Test Design

Test Design

The common portion of the grades 5 and 8 tests included thirty-two 1-point selected-response items, three 2-point selected-response items, two 2-point constructed-response items, and four 3-point constructed-response items. The tests included two common modules, which are groups of items based on a scenario/phenomenon. Each module contained three 1-point selected-response items and one 3-point constructed-response item. Module items made up 12 points of the test, while discrete items made up 42 points of the test. The matrix portion included five 1-point selected-response items, one 2-point selected-response or constructed-response item, and one 3-point constructed-response item, for a total of 10 points. Some forms contained matrix modules (equating or field test) while other forms only included discrete items. The test contained a total of 54 common points distributed across two testing sessions. Approximately 25–30% of the items were technology-enhanced items.

Table 3-13 shows the distribution of common and matrix points on the STE tests, as well as recommended testing times. Since MCAS tests are untimed, the times shown are approximate. In 2021, only one of the two sessions was administered to each student in grades 5 and 8; therefore, total recommended testing time is not provided for those grades.

Table 3-13. STE Recommended Testing Times and Common/Matrix Points per Test, Grades 5 & 8

Grade	# of Sessions	Session 1 Recommended Testing Time (in minutes)	Session 2 Recommended Testing Time (in minutes)	Total Recommended Testing Time (in minutes)	Common Points	Matrix Points
5	2	75–90	75–90	NA	54	10
8	2	60–75	60–75	NA	54	10

The grades 5 and 8 STE tests were administered to a large majority of students on the computer with relatively few students taking the paper form as an accommodation. The paper form was derived from Form 1 of the CBT. Both forms had the same number of common and matrix points. Table 3-14 shows the distribution of common and matrix item types by grade level.

Table 3-14. Distribution of STE Common and Matrix Items by Grade and Item Type

Grade	# of Forms	Common				Matrix		
		SR1 (1 pt.)	SR2 (2 pt.)	CR2 (2 pt.)	CR3 (3 pt.)	SR1 (1 pt.)	SR2/CR2 (2 pt.)	CR3 (3 pt.)
5	19	32	3	2	4	5	1	1
8	19	32	3	2	4	5	1	1

3.2.4.4 STE Blueprints

Table 3-15 shows the target and actual percentages of common item points by content reporting category. Content reporting categories are based on the Massachusetts curriculum framework domains.

Table 3-15. Target (and Actual) Distribution of STE Common Item Points by Reporting Category, Grades 5 & 8

Domain	% of Points at Each Grade (+/-5%)	
	5	8
Earth and Space Sciences	25 (26)	25 (26)
Life Science	25 (26)	25 (26)
Physical Science	25 (26)	25 (26)
Technology/Engineering	25 (22)	25 (22)
Total	**100**	**100**

In addition to the content reporting categories, over 50% of the items were coded to an MCAS science and engineering practice category. These items were dually coded, meaning they were coded to both a content reporting category and a practice reporting category. The MCAS practice reporting categories are listed in Table 3-16.

Table 3-16. STE Practices Assessed on MCAS

MCAS Practice Category	Science and Engineering Practices
Investigations and Questioning	Asking Questions and Defining Problems Planning and Carrying Out Investigations
Mathematics and Data	Analyzing and Interpreting Data Using Mathematics and Computational Thinking
Evidence, Reasoning, and Modeling	Developing and Using Models Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information

Regarding the STE practices, each content standard includes a reference to one STE practice. For example, standard 5-ESS2-1 states:

Use a model to describe the cycling of water through a watershed through evaporation, precipitation, absorption, surface runoff, and condensation.

Although only a single practice is referenced within each standard, different practices may be assessed with the associated content. In the example above, items assessing standard 5-ESS2-1 may assess not only the "developing and using models" practice; they may also assess any other practice, such as constructing explanations or analyzing and interpreting data.

Each released item that assessed a practice was coded to one of the three practice categories listed in Table 3-16. However, when reporting results by reporting category, there was a general "STE Practices" reporting category. Results were not reported out on the three practice categories listed, due to the limited number of items.

3.2.4.5 STE Cognitive Levels

Each item on the STE tests is assigned a cognitive level according to the cognitive demand of the item. Cognitive levels are not synonymous with difficulty. The cognitive skill describes each item based on the complexity of the mental processing a student must use to answer the item correctly. Only one cognitive skill is designated for each item. STE uses a modified revised Bloom's taxonomy to code items by cognitive level. Items generally fall into either the understanding or applying/analyzing cognitive skill level. Table 3-17 partially describes the cognitive skills used for the STE test items. Additional information is used to code questions for each grade level.

Table 3-17. STE Cognitive Skill Descriptions

Cognitive Skill	Description
Understanding	Identify, describe, or explain concepts using typical classroom examples. Using a model, explain how people on Earth experience day and night. Describe the role of weathering and erosion in the production and movement of soil. Identify processes illustrated in common science models such as the water cycle and particle models of matter. Complete a life cycle with the stages birth, growth, reproduction, and death. Distinguish between common inherited characteristics and common characteristics that are a result of the environment. Describe how magnets will behave in familiar set-ups. Identify characteristic properties that can be used to classify a substance. Does the item require the recognition or a description of a familiar concept?
Applying / Analyzing	Describe, explain, or apply scientific concepts to a novel situation, or Critically analyze data, graphs, and models of scientific phenomena. Use climate data to describe or predict the expected weather for a particular region. Draw conclusions by interpreting data tables, graphs, or models, such as maps of plate boundaries, food webs, or steps of the communication process. Compare different composter designs and describe benefits and drawbacks of their design features. Given the results, determine whether combining novel substances results in a chemical reaction or a mixture. Given a novel situation, explain how energy can be transferred from place to place. Analyze investigations and predict outcomes. Use evidence from an investigation to support a claim and provide reasoning. Describe or explain a scientific concept by applying a model to novel situations (e.g., use fossil data in rock layers to describe how the area has changed over time). Determine a testable question that can be asked based on given information. Does the item require drawing conclusions based on novel information? Does the item require critical analysis of information to make conclusions?
Evaluating / Creating	Generate an explanation or conclusion that involves the synthesis of multiple scientific concepts or processes. Construct models, graphs, charts, drawings, or diagrams and generate explanations or conclusions based on the information. Propose solution(s) to a scientific or engineering problem based on given criteria and constraints and generate an explanation for the solution(s). Does the item require the synthesis of different concepts or skills to generate a solution?

3.2.4.6 STE Reference Materials

Rulers were provided to students in grades 5 and 8. Handheld rulers were provided to students taking the paper version of the STE test. Students taking the computer-based STE tests had access to two separate computer-based rulers: a centimeter ruler and a 1/8-inch ruler; students were not permitted to use handheld rulers on the computer-based tests.

Students were provided a computer-based five-function calculator in grade 5 and a computer-based scientific calculator in grade 8. Handheld calculators were given to students taking the paper-based tests.

3.2.5 Item and Test Development Process

Table 3-18 provides a detailed view of the item and test development process, in chronological order.

Table 3-18. Overview of Item and Test Development Process

Development Step	Detail of the Process
Select reading passages (for ELA only)	Contractor's test developers find potential passages and present them to DESE for initial approval; DESE-approved passages go to Assessment Development Committees (ADCs) composed of experienced educators, and then to a Bias and Sensitivity Committee (BSC) for review and recommendations. ELA items are not developed until passages have been reviewed by an ADC and a BSC. With the ADC and BSC recommendations, DESE makes the final determination as to which passages will be developed and used on a future MCAS test.
Develop items	Contractor's test developers generate items and edit items from subcontractors that are aligned to Massachusetts standards and specifications.
DESE and educator review of items	1. Contractor sends draft items to DESE test developers for review. 2. DESE test developers review and edit items prior to presenting the items to ADCs. 3. ADCs review items and make recommendations. 4. BSC reviews items and makes recommendations. 5. DESE test developers edit & revise items based on recommendations from ADC & BSC.
Expert review of items	Experts from higher education and practitioners review all field-tested items for content accuracy. Each item is reviewed by at least two independent expert reviewers. Comments and suggested edits are provided to DESE staff for review.
Benchmark constructed-response items and essays	DESE and contractor test developers meet to determine appropriate benchmark papers for training of scorers of field-tested constructed-response items and essays. Scoring rubrics and notes are reviewed and edited during benchmarking meetings. During the scoring of field-tested items, the contractor contacts DESE test developers with any unforeseen issues.
Item statistics meeting	ADCs review field-test statistics and recommend items for the common-eligible status, for re-field-testing (with edits, for math and discrete STE items, since ELA is passage-based), or for rejection. BSC also reviews items and recommends items to become common-eligible or to be rejected.

continued

Development Step	Detail of the Process
Test construction	Before test construction, DESE provides target performance-level cut scores to contractor's test developers. Contractor proposes sets of common items (items that count toward student scores) and matrix items. Matrix items consist of field-test and equating items, which do not count toward student scores. Each common set of items is delivered with proposed cut scores, including test characteristic curves (TCCs) and test information functions (TIFs). DESE test developers and editorial staff review and edit proposed sets of items. Contractor and DESE test developers and editorial staff meet to review edits and changes to tests. Psychometricians are available to provide statistical information for changes to the common form.
Operational test items	Approved common-eligible items become part of the common item set and are used to determine individual student scores.
Released common items	Approximately 50% of common items in grades 3–8 and 100% of common items in grade 10 are released to the public, and the remaining items are returned to the common-eligible pools to be used on future MCAS tests. An item description (a statement specifying the content of the item) is released for each common item (both released and non-released).

3.2.5.1 Item Development and Review

Initial DESE Item Review

As described in the table above, all passages, items, and scoring guides are reviewed by DESE test developers before presentation to the ADCs for review. Passage selection information can be found in section 3.2.2.3. The DESE test developers evaluate new items for the following characteristics:

- **Alignment**: Are the items aligned to the standards?
- **Content**: Is the content accurate? Does the item elicit a response that shows a depth of understanding of the subject?
- **Contexts**: Are contexts grade-level appropriate? Are they realistic? Are they interesting to students?
- **Grade-level appropriateness**: Are the content, language, and contexts appropriate for the grade level?
- **Creativity**: Does the item demonstrate creativity with regard to approaches to items and contexts?
- **Distractors**: Have the distractors for selected-response items been chosen based on plausible content errors? What are the distractor rationales?
- **Mechanics**: How well are the items written? Are they grammatically correct? Do they follow the conventions of item writing? Is the wording grade-level appropriate and accessible for all students?
- **Technology**: Are the items scoring correctly? Is the item making the best use of the technology? Is there another type of item that is more appropriate?

After DESE's initial review, DESE and the contractor's test developers discuss and revise the proposed item sets in preparation for ADC review.

Assessment Development Committee (ADC) and Bias & Sensitivity Committee (BSC) Reviews

ADCs and the BSCs are each composed of approximately 10–12 Massachusetts educators from across the state (see Appendix D for lists of names). Each ADC meeting is co-facilitated by DESE and Cognia's test developers. BSC meetings are facilitated by Cognia's Director of Test Development. There is an ADC

for each content area and grade (e.g., ELA grade 3), and one BSC. All ADC and BSC recommendations remain with each item. ADC and BSC members meet several times a year to review new passages and items and to review data from field-test items. Members review items using Pearson's online platform ABBI. Each participant enters their "vote" and recommendations, and the facilitators record the consensus of the committee. The DESE takes the recommendations of the ADCs and the BSCs into consideration and makes the final decision to approve items to become field-test eligible.

ADC Passage Review (ELA Only)

ELA ADCs review passages before any corresponding items are written. Committee members consider all the elements noted in section 3.2.2.3. If a passage is well known or if the passage comes from a book that is widely taught, then the passage is likely to provide an unfair advantage to those students who are familiar with the work. Committee members vote to accept or reject each passage, and the facilitators record the consensus of the group.

For each passage recommended for acceptance, committee members provide suggestions for item development. They also provide recommendations for the presentation of the passage, including suggestions for the purpose-setting statement, words to be footnoted/glossed or redacted, and graphics, illustrations, or photographs to be included with the text.

ADC Item Review

Once DESE test developers have reviewed and edited new items and scoring guides, the items are reviewed by the ADCs. Committees review items for the characteristics noted above. Members vote to accept, accept with edits (members may include suggested edits), or reject each item. The meeting facilitators record the consensus/majority opinion of the group.

BSC Passage and Item Review

After passages and items have been approved by the ADCs, they are also reviewed by a separate BSC. The role of the committee is to identify whether a passage or item contains material that is likely to significantly favor or disadvantage one group of students for reasons that are not educationally relevant. The purpose of the committee's review is to ensure that the ability to answer an item correctly reflects a student's learning, not cultural opportunities or life experiences. Specifically, a passage or item should be flagged by the committee if it is insensitive or disrespectful to a student's ethnic, religious, or cultural background (including disability, socio-economic status, and regional differences). The BSC votes to accept, accept with edits (including suggested edits), or reject (including their reasoning) each passage or item. The meeting facilitators record the consensus of the group.

External Content Expert Item Review

When items are selected to be included on the field-test portion of the MCAS, they are submitted to expert reviewers for their feedback. The task of the expert reviewer is to consider the accuracy of the content of items. Each item is reviewed by two independent expert reviewers. All expert reviewers for MCAS hold a doctoral degree (either in the content they are reviewing or in the field of education) and are affiliated with institutions of higher education in either teaching or research positions. Each expert reviewer has been approved by the DESE. The External Content Experts recommend either accepting or rejecting the item, including their reasoning. Expert reviewers' comments remain with each item.

Editing of Recommended Items

DESE test developers review the recommendations of the ADC, BSC, and expert reviewers and determine whether to revise an item based on the suggested edits. The items are also reviewed and

edited by DESE and Cognia editors to ensure adherence to style guidelines in *The Chicago Manual of Style*, *American Heritage Dictionary*, MCAS Style Guidelines, and to sound testing principles. According to these principles, all items should:

- demonstrate correct grammar, punctuation, usage, and spelling;
- be written in a clear, concise style;
- contain unambiguous descriptions of what is required for a student to attain a maximum score;
- be written at a reading level that allows students to demonstrate their knowledge of the subject matter being tested.

3.2.5.2 Field-Testing of Items

Items that pass the reviews listed above are approved to be field-tested. Field-tested items appear in the matrix portions of the tests. Each matrix item is typically answered by a minimum of 1,500 students, resulting in enough responses to yield reliable performance data.

Scoring of Field-Tested Items

All field-tested items, except for constructed-response items and essays, are machine-scored. These items include multiple-choice, multiple-select, short-answer, and technology-enhanced items.

All field-tested constructed-response items and essays are hand-scored. To train scorers, DESE works closely with the scoring staff to refine rubrics and scoring notes, and to select benchmark papers that exemplify the score points and variations within each score point. Approximately 1,500 student responses are scored per field-tested constructed-response item or essay. As with machine-scored items, 1,500 student responses are sufficient to provide reliable results. See section 3.4 for additional information on scorers and scoring.

Data Review of Field-Tested Items

Data Review by DESE

DESE test developers review all item statistics as available prior to committee review by the ADCs and BSCs. An item displaying statistics that indicate it did not perform as expected is closely reviewed and if it is found to be flawed it is rejected from the pool of items. After ADC and BSC reviews of item statistics, DESE test developers make final decisions regarding any recommendations.

Data Review by ADCs

The ADCs meet to review the field-test items with their associated statistics. ADCs review the following item statistics:

- item difficulty (or mean score for polytomous items),
- item discrimination,
- Differential Item Functioning (DIF),
- distribution of scores across answer options and score points,
- distribution of answer options and score points across quartiles, and
- distribution of unique student responses (for some items).

The ADCs make one of the following recommendations for each field-tested item:

- accept
- edit and field-test again (this recommendation is made for mathematics and discrete STE items only, since ELA items are passage-based)
- reject

Data Review by BSCs

The BSC also reviews the statistics for the field-tested items. The committee reviews only the items that the ADCs have accepted. The BSC pays special attention to items that show DIF when comparing the following subgroups of test takers:

- female compared with male,
- African American/Black compared with white,
- Hispanic or Latino/a compared with white,
- English learners (EL) and former EL compared with non-EL

3.2.5.3 Item Selection for Operational Test

Cognia's test developers propose a set of previously field-tested or common, non-released items to be used in the common portion of the test. Test developers work closely with psychometricians to ensure that the proposed tests meet the statistical requirements set forth by DESE. In preparation for meeting with the DESE test developers, the contractor's test developers consider the following criteria in selecting items to propose for the common portion of the test:

- **Content coverage/match to test design and blueprints**. The test designs and blueprints stipulate a specific number of items per item type and per reporting category for each content area. A broad coverage of standards and cognitive skills is expected. The previous year's common test should also be considered, and items should not be duplicated.
- **Item difficulty and complexity**. Item statistics drawn from the data analysis of items are used to ensure similar levels of difficulty and complexity from year to year as well as high-quality psychometric characteristics. Items can be "reused" if they have not been released and not used the previous year. When an item is reused in the common portion of the test, the latest usage statistics accompany that item.
- **"Clueing" items**. Items are reviewed for any information that might "clue" or help the student answer another item.
- **Item types**. A variety of item types, including approximately 20–30% technology-enhanced items, should populate the common slots.

Field-test items are also selected during form construction. Field-test items are drawn from the field-test eligible pools and should mirror the operational test, to the extent needed. If a standard or reporting category is lacking in the common eligible item pool, items should be chosen to fill this need. During assembly of the test forms, the following criteria are considered:

- **Key patterns**. The sequence of keys (correct answers) is reviewed to ensure that the key order appears random.
- **Option balance**. Items are balanced across forms so that each form contains a roughly equivalent number of key options.
- **"Clueing" items**. Items are reviewed for any information that might "clue" or help the student answer another item.
- **Item types**. A variety of item types should populate the matrix slots.

3.2.5.4 Operational Test Draft Review

The proposed operational test is posted for DESE to review. DESE test developers consider the proposed items, make recommendations for changes, and then meet with Cognia's test developers to construct the final forms of the tests. After form construction meetings, the test forms enter several rounds of review by test developers and editors. Items are checked to ensure that requested changes were made after the test construction meetings, and to ensure that all items are scoring correctly. In addition, items are checked again for any grammatical or "fatal flaw" errors, and these are corrected before the test forms are published.

3.2.5.5 Special Edition Test Forms

Students with Disabilities

MCAS is accessible to students with disabilities through the universal design of test items, provision of special edition test forms, and the availability of a range of accommodations and accessibility features for students taking the standard tests. To be eligible to receive a special edition test form, a student must have a disability that is documented either in an individualized education program (IEP) or in a 504 plan. All MCAS 2021 operational tests and retests were available in the following special editions for students with disabilities:

- **Large-print**—Form 1 of the operational test was translated into a large-print edition. The large-print edition contains all common and matrix items found in Form 1.
- **Braille**—This form included only the common items found in the operational test. If an item indicates bias toward students with visual disabilities (e.g., if it includes a complex graphic that a student taking the Braille test could not reasonably be expected to comprehend as rendered), then simplification of the graphic is considered, with appropriate rewording of the item text, as necessary. If a graphic such as a photograph cannot be rendered in Braille, or if the graphic is not needed for the student to respond to the item, the graphic is replaced with descriptive text or a caption or eliminated altogether. Three-dimensional shapes that are rendered in two dimensions in print are rendered on the Braille test as "front view," "top view," and/or "side view," and are accompanied where necessary by a three-dimensional wooden or plastic manipulative wrapped in a Braille-labeled plastic bag. Modifications to original test items for the Braille version of the test are made only when necessary, as determined by the Braille test subcontractor and DESE staff, and only when they do not provide clues or assistance to the student, or change what the item is measuring. When successful modification of an item or graphic is not possible, all or part of the item is omitted, and may be replaced with a similar item.
- **Screen reader—**This accommodation was available only for those students who are blind or have a visual disability. Students who used a screen reader were also given a separate hard-copy Braille edition test in order to have the appropriate Braille graphics. All answers are entered onscreen, either by the student using a Braille writing device, or by the test administrator.
- **Text-to-speech—**This functionality was embedded in the grades 3–8 and 10 computer-based tests (CBT). Students typically use headphones with this format but may also be tested individually in a separate setting to minimize distractions to other students (from hearing what is being read aloud).
- **American Sign Language (ASL)**—The grade 10 MCAS mathematics computer-based test is available to students who are deaf or hard-of-hearing in an American Sign Language edition, which contains only the common items found in the operational test.
- **Spanish-English**—This version of the grade 10 mathematics test is intended for Spanish-speaking EL students who have been in the United States less than 3 years. Spanish-English tests are available in computer- and paper-based formats. Paper-based tests consist of English-Spanish facing pages (side-by-side); and computer-based tests consist of "stacked" Spanish text above English text. Students may respond either in Spanish or English. (Note: For all other MCAS test versions, students must respond in English.)

Appendix E details other accommodations that did not require a special edition test form and lists accessibility features that were available to all students, such as screen magnification and highlighting. After testing was completed, DESE received a list with the number of students who participated in the 2021 MCAS with each accommodation, based on information compiled in the Personal Needs Profile in PearsonAccess Next.

3.3 Test Administration

3.3.1 Test Administration Schedule

The grades 3–8 and 10 next-generation MCAS tests were administered in spring 2021 during an extended period, with varying start dates, as shown in Table 3-19. Due to the pandemic, approximately 10% of high school students (largely grade 10 students) were unable to take the tests in school in the spring of 2021. These students had the opportunity to take the tests in the November 2021 Retest administration. This meant a significant number of students took the high school MCAS tests for the first time in November 2021 (see the last row of Table 3-19).

Table 3-19. Test Administration Schedule—ELA and Mathematics Grades 3–8 & 10, STE 5 & 8

Content Area	Complete the Student Registration/ Personal Needs Profile Process	Receive Test Administration Materials	Test Administration Windows	Deadline to Complete the Principal's Certification of Proper Test Administration (PCPA), Update Students' Accommodations, and Mark CBT as Complete	Deadline for Return of Materials to Contractor (for PBT Only)
Grades 3–5 ELA	February 1–10	April 26	May 10 – June 11	June 14	June 15
Grade 6–8 ELA	February 1–10	May 3	May 17 – June 11	June 14	June 15
Grades 3–5 Mathematics	February 1–10	April 26	May 10 – June 11	June 14	June 15
Grades 6–8 Mathematics	February 1–10	May 3	May 17 – June 11	June 14	June 15
Grades 5 & 8 STE	February 1–10	May 3	May 17 – June 11	June 14	June 15
Grade 10 ELA and Mathematics	March 1–12	April 26	May 3 – June 11[1]	June 14	June 15
November 2021 Retest	September 20 – October 1	Math: November 1 ELA: November 8	Math: November 9–10 ELA: November 16–17 (Last day of makeup testing for all tests: November 22)	November 22	November 23

[1]*New for 2021, high school had a window instead of a prescribed date.*

3.3.2 Security Requirements

Principals were responsible for ensuring that all test administrators complied with the requirements and instructions contained in the *Test Administrator's Manual*s. In addition, other administrators, educators, and staff within the school were responsible for complying with the same requirements. Schools and school staff who violated the test security requirements were subject to numerous possible sanctions and penalties, including delays in reporting of test results, the invalidation of test results, the removal of school personnel from future MCAS administrations, employment consequences, and possible licensure consequences for licensed educators.

If test content is breached, quick identification and resolution of the breach are critical to the integrity of a testing program. In addition to reports of breaches in the field, the MCAS program used the Pearson proprietary web monitoring tool to perform web monitoring. The Pearson web monitoring system

leverages technology tools and human expertise to identify, prioritize, and monitor sites where sensitive test information may be disclosed. The following strategies were used:

- systematically patrolled the internet, websites, blogs, discussion forums, video archives, social media, document archives, brain dumps, auction sites, and media outlets;
- identified and verified threats to MCAS test security and notified DESE and Cognia, as required;
- worked systematically through the steps necessary to have infringing content removed if a threat was verified; and
- provided summary reporting that included overall and specific threat analysis.

Full security requirements, including details about responsibilities of principals and test administrators, examples of testing irregularities, guidance for establishing and following a document tracking system, and lists of approved and unapproved resource materials, can be found in the *Spring 2021 Principal's Administration Manual* (PAM), the *Spring 2021 Test Administrator's Manual for Computer-Based Testing* (CBT TAM), and the *Spring 2021 Test Administrator's Manual for Paper-Based Testing* (PBT TAM).

3.3.3 Participation Requirements

In spring 2021, students educated with Massachusetts public funds were required by state and federal laws to participate in MCAS testing. The 1993 Massachusetts Education Reform Act mandates that **all** students in the tested grades who are educated with Massachusetts public funds participate in the MCAS, including the following groups of students:

- students enrolled in public schools
- students enrolled in charter schools
- students enrolled in innovation schools
- students enrolled in a Commonwealth of Massachusetts Virtual School
- students enrolled in educational collaboratives
- students enrolled in private schools receiving special education that is publicly funded by the Commonwealth, including approved and unapproved private special education schools within and outside Massachusetts
- students enrolled in institutional settings receiving educational services
- students in military families
- students in the custody of either the Department of Children and Families (DCF) or the Department of Youth Services (DYS)
- students with disabilities, including students with temporary disabilities such as a broken arm
- English learner (EL) students
- students who have been expelled but receive educational services from a district
- foreign exchange students who are coded as #11 under "Reason for Enrollment" in the Student Information Management System (SIMS)

It was the responsibility of the principal to ensure that all enrolled students participated in testing as mandated by state and federal laws. To certify that **all** students participated in testing as required, principals were required to complete the online Principal's Certification of Proper Test Administration (PCPA) following test administration. For a summary of participation rates, see the 2021 MCAS Participation Report on DESE's School and District Profiles website: profiles.doe.mass.edu /mcas/participation.aspx?linkid=26&orgcode=00000000&fycode=2021&orgtypecode=0&.

3.3.3.1 Students Not Tested on Standard Tests

A very small number of students educated with Massachusetts public funds were not required to take the standard MCAS tests. These students were strictly limited to the following categories:

- EL students in their first year of enrollment in U.S. schools, who are not required to participate in ELA testing
- students with significant disabilities who were unable to take the standard MCAS tests and instead participated in the MCAS-Alt (see Chapter 4 for more information)
- students with a medically documented absence who were unable to participate in make-up testing, including students participating in post-concussion "graduated reentry" plans who were determined to be not well enough for standard MCAS testing

More details about test administration policies and participation requirements for students without disabilities, for students with disabilities, for EL students, and for students educated in alternate settings can be found in the PAM.

3.3.4 Administration Procedures

In 2021, at-home remote testing was offered in grades 3–8 in response to pandemic-related learning disruptions. Schools could enroll students in an at-home test administration block if the student had not yet returned to class, in-person. Most of the in-school administration procedures were used for these students, using a video software such as Zoom.

It is the principal's responsibility to coordinate the school's 2021 MCAS test administration. This coordination included the following responsibilities:

- understanding and enforcing test security requirements and test administration protocols;
- reviewing plans for maintaining test security with the superintendent;
- ensuring that all enrolled students participated in testing at their grade level;
- coordinating the school's test administration schedule and ensuring that tests were administered in the correct order and during the prescribed testing windows;
- ensuring that test accommodations were properly provided and that transcriptions, if required for any accommodation, were done appropriately (Accommodation frequencies during 2021 testing can be found in Appendix F; for a list of test accommodations, see Appendix E. The overall number of accommodations has increased in the next-generation MCAS administration because of CBT-specific accommodations such as text-to-speech.);
- completing and ensuring the accuracy of information provided on the PCPA;
- monitoring DESE's website (www.doe.mass.edu/mcas/) throughout the school year for important updates;
- reading the Student Assessment Update emails throughout the year for important information; and
- providing DESE with correct contact information to receive important notices during test administration.

More details about test administration procedures, including ordering test materials, scheduling test administration, designating and training qualified test administrators, identifying testing spaces, meeting with students, providing accurate student information, and accounting for and returning test materials, can be found in the PAM.

The MCAS program is supported by the MCAS Service Center, which includes a toll-free telephone line and email answered by staff members who provide support to schools and districts. The MCAS Service Center operates weekdays from 7:00 a.m. to 5:00 p.m. (Eastern Time), Monday through Friday.

3.4 Scoring

3.4.1 Preparation

3.4.1.1 Preparation of Student Response Booklets

Scoring of the 2021 MCAS tests was conducted by both Cognia and Pearson. Table 3-20 shows the breakdown of how scoring work was divided between Cognia and Pearson.

Table 3-20. Breakdown of Scoring Work

Cognia	Pearson
ELA & mathematics grade 10 operational ELA & mathematics grades 3–8 & 10 field tests ELA & mathematics grades 3–8 operational preparation of expanded training materials for hand-off to Pearson STE grades 5, 8, and HS operational and field tests	ELA & mathematics grades 3–8 operational

For paper-based tests, Cognia scanned each MCAS student answer booklet. Images for field-test items were loaded into iScore, Cognia's secure scoring platform. Images for operational items were transferred via FTP site to Pearson for uploading into the ePEN scoring platform. For computer-based tests, images were uploaded into the appropriate scoring platform so that all scoring was conducted in a similar manner, regardless of the method of test administration.

A set of quality-control procedures was enacted for scanning paper test forms. These procedures are provided in Appendix G and included

- checks of the answer booklet codes against the grade level, to ensure that the correct answer booklets were scanned in each batch;
- counting checks, to ensure that all booklets were accounted for; and
- spot checks, in which the scanned results were checked against randomly selected answer booklets to ensure that the scanners were working as intended.

For computer-based test takers, DESE had previously reviewed all items in the online item bank (ABBI) and approved all selected-response answer keys during test construction. The item scoring specifications (in Question and Test Interoperability [QTI]) were configured using the test maps and keys provided for the tests. Once the scoring system was configured, a quality-assurance group verified that the selected responses entered by the student for an item as shown in the uploaded image corresponded to the response recorded in the database, for both the pre-score and the scored student data files.

Scoring for selected-response items was verified against the specific DESE requirements for the item; the requirement of the test map, which includes the QTI response; and the keys and validations made for an individual student's derived scores per level of the test. This process included a review of all score-value-related fields—such as raw scores, object scores (part one and part two of multi-part items), strand scores, performance levels, pass/fail indicators, attempt rules, and scaled scores—against the tables provided by Pearson psychometrics.

3.4.1.2 Preparation for Scoring Constructed-Response Items

Scoring of responses to short-answer, constructed-response, and essay items began by first preparing the documents for scoring. Student identification information, demographic information, and school contact information was converted to alphanumeric format. Digitized student responses to constructed-response items were sorted into specific content areas, grade levels, and items before being scored.

Scoring consistency across scoring departments on all item types was established by conducting the following activities:

- Cognia provided annotated anchor, practice, and qualification sets for all existing items to Pearson for review in advance of scoring. Content specialists at Pearson and Cognia consulted with each other to address any questions and ensure clarity of training materials.
- Cognia facilitated benchmarking meetings in meeting rooms at two hotels in downtown Portsmouth, New Hampshire.
- For operational ELA items that needed to be re-benchmarked due to modifications, content specialists from Cognia, Pearson, and DESE collaborated on the establishment of final scoring decisions.
- Weekly meetings between the Cognia and Pearson scoring departments were held to address any issues and questions before and during scoring.

3.4.2 Benchmarking Meetings

Samples of student responses to field-test items were read, scored, and discussed by members of Cognia's Scoring Services and Content Development and Publishing (CDP) Departments and by DESE test developers. Each benchmarking meeting is content- and grade-specific (e.g., grade 6 ELA). All decisions were recorded and considered final upon DESE signoff.

The primary goals of the field-test benchmarking meetings were to

- revise, as necessary, an item's scoring guide and/or scoring rubric;
- revise, as necessary, an item's scoring notes based on student responses—these, along with scoring guides, provide detailed information about how to score an item;
- assign final score points to a given set of student responses; and
- approve anchor and training sets of responses that are used to train scorers.

3.4.3 Machine-Scored Items

Student responses to selected-response and short-answer items were machine-scored by PearsonAccess Next (PAN) Scoring. Student responses with multiple marks (possible only on paper-based tests) and blank responses were assigned zero points.

3.4.4 Hand-Scored Items

Once responses to hand-scored items were sorted into item-specific groups, student responses were scored. Scorers within each item group scored one response at a time. However, if there was a need to see a student's responses across all of the hand-scored items, scoring leadership had access to the student's entire answer booklet. Details on the procedures used to hand-score student responses are provided later in this chapter.

3.4.4.1 Scoring Location and Staff

The following scoring plan summarizes the approach to the scoring of MCAS Next Gen administrations for all grades and contents:

- All scoring was conducted applying a virtual/synchronous scoring model maintaining the same stringent quality control measures that were applied in a center-based, regional scoring environment.
- Prior to the start of scoring, scorers attended connectivity sessions to support their readiness for virtual/synchronous scoring and to answer any technology-related questions.
- Scorers evaluated student work on a fixed daily schedule under constant supervision of leadership.
- Training and all interaction between leadership and scorers occurred live via Zoom (Cognia) or Teams (Pearson) and/or via pre-recorded training module or a recording of live training
- Breakout rooms were used to facilitate scorer training and individualized coaching.
- DESE had remote access to the scoring system and Zoom/Teams links were provided to observe training sessions and scoring.
- Scorers worked in a non-public setting and were required to be on camera during training and scoring.
- A post-scoring survey was sent out to all MCAS scoring associates to elicit feedback on their scoring experience. The results were shared with DESE.

The following staff members were involved with scoring the 2021 MCAS responses:

- Cognia Staff
    - The *Scoring Director for Content and Quality* provided guidance, direction, and leadership to MCAS scoring.
    - The *Scoring Project Manager* was responsible for the communication and coordination of MCAS scoring between Cognia and Pearson.
    - *Scoring Content Specialists* facilitated all benchmarking meetings to ensure consistency of content area benchmarking and field-test scoring across all grade levels. They also handled all aspects for scoring of grade 10 ELA and mathematics, and grades 5, 8, and HS STE. Scoring content specialists prepared training materials for all operational scoring of ELA and mathematics grades 3–8 prior to scoring by Pearson. They also fielded any questions between Pearson and Cognia to ensure a consistent scoring approach across the scoring groups and years.
    - *Scoring Supervisors* were responsible for the training and qualification of both scorers and Scoring Team Leaders, and for ensuring quality targets for their assigned items.
    - *Scoring Team Leaders* provided support and direction to scorers on quality, accuracy, and timely completion of scoring.
- Pearson Staff
    - The *Scoring Portfolio Manager* was responsible for the coordination, management, and oversight of MCAS scoring for Pearson.
    - The *Scoring Project Manager* oversaw communication and coordination of MCAS scoring between Pearson and Cognia.
    - *Scoring Content Specialists* ensured consistency of content area scoring across all grade levels. Scoring content specialists monitored the quality of scoring and worked closely with a group of scoring directors to ensure the accurate and timely completion of scoring. Scoring content specialists also coordinated communication with their counterparts at Cognia regarding the training materials.
    - *Scoring Directors* were responsible for the training and qualification of both scorers and scoring supervisors and ensuring quality targets for their assigned items.
    - *Scoring Supervisors* provided support and direction to scorers on quality, accuracy, and timely scoring completion.
    - *Automated Scoring Team Members* were responsible for training and monitoring the scoring performance of the Intelligent Essay Assessor (IEA) on the subset of the ELA prompts selected for automated scoring.

3.4.4.2 Scorer Recruitment and Qualifications

MCAS scorers, a diverse group of individuals with a wide range of backgrounds, ages, and experiences, were recruited to meet contract requirements. These requirements included successful completion of at least two years of college, although hiring preference was given to individuals with a four-year college degree. Those scoring high school students' responses must have at least a 4-year degree and must either have a degree related to the content they were working on OR have at least two classes related to the content and have prior experience in the content area.

Teachers, tutors, and administrators (e.g., principals, guidance counselors) currently under contract or employed by or in Massachusetts schools, and people under 18 years of age, were not eligible to score MCAS responses. Potential scorers were required to submit an application and documentation of qualifications, such as résumés and transcripts, which were carefully reviewed. Regardless of their qualifications, potential scorers who did not clearly demonstrate content area knowledge or have at least two college courses with average or above-average grades in the content area they wished to score were eliminated from the applicant pool. A summary of scorers' backgrounds is provided in Table 3-21.

Table 3-21. Summary of Scorer and Scoring Leadership Backgrounds (Operational Scoring)

Cognia Education	Scorers		Leadership	
	Number	Percent	Number	Percent
Master's degree/doctorate	89	38	31	45
Bachelor's degree	131	56	38	55
Associate's degree/more than 48 college credits	15	6	0	0
Less than 48 college credits	0	0	0	0
TOTAL	235	--	69	--
Teaching Experience				
College instructor	26	9.2	10	15
Teaching certificate or experience	95	33.9	28	40
No teaching certificate or experience	114	57.1	31	45
Scoring Experience				
3+ years of experience	82	29.8	49	71
1–3 years of experience	61	25.2	20	29
No previous experience as scorer/first season	92	45.3	0	0
Pearson Education	**Scorers**		**Leadership**	
	Number	**Percent**	**Number**	**Percent**
Master's degree/doctorate	345	47	36	40
Bachelor's degree	738	100	89	100
Associate's degree/more than 48 college credits	0	0	0	0
Less than 48 college credits	0	0	0	0
TOTAL	1,083	--	125	--
Teaching Experience				
College instructor	0	0	0	0
Teaching certificate or experience	545	74	55	62
No teaching certificate or experience	193	26	34	38
Scoring Experience				
3+ years of experience	403	55	68	76
1–3 years of experience	289	39	19	21
No previous experience as scorer/first season	46	6	0	0

3.4.4.3 Scorer Training

Scoring content specialists had overall responsibility for ensuring that responses were scored consistently, fairly, and according to the approved scoring guidelines. Scoring materials were carefully compiled and checked for consistency and accuracy. Student identification information, demographic information, and school contact information were not visible to scorers. The sequence and manner in which the materials were presented to scorers was standardized to ensure that all scorers had the same training environment and scoring experience, regardless of content, grade level, or item scored.

Three training methods were used to train scorers of MCAS hand-scored items:

- live group training via Zoom/Teams
- recording of live group training
- pre-recorded interactive modules

Scorers started the training process by receiving an overview of MCAS; this general orientation included the purpose and goal of the testing program and any unique features of the test and the testing population. Scorer training for a specific item to be scored always started with a thorough review and discussion of the scoring guide, which consisted of the task, the scoring rubric, and any specific scoring notes for that task. All scoring guides were previously approved by the DESE during field-test benchmarking meetings and used without any additions or deletions.

As part of training, prospective scorers carefully reviewed three different sets of student responses, some of which had been used to train scorers when the item was a field-test item:

- **Anchor sets** are DESE-approved sets consisting of two or three sample responses at each score point. Each response represents a typical response, rather than an unusual or uncommon one; is solid and has a true score, meaning that this response has a precise score. Anchor sets are used to exemplify each score point.
- **Practice sets may** include unusual, discussion-provoking responses, illustrating the range of responses encountered in operational scoring (including exceptionally creative approaches; extremely short or disorganized responses; responses that demonstrate attributes of both higher-score anchor papers and lower-score anchor papers; and responses that show traits of multiple score points). Practice sets are used to refine the scorers' understanding of how to apply the scoring rules across a wide range of responses.
- **Qualifying sets** consist of 10 responses that are clear, typical examples of each of the possible score points. Qualifying sets are used to determine whether scorers can score consistently according to the DESE-approved scoring standards.

Meeting or surpassing the minimum acceptable standard on an item's qualifying set was an absolute requirement for scoring student responses to that item. An individual scorer must have attained a scoring accuracy rate of 70% exact and 90% exact-plus-adjacent agreement[1] (at least 7 out of the 10 were exact score matches and either zero or one discrepant) on either of two potential qualifying sets. For multi-trait ELA items, each scorer had to meet the 70% / 90% passing threshold for each individual trait.

3.4.4.4 Leadership Training

Scoring content specialists also had overall responsibility for ensuring that scoring leadership (Cognia scoring supervisors and Pearson scoring directors) continued their history of scoring consistently, fairly, and according to the approved scoring guidelines. Once they had completed their item-specific training, scoring leadership was required to meet or surpass a qualification standard of at least 80% exact and

1 "Adjacent agreement" means that a pair of scores (for the same response) are only off by one point. "Exact-plus-adjacent agreement" means that a pair of scores are either the same or off by only one point.

90% exact-plus-adjacent scoring accuracy. For multi-trait ELA items, scoring leadership had to meet the 80% and 90% passing threshold for each individual trait.

3.4.4.5 Methodology for Scoring Hand-Scored Polytomous Items

In 2021, two scoring methods were used for ELA essay items in grades 3–8. First, hand scoring by human scorers was conducted on all field-test items administered in 2018 and used on the 2021 next-generation MCAS tests in 2021. Next, hand scoring of all operational items was conducted using the procedures described below. In grades 3–8, the 10% double-blind scoring for ten ELA essay items (described below in this section) was conducted via automated scoring, using Pearson's Intelligent Essay Assessor (IEA). The double-blind scoring on the other 3–8 ELA and mathematics items was done by human scorers. Information on how the IEA works and how it was used on the MCAS essay scoring is provided in section 3.4.4.7 below.

3.4.4.6 Monitoring of Scoring Quality Control

The 2021 MCAS tests included constructed-response items and essays (in addition to selected-response and short-answer items) that were scored by hand. Hand-scored items included the following:

- constructed-response items with assigned scores of 0–3 (ELA grades 3 and 4 only)
- constructed-response items with assigned scores of 0–3 (mathematics grade 3) and 0–4 (mathematics grades 4–8 and 10)
- constructed-response items with assigned scores of 0–2 and 0–3 (STE grades 5, 8, and HS)
- essays with assigned scores of 0–7 (ELA grades 3–5) and 0–8 (ELA grades 6–8)

For each of these hand-scored items, a scoring guide was created. For examples of item-specific scoring guides, see the MCAS Student Work/Scoring Guides webpage at www.doe.mass.edu/mcas/student/.

The final non-numeric scores assigned by Cognia and Pearson could be designated as:

- Blank: The written response form is completely blank.
- Unreadable: The response cannot be read because of poor penmanship, or spelling cannot be deciphered, or writing is too small, too faint to see, or only partially visible.
- Non-English: Response was written entirely in a language other than English or without enough English or numbers to provide a score.
- Off Topic: Response does not address the topic or task for the item. The response is irrelevant to the item prompt, or the response states that the student is refusing to participate in testing.
- Direct Copy: Direct copy of text from the passage or item prompt.

Scorers at both Cognia and Pearson could also flag a response as a "Crisis" response, which would be sent to scoring leadership for immediate attention.

A response would be flagged as a "Crisis" response if it indicated

- perceived, credible desire to harm self or others;
- perceived, credible, and unresolved instances of mental, physical, or sexual abuse;
- presence of language or thoughts that may require professional intervention;
- sexual knowledge well beyond the student's developmental age;
- ongoing, unresolved misuse of legal/illegal substances (including alcohol);
- knowledge of or participation in real, unresolved criminal activity; or
- direct or indirect request for adult intervention/assistance (e.g., crisis pregnancy, doubt about how to handle a serious problem at home).

Single-Scoring, Double-Blind Scoring, and Read-Behind Scoring

Student responses were either single scored (response was scored once by a single scorer) or double-blind scored (response was independently read and scored by two scorers).

Double-Blind Scoring

In double-blind scoring, scorers were not aware that double-blind scoring was taking place. For a double-blind response with adjacent scores (within one point of each other), the higher score was used. Any double-blind response with discrepant scores greater than one point was sent to the arbitration queue and read by scoring leadership, where the expert score resolved the scoring discrepancy.

Double-blind scoring with the IEA scoring platform was conducted on 10% of the responses for ten ELA essay items across grades 3–8. For the remaining items in grades 3–8, human scorers conducted double-blind scoring at a rate of 10%. For the grade 10 ELA essay items, human scorers conducted double-blind scoring at a 100% rate.

A description of how the IEA functions and how it was used is provided in section 3.4.4.7. Scoring agreement statistics provided in Tables 3-26 and 3-27 are based on comparing human scoring to the 10% double-blind scoring (IEA scoring or human scoring depending on the prompt).

Read-Behind Scoring

In addition to the 10% or 100% double-blind scoring, scoring leadership, at random points throughout the scoring shift, engaged in read-behind (back-read) scoring for each scorer assigned to their team. In this process, scoring leadership views responses recently scored by a particular scorer and assigns a score to that same response. Scoring leadership then compared scores and advised or counselled the scorer as necessary.

Table 3-22 illustrates how the rules were applied for instances when two read-behind scores were not an exact match or when two scorers conducting double-blind scoring assigned scores that did not match.

Table 3-22. Read-Behind and Double-Blind Resolution Examples

Read-Behind Scoring[1]			
Scorer #1	Scorer #2	Scoring Leadership Resolution	Final
4	--	4	4
3	3	4	4
3	--	2	2
Double-Blind Scoring[2] Of 4-Point Item			
Scorer #1	Scorer #2	Scoring Leadership Resolution	Final
4	3	--	4
4	2	3	3
1	3	1	1
1	2	--	2
4	2	1	1
1	1	--	1

[1] In all cases, the scoring leadership score is the final score of record.

[2] If double-blind scores are adjacent (only 1 point different), the higher score is used as the final score. If double-blind scores are neither exact nor adjacent, the resolution score is used as the final score.

3.4.4.7 Double-Blind Scoring with the INTELLIGENT Essay Assessor (IEA)

The Intelligent Essay Assessor (IEA) is used to score student responses to essay prompts.[2] Like human scorers, IEA evaluates the content and meaning of text, as well as grammar, style, and mechanics. IEA learns to score via a range of machine learning and natural language processing technologies. The engine is trained individually on each prompt and trait using hundreds or thousands of human-scored student responses.

IEA measures the content and quality of responses by determining the features human scorers evaluate when scoring a response. Given a set of human-scored responses to a prompt, IEA computes hundreds of different metrics that characterize each response in numerical ways. Some examples of these metrics include:

- number of grammar errors
- types of grammar errors
- variety of words
- maturity of words
- variety of sentence types
- coherence of the response
- similarity of the response to other responses and/or source materials

All these different metrics are fed to machine learning algorithms that determine which of them best predict the scores assigned by human scorers.

One of the hallmarks of IEA is its ability to score constructed responses in content areas beyond just ELA using a unique implementation of Latent Semantic Analysis (LSA). LSA analyzes large bodies of relevant text to generate semantic similarity of words and passages. LSA can then "understand" the meaning of text in much the same way as a human scorer.

IEA's background knowledge of English is based on a collection of text of about 12 million words—roughly the amount of text a student will read over the course of their academic career. Because LSA operates over the semantic representation of texts, rather than at the individual word level, it can evaluate similarity even when texts have few or no words in common. For example, LSA finds the following two sentences to have a high semantic similarity:

Surgery is often performed by a team of doctors.

On many occasions, several physicians are involved in an operation.

IEA was used operationally for the second consecutive year as the second double-blind score. IEA was trained before the operational assessment was administered using responses collected during the field test and scored by trained human scorers. For each prompt, IEA was trained using approximately 1,300 responses per prompt and then evaluated using approximately 650 responses. Table 3-23 includes the specific N counts for each prompt. The responses were randomly assigned to each set (training or evaluation). Performance on the evaluation set was measured using a variety of criteria comparing IEA with human scoring using the industry standard metrics shown in Table 3-24.

[2] *Additional information about IEA can be found in Foltz, P. W., Streeter, L. A., Lochbaum, K. E., & Landauer, T. K (2013). Implementation and applications of the Intelligent Essay Assessor. Handbook of Automated Essay Evaluation, M. Shermis & J. Burstein, (Eds.). Pp. 68-88. Routledge, NY, NY.*

Table 3-23. N Counts by Prompt

Grade	Prompt	Training Set Size	Evaluation Set Size
3	EL735736712	1,301	651
4	EL812949238	1,309	655
5	EL736478825	1,321	661
5	EL806033603	1,322	661
6	EL735440256	1,303	652
6	EL807016586	1,312	656
7	EL807349832	1,310	656
7	EL807456720	1,311	656
8	EL810463548	1,300	650
8	EL810733917	1,293	646

Table 3-24. Industry Standard Metrics for Evaluating Automated Scoring[3]

Measure	Threshold
Pearson R	≥ 0.70
Quadratic Weighted Kappa (QWK)	≥ 0.70
Kappa	≥ 0.40
Exact Agreement	≥ 65% (or better than human-human agreement)
Per score point agreement	≥ 50% (or better than human-human agreement)
Standardized Mean Difference (SMD)	Within |0.15|

Ten prompts met the required performance criteria and were approved by DESE to be scored by IEA as the double-blind score to monitor quality during the operational assessment. Scoring performance on the operational assessment is described in the next section.

Table 3-25 shows a comparison of IEA to human scoring on the validity papers, by exact score point (validity papers are student responses with known scores interspersed among the other student responses; these papers are used to check scoring accuracy). As shown below, IEA scoring accuracy on these validity papers is similar to or slightly higher than the human scoring accuracy at all score points. IEA accuracy tends to be higher than human accuracy at the highest score point, as seen in the Idea Development agreement statistics for grades 3–8.

Table 3-25. Comparison of Human and IEA Agreement with Validity Papers—ELA

Grade	UIN	Trait	Validity	N	Exact Agreement	Exact Agreement by Score Point					
						0	1	2	3	4	5
3	EL735736712	Idea Development	IEA	80	85%	97%	62%	90%	83%	100%	
			Human		90%	95%	87%	89%	82%	91%	
		Conventions	IEA		89%	87%	91%	89%	82%		
			Human		89%	95%	90%	85%	84%		
4	EL812949238	Idea Development	IEA	108	89%	96%	80%	92%	57%	100%	
			Human		90%	97%	90%	86%	68%	67%	
		Conventions	IEA		90%	100%	88%	88%	82%		
			Human		88%	91%	91%	75%	87%		
5	EL736478825	Idea Development	IEA	102	91%	100%	91%	96%	91%	64%	
			Human		85%	98%	86%	87%	60%	37%	
		Conventions	IEA		98%	95%	100%	100%	97%		
			Human		89%	97%	90%	84%	76%		
	EL806033603	Idea Development	IEA	59	97%	94%	100%	93%	100%	100%	
			Human		92%	95%	95%	89%	81%	63%	
		Conventions	IEA		92%	83%	92%	93%	100%		
			Human		92%	98%	93%	86%	77%		

continued

[3] *Williamson, D. M., Xi, X., & Breyer, F. J. (2012). A framework for evaluation and use of automated scoring. Educational Measurement: Issues and Practices, 31, 2.*

Grade	UIN	Trait	Validity	N	Exact Agreement	Exact Agreement by Score Point					
						0	1	2	3	4	5
6	EL735440256	Idea	IEA	47	91%	89%	100%	100%	67%	86%	100%
		Development	Human		89%	97%	91%	88%	77%	71%	36%
		Conventions	IEA		94%	88%	100%	90%	94%		
			Human		91%	97%	89%	88%	92%		
	EL807016586	Idea	IEA	149	93%	93%	95%	97%	90%	87%	88%
		Development	Human		79%	76%	91%	81%	59%	63%	68%
		Conventions	IEA		94%	94%	85%	97%	98%		
			Human		86%	88%	89%	82%	85%		
7	EL807349832	Idea	IEA	115	75%	100%	43%	91%	85%	67%	100%
		Development	Human		88%	98%	98%	83%	64%	66%	25%
		Conventions	IEA		94%	100%	79%	85%	100%		
			Human		89%	95%	88%	80%	84%		
	EL807456720	Idea	IEA	60	83%	86%	89%	81%	71%	100%	0%
		Development	Human		80%	91%	88%	74%	63%	25%	15%
		Conventions	IEA		86%	100%	95%	81%	75%		
			Human		82%	96%	81%	71%	80%		
8	EL810463548	Idea	IEA	90	100%	100%	100%	100%	100%	100%	100%
		Development	Human		83%	97%	85%	84%	67%	57%	64%
		Conventions	IEA		100%	100%	100%	100%	100%		
			Human		87%	99%	84%	81%	85%		
	EL810733917	Idea	IEA	149	80%	100%	81%	88%	70%	71%	57%
		Development	Human		81%	91%	94%	79%	56%	51%	59%
		Conventions	IEA		97%	88%	94%	100%	100%		
			Human		87%	96%	87%	78%	85%		

3.4.4.8 Monitoring of Scoring Quality

Once MCAS scorers met or exceeded the minimum standard on a qualifying set and were allowed to begin scoring, they were constantly monitored throughout the entire scoring window to ensure they scored student responses as accurately and consistently as possible. If a scorer fell below the minimum standard on any of the quality-control indicators, some form of intervention occurred, ranging from counseling to retraining to dismissal. Scorers were required to meet or exceed the minimum standard of 70% exact and 90% exact-plus-adjacent agreement on the following quality control methods listed and further defined below:

- daily recalibration set (Cognia),
- embedded responses (Cognia),
- validity responses (Pearson),
- read-behind scoring (RBs)/back-reading,
- double-blind scoring (DBs), and
- compilation reports (summary of scoring agreement statistics).

Daily recalibration sets (Cognia) were administered at the very beginning of a scoring shift and each set consisted of five responses representing various scores. If scorers had an exact score match on at least four of the five responses, and were at least adjacent on the fifth response, they were allowed to begin scoring operational responses. Scorers who had discrepant scores, or only two or three exact score matches, were retrained and, if approved by leadership, were allowed to return to scoring with extra monitoring. Scorers who had zero or one out of the five exact were typically reassigned to another item or released for the day.

Embedded responses (Cognia) were approved by the scoring content specialist and loaded into iScore for blind distribution to scorers at random points during the scoring of their first 200 operational responses. Embedded responses comprised 5% of responses scored by a scorer during this period. Scorers who fell below the 70% exact and 90% exact-plus-adjacent accuracy standard were provided counseling and additional read-behind monitoring.

Validity responses (Pearson) were used to monitor the scorer's accuracy of scoring. These responses were approved by scoring leadership and distributed to scorers based on a percentage of their total number of responses scored. For the first two days, validity responses routed to scorers comprised 6% of their responses for ELA and 3% for mathematics. Starting with the third day of live scoring, these rates were reduced to 4% for ELA and 2% for mathematics. At the third-day rate, a full shift of scoring was expected to result in 6–19 validity responses per day in ELA and around 8 validity responses per day in mathematics, based on expected read rates.

Alert messages were issued to scorers who did not meet minimum validity metrics after 10 validity responses. If after an additional five validity responses, the scorer had not improved, ePEN automatically blocked that scorer, and launched a 10-response targeted calibration set. The scorer was required to attain at least 70% exact agreement and 90% exact-plus-adjacent agreement on this calibration set to continue scoring the item for which the calibration set was administered. If the scorer passed the targeted calibration, ePEN was unblocked and the scorer regained admission to operational responses. The scorer was required to continue maintaining scoring standards for validity, as validity statistics continued to be checked every 10 validity responses. If validity fell below scoring standards at any of these subsequent intervals, the scorer was released from the project and all scores assigned immediately reset.

Read-behinds involved responses that were first read and scored by a scorer, then read and scored by a member of scoring leadership. Scoring leadership would, at various points during the scoring shift, conduct a review of submitted scorer work. After the scorer scored the response, scoring leadership would give his or her own score to the response and then compare his or her score to the scorer's score. Read-behinds were performed at least 10 times for each full-time day shift scorer and at least five times for each evening shift and partial-day shift scorer. Scorers who fell below the 70% exact and 90% exact-plus-adjacent score agreement standard were counseled, given extra monitoring assignments such as additional read-behinds, and allowed to resume scoring if they demonstrated the ability to meet the scoring standards after the intervention.

Double-blinds involved responses scored independently by two different scorers. Scorers knew in advance that some of the responses they scored were going to be scored by others, but they had no way of knowing what responses would be scored by another scorer, or whether they were the first, second, or only scorer. Double-blind scoring served as an indicator for agreement of scoring between two scorers. Responses given discrepant scores by two independent scorers were read and scored by scoring leadership.

Compilation reports were generated at both Cognia and Pearson. Compilation reports displayed all the statistics for each scorer, including the percentage of exact, adjacent, and discrepant scores on the RBs as well as the percentage of exact, adjacent, and discrepant scores on recalibration sets (Cognia) or validity sets (Pearson). As scoring leadership conducted RBs, the scorers' overall percentages on the compilation report were automatically calculated and updated. If the compilation report at the end of the scoring shift listed any individuals who were still below the 70% exact and 90% exact-plus-adjacent standard, their scores for that day were voided. Responses with voided scores were returned to the scoring queue for other scorers to score.

3.4.4.9 Interrater Consistency

Interrater consistency statistics are evaluated to ensure valid and reliable hand-scoring of items and, as such, provide evidence of scoring stability or consistency. As described above, double-blind scoring was the primary process used to monitor the consistency of the hand-scoring of students' constructed responses. Ten percent of responses to constructed-response items in grades 3–8 were randomly selected and scored independently by two different scorers. As described in the previous section, for ten of those prompts, IEA was the second scorer.

A summary of the interrater consistency results is presented in Table 3-26. Results in the table are organized by content area and grade. The table shows the number of score categories (number of possible scores for an item type), the number of included scores, the exact agreement percentage, the adjacent agreement percentage, and the correlation between the first two sets of scores. The percentages of exact and adjacent scores will approach 100%; sums less than 100 denote that some proportion of third-score resolutions took place. This same information is provided at the item level in Appendix H. Linearly weighted kappa is also included in Table 3-26 as a measure of scorer consistency by accounting for chance agreement. It is defined as:

$$\kappa = \frac{O - E}{1 - E},$$

where

$$O = \sum_{i=1}^{n}\sum_{j=1}^{n}\left[1 - \frac{|i-j|}{n-1}\right]a_{ij} \text{ and } E = \sum_{i=1}^{n}\sum_{j=1}^{n}\left[1 - \frac{|i-j|}{n-1}\right]p_i q_j,$$

with a_{ij} being the proportion of that scorer 1 gives score i and scorer 2 gives score j, p_i being the proportion of that scorer 1 gives score i and q_i being the proportion of that scorer 2 gives score j. O and E are observed agreement and chance agreement, respectively.

Table 3-26. Summary of Interrater Consistency Statistics Organized across Items by Content Area and Grade

Content Area	Grade	Number of Score Categories	Number of Included Scores	Percentage Exact	Percentage Adjacent	Correlation	LW Kappa
ELA	3	4	5,821	79.33	20.55	0.78	0.830
		5	2,960	80.61	18.99	0.82	0.859
	4	4	6,241	77.01	22.58	0.84	0.818
		5	3,100	82.58	16.94	0.92	0.891
	5	4	6,329	71.51	28.06	0.80	0.734
		5	6,329	71.05	28.41	0.81	0.750
	6	4	6,401	76.21	23.79	0.88	0.813
		6	6,401	69.32	30.57	0.89	0.804
	7	4	6,523	70.03	29.10	0.84	0.754
		6	6,523	65.05	33.16	0.83	0.739
	8	4	6,501	74.67	24.87	0.87	0.807
		6	6,501	66.45	31.69	0.88	0.791
	10	4	135,407	76.06	22.94	0.84	0.727
		6	135,407	62.21	35.38	0.84	0.711
Mathematics	3	4	12,389	93.51	6.29	0.97	0.947
	4	5	12,758	90.23	9.45	0.97	0.935
	5	5	12,700	88.19	10.70	0.96	0.925
	6	5	12,968	88.58	10.76	0.96	0.925
	7	5	12,962	91.35	8.25	0.97	0.942
	8	5	13,043	86.05	13.10	0.95	0.913
	10	5	270,738	88.53	10.90	0.97	0.929
STE	5	3	6,335	83.00	15.72	0.85	0.837
		4	10,027	76.67	22.07	0.84	0.801
	8	3	5,234	84.26	15.36	0.85	0.839
		4	10,643	78.03	20.30	0.82	0.865

[1]*Caution should be used when interpreting the sums of exact and adjacent percentages for ELA items. This is because resolutions are done by item in ELA, and it is entirely possible that only one trait (either idea development or conventions) on a writing item has a non-adjacent score. For instance, if the idea development score for an item were non-adjacent, the item would also receive a third score for conventions, even if it initially received an exact or adjacent score for conventions.*

Table 3-26 summarizes the interrater consistency across score categories for the double-blind scored responses. To evaluate the interrater consistency at each score, Table 3-27 summarizes the proportion of exact agreement by score points at the test level. Item-level results are also included in Appendix H. The proportion of exact agreement at each score point is calculated as the proportion of responses where the double-blind scores are the same as the initial score at each score point. As noted in section 3.4.4.6, the double-blind scores for ten of the grades 3–8 essay responses are generated by IEA, with the remaining item response scores provided by human scorers.

Table 3-27. Summary of Proportion of Exact Agreement by Score Points

Content Area	Grade	Number of Score Categories	Number of Included Scores	Exact	Score Points 0	1	2	3	4	5
ELA	3	3	134	91.13	92.33	94.56	85.49			
		4	3,874	88.88	90.58	92.57	81.72	73.57		
		5	1,926	89.85	94.53	86.89	88.4	81.05	89.63	
	4	3	388	90.52	97.2	84.89	85.37			
		4	4,184	87.58	92.07	93.34	78.53	72.57		
		5	1,920	90.16	97.05	90.13	85.71	68.18	67.19	
	5	4	4,141	90.73	97.53	92.09	84.91	76.93		
		5	3,775	88.52	96.2	91.27	87.87	70.33	38.6	
	6	4	3,927	88.68	93.04	88.6	85.25	87.87		
		5	122	92.76	100	93.5	93	93	67	
		6	3,805	83.77	89.16	90.79	84.64	65.29	66.59	64.33
	7	4	4,118	85.52	95.7	83.2	74.61	83.31		
		6	4,118	83.63	93.81	92.97	77.6	64.09	58	48.44
	8	4	3,910	87.15	96.75	85.68	80.92	85.37		
		5	133	90.95	89	93	93.94	69.8		
		6	3,777	81.91	94.61	90.14	81.84	63.24	53.64	62.38
Mathematics	3	4	4,387	97.4	98.73	96.59	97.28	97.36		
	4	5	4,860	95.82	99.13	96.45	92.08	94.82	97.69	
	5	5	4,383	93.74	98.05	87.25	93.6	93.28	97.88	
	6	5	4,549	93.5	96.96	91.16	93.53	91.38	97.25	
	7	5	4,784	93.74	97	97.86	91.87	90.29	88.7	
	8	5	4,666	93.61	95.9	95.62	91.38	88.15	96.09	

As described in section 3.4.4.8, validity responses were used to monitor the scoring accuracy. Table 3-28 provides a summary of these “validity” statistics. These statistics denote accuracy in scoring; they provide an average of the human and IEA agreement with the validity responses (e.g., agreement with the true scores for each essay).

Table 3-28. Summary of Validity Statistics[1]

Subject	Grade	Number of Score Categories[2]	Number of Validity Reads[3]	Exact Agreement	Agreement by Score Point					
					0	1	2	3	4	5
ELA	3	4 (SR)	2,082	88.6%	85.5%	94.5%	78.5%	52.5%		
		4 (Conv)	1,926	89.4%	95.8%	90.0%	84.4%	84.1%		
		5 (ID)	1,926	89.9%	94.5%	86.9%	84.4%	81.1%	89.6%	
	4	4 (SR)	2,396	87.9%	92.8%	95.9%	80.7%	64.6%		
		4 (Conv)	2,048	87.7%	92.4%	90.8%	76.0%	86.7%		
		5 (ID)	2,048	90.0%	97.2%	89.0%	85.8%	68.2%	67.2%	
	5	4 (Conv)	3,958	90.8%	97.8%	91.9%	84.8%	77.2%		
		5 (ID)	3,958	88.6%	95.9%	91.5%	87.8%	70.3%	38.6%	
	6	4 (Conv)	3,927	88.7%	93.0%	88.6%	85.2%	87.9%		
		6 (ID)	3,927	84.1%	89.4%	90.9%	84.7%	66.6%	66.6%	64.3%
	7	4 (Conv)	4,118	85.5%	95.7%	83.2%	74.6%	83.3%		
		6 (ID)	4,118	83.6%	93.8%	93.0%	77.6%	64.1%	58.0%	48.4%
	8	4 (Conv)	3,910	87.2%	96.7%	85.7%	80.9%	85.4%		
		6 (ID)	3,910	82.2%	94.5%	90.3%	82.3%	63.4%	53.6%	62.4%
Mathematics	3	4	4,387	97.4%	98.8%	96.6%	97.3%	97.4%		
	4	5	4,634	95.9%	99.1%	96.5%	92.1%	95.0%	97.6%	
	5	5	4,383	93.7%	98.0%	87.2%	93.5%	93.2%	98.0%	
	6	5	3,445	92.1%	94.9%	89.8%	92.5%	89.5%	96.7%	
	7	5	4,784	93.7%	97.1%	97.9%	91.7%	90.3%	88.7%	
	8	5	4,666	93.2%	95.9%	95.6%	88.8%	88.1%	96.1%	

[1]Includes all operational and equating items for ELA and mathematics
[2]SR= Short response; Conv= Conventions; ID=Idea Development
[3] This column displays the number of validity reads (how many times all of the responses were scored against validity papers) that occurred, not the number of validity papers used.

3.5 Classical Item Analyses

As noted in Brown (1983), "A test is only as good as the items it contains." A complete evaluation of a test's quality must include an evaluation of each item. Both Standards for Educational and Psychological Testing (AERA et al., 2014) and the Code of Fair Testing Practices in Education (Joint Committee on Testing Practices, 2004) include standards for identifying quality items. Items should predominantly assess the knowledge and skills that are identified as part of the domain being tested and should avoid assessing irrelevant factors. Items should also be unambiguous and free of grammatical errors, potentially insensitive content or language, and other confounding characteristics. In addition, items must not unfairly disadvantage students—in particular, racial, ethnic, or gender groups.

Both qualitative and quantitative analyses have been conducted to ensure that MCAS items meet these standards. Qualitative analyses, such as those conducted by the ADC committees, are described in earlier sections of this chapter; this section focuses on quantitative evaluations. Statistical evaluations are presented in four parts: (1) difficulty indices, (2) item-test correlations, (3) DIF statistics, and (4)

dimensionality analyses. The item analyses presented here are based on the statewide in-person administration of the MCAS assessments in spring 2021. Data from remote test takers is not included in the statistical evaluation because remote administration data could involve assessing irrelevant factors. Note that the information presented in this section is based only on the operational items, since those are the items on which student scores are calculated. (Item analyses, not included in this report, have also been performed for field-test items; the statistics are used during the item review process and during form assembly for future administrations.)

3.5.1 Classical Difficulty and Discrimination Indices

All selected-response and constructed-response items are evaluated in terms of item difficulty according to standard classical test theory practices. Difficulty is defined as the average proportion of points achieved on an item and is measured by obtaining the average score on an item and dividing it by the maximum possible score for the item. Selected-response items are scored dichotomously (correct vs. incorrect), so, for these items, the difficulty index is simply the proportion of students who correctly answered the item. Constructed-response items and essay items are scored polytomously, meaning that a student can achieve scores other than just 0 or 1 (e.g., 0, 1, 2, 3, or 4 for a 4-point constructed-response item). By computing the difficulty index as the average proportion of points achieved, the indices for the different item types are placed on a similar scale, ranging from 0.0 to 1.0 regardless of the item type. Although this index is traditionally described as a measure of difficulty, it is properly interpreted as an easiness index, because larger values indicate easier items. An index of 0.0 indicates that all students earned 0% of the item points, and an index of 1.0 indicates that all students received full credit for the item (i.e., all the item points).

Items that are answered correctly by almost all students provide little information about differences in student abilities, but they do indicate knowledge or skills that have been mastered by most students. Similarly, items that are correctly answered by very few students provide little information about differences in student abilities, but they may indicate knowledge or skills that have not yet been mastered by most students. In general, to provide the best measurement, difficulty indices should range from near-chance performance (0.25 for four-option selected-response items or essentially zero for constructed-response items) to 0.90, with the majority of items generally falling between 0.40 and 0.70. However, on a standards-referenced assessment such as the MCAS, it may be appropriate to include some items with very low or very high item difficulty values to ensure sufficient content coverage.

It is desirable for an item to be one on which higher-ability students perform better than lower-ability students. The correlation between student performance on a single item and total test score is a commonly used measure of this item characteristic. Within classical test theory, the item-test correlation is referred to as the item's discrimination because it indicates the extent to which successful performance on an item discriminates between high and low scores on the test. For 2021 MCAS constructed-response items, the item discrimination index used was the Pearson product-moment correlation; for selected-response items, the corresponding statistic is commonly referred to as a point-biserial correlation. The theoretical range of these statistics is -1.0 to 1.0, with a typical observed range for selected-response items from 0.20 to 0.60.

Discrimination indices can be thought of as measures of how closely an item assesses the same knowledge and skills assessed by the other items contributing to the criterion total score on the assessment. When an item has a high discrimination index, it means that, in general, students selecting the correct response are students with higher total scores, and students selecting incorrect responses are students with lower total scores. Given this definition, an item can discriminate between low-performing examinees and high-performing examinees. Discrimination indices were very useful to consider when selecting items for the new MCAS tests and were provided to the ADC committees along with other item-

level statistics, such as difficulty. Very low or negative point-biserial coefficients on field-tested new items can indicate that the items are flawed and should not be considered for the operational tests.

A summary of the item difficulty and item discrimination statistics for each grade and content area combination for the CBT items administered in school is presented in Table 3-29. Note that the statistics are presented for all items as well as separately by item type: selected-response (SR), constructed-response (CR), and essay (ES). The mean difficulty (*p*-value) and discrimination values shown in the table are within generally acceptable and expected ranges and are consistent with results obtained in previous administrations.

Table 3-29. Summary of Item Difficulty and Discrimination Statistics by Content Area and Grade

Content Area	Grade	Item Type	Number of Items	*p*-Value		Discrimination	
				Mean	Standard Deviation	Mean	Standard Deviation
ELA	3	ALL	30	0.59	0.15	0.52	0.09
		CR	1	0.41	--	0.59	--
		ES	1	0.19	--	0.68	--
		SR	28	0.61	0.13	0.51	0.08
	4	ALL	31	0.63	0.12	0.52	0.09
		CR	1	0.44	--	0.68	--
		ES	1	0.33	--	0.81	--
		SR	29	0.65	0.10	0.50	0.07
	5	ALL	31	0.65	0.14	0.48	0.11
		ES	2	0.36	0.03	0.77	0.00
		SR	29	0.67	0.12	0.46	0.08
	6	ALL	32	0.61	0.11	0.49	0.12
		ES	2	0.40	0.00	0.83	0.02
		SR	30	0.62	0.10	0.47	0.08
	7	ALL	32	0.63	0.13	0.50	0.10
		ES	2	0.37	0.01	0.81	0.02
		SR	30	0.65	0.12	0.48	0.07
	8	ALL	32	0.66	0.10	0.51	0.12
		ES	2	0.41	0.01	0.83	0.04
		SR	30	0.68	0.08	0.48	0.08
	10	ALL	30	0.74	0.10	0.49	0.12
		ES	2	0.62	0.03	0.83	0.01
		SR	28	0.75	0.10	0.47	0.08
Mathematics	3	ALL	47	0.49	0.15	0.54	0.13
		CR	4	0.42	0.12	0.77	0.02
		SA	10	0.48	0.16	0.54	0.10
		SR	33	0.50	0.16	0.50	0.11
	4	ALL	47	0.50	0.17	0.57	0.11
		CR	4	0.47	0.13	0.77	0.03
		SA	14	0.46	0.16	0.57	0.09
		SR	29	0.53	0.18	0.54	0.09
	5	ALL	45	0.47	0.16	0.52	0.13
		CR	4	0.44	0.11	0.78	0.02
		SA	10	0.49	0.18	0.56	0.07
		SR	31	0.47	0.16	0.48	0.11
	6	ALL	45	0.44	0.16	0.52	0.12
		CR	4	0.47	0.10	0.79	0.01
		SA	10	0.38	0.13	0.57	0.04
		SR	31	0.46	0.17	0.47	0.10

continued

Content Area	Grade	Item Type	Number of Items	*p*-Value		Discrimination	
				Mean	Standard Deviation	Mean	Standard Deviation
Mathematics	7	ALL	49	0.43	0.16	0.57	0.12
		CR	4	0.34	0.11	0.77	0.03
		SA	15	0.41	0.18	0.60	0.07
		SR	30	0.45	0.16	0.52	0.11
	8	ALL	50	0.46	0.17	0.56	0.12
		CR	4	0.40	0.11	0.80	0.05
		SA	15	0.42	0.17	0.60	0.06
		SR	31	0.49	0.17	0.51	0.11
	10	ALL	46	0.54	0.12	0.54	0.15
		CR	4	0.44	0.05	0.83	0.03
		SA	5	0.51	0.19	0.60	0.12
		SR	37	0.56	0.11	0.50	0.12
STE	5	ALL	41	0.57	0.15	0.47	0.12
		CR	6	0.41	0.09	0.64	0.03
		SR	35	0.59	0.14	0.44	0.10
	8	ALL	41	0.55	0.18	0.47	0.12
		CR	6	0.35	0.09	0.64	0.07
		SR	35	0.58	0.17	0.44	0.10

Caution should be exercised when comparing indices across grade levels. Differences may be due not only to differences in the item statistics on the test but may also be affected by differences in student abilities and/or differences in the standards and/or curricula taught in each grade.

Difficulty indices for selected-response items tend to be higher (indicating that students performed better on these items) than the difficulty indices for constructed-response items because selected-response items can be answered correctly by simply identifying rather than providing the correct answer, and by guessing. Similarly, discrimination indices for those constructed-response items with more than two points tend to be larger than those for dichotomous items because of the greater variability of the former (i.e., the partial credit these items allow). The restriction of range (i.e., only two score categories) in dichotomous items tends to make the discrimination indices lower. Note that these patterns are more consistent within item type, and therefore when interpreting classical item statistics, comparisons should be emphasized among items of the same type.

In addition to the item difficulty and discrimination summaries presented above, item-level classical statistics are provided in Appendix I. On these MCAS items, the item difficulty and discrimination indices are within generally acceptable and expected ranges. Very few items were answered correctly at near-chance or near-perfect rates. Similarly, the positive discrimination indices indicate that students who performed well on individual items tended to perform well overall. There are a small number of items with difficulty below 0.20 and one item with discrimination below 0.2. Item-level score point distributions are provided for constructed-response items in Appendix J; for each item, the percentage of students who received each score point is presented.

In 2021, with the administration of the MCAS to CBT at-home (remote) students in grades 3–8, DESE also reviewed item DIF by test administration type (CBT in-school vs. CBT at-home). As shown in tables K-4 to K-6 in Appendix K, most items showed zero to low DIF by test administration type, as is typical in historical DIF reviews. This provides evidence that the interpretation and use of test scores resulting from CBT at-home administration is comparable to that of test scores resulting from traditional CBT test-site administration. However, caution was exerted in the use of the CBT at-home item results, and they were used for reporting purposes and not for IRT analyses.

3.5.2 DIF

The *Code of Fair Testing Practices in Education* (Joint Committee on Testing Practices, 2004) explicitly states that subgroup differences in performance be examined when sample sizes permit and that actions be taken to ensure that differences in performance are attributable to construct-relevant, rather than irrelevant, factors. *Standards for Educational and Psychological Testing* (AERA et al., 2014) includes similar guidelines. As part of the effort to identify such problems, psychometricians evaluated the 2021 MCAS items in terms of DIF statistics. One application of the DIF statistics is to use them to evaluate item quality in the ADC and bias committee item review process.

For the 2021 MCAS, the standardization DIF procedure (Dorans & Kulick, 1986) was employed to evaluate subgroup differences. (Subgroup differences denote significant group-level differences in performance for examinees with equivalent achievement levels on the test.) The standardization DIF procedure is designed to identify items for which subgroups of interest perform differently, beyond the impact of differences in overall achievement. The DIF procedure calculates the difference in item performance for two groups of students (at a time) matched for achievement on the total test. Specifically, average item performance is calculated for students at every total score. Then an overall average is calculated, weighting the total score distribution so that it is the same for the two groups. DIF statistics were calculated for all subgroups with at least 75 students.

DIF for items is evaluated initially at the time of field-testing. When differential performance between two groups occurs on an item (i.e., a DIF index in the "low" or "high" categories, explained below), it may or may not indicate actual item bias. Consequently, all items with either high or low DIF are examined by content experts and educators to try to identify the cause. If subgroup differences in performance can be traced to differential experience (such as geographical living conditions or access to technology), the inclusion of such items is reconsidered during the item review process. If content experts do not identify a source of bias on the item, the item may be eligible for operational form construction.

Computed DIF indices have a theoretical range from -1.0 to 1.0 for selected-response items, and an adjusted index with the same scale (-1.0 to 1.0) for constructed-response items. Dorans and Holland (1993) suggested that index values between -0.05 and 0.05 denote either a negligible amount of DIF or the absence of DIF. The majority of 2021 MCAS items fell within this range. Dorans and Holland further stated that items with values between -0.10 and -0.05 and between 0.05 and 0.10 (i.e., "low" DIF) should be inspected to ensure that no possible effect is overlooked, and that items with values outside the -0.10 to 0.10 range (i.e., "high" DIF) are more unusual and should be examined very carefully before being used operationally.

For the 2021 MCAS administration, DIF analyses were conducted for all subgroups (as defined in the No Child Left Behind Act) for which the sample size was adequate. Six subgroup comparisons were evaluated for DIF:

- male compared with female,
- not LEP/FLEP compared with LEP/FLEP,[4]
- not economically disadvantaged compared with economically disadvantaged,
- white compared with African American/Black,
- white compared with Hispanic or Latino, and
- without disabilities compared to with disabilities.

After the 2021 spring administration, DIF analyses were conducted again as a post-hoc quality check based on the operational data. The tables in Appendix K present the number of items classified as either "low" or "high" DIF, in total and by group favored. Very few items exhibited high DIF in the operational

[4] *LEP=limited English proficient / FLEP=formerly limited English proficient*

data, which suggested that the bias and sensitivity review that occurred after the field-testing effectively ruled out large DIF for the MCAS 2021 spring tests.

3.5.3 Dimensionality Analysis

Because tests are constructed with multiple content area subcategories and their associated knowledge and skills, the potential exists for the invocation of multiple dimensions beyond the common primary dimension. Generally, the subcategories are highly correlated with each other; therefore, a primary dimension typically explains the majority of variance in test scores. The presence of one dominant primary dimension is the primary psychometric assumption to support the use of the unidimensional item response theory (IRT) models that are used for calibrating and scaling the 2021 MCAS assessments.

The purpose of dimensionality analysis is to investigate whether violation of the assumption of test unidimensionality is statistically detectable and, if so, (a) the degree to which unidimensionality is violated and (b) the nature of the multidimensionality. Dimensionality analyses were performed on common items for all MCAS test forms used during the spring 2021 administrations. Because two sessions in each test were randomly spiraled among students, each session was analyzed as a separate form. A total of 30 forms were analyzed; the results for these analyses are reported in sections 3.5.3.1 and 3.5.3.2 below.

The dimensionality analyses were conducted using the nonparametric IRT-based methods DIMTEST (Stout, 1987; Stout, Froelich, & Gao, 2001) and DETECT (Zhang & Stout, 1999). Both methods use as their basic statistical building block the estimated average conditional covariances for item pairs. A conditional covariance is the covariance between two items conditioned on true score (expected value of observed score) for the rest of the test, and the average conditional covariance is obtained by averaging across all possible conditioning scores. When a test is strictly unidimensional, all conditional covariances are expected to take on values within random noise of zero, indicating statistically independent item responses for examinees with equal expected scores. Nonzero conditional covariances are essentially violations of the principle of local independence, and such local dependence implies multidimensionality. Thus, nonrandom patterns of positive and negative conditional covariances are indicative of multidimensionality.

DIMTEST is a hypothesis-testing procedure for detecting violations of local independence. The data are first randomly divided into a training sample and a cross-validation sample. Then an exploratory analysis of the conditional covariances is conducted on the training sample data to find the cluster of items that displays the greatest evidence of local dependence. The cross-validation sample is then used to test whether the conditional covariances of the selected cluster of items display local dependence, conditioning on total score from the nonclustered items. The DIMTEST statistic follows a standard normal distribution under the null hypothesis of unidimensionality.

DETECT is an effect-size measure of multidimensionality. As with DIMTEST, the data are first randomly divided into a training sample and a cross-validation sample (these samples are drawn independently of those used with DIMTEST). The training sample is used to find a set of mutually exclusive and collectively exhaustive clusters of items that best fit a systematic pattern of positive conditional covariances for pairs of items from the same cluster and negative conditional covariances for pairs composed of items from different clusters. Next, the clusters from the training sample are used with the cross-validation sample data to average the conditional covariances: within-cluster conditional covariances are summed; from this sum, the between-cluster conditional covariances are subtracted. This difference is divided by the total number of item pairs, and this average is multiplied by 100 to yield an index of the average violation of local independence for an item pair. DETECT values less than 0.2 indicate very weak multidimensionality (or near unidimensionality); values of 0.2 to 0.4, weak to moderate multidimensionality; values of 0.4 to 1.0, moderate to strong multidimensionality; and values greater than 1.0, very strong multidimensionality (Roussos & Ozbek, 2006).

DIMTEST and DETECT were applied to the operational items of the MCAS tests administered during spring 2021. For all forms, there were over 25,000 student examinees per grade in all subjects. The data for each grade were split into a training sample and a cross-validation sample. Because DIMTEST had an upper limit of 24,000 students, the training and cross-validation samples for the tests that had over 24,000 students were limited to 12,000 each, randomly sampled from the total sample. DETECT, on the other hand, had an upper limit of 500,000 students, and so every training sample and cross-validation sample used all the available data. After randomly splitting the data into training and cross-validation samples, DIMTEST was applied to each data set to see if the null hypothesis of unidimensionality would be rejected. DETECT was then applied to each data set for which the DIMTEST null hypothesis was rejected to estimate the effect size of the multidimensionality.

3.5.3.1 DIMTEST Analyses

The results of the DIMTEST analyses indicated that the null hypothesis was rejected at a significance level of 0.05 for every data set. Because strict unidimensionality is an idealization that almost never holds exactly for a given data set, the statistical rejections in the DIMTEST results were not surprising. Indeed, because of the very large sample sizes involved in all of the data sets, DIMTEST would be expected to be sensitive to even quite small violations of unidimensionality.

3.5.3.2 DETECT Analyses

Next, DETECT was used to estimate the effect size for the violations of local independence for the 2017 to 2021 tests. Table 3-30 displays the multidimensionality effect-size estimates from DETECT.

Table 3-30. Multidimensionality Effect Sizes by Grade and Content Area

Content Area	Grade	Effect Size				
		2017	2018	2019	2021*	
					Session 1	Session 2
ELA	3	0.25	0.17	0.27	0.24	0.27
	4	0.30	0.35	0.29	0.34	0.25
	5	0.35	0.28	0.34	0.44	0.26
	6	0.38	0.26	0.42	0.44	0.37
	7	0.34	0.34	0.49	0.51	0.26
	8	0.38	0.35	0.47	0.32	0.20
	10	0.20	0.24	0.26	0.34	
	Average	**0.33**	**0.29**	**0.36**	**0.38**	**0.27**
Mathematics	3	0.20	0.17	0.20	0.23	0.18
	4	0.19	0.22	0.10	0.12	0.20
	5	0.19	0.15	0.15	0.26	0.22
	6	0.21	0.13	0.21	0.21	0.21
	7	0.13	0.14	0.15	0.34	0.14
	8	0.11	0.15	0.13	0.19	0.25
	10	0.12	0.09	0.09	0.11	--
	Average	**0.17**	**0.16**	**0.15**	**0.21**	**0.20**
STE	5	0.08	0.11	0.08	0.22	0.18
	8	0.08	0.13	0.08	0.19	0.18

The DETECT values indicate weak or very weak multidimensionality for all the 2021 mathematics and next-generation STE test forms, which are consistent with previous years' results. The 2021 ELA tests in grades 5 to 7 show weak to moderate multidimensionality in Session 1 (with the DETECT effect size indicating stronger multidimensionality). Session 1 forms have stronger multidimensionality than Session 2 in those grades due to the higher proportion of essay or constructed-response items in Session 1.

Because each session has a different content blueprint than the whole test, caution should be taken when comparing the 2021 DETECT effect size results to previous years' results. For the forms with stronger multidimensionality, the cluster patterns are the same as those in previous years: the essay and constructed-response items tend to form a different cluster from the selected-response items.

The way in which DETECT divided the tests into clusters was investigated to determine whether there were any discernable patterns with respect to the selected-response and constructed-response item types. Inspection of the DETECT clusters indicated that selected-response/constructed-response separation generally occurred much more strongly with ELA than with mathematics, a pattern that has been consistent across all previous years. Specifically, for the ELA test forms with stronger multidimensionality, every form had one set of clusters dominated by selected-response items and another set of clusters dominated by writing prompt items. On the mathematics and next-generation STE test forms, there was less clear evidence of consistent separation of selected-response and constructed-response items. This lack of evidence is consistent with the weaker multidimensionality exhibited by those subjects historically.

In summary, for the 2021 dimensionality analyses, the violations of local independence, as evidenced by the DETECT effect sizes, were either weak or very weak in mathematics test forms and were weak to moderate in ELA test forms. The patterns with respect to the selected-response and constructed-response items were consistent with those in the previous years, with ELA tending to display more separation than mathematics.

3.6 MCAS IRT Linking and Scaling

This section describes the procedures used to calibrate, equate, and scale the MCAS tests. During the course of these psychometric analyses, a number of quality-control procedures and checks on the processes were conducted. These procedures included

- evaluations of the calibration processes (e.g., checking the number of cycles required for convergence for reasonableness);
- checking item parameters and their standard errors for reasonableness;
- examination of test characteristic curves (TCCs) and test information functions (TIFs) for reasonableness;
- evaluation of model fit;
- evaluation of equating items (e.g., delta analyses, b-b analyses, beta analyses);
- examination of a-plots and b-plots for reasonableness; and
- evaluation of the scaling results (e.g., comparing look-up tables to the previous year's).

Section 3.6.3 summarizes the equating procedure and results to place the 2021 next-generation MCAS tests on the same scale as the previous year. An equating report (Appendix L), which provided complete documentation of the quality-control procedures and results, was reviewed by the DESE and approved prior to production of the *Spring 2021 MCAS Tests Parent/Guardian Report*s (Cognia Psychometrics and Research Department, *2020–2021 MCAS Equating Report*, unpublished manuscript).

3.6.1 IRT

All MCAS items are calibrated using IRT. IRT uses mathematical models to define a relationship between an unobserved measure of student performance, usually referred to as theta (θ), and the probability [$P(\theta)$] of getting a dichotomous item correct or of getting a particular score on a polytomous item (Hambleton, Swaminathan, & Rogers, 1991; Hambleton & Swaminathan, 1985). In IRT, it is assumed that all items are independent measures of the same construct (i.e., of the same θ). Another way to think of θ is as a mathematical representation of the latent trait of interest. Several common IRT models are used to

specify the relationship between θ and $P(\theta)$ (Hambleton & van der Linden, 1997; Hambleton & Swaminathan, 1985). The process of determining the mathematical relationship between θ and $P(\theta)$ is called item calibration. After items are calibrated, they are defined by a set of parameters that specify a nonlinear, monotonically increasing relationship between θ and $P(\theta)$. Once the item parameters are known, an estimate of θ for each student can be calculated. This estimate, $\hat{\theta}$, is considered to be an estimate of the student's true score or a general representation of student performance. IRT has characteristics that may be preferable to those of raw scores for equating purposes because it specifically models examinee responses at the item level, and also facilitates equating to an IRT-based item pool (Kolen & Brennan, 2014).

For the 2021 next-generation MCAS tests, the three-parameter logistic (3PL) model was used for traditional four-option selected-response items, and the two-parameter logistic (2PL) model was used for binary-scored selected-response and technology-enhanced items (Hambleton & van der Linden, 1997; Hambleton, Swaminathan, & Rogers, 1991). The graded-response model (GRM) was used for polytomous items (Nering & Ostini, 2010), including polytomously scored multi-part items, constructed-response items, and essays.

The 3PL model for selected-response items can be defined as:

$$P_i(\theta_j) = P(U_i = 1|\theta_j) = c_i + (1 - c_i)\frac{\exp[Da_i(\theta_j - b_i)]}{1+\exp[Da_i(\theta_j - b_i)]},$$

where
U represents the scored response on an item,
i indexes the items,
j indexes students,
α represents item discrimination,
b represents item difficulty,
c is the pseudo guessing parameter,
θ is the student proficiency, and
D is a normalizing constant equal to 1.701.

For the 2PL model, this equation reduces to the following:

$$P_i(\theta_j) = P(U_i = 1|\theta_j) = \frac{\exp[Da_i(\theta_j - b_i)]}{1+\exp[Da_i(\theta_j - b_i)]}.$$

In the GRM for polytomous items, an item is scored in $k + 1$ graded categories that can be viewed as a set of k dichotomies. At each point of dichotomization (i.e., at each threshold), a two-parameter model can be used to model the probability that a student's response falls at or above a particular ordered category, given θ. This implies that a polytomous item with $k + 1$ categories can be characterized by k item category threshold curves (ICTCs) of the 2-PL form:

$$P_{ik}^{*}(\theta_j) = P(U_i \geq k|\theta_j) = \frac{\exp[Da_i(\theta_j - b_i + d_{ik})]}{1+\exp[Da_i(\theta_j - b_i + d_{ik})]},$$

where
U indexes the scored response on an item,
i indexes the items,
j indexes students,
k indexes threshold,
θ is the student ability,

α represents item discrimination,
b represents item difficulty,
d represents threshold, and
D is a normalizing constant equal to 1.701.

After computing k ICTCs in the GRM, $k+1$ item category characteristic curves (ICCCs), which indicate the probability of responding to a particular category given θ, are derived by subtracting adjacent ICTCs:

$$P_{ik}(\theta_j) = P(U_i = \mathrm{k}|\theta_j) = P^*_{ik}(\theta_j) - P^*_{i(k+1)}(\theta_j),$$

where
i indexes the items,
j indexes students,
k indexes threshold,
θ is the student ability,
P_{ik} represents the probability that the score on item *i* falls in category k, and
P^*_{ik} represents the probability that the score on item *i* falls at or above the threshold k ($P^*_{i0} = 1$ and $P^*_{i(m+1)} = 0$).

The GRM is also commonly expressed as:

$$P_{ik}(\theta_j) = \frac{\exp[Da_i(\theta_j - b_i + d_k)]}{1+\exp[Da_i(\theta_j - b_i + d_k)]} - \frac{\exp[Da_i(\theta_j - b_i + d_{k+1})]}{1+\exp[Da_i(\theta_j - b_i + d_{k+1})]}.$$

Finally, the item characteristic curve (ICC) for a polytomous item is computed as a weighted sum of ICCCs, where each ICCC is weighted by a score assigned to a corresponding category. The expected score for a student with a given theta is expressed as:

$$E(U_i|\theta_j) = \sum_k^{m+1} w_{ik} P_{ik}(\theta_j),$$

where w_{ik} is the weighting constant and is equal to the number of score points for score category *k* on item *i*.

Note that for a dichotomously scored item, $E(U_i|\theta_j) = P_i(\theta_j)$. For more information about item calibration and determination, see Lord and Novick (1968), Hambleton and Swaminathan (1985), or Baker and Kim (2004).

3.6.2 IRT Results

IRT calibration was conducted using flexMIRT 3.03 (Cai, 2012). IRT calibration was conducted for the computer-based tests in all grades. Because paper test forms are treated as accommodated forms, item parameters for computer-based items were applied to their paper counterparts. The tables in Appendix L give the IRT item parameters and associated standard errors of all operational scoring items on the 2021 MCAS tests. Appendix L contains graphs of the TCCs and TIFs, which are defined below.

TCCs display the expected (average) raw score associated with each θ_j value between -4.0 and 4.0. Mathematically, the TCC is computed by summing the ICCs of all items that contribute to the raw score. Using the notation introduced in section 3.6.1, the expected raw score at a given value of θ_j is as follows:

$$E(X|\theta_j) = \sum_{i=1}^{n} E(U_i|\theta_j),$$

where
i indexes the items (and n is the number of items contributing to the raw score),
j indexes students (here, θ_j runs from -4 to 4), and
$E(X|\theta_j)$ is the expected raw score for a student of ability θ_j.

The expected raw score monotonically increases with θ_j, consistent with the notion that students of high ability tend to earn higher raw scores than students of low ability. Most TCCs are "S-shaped": they are flatter at the ends of the distribution and steeper in the middle.

The TIF displays the amount of statistical information that the test provides at each value of θ_j. Information functions depict test precision across the entire latent trait continuum. There is an inverse relationship between the information of a test and its standard error of measurement (SEM). For long tests, the SEM at a given θ_j is approximately equal to the inverse of the square root of the statistical information at θ_j (Hambleton, Swaminathan, & Rogers, 1991), as follows:

$$SEM(\theta_j) = \frac{1}{\sqrt{I(\theta_j)}}.$$

Compared to the tails, TIFs are often higher near the middle of the θ distribution where most students are located. This is by design. Test items are often selected with middle difficulty levels and high discriminating powers so that test information is maximized for most candidates who are expected to take a test.

The number of cycles required for convergence for each grade and content area during the IRT analysis can be found in Table 3-31. The number of cycles required for convergence fell within acceptable ranges (less than 150) for all tests.

Table 3-31. Number of Cycles Required for Convergence

Content Area	Grade	Initial Cycles
ELA	3	18
	4	25
	5	26
	6	29
	7	26
	8	29
	10	57
Mathematics	3	37
	4	28
	5	38
	6	42
	7	51
	8	51
	10	47
STE	5	24
	8	27

3.6.3 Equating

The purpose of equating is to ensure that scores obtained from different forms of a test are comparable to one another. Equating may be used if multiple test forms are administered in the same year; or one year's forms may be equated to those used in the previous year. Equating ensures that students are not given

an unfair advantage or disadvantage because the test form they took is easier or harder than that taken by other students. See section 3.2 for more information about how the test development process supports successful equating.

It has been the standard practice to use external post-equating for MCAS. However, considering the potential learning loss during the pandemic, the MCAS Technical Advisory Committee (TAC) had suggested using pre-equating for this year's test to maintain the interpretability of the scale. Compared to post-equating that uses the 2021 data to update the item parameters, pre-equating fixes the item parameters to previously obtained values, such as through field-testing. Pre-equating could potentially better preserve the meaning of the scale in 2021 considering unknown effect of learning loss on testing data.

One complication for implementing the fully pre-equated solution is that some items in the 2021 tests come from the legacy MCAS, and their original parameters were on the legacy MCAS scale rather than the next-generation MCAS scale. A linear transformation had been conducted to transform the legacy item parameters to the next-generation scale, by using a set of items that were administered in both legacy and next-generation MCAS. However, initial pre-equating fit analysis suggested the transformed parameters of the legacy items had poor fit to the data, indicating the linear transformation failed to generate the best estimates for those legacy items.

To reduce the systematic error in the pre-equated parameters for legacy items, a post-equating was conducted by fixing the item parameters for all next-generation items, including both operational and matrix equating items. The fixed common item parameter (FCIP) method was used to estimate the parameters for the legacy items.

As it remains unknown as for how the learning loss has impacted item statistics, the drift analysis for equating items was not conducted for deciding which items to be excluded from the anchor set. The methods of evaluating the suitability of the equating items were still conducted for exploratory purposes, including the *a*/*a* analysis, the *b*/*b* analysis, and the rescore analysis. The *a*/*a* or *b*/*b* analysis compares the current year's freely estimated IRT discrimination/difficulty parameters with the previous year's values for equating items and flags an item if its standardized distance to the principal axis line is at or above 3 in absolute value. The rescore analysis evaluates the rater drift by having the current year's rater score a sample of constructed responses from previous years and comparing the current year's scores with previous scores. Results from these analyses are included in the equating report in Appendix L.

3.6.4 Achievement Standards

Cutpoints for the next-generation MCAS tests were set via standard setting in 2017 for grades 3–8 ELA and mathematics tests, and in 2021 for grade 10 ELA and mathematics tests and grades 5 and 8 STE tests (see the *2019 Next-Generation MCAS and MCAS-Alt Technical Report* for the 2019 standard-setting report and the *2017 Next-Generation MCAS and MCAS-Alt Technical Report* for the 2017 standard-setting report). The standard setting establishes the theta cutpoints used for reporting each year. These theta cuts are presented in Table 3-32. The operational θ-metric cut scores will remain fixed throughout the assessment program unless standards are reset. Also shown in the table are the cutpoints on the reporting score scale.

Table 3-32. Cut Scores on the Theta Metric and Reporting Scale by Content Area and Grade

Content Area	Grade	Theta			Scale Score				
		Cut 1	Cut 2	Cut 3	Min	Cut 1	Cut 2	Cut 3	Max
ELA	3	-1.581	0.011	1.604	440	470	500	530	560
	4	-1.561	0.031	1.623	440	470	500	530	560
	5	-1.659	0.038	1.734	440	470	500	530	560
	6	-1.591	-0.011	1.570	440	470	500	530	560
	7	-1.560	0.011	1.582	440	470	500	530	560
	8	-1.456	0.051	1.559	440	470	500	530	560
	10	-1.728	-0.299	1.130	440	470	500	530	560
Mathematics	3	-1.377	0.027	1.432	440	470	500	530	560
	4	-1.379	0.054	1.487	440	470	500	530	560
	5	-1.551	0.025	1.601	440	470	500	530	560
	6	-1.518	-0.008	1.502	440	470	500	530	560
	7	-1.414	0.031	1.476	440	470	500	530	560
	8	-1.496	-0.008	1.479	440	470	500	530	560
	10	-1.721	-0.317	1.087	440	470	500	530	560
STE	5	-1.621	-0.112	1.398	440	470	500	530	560
	8	-1.499	-0.020	1.459	440	470	500	530	560

3.6.5 Reported Scale Scores

Because the θ scale used in IRT calibrations is not understood by most stakeholders, reporting scales were developed for the 2021 MCAS ELA and mathematics tests in grades 3–8. The reporting scales are linear transformations of the underlying θ scale. As the three θ cutpoints from the standard setting have equal intervals, one single linear transformation was sufficient to transform the θ scale from each performance level category on one reporting scale.

Student scores on the next-generation MCAS tests are reported in integer values from 440 to 560. Because the same transformation is applied to all achievement-level categories, and the reported scaled scores preserve the interval scale properties (except for the truncated scaled scores at the lower and upper end of the score scale), it is appropriate to calculate means and standard deviations with scaled scores.

By providing information that is more specific about the position of a student's results, scaled scores supplement achievement-level scores. Students' raw scores (i.e., total number of points) on the 2021 next-generation MCAS tests were translated to scaled scores using a data analysis process called *scaling*, which simply converts from one scale to another. In the same way that a given temperature can be expressed on either the Fahrenheit or the Celsius scale, or the same distance can be expressed in either miles or kilometers, student scores on the 2021 next-generation MCAS tests can be expressed in raw or scaled scores.

It is important to note that converting from raw scores to scaled scores does not change students' achievement-level classifications. Given the relative simplicity of raw scores, it is fair to question why scaled scores for the MCAS are reported instead of raw scores. The answer is that scaled scores make the reporting of results consistent. To illustrate, standard setting typically results in different raw cut scores across content areas. The raw cut score between *Partially Meeting Expectations* and *Meeting Expectations* could be, for example, 35 in grade 3 mathematics but 33 in grade 4 mathematics, yet both

of these raw scores would be transformed to scaled scores of 500. It is this uniformity across scaled scores that facilitates the understanding of student performance. The psychometric advantage of scaled scores over raw scores comes from their being linear transformations of θ. Since the θ scale is used for equating, scaled scores are comparable from one year to the next. Raw scores are not.

The scaled scores are obtained by a simple translation of ability estimates ($\hat{\theta}$) using the linear relationship between threshold values on the θ metric and their equivalent values on the scaled score metric. Students' ability estimates are obtained by mapping their raw scores through the TCC. Scale scores are calculated using the following linear equation:

$$SS = m\hat{\theta} + b,$$

where
m is the slope and
b is the intercept.

A separate linear transformation is used for each grade and content area combination. Table 3-33 shows the slope and intercept terms used to calculate the scaled scores for each grade and content area. Note that the values in Table 3-33 will not change unless the standards are reset.

Appendix L contains raw-score-to-scale-score look-up tables for two sessions in each test. The tables show the scaled score equivalent of each raw score for the 2019 next-generation MCAS tests. However, due to the session-level administration in 2021, caution needs to be taken when comparing the 2021 scale scores with those in 2019. Additionally, Appendix L contains scaled score distribution graphs for each grade and content area for each testing form.

Table 3-33. Scale Score Slopes and Intercepts by Content Area and Grade

Content Area	Grade	Slope	Intercept
ELA	3	18.839	499.785
	4	18.846	499.421
	5	17.686	499.335
	6	18.984	500.202
	7	19.098	499.791
	8	19.900	498.981
	10	20.995	506.274
Mathematics	3	21.357	499.413
	4	20.938	498.869
	5	19.039	499.525
	6	19.870	500.165
	7	20.758	499.353
	8	20.172	500.170
	10	21.373	506.775
STE	5	19.875	502.220
	8	20.287	500.409

3.7 MCAS Reliability

Although an individual item's performance is an important factor in evaluating an assessment, a complete evaluation must also address the way items grouped in a set function together and complement one another. Tests that function well provide a dependable assessment of a student's level of ability. Just like the measurement of physical properties, such as temperature, any measurement tool contains some amount of measurement error, which leads to different results if the measurements were taken multiple times. The quality of items, as the tools to measure the latent ability, determines the degree to which a given student's score can be higher or lower than his or her true ability on a test.

There are several ways to estimate an assessment's reliability. The approach that was implemented to assess the reliability of the 2021 next-generation MCAS tests is the α coefficient of Cronbach (1951). This approach is most easily understood as an extension of a related procedure, the split-half reliability. In the split-half approach, a test is split in half, and students' scores on the two half-tests are correlated. To estimate the correlation between two full-length tests, the Spearman-Brown correction (Spearman, 1910; Brown, 1910) is applied. If the correlation is high, this is evidence that the items complement one another and function well as a group, suggesting that measurement error is minimal. The split-half method requires psychometricians to select items that contribute to each half-test score. This decision may have an impact on the resulting correlation since each different possible split of the test into halves will result in a different correlation. Cronbach's α eliminates the item selection impact by comparing individual item variances to total test variance, and it has been shown to be the average of all possible split-half correlations. Along with the split-half reliability, Cronbach's α is referred to as a coefficient of internal consistency. The term "internal" indicates that the index is measured internal to each test of interest, using data that come only from the test itself (Anastasi & Urbina, 1997). The formula for Cronbach's α is given as follows:

$$a = \frac{n}{n-1}\left[1 - \frac{\sum_{i=1}^{n} \sigma^2_{(Y_i)}}{\sigma^2_x}\right],$$

where
i indexes the item,
n is the total number of items,
$\sigma^2_{(Y_i)}$ represents individual item variance, and
σ^2_x represents the total test variance.

3.7.1 Reliability and Standard Errors of Measurement

Table 3-34 presents descriptive statistics, Cronbach's α coefficient, and raw score SEMs for each content area and grade. Statistics are based on operational items only. The reliability estimates range from 0.80 to 0.94, which are generally in acceptable ranges.

Table 3-34. Raw Score Descriptive Statistics, Cronbach's Alpha, and SEMs by Content Area and Grade—Computer-based

Content Area	Grade	Session	Number Of Students	Raw Score			Alpha	SEM
				Maximum	Mean	Standard Deviation		
ELA	3	1	31,316	21	10.26	4.12	0.80	1.84
		2	31,385	21	13.30	4.93	0.82	2.08
	4	1	32,095	20	11.06	4.31	0.80	1.90
		2	32,123	20	14.02	5.49	0.85	2.13
	5	1	32,412	21	12.06	4.26	0.79	1.97
		2	32,192	21	15.10	5.39	0.82	2.26
	6	1	32,809	21	11.17	4.40	0.77	2.11
		2	32,801	21	15.34	6.65	0.86	2.48
	7	1	33,423	22	11.27	4.99	0.81	2.20
		2	33,305	22	15.85	5.90	0.84	2.33
	8	1	33,567	21	11.42	4.95	0.84	2.00
		2	33,191	21	17.56	6.00	0.85	2.35
	10	--	63,485	51	35.79	9.97	0.91	3.07
Mathematics	3	1	31,459	24	11.34	5.87	0.87	2.14
		2	31,241	24	11.64	5.99	0.87	2.19
	4	1	32,189	27	13.65	6.82	0.88	2.37
		2	32,026	27	12.96	6.83	0.89	2.29
	5	1	32,411	27	13.06	6.47	0.84	2.56
		2	32,116	27	12.05	6.40	0.85	2.51
	6	1	32,843	27	12.01	6.64	0.86	2.48
		2	32,678	27	11.70	6.13	0.84	2.44
	7	1	33,404	27	11.86	7.01	0.88	2.41
		2	33,232	27	10.16	5.94	0.86	2.21
	8	1	33,473	27	11.53	6.56	0.87	2.40
		2	33,287	27	12.74	6.56	0.87	2.36
	10	--	63,198	60	31.72	15.01	0.94	3.75
STE	5		31,849	27	14.43	5.85	0.82	2.47
			31,876	27	14.54	5.36	0.83	2.24
			666	27	24.19	8.34	0.89	2.83
	8		25,652	27	14.40	5.34	0.82	2.26
			25,614	27	12.80	5.28	0.81	2.29
			824	27	23.09	8.25	0.88	2.81

Because of the dependency of the alpha coefficients on the test-taking population and the test characteristics, cautions need be taken when making inferences about the quality of one test by comparing its reliability to that of another test from a different grade or content area. To elaborate, reliability coefficients are highly influenced by test-taking population characteristics such as the range of individual differences in the group (i.e., variability within the population), average ability level of the population that took the exams, test designs, test difficulty, test length, ceiling or floor effect, and influence

of guessing. Hence, “the reported reliability coefficient is only applicable to samples similar to that on which it was computed” (Anastasi & Urbina, 1997, p. 107).

3.7.2 Subgroup Reliability

The reliability coefficients discussed in the previous section were based on the overall population of students who took the 2021 next-generation MCAS tests. Appendix M presents reliabilities for various subgroups of interest. Cronbach’s α coefficients were calculated using the formula defined above based only on the members of the subgroup in question in the computations; values are calculated only for subgroups with 10 or more students. The reliability coefficients for subgroups range from 0.61 to 0.95 across the tests, with a median of 0.82 and a standard deviation of 0.055, indicating that reliabilities are generally within a reasonable range.

For several reasons, the subgroup reliability results should be interpreted with caution. Reliabilities are dependent not only on the measurement properties of a test but also on the statistical distribution of the studied subgroup. For example, Appendix M shows that subgroup sizes may vary considerably, which results in natural variation in reliability coefficients. Alternatively, α, which is a type of correlation coefficient, may be artificially depressed for subgroups with little variability (Draper & Smith, 1998). Third, there is no industry standard to interpret the strength of a reliability coefficient when the population of interest is a single subgroup.

3.7.3 Reporting Subcategory Reliability

Reliabilities were calculated for the reporting subcategories within the 2021 next-generation MCAS content areas, which are described in section 3.2. Cronbach’s α coefficients for subcategories were calculated via the same formula defined previously using just the items of a given subcategory in the computations. Results are presented in Appendix M. Lower reliabilities on subcategory scores are associated with very low numbers of items. For example, the grade 3 reporting category Geometry has only 2 items, resulting in a predictably very low reliability statistic of 0.14, the reliability coefficients for the reporting subcategories with items >2 range from 0.32 to 0.86, with a median of 0.62 and a standard deviation of 0.12. Because they are based on a subset of items rather than the full test, subcategory reliabilities were typically lower than were overall test score reliabilities, approximately to the degree expected based on classical test theory (Haertel, 2006), and interpretations should take this into account. Qualitative differences among grades and content areas once again preclude valid inferences about the reliability of the full test score based on statistical comparisons among subtests.

3.7.4 Reliability of Achievement-Level Categorization

The accuracy and consistency of classifying students into achievement levels are critical components of a standards-based reporting framework (Livingston & Lewis, 1995). For the 2021 next-generation MCAS tests, students were classified into one of four achievement levels: *Not Meeting Expectations*, *Partially Meeting Expectations*, *Meeting Expectations*, or *Exceeding Expectations*. Appendix N shows achievement-level distributions by content area and grade for the 2021 next-generation MCAS tests.

Cognia conducted decision accuracy and consistency (DAC) analyses to determine the statistical accuracy and consistency of the classifications. This section explains the methodologies used to assess the reliability of classification decisions and gives the results of these analyses.

Accuracy refers to the extent to which achievement classifications based on test scores match the classifications that would have been assigned if the scores did not contain any measurement error. Accuracy must be estimated because errorless test scores do not exist. Consistency measures the extent

to which classifications based on test scores match the classifications based on scores from a second, parallel form of the same test. Consistency can be evaluated directly from actual responses to test items if two complete and parallel forms of the test are administered to the same group of students. In operational testing programs, however, such a design is usually impractical. Instead, techniques have been developed to estimate both the accuracy and the consistency of classifications based on a single administration of a test. The Livingston and Lewis (1995) technique was used for the 2021 next-generation MCAS tests because it is easily adaptable to all types of testing formats, including mixed formats.

The DAC estimates reported in Tables 3-35 and 3-36 make use of "true scores" in the classical test theory sense. A true score is the score that would be obtained if a test had no measurement error. True scores cannot be observed and so must be estimated. In the Livingston and Lewis (1995) method, estimated true scores are used to categorize students into their "true" classifications.

For the 2021 next-generation MCAS tests, after various technical adjustments (described in Livingston & Lewis, 1995), a four-by-four contingency table of accuracy was created for each content area and grade, where cell [i,j] represented the estimated proportion of students whose true score fell into classification i (where i = 1 to 4) and observed score fell into classification j (where j = 1 to 4). The sum of the diagonal entries (i.e., the proportion of students whose true and observed classifications matched) signified overall accuracy.

To calculate consistency, true scores were used to estimate the joint distribution of classifications on two independent, parallel test forms. Following statistical adjustments (per Livingston & Lewis, 1995), a new four-by-four contingency table was created for each content area and grade and populated by the proportion of students who would be categorized into each combination of classifications according to the two (hypothetical) parallel test forms. Cell [i,j] of this table represented the estimated proportion of students whose observed score on the first form would fall into classification i (where i = 1 to 4) and whose observed score on the second form would fall into classification j (where j = 1 to 4). The sum of the diagonal entries (i.e., the proportion of students categorized by the two forms into the same classification) signified overall consistency.

Cognia also measured consistency on the 2021 next-generation MCAS tests using Cohen's (1960) coefficient κ (kappa), which assesses the proportion of consistent classifications after removing the proportion of consistent classifications that would be expected by chance. It is calculated using the following formula:

$$\kappa = \frac{(\text{Observed agreement}) - (\text{Chance agreement})}{1 - (\text{Chance agreement})} = \frac{\sum_i C_{ii} - \sum_i C_{i.} C_{.i}}{1 - \sum_i C_{i.} C_{.i}},$$

where
$C_{i.}$ is the proportion of students whose observed achievement level would be level i (where i = 1–4) on the first hypothetical parallel form of the test;
$C_{.i}$ is the proportion of students whose observed achievement level would be level i (where i = 1–4) on the second hypothetical parallel form of the test; and
C_{ii} is the proportion of students whose observed achievement level would be level i (where i = 1–4) on both hypothetical parallel forms of the test.

Because κ is corrected for chance, its values are lower than other consistency estimates.

3.7.5 Decision Accuracy and Consistency Results

DAC analyses were conducted both for the overall population and for subpopulations at each performance achievement level. Results of the DAC analyses are provided in Tables 3-35 and 3-36. The

tables include overall accuracy indices with consistency indices displayed in parentheses next to the accuracy values, as well as overall kappa values. Overall ranges for accuracy (0.75–0.85), consistency (0.65–0.79), and kappa (0.47–0.69) indicate that most students were classified accurately and consistently with respect to measurement error and chance.

In addition to overall accuracy and consistency indices, accuracy and consistency values conditional on achievement level are also given. For the calculation of these conditional indices, the denominator is the proportion of students associated with a given achievement level. For example, from Table 3-35, the conditional accuracy value is 0.74 for *Not Meeting Expectations* for the grade 3 ELA computer-based form. This figure indicates that among the students whose true scores placed them in this classification, 74% would be expected to be in this classification when categorized according to their observed scores. Similarly, a consistency value of 0.55 indicates that 55% of students with observed scores in the *Not Meeting Expectations* level would be expected to score in this classification again if a second, parallel test form were taken.

For some testing situations, the greatest concern may be decisions about achievement level thresholds. For example, for tests associated with the Every Student Succeeds Act (ESSA), the primary concern is distinguishing between students who are proficient and those who are not yet proficient. In this case, accuracy at the *Partially Meeting Expectations/Meeting Expectations* threshold is critically important, since it summarizes the percentage of students who are correctly classified either above or below the particular cutpoint. Table 3-36 provides the accuracy and consistency estimates and false positive and false negative decision rates at each cutpoint. A false positive is the proportion of students whose observed scores were above the cut and whose true scores were below the cut. A false negative is the proportion of students whose observed scores were below the cut and whose true scores were above the cut.

The accuracy and consistency indices at the *Partially Meeting Expectations/Meeting Expectations* threshold shown in Table 3-36 range from 0.87–0.93 and 0.82–0.90, respectively. The false positive and false negative decision rates at the *Partially Meeting Expectations/Meeting Expectations* threshold range from 3% to 7%. These results indicate that nearly all students were correctly classified with respect to being above or below the *Partially Meeting Expectations/Meeting Expectations* cutpoint.

Table 3-35. Summary of Decision Accuracy and Consistency Results by Content Area and Grade—Overall and Conditional on Achievement Level

Content Area	Grade	Overall	Kappa	Conditional On Achievement Level			
				Not Meeting Expectations	*Partially Meeting Expectations*	*Meeting Expectations*	*Exceeding Expectations*
ELA	3	0.76 (0.66)	0.47	0.74 (0.55)	0.77 (0.69)	0.75 (0.68)	0.71 (0.51)
	4	0.77 (0.67)	0.49	0.79 (0.63)	0.73 (0.65)	0.81 (0.74)	0.66 (0.45)
	5	0.76 (0.66)	0.48	0.76 (0.59)	0.77 (0.69)	0.75 (0.68)	0.71 (0.48)
	6	0.76 (0.66)	0.52	0.84 (0.74)	0.71 (0.61)	0.76 (0.68)	0.74 (0.60)
	7	0.76 (0.66)	0.50	0.83 (0.71)	0.73 (0.64)	0.78 (0.71)	0.64 (0.44)
	8	0.76 (0.65)	0.49	0.79 (0.67)	0.78 (0.69)	0.74 (0.66)	0.62 (0.42)
	10	0.80 (0.71)	0.58	0.83 (0.70)	0.77 (0.68)	0.81 (0.75)	0.79 (0.68)
Mathematics	3	0.78 (0.68)	0.54	0.83 (0.73)	0.80 (0.72)	0.73 (0.66)	0.63 (0.42)
	4	0.80 (0.72)	0.57	0.82 (0.71)	0.81 (0.75)	0.80 (0.72)	0.65 (0.44)
	5	0.81 (0.73)	0.57	0.80 (0.67)	0.82 (0.76)	0.80 (0.73)	0.76 (0.54)
	6	0.80 (0.71)	0.56	0.82 (0.69)	0.79 (0.73)	0.80 (0.72)	0.75 (0.56)
	7	0.80 (0.72)	0.57	0.78 (0.65)	0.83 (0.78)	0.77 (0.69)	0.79 (0.63)
	8	0.81 (0.72)	0.57	0.80 (0.69)	0.82 (0.77)	0.79 (0.71)	0.72 (0.51)
	10	0.85 (0.79)	0.69	0.81 (0.73)	0.84 (0.79)	0.87 (0.82)	0.85 (0.74)
STE	5	0.75 (0.65)	0.48	0.78 (0.62)	0.75 (0.67)	0.76 (0.69)	0.67 (0.46)
	8	0.77 (0.67)	0.50	0.77 (0.60)	0.78 (0.71)	0.75 (0.67)	0.79 (0.61)

Table 3-36. Summary of Decision Accuracy and Consistency Results by Content Area and Grade—Conditional on Cutpoint

Content Area	Grade	*Not Meeting Expectations / Partially Meeting Expectations*			*Partially Meeting Expectations / Meeting Expectations*			*Meeting Expectations / Exceeding Expectations*		
		Accuracy (Consistency)	False		Accuracy (Consistency)	False		Accuracy (Consistency)	False	
			Pos	Neg		Pos	Neg		Pos	Neg
ELA	3	0.95 (0.93)	0.02	0.03	0.87 (0.82)	0.06	0.07	0.93 (0.91)	0.05	0.02
	4	0.94 (0.92)	0.02	0.04	0.87 (0.82)	0.07	0.06	0.95 (0.93)	0.03	0.02
	5	0.95 (0.92)	0.02	0.03	0.87 (0.82)	0.06	0.07	0.94 (0.92)	0.05	0.01
	6	0.93 (0.90)	0.03	0.04	0.89 (0.85)	0.06	0.05	0.93 (0.90)	0.04	0.03
	7	0.93 (0.90)	0.03	0.04	0.88 (0.84)	0.06	0.06	0.95 (0.92)	0.03	0.02
	8	0.93 (0.90)	0.03	0.04	0.88 (0.83)	0.05	0.07	0.94 (0.92)	0.03	0.02
	10	0.97 (0.95)	0.01	0.02	0.92 (0.88)	0.04	0.04	0.91 (0.88)	0.05	0.04
Mathematics	3	0.93 (0.90)	0.04	0.04	0.90 (0.85)	0.05	0.06	0.95 (0.93)	0.04	0.01
	4	0.94 (0.91)	0.03	0.03	0.90 (0.86)	0.05	0.05	0.97 (0.95)	0.02	0.01
	5	0.94 (0.91)	0.02	0.04	0.90 (0.85)	0.05	0.05	0.97 (0.96)	0.02	0.01
	6	0.93 (0.90)	0.03	0.04	0.90 (0.85)	0.06	0.05	0.97 (0.96)	0.02	0.01
	7	0.94 (0.91)	0.03	0.03	0.90 (0.86)	0.05	0.05	0.97 (0.95)	0.02	0.01
	8	0.93 (0.90)	0.03	0.04	0.90 (0.86)	0.05	0.05	0.97 (0.96)	0.02	0.01
	10	0.97 (0.95)	0.02	0.02	0.93 (0.90)	0.04	0.03	0.96 (0.94)	0.02	0.02
STE	5	0.94 (0.91)	0.02	0.04	0.87 (0.82)	0.06	0.06	0.94 (0.92)	0.04	0.02
	8	0.94 (0.91)	0.02	0.04	0.88 (0.83)	0.06	0.06	0.95 (0.93)	0.04	0.01

The above indices are derived from Livingston and Lewis's (1995) method of estimating DAC. Livingston and Lewis discuss two versions of the accuracy and consistency tables. A standard version performs calculations for forms parallel to the form taken. An "adjusted" version adjusts the results of one form to match the observed score distribution obtained in the data. The tables use the standard version for two reasons: (1) This "unadjusted" version can be considered a smoothing of the data, thereby decreasing the variability of the results; and (2) for results dealing with the consistency of two parallel forms, the unadjusted tables are symmetrical, indicating that the two parallel forms have the same statistical properties. This second reason is consistent with the notion of forms that are parallel (i.e., it is more intuitive and interpretable for two parallel forms to have the same statistical distribution).

As with other methods of evaluating reliability, DAC statistics that are calculated based on groups with smaller variability can be expected to be lower than those calculated based on groups with larger variability. For this reason, the values presented in Tables 3-35 and 3-36 should be interpreted with caution. In addition, it is important to remember that it might be inappropriate to compare DAC statistics across grades and content areas.

3.8 Reporting of Results

The next-generation MCAS tests are designed to measure student achievement on the Massachusetts content standards. Consistent with this purpose, results on the MCAS were reported in terms of achievement levels, which describe student achievement in relation to these established state standards. There are four achievement levels for ELA and mathematics for students in grades 3–8 and 10 ELA and mathematics: *Not Meeting Expectations, Partially Meeting Expectations, Meeting Expectations,* and *Exceeding Expectations.* (This language is different than that used for the legacy tests.)

*Parent/Guardian Report*s and student results labels are the only printed reports; one copy of each was mailed to districts for distribution to schools. The schools disseminate the reports to parents/guardians.

Parent/Guardian Reports were also made available to schools and districts online in PearsonAccess Next (PAN). See section 3.8.1 for additional details of the *Parent/Guardian Report.*

The DESE also provides numerous reports to districts, schools, and teachers through its Edwin Analytics reporting system. Section 3.9.5 provides more information about the Edwin Analytics system, along with examples of commonly used reports.

3.8.1 Parent/Guardian Report

The *Parent/Guardian Report* was generated for each student eligible to take the MCAS tests. It is a stand-alone single page (11" x 17") color report that is folded. A sample report is provided in Appendix O.

The report is designed to present parents/guardians with a detailed summary of their child's MCAS performance and to enable comparisons with other students at the school, district, and state levels. The DESE has revised the report's design several times to make the data displays more user-friendly and to add information. The 2017 revisions were undertaken with input from the MCAS Technical Advisory Committee, and from parent focus groups held in several towns across the state, with participants from various backgrounds. DESE made several changes to the report due to the anomalous administration of the MCAS tests. DESE added text to explain that the tests were shorter than usual due to students taking only one session of each test. A student took either session 1 or session 2 of the ELA and mathematics tests and STE if applicable to their grade. Remote testing was also new in 2021 for students in grades 3–8. Text was also added to the report to discuss the participation rates in the MCAS tests.

The front cover of the *Parent/Guardian Report* provides student identification information, including student name, grade, date of birth, ID (SASID), school name, and district name. The cover also presents general information about the test, and website information for parent/guardian resources.

The inside portion of the report contains the achievement level, scaled score, and standard error of the scaled score for each content area tested. If the student does not receive a scaled score, the reason is displayed where the score would be displayed. Each achievement level has its own distinct color, and that color is used throughout the report to highlight important report elements based on the student's achievement level and score. These report elements include the student's earned achievement level, scaled score, the visual scale's achievement-level title and achievement-level cut scores, and the comparison of the student's scaled score to the average scaled score at the student's school, district, and the state levels. The achievement-level descriptor for the student's earned achievement level was printed below the scaled score and achievement level. A dashed line was used to represent the standard error.

For ELA and mathematics, the student's scaled score is compared to the average scaled score earned by students at the school, district, and state levels who, based on business requirements, are included in aggregations. These scaled score values are color-coded based on the corresponding achievement levels. In 2021, growth was not reported for grade 4 students due to the absence of a 2020 score. The mode of testing—paper, computer, or remote—for the subject is indicated on each subject page. Remote testing was online only. The students in grades other than 5, 8, and 10 received a report with a back page image provided by DESE.

If the student took the ELA or mathematics test with one of the following nonstandard accommodations, a note was printed on the report in the area where scaled score and achievement level are reported:

- The ELA test was read aloud to the student.
- The ELA essay was scribed for the student.
- The student used a calculator during the non-calculator session of the mathematics test.
- At the bottom of each subject page grade-specific resources are provided to help parents with next steps.

3.8.2 Student Results Label

A *student results label* was produced for each student receiving a *Parent/Guardian Report*. The following information appeared on the label:

- student name
- grade
- birth date
- test date
- student ID (SASID)
- school code
- school name
- district name
- student's scaled score and achievement level (or the reason the student did not receive a score)

3.8.3 Analysis and Reporting Business Requirements

To ensure that MCAS results are processed and reported accurately, the documents detailing analysis and reporting business requirements and data processing specifications are updated to reflect any changes/additions necessary for reporting each year. The processing, analysis, and reporting business requirements are observed in the analyses of the MCAS test data and in reporting results. These requirements also guide data analysts in identifying which students will be excluded from school-, district-, and state-level summary computations. A copy of the *Analysis and Reporting Business Requirements* document for the 2021 next-generation MCAS administration is included in Appendix P.

3.8.4 Quality Assurance

Quality-assurance measures are implemented throughout the process of analysis and reporting at Cognia. The data processors and data analysts perform routine quality-control checks of their computer programs. When data are handed off to different units within the data team, the sending unit verifies that the data are accurate before handoff. Additionally, when a unit receives a data set, the first step is to verify the accuracy of the data. Once new report designs were approved by the DESE, reports were run using demonstration data to test the application of the analysis and reporting business requirements. The populated reports were then approved by the DESE.

Another type of quality-assurance measure used at Cognia is parallel processing. One data analyst is responsible for writing all programs required to populate the student-level and aggregate reporting tables for the administration. Each reporting table is assigned to a second data analyst who uses the analysis and reporting business requirements to independently program the reporting table. The production and quality-assurance tables are compared; when there is 100% agreement, the tables are released for report generation.

The third aspect of quality control involves procedures to check the accuracy of reported data. Using a sample of schools and districts, the quality-assurance group verifies that the reported information is correct. The selection of sample schools and districts for this purpose is very specific because it can affect the success of the quality-control efforts. There are two sets of samples selected that may not be mutually exclusive. The first set includes samples that satisfy all of the following criteria:

- one-school district,
- two-school district,
- multi-school district,
- private school,

- special school (e.g., a charter school),
- small school that does not have enough students to report aggregations, and
- school with excluded (not tested) students.

The second set of samples includes districts or schools that have unique reporting situations that require the implementation of a decision rule. This set is necessary to ensure that each rule is applied correctly.

The quality-assurance group uses a checklist to implement its procedures. Once the checklist is completed, sample reports are circulated for review by psychometric and program management staff. The appropriate sample reports are then sent to DESE for review and signoff.

3.9 MCAS Validity

One purpose of this report is to describe the technical and reporting aspects of the next-generation MCAS program that support valid score interpretations. According to the *Standards for Educational and Psychological Testing* (AERA et al., 2014), considerations regarding establishment of intended uses and interpretations of test results—and conformance to these uses—are of paramount importance regarding valid score interpretations. These considerations are addressed in this section.

Many sections of this technical report provide evidence of validity, including sections on test design and development, test administration, scoring, scaling and equating, item analysis, reliability, and score reporting. Taken together, these sections provide a comprehensive presentation of validity evidence associated with the MCAS program.

3.9.1 Test Content Validity Evidence

Test content validity demonstrates how well the assessment tasks represent the curriculum and standards for each content area and grade level. Content validity is rooted in the item development process, including how the test blueprints and test items align to the curriculum and standards. All items are developed, edited, administered, reviewed, and scored to represent the expectations from the state curriculum frameworks. This process is described further in sections 3.2, 3.3, and 3.4.

The following are all components of validity evidence based on test content: item alignment with Massachusetts curriculum framework content standards; item bias, sensitivity, and content appropriateness review processes; adherence to the test blueprint; use of multiple item types; use of standardized administration procedures, with accommodated options for participation; and appropriate test administration training. As discussed earlier, all MCAS items are aligned by Massachusetts education stakeholders to specific Massachusetts curriculum framework content standards, and they undergo several rounds of review for content fidelity and appropriateness.

A 2017 content alignment study on the next-generation MCAS tests, conducted by Boston College researchers under the leadership of Michael Russell (See the *2019 Next-Generation MCAS and MCAS-Alt Technical Report*, Appendix S for study details), found a high degree of content alignment. For mathematics, over 90% of the domains assessed across the grade level tests showed high levels of alignment. For ELA, alignment was also found to be strong across grade levels and domains. When both the items and essay scoring criteria were considered, over 95% of the alignment considerations were deemed adequate. Only two domains, Grade 7 and Grade 8 Reading Informational Text, were identified as candidates for improved alignment. In addition, analyses of the level of agreement among panel members' ratings showed high levels of agreement for most ratings following the consensus process. While the study found a few select opportunities to improve alignment, the results from the analyses provide evidence of strong alignment across most of the tests examined.

3.9.2 Response Process Validity Evidence

Response process validity evidence can be gathered via cognitive interviews and/or focus groups with examinees. It is particularly important to collect this type of information prior to introducing a new test or test format, or when introducing new item types to examinees. The DESE ensures that evidence of response process validity is collected and reported for all new MCAS item types used in the next-generation assessments.

DESE conducted a 2019 study to determine the readiness of grade 10 students and educators in Massachusetts schools to respond to the next-generation MCAS items. Two standalone field tests were administered to students in every high school in the state. Data from these standalone field tests were then analyzed to determine the following:

- the psychometric properties of the test items and the field tests
- the response time students took to successfully respond to the test

Student response time data was used to filter out the results of students who did not spend sufficient time on their answers. The data from the remaining motivated students were used to examine item discrimination and ensure that new scoring rubrics were keyed correctly. Next-generation test forms were then developed from these sampled results.

3.9.3 Internal Structure Validity Evidence

Evidence of test validity based on internal structure is presented in detail in the discussions of item analyses, reliability, and scaling and linking in sections 3.5 through 3.7. Technical characteristics of the internal structure of the assessments are presented in terms of classical item statistics (item difficulty, item-test correlation), DIF analyses, dimensionality analyses, reliability, SEM, and IRT parameters and procedures. In general, item difficulty and discrimination indices were within acceptable and expected ranges. Very few items were answered correctly at near-chance or near-perfect rates. Similarly, the positive discrimination indices indicate that most items were assessing consistent constructs, and students who performed well on individual items tended to perform well overall. See the individual sections for more complete results of the different analyses.

Furthermore, to evaluate whether different reporting categories constitute statistically different dimensions, item-level confirmatory factor analysis (CFA) was conducted to assess the internal structure of the MCAS ELA and mathematics assessments in grade 10 from the School Year 18–19. The CFA model for each test was specified such that the number of factors equaled the number of reporting categories and each item loaded onto the factor that corresponded to the reporting category to which the given item contributed. The results showed very high correlations between different factors, suggesting that there is very little unique variance among the given set of reporting categories. In other words, different reporting categories are essentially measuring the same thing. These results are highly consistent with the unidimensionality results from the DIMTEST and DETECT analyses, as well as the previous CFA analyses conducted on MCAS ELA and mathematics assessments in grades 3–8 from the School Year 17–18. Although the CFA analysis suggested unidimensionality among different reporting categories, the high and positive factor loadings do suggest the items provide good measurement for each reporting category. Unidimensionality, meaning items from one reporting category correlate highly to other reporting categories, can be evidence that students have learned different content areas within each subject in an integrated fashion.

3.9.4 Validity Evidence in Relationship to Other Variables

DESE continues collecting evidence to evaluate the extent to which the next-generation MCAS assessments measure "student readiness for the next level" of schooling, such as readiness for the next grade level, or readiness for postsecondary education. In 2021, DESE conducted concurrent validity studies. They first compared student results on the next-generation MCAS tests to course grades and course-taking in middle school and high school. Specifically, the relationships among MCAS results and student course grades in the respective subjects (in ELA and mathematics) showed that MCAS results were more strongly associated with course grades than other covariates tested, including course level, economic disadvantage, being on an IEP, or being an English learner. In mathematics in grades 8 and 10, MCAS achievement levels were significantly associated with taking advanced mathematics courses. Convergent validity evidence was also reported between MCAS test portions and subjects.

In 2021, DESE conducted a study examining predictive validity of grade 8 MCAS results on grade 9 course-taking patterns and GPAs. Results from this study will be published as a white paper on the DESE website at www.doe.mass.edu/mcas/tech/.

3.9.5 Efforts to Support the Valid Use of Next-Generation MCAS Data

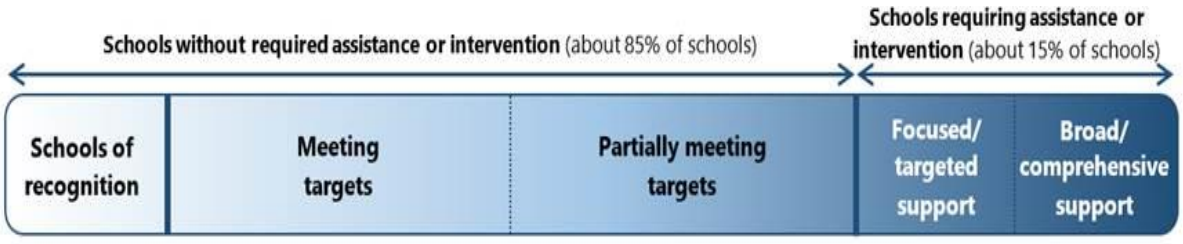
The DESE takes many steps to support the intended uses of MCAS data. (The intended uses are listed in section 2.3 of this report.) This section will examine some of the reporting systems and policies designed to address each use.

1. Determining school and district progress toward the goals set by the state and federal accountability systems

In 2018, DESE updated its accountability plan to conform to state and federal requirements. Measures of student achievement and growth are prominently featured alongside other indicators in the new school and district accountability system. Each school's performance on all measures is compared to its targets and to the performance of other schools in the state. The system includes incentives designed to focus schools on their lowest-performing students from prior years.

In the system, schools are placed into categories that describe their performance relative to state goals. As shown in Figure 3-1, the categories reflect how much assistance or intervention each school requires under the system. School and district accountability report cards are publicly available at www.doe.mass.edu/accountability/report-cards/.

Figure 3-1. School Categories in Massachusetts Accountability System



Students with significant disabilities who are unable to take the MCAS exams even when accommodations are provided can participate in the MCAS-Alt, which requires that students submit an MCAS-Alt Skills Survey as well as a collection of work samples and other documentation that

demonstrates their proficiency on the state standards. Technical information on the MCAS-Alt is presented in Chapter 4 of this report.

2. Providing information to support program evaluation at the school and district levels
3. Providing diagnostic information to help all students reach higher levels of performance

Each year, student-level data from each test administration are shared with parents/guardians and school and district stakeholders in personalized *Parent/Guardian Report*s. The current versions of these reports (see the samples provided in Appendix O) were designed with input from groups of parents. These reports contain scaled scores and achievement levels from the current year and prior years, as well as norm-referenced student growth percentiles, which calculate how a student's current score compares to that of students who scored similarly on the prior one or two tests in that subject. They also contain item-level data broken down by standard. The reports include links that allow parents and guardians to access the released test items on the DESE website.

The DESE's secure data warehouse, Edwin Analytics, provides users with more than 150 customizable reports that feature achievement data and student demographics geared toward educators at the classroom, school, and district levels. All reports can be filtered by year, grade, subject, and student demographic group. In addition, Edwin Analytics gives users the capacity to generate their own reports, with user-selected variables and statistics, and to use state-level data for programmatic and diagnostic purposes. These reports can help educators review patterns in the schools and classrooms that students attended in the past or make plans for the schools and classrooms the students are assigned to in the coming year. The DESE monitors trends in report usage in Edwin Analytics. Between June and November (the peak reporting season for MCAS), over one million reports are run in Edwin Analytics, with approximately 400,000 reports generated in August when schools review their preliminary assessment results in preparation for the return to school.

Examples of two of the most popular reports are provided on the following pages. The *MCAS School Results by Standards* report, shown in Figure 3-2, indicates the mean percentage of possible points earned by students in the school, the district, and the state on MCAS items assessing particular standards/topics. The reporting of total possible points provides educators with a sense of how reliable the statistics are, based on the number of test items/test points. The School/State Diff column allows educators to compare their school or district results to the state results. Filters provide educators with the capacity to compare student results across nine demographic categories, which include gender, race/ethnicity, economically disadvantaged status, and special education status.

The *MCAS Growth Distribution* report, shown in Figure 3-3, presents the distribution of students by student growth percentile band across years. For each year, the report also shows the median student growth percentile and the percentage of students scoring *Meeting or Exceeding Expectations*. Teachers, schools, and districts use this report to monitor student growth from year to year. As in the report above, all demographic filters can be applied to examine results within student groups.

Figure 3-2. Example of School Results by Standards Report—Mathematics, Grade 7

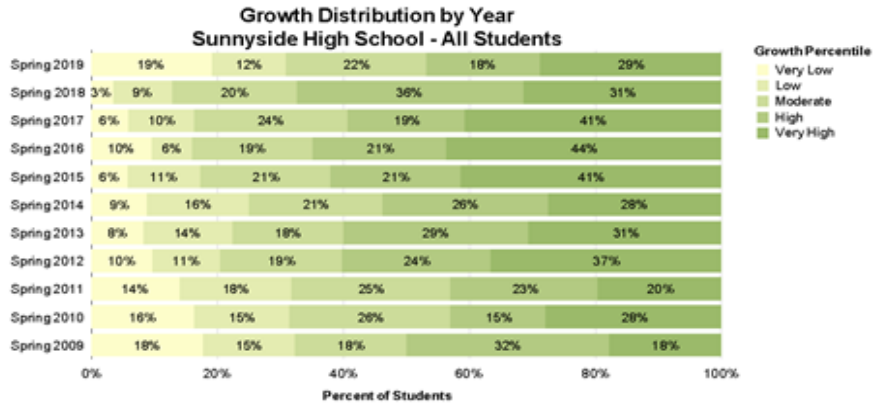
All Students Students (161)

Standards: MA 2017 Standards **Show results with <10 students :** No

	Possible Points	School % Possible Points	District % Possible Points	State % Possible Points	School/ State Diff
Mathematics					
All items	54	48%	48%	47%	1
Question Type					
Constructed Response	16	48%	49%	48%	1
Short Answer	14	41%	42%	39%	2
Selected Response	24	52%	51%	51%	1
Domain / Cluster					
Expressions and Equations	**14**	**47%**	**48%**	**47%**	**-1**
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	10	54%	54%	52%	2
Use properties of operations to generate equivalent expressions.	4	28%	31%	36%	-8
Geometry	**8**	**42%**	**43%**	**44%**	**-2**
Draw	2	39%	44%	47%	-9
Solve real-life and mathematical problems involving angle measure	6	43%	43%	43%	0
Ratios and Proportional Relationships	**11**	**55%**	**54%**	**53%**	**2**
Analyze proportional relationships and use them to solve real-world and mathematical problems.	11	55%	54%	53%	2
Statistics and Probability	**11**	**36%**	**36%**	**37%**	**0**
Draw informal comparative inferences about two populations.	3	29%	30%	32%	-2
Investigate chance processes and develop	6	36%	35%	36%	0
Use random sampling to draw inferences about a population.	2	48%	45%	47%	2
The Number System	**10**	**62%**	**59%**	**54%**	**8**
Apply and extend previous understandings of operations with fractions to add	10	62%	59%	54%	8

Note: MCAS results are suppressed for group counts less than 10 and school results only include students enrolled in the school since October 1

Figure 3-3. Example of Growth Distribution Report—ELA, Grade 10



Vertical lines at 20%, 40%, 60%, 80% and 100% represent the Statewide distribution for very low, low, moderate, high and very high growth.

Test	# Very Low	# Low	# Moderate	# High	# Very High	Median SGP	Mean SGP	# Students (SGP)	% Proficient or Higher	% Meeting or Exceeding Expectations	# Students (Ach. Level)
Spring 2019	18	11	21	17	27	58.5	55.0	94		65	95
Spring 2018	3	8	17	31	27		66.6	86	99		88
Spring 2017	5	9	21	16	35	70.5		86	100		86
Spring 2016	9	6	18	20	41	71.5		94	99		94
Spring 2015	5	10	18	18	36	73.0		87	99		87
Spring 2014	7	13	17	21	22	65.0		80	95		83
Spring 2013	7	12	15	25	26	67.0		85	100		86
Spring 2012	9	10	18	22	34	70.0		93	98		93
Spring 2011	15	19	27	25	21	53.0		107	85		109
Spring 2010	14	13	22	13	24	51.0		86	74		87
Spring 2009	11	9	11	20	11	60.5		62	88		69
Spring 2008									81		43

Aggregate student growth percentile (SGP) is not calculated if the number of students with SGP is less than 20.

The assessment data in Edwin Analytics are also available on the DESE public website through the school and district profiles (profiles.doe.mass.edu). In both locations, stakeholders can click on links to view released assessment items, the educational standards they assess, and the rubrics and model student work at each score point. The public is also able to view each school's progress toward the performance goals set by the state and federal accountability system.

The high-level summary provided in this section documents the DESE's efforts to promote uses of state data that enhance student, educator, and LEA outcomes while reducing less-beneficial unintended uses of the data. Collectively, this evidence documents the DESE's efforts to use MCAS results for the purposes of program and instructional improvement and as a valid component of school accountability.

Chapter 4. MCAS Alternate Assessment (MCAS-Alt)

4.1 MCAS-Alt Overview

4.1.1 Background

This chapter presents evidence in support of the technical quality of the MCAS Alternate Assessment (MCAS-Alt) and documents the procedures used to conduct, score, and report student results on MCAS-Alt student assessments. These procedures have been implemented to ensure, to the extent possible, the validity of score interpretations based on the MCAS-Alt. While flexibility is built into the MCAS-Alt to allow teachers to customize academic goals at an appropriate level of challenge for each student, the procedures described in this report are also intended to constrain unwanted variability wherever possible.

For each phase of the alternate assessment process, this chapter includes a separate section that documents how the assessment evaluates the knowledge and skills of students with the most significant cognitive disabilities in the context of grade-level content standards. Together, these sections provide a basis for the validity of the results.

This chapter is intended primarily for a technical audience and requires highly specialized knowledge and a solid understanding of measurement concepts. However, teachers, parents/guardians, and the public will also be interested in how the assessments both inform and emerge from daily classroom instruction.

4.1.2 Purposes of the Assessment System

The MCAS is the state's program of student academic assessment, implemented in response to the Massachusetts Education Reform Act of 1993. Statewide assessments, along with other components of education reform, are designed to strengthen public education in Massachusetts and to ensure that all students receive challenging instruction based on the standards in the Massachusetts curriculum frameworks. The law requires that the curriculum of all students whose education is publicly funded, including students with disabilities, be aligned with state standards. The MCAS is designed to improve teaching and learning by reporting detailed results to districts, schools, and parents/guardians; to serve as the basis, with other indicators, for school and district accountability; and to certify that students have met the Competency Determination (CD) standard to graduate from high school. Students with the most significant cognitive disabilities who are unable to take the standard MCAS tests, even when accommodations are provided, are designated in their individualized education program (IEP) or 504 plan to take the MCAS-Alt. The MCAS-Alt is intended to document the student's achievement and progress in learning the skills, knowledge, and concepts outlined in the state's curriculum frameworks, and to

- provide a basis for including difficult-to-assess students in statewide assessment and accountability systems;
- determine whether students with the most significant cognitive disabilities are receiving a program of instruction based on the state's academic learning standards;
- determine how much the student has learned in the specific areas of the academic curriculum being assessed;
- assist teachers in providing challenging academic instruction.

The MCAS-Alt was developed between 1998 and 2000 and has been refined and enhanced each year since its initial implementation in the 2000–2001 school year.

4.1.3 Format

The MCAS-Alt consists of a structured set of "evidence" collected during instructional activities in each subject to be assessed during the school year, plus a standardized MCAS-Alt Skills Survey that measures the degree to which students have already learned the range of skills covered by a particular strand or domain of the frameworks. Teachers are required to use the results of the skills survey to identify particular standards and levels of complexity at which to begin assessing the student. The MCAS-Alt also includes the student's demographic information and weekly schedule, parent/guardian verification and signoff, and a school calendar, all of which are submitted to the state each spring. Preliminary 2021 results were reported to parents/guardians, schools, and the public in August, with final results provided in October. In a typical year in which the submission deadline is not extended, preliminary results would be reported in June of the current school year, with final results reported in early September.

The Department's *Resource Guide to the Massachusetts Curriculum Frameworks for Students with Disabilities* (the *Resource Guide*) describes the content to be assessed by the 2021 MCAS-Alt and contains the 2017 English language arts (ELA) standards, the 2017 mathematics standards, and the 2016 science and technology/engineering (STE) standards.

The *Resource Guide* provides strategies for adapting and using the state's learning standards to instruct and assess students taking the MCAS-Alt. The fall 2020 *Resource Guide* is intended to ensure that all students receive instruction in the Massachusetts curriculum frameworks in ELA, mathematics, and STE at levels that are challenging and attainable for each student. For the MCAS-Alt, students are expected to achieve the same standards as their peers without disabilities. However, they may need to learn the necessary knowledge and skills differently, such as through presentation of the knowledge/skills at lower levels of complexity, in smaller segments, and at a slower pace.

4.2 MCAS-Alt Test Design and Development

4.2.1 Test Content and Design

MCAS-Alt assessments are required for all grades and content areas in which standard MCAS tests are administered. In the MCAS-Alt, the range and level of complexity of the standards being assessed have been modified, yet without altering the essential components or meaning of the standards. The MCAS-Alt content areas and strands/domains required for the assessment of students in each grade are listed in Table 4-1.

Table 4-1. MCAS-Alt Requirements in Each Category

Grade	ELA Strands Required	Mathematics Domains Required	STE Strands Required
3	▪ Language ▪ Reading ▪ Writing	▪ Operations and Algebraic Thinking ▪ Measurement and Data	
4	▪ Language ▪ Reading ▪ Writing	▪ Operations and Algebraic Thinking ▪ Numbers and Operations – Fractions	
5	▪ Language ▪ Reading ▪ Writing	▪ Number and Operations in Base Ten ▪ Number and Operations – Fractions	For any three of the four STE disciplines* select one core idea in each discipline and assess six entry points within each core idea.
6	▪ Language ▪ Reading ▪ Writing	▪ Statistics and Probability ▪ The Number System	
7	▪ Language ▪ Reading ▪ Writing	▪ Ratios and Proportional Relationships ▪ Geometry	
8	▪ Language ▪ Reading ▪ Writing	▪ Expressions and Equations ▪ Geometry	For any three of the four STE disciplines* select one core idea in each discipline and assess six entry points within each core idea.
10	▪ Language ▪ Reading ▪ Writing	Any three of the five mathematics conceptual categories: ▪ Functions ▪ Geometry ▪ Statistics and Probability ▪ Number and Quantity ▪ Algebra	Select three core ideas in <u>one</u> of the following disciplines: ▪ Biology ▪ Chemistry ▪ Introductory Physics or ▪ Technology/Engineering

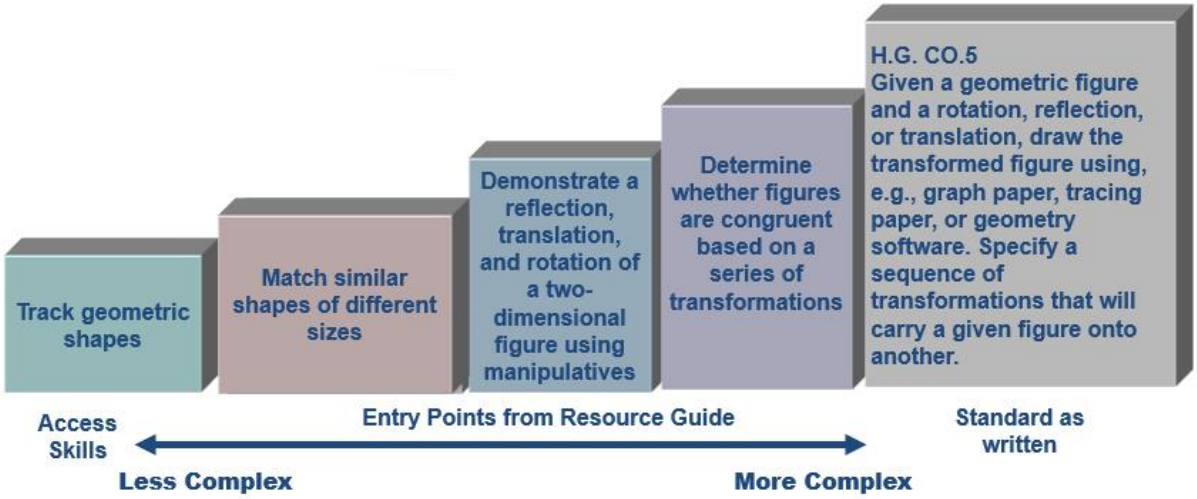
** Earth and Space Science, Life Science, Physical Sciences, Technology/Engineering*

4.2.1.1 Access to the Grade-Level Curriculum

Students with disabilities are expected to achieve the same standards as their peers who do not have disabilities. However, they may need extensive support to learn the necessary knowledge and skills and are likely to require instruction in smaller segments and at a slower pace. The *Resource Guides to the Massachusetts Curriculum Frameworks for Students with Disabilities* identify student-centered academic outcomes, called entry points, based on each grade-level content standard. The *Resource Guide* is intended to assist educators in teaching and assessing appropriately challenging, standards-based academic skills and content aligned with grade-level standards, as required by law. Entry points consist of academic outcomes based on the "essence" of the grade-level content but presented at modified levels of complexity and difficulty. Entry points provide a roadmap for students to make steady progress toward eventually meeting standards at grade-level complexity.

In a small number of cases where students with the most significant cognitive abilities cannot yet address entry points even at the lowest levels of complexity and even with the use of instructional accommodations, those students are instructed and assessed on the acquisition of access skills, which describe the communication and motor skills practiced during age-appropriate activities based on the standards. Entry points and access skills are listed in the *Resource Guides* in ELA, mathematics, and STE for every curriculum framework standard, available online at www.doe.mass.edu/mcas/alt/resources.html.

Figure 4-1. Model of a Method to Access the Grade-Level Curriculum Using Entry Points That Address the Essence of the Standard for Students Who Take the MCAS-Alt (Mathematics Example)



How Resource Guides Were Developed

After each curriculum framework was developed or subsequently revised, DESE convened panels of experts in each of three content areas (ELA, mathematics, and STE) to adapt the general education curriculum standards for students with the most significant cognitive disabilities. Panelists included content specialists, assessment experts, special educators familiar with students with the most significant cognitive disabilities, higher education faculty, parents and advocates, and members of the state's contractor team. Panelists are listed for each content area on the acknowledgements page of each on the Resource Guides here www.doe.mass.edu/mcas/alt/resources.html.

Each panel reviewed the standards in their respective content area and identified the big ideas, key skills, and content knowledge—the so-called "essence"—contained in each standard. Once panelists agreed upon the essence, they determined "entry points," standards-based outcomes at successively lower levels of complexity than are typically expected of students who are achieving the grade-level standards as originally written. First, the panels determined entry points at the lowest level of complexity at which a student could address the standard without losing its essence. Then, they determined additional entry points at successively higher levels of complexity so teachers could identify and select the entry point at a challenging and attainable level of complexity appropriate for each student. This "continuum of complexity" allows teachers to progress to higher levels of complexity once lower complexity entry points are mastered by the student.

The process of developing the essence and entry points was repeated in each of the three content areas and was replicated each time revisions were made to the curriculum frameworks (1999; 2001; 2006; 2011; 2016; 2017). Subsequently, special educators familiar with students with the most significant cognitive disabilities developed access skills appropriate for students who are unable to address the content and skills at even the lowest level of complexity. Access skills include motor and communication skills addressed during a standards-based activity in the required strand/domain and are intended for a very small number of students with the most unique, complex, and significant cognitive disabilities. Each Resource Guide lists the standards as written for students in each grade together with entry points and access skills intended for students with the most cognitive disabilities who are designated to participate in the MCAS-Alt.

4.2.1.2 Assessment Design

The MCAS-Alt assessments for ELA–language, ELA–reading, mathematics, and high school STE consist of a completed MCAS-Alt Skills Survey, a collection of primary evidence, supporting documentation, and other required information.

MCAS-Alt Skills Survey

The MCAS-Alt Skills Survey (see Appendix Q) is a standardized component of the MCAS-Alt that must be administered by the teacher to each student before selecting an entry point or access skill in the subject required for assessment. The survey determines a student's current level of academic knowledge, skills, and abilities across a broad range of standards. The results of the skills survey are intended to be used as the basis for selecting an entry point or access skill listed in the *Resource Guide* in each subject scheduled for assessment. The survey is also intended to familiarize teachers with the range of entry points in a strand/domain that are available for the assessment.

The survey lists the important skills in each strand/domain/conceptual category/discipline from least to most complex. The skills represented on each survey were identified in collaboration with content experts in order to assess students with the most significant cognitive disabilities on skills that represent the "knowledge of most worth" within each strand ranging from low to high complexity.

To complete the skills survey, teachers may use the sample tasks provided on the survey, design their own simple tasks, use classroom observations, class assignments, progress reports, or locally administered assessments to determine the degree to which the student can perform each skill listed in the survey. A sample strand from the survey is shown in Figure 4-2.

A follow-up skills survey, though not required, is recommended *after* the selected skill has been taught to note the student's progress, especially if the student will attend a different classroom the following year.

Figure 4-2. MCAS-Alt Skills Survey–Reading Sample Strand

Reading (Informational or Literary Text)

	Based on a literary or informational text read by or to the student, student can:	A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Identify the main character(s) in the text.					
2.	Identify the setting of the text.					
3.	State key details from the text.					
4.	Identify events (or ideas) presented in the text.					
5.	Identify the central (main) idea of the text.					
6.	Explain *why* or *how* something occurred in the text.					
7.	Identify and define unknown words in the text; or match words or phrases from the text to their meaning.					
8.	Differentiate between a fact and the author's opinion.					
9.	Describe the author's point of view.					

Instructions for Completing the Skills Survey

Teachers are instructed to:

Conduct the MCAS-Alt Skills Survey for the most significant entry points listed in the Resource Guide in the required strand/domain for a student in that grade. Check one box (A–E) for each skill in the required strand/domain(s).

Teachers may use any combination of the following methods to conduct a brief assessment of each skill:

a) observations, informal assessments, progress reports, or classroom work; OR

b) 2–4 tasks, based on the examples provided in the survey form; or tasks designed by the teacher that are accommodated for each student's instructional level and needs.

If using specific tasks or activities to assess the student, the following protocol should be used:

1) Present the first task to the student.

2) If the student does not respond on the first attempt, repeat the task with a verbal reminder or other prompt (if needed), but do not give the answer. (Note: If a prompt is given, the response may be accurate, but is not independent.)

3) If the student responds to the first task, give a second, more complex task. Repeat with a prompt if needed. Make notes on the survey form to remind you of the student's performance of each task.

4) If the student does not respond to the second task, even with a prompt, do not introduce a third task. Simply mark an "X" in the column (A, B, C, D, or E) that most closely describes his or her performance of the skill.

5) Introduce the next task in the survey. Repeat steps 2 through 4 until all skills in the required strand/domain are assessed.

Once the survey has been completed for each required strand/domain, review the results, and proceed as follows:

- Select a related or higher-level-of-complexity entry point from the Resource Guide based on any skill that has been checked in columns A, B, or C.
- Do not select an entry point for any skills checked in columns D or E.
- If column A ("unable to perform the skill") is checked for all skills in the strand/domain, consider assessing an access skill (i.e., a motor or communication skill).
- If columns D and/or E are checked for most of the skills in the strand/domain, then the IEP team should consider whether the standard MCAS test (paper or online) would be more appropriate for the student in that subject.

Submit a completed MCAS-Alt Skills Survey for each assessed strand just after the Strand Cover Sheet in each student's MCAS-Alt. A strand without a completed Skills Survey will receive a score of *Incomplete*.

MCAS-Alt Skills Survey Pilot

In Fall 2018, 55 MCAS-Alt training specialists (i.e., special educators selected to be peer trainers) were asked to conduct a pilot study of the MCAS-Alt Skills Survey with one or more students in at least one of three content areas and provide responses to the following questions.

- How difficult was it to administer the skills survey?
- How much time did it take to administer each strand of the survey?

- Did conducting the skills survey help you gain a better understanding of your students' abilities?
- Was the skills survey helpful in guiding you to select appropriate entry points to assess?
- Was the skills survey rating system useful in determining a student's performance?
- Do you have suggestions for how the DESE should communicate this new requirement to teachers for the 2019–2020 school year? (Note: The survey was introduced in 2019–2020, but the state's academic assessments were cancelled due to the impact of the pandemic in spring 2020. It was first implemented and scored in the 2020–2021 school year.)

The DESE received 48 written responses to the questions listed above. Most respondents said the skills survey was easy to administer, though the duration of administration varied widely (between 5–30 minutes per strand, depending on the student's abilities—surveying lower functioning students was completed more quickly while higher functioning students took longer).

Several said it seemed redundant of other broad-based skills assessments they routinely conduct at the start of each school year, though many said the MCAS-Alt Skills Survey was more formal, sequential, systematic, and standards-based. Respondents were about equally divided on the question of its effectiveness in helping gain a better understanding of their student(s), though many said it helped them identify the standards on which to focus for instruction and assessment. A few said their students surprised them with new skills they hadn't been aware they had mastered, and many said it was most helpful in cases when surveying students with whom they were less familiar. Many felt the survey helped them expand their understanding of possible entry points to select for assessment and the range of skills they were willing to teach and assess.

While most acknowledged that the survey would require additional time to conduct, a large proportion said it was not overly time-consuming to administer. A few said it had saved them time, since it revealed the areas that needed the greatest instructional focus and gave them ideas for areas to assess. Some suggested the survey would be a good informal pre- and post-assessment conducted at different points throughout the school year, which could assist with progress monitoring and passing along orientation information to a new teacher the following year. Most felt the skills survey process will make sense to teachers when it is introduced, though they might be unhappy about the additional work requirement and suggested it be made optional.

As a result of feedback from the pilot study, the following adjustments were made to the operational MCAS-Alt Skills Survey:

- The skills survey was incorporated into the online MCAS-Alt forms and graphs application so it could be completed online.
- Multiple skills that had been combined were separated into separate skills.
- A training unit was developed to prepare teachers for implementation.
- The designations used in headers for columns A through E to rate each skill were edited to include both percentages of independence AND descriptors of the students' achievement of the skill (see Figure 4-3 below).
- Additional consultation occurred with content specialists to develop examples of assessment activities, ensure fidelity to the standards, and provide coverage of the most significant entry points across all ability levels.
- Instructional examples were added to the listed skills in Science and Technology/Engineering.

Figure 4-3. Descriptors for Each Column Used on the Skills Survey

A	B	C	D	E
Student is **unable** to perform this skill. ---------OR-------- Teacher is unable to assess student on this skill.	Student is just starting to learn this skill and demonstrates the skill only **rarely** without support. --- Student performs this skill accurately with **0–25% independence**. ---------OR-------- Student performs this skill independently with **0–25% accuracy**.	Student demonstrates this skill **intermittently** and only **occasionally** without support. --- Student performs this skill accurately with **26–50% independence**. ---------OR-------- Student performs this skill independently with **26–50% accuracy**.	Student demonstrates this skill **more often than not** without support. --- Student performs this skill accurately with **51–75% independence**. ---------OR-------- Student performs this skill independently with **51–75% accuracy**.	Student demonstrates this skill **almost all the time** without support. --- Student performs this skill accurately with **76–100% independence**. --------OR--------- Student performs this skill independently with **76–100% accuracy**.

Primary Evidence

For the evidence collection portion of the MCAS-Alt, the ELA, mathematics, and STE assessments require the inclusion of an instructional data chart and two or more pieces of primary evidence in each assessed strand, plus other supporting documentation that shows or describes the student's performance of the targeted skill.

The ELA–language, ELA–reading, and all required mathematics strands must include a data chart (e.g., field data chart, line graph, or bar graph) that indicates

- the student's performance of the targeted skill based on the learning standard being assessed,
- tasks performed by the student on at least eight distinct dates, with a brief description of each activity,
- percentage of accuracy for each performance,
- percentage of independence for each performance, and
- progress over time, including an indication that the student has attempted a new skill.

Two or more pieces of primary evidence must document the student's performance of the same skill or outcome identified on the data chart. Primary evidence may include

- work samples (created by the student or dictated to a scribe using the student's primary mode of communication),
- photographs of one or more classroom activities, and/or
- audio or video clips of the student performing the targeted activity.

Each piece of primary evidence must clearly show the final product of an instructional activity and be labeled with

- the student's name,
- the date of the activity,
- a brief description of what the student was asked to do and how the task or activity was conducted,
- the percentage of accuracy for the task or activity, and

- the percentage of independence during the task or activity (i.e., the degree to which the student demonstrated knowledge and skills without the use of prompts or cues from the teacher).

The data chart and at least two additional pieces of primary evidence comprise the "core set of evidence" required in each strand, with the exception (noted below) of the ELA–Writing strand and next-generation STE strands.

The MCAS-Alt for ELA–Writing consists of one baseline writing sample (not included in the student's score), plus three final writing samples in any of three writing types generated using the student's primary mode of communication. Final writing samples are included in the final score.

The MCAS-Alt assessments for STE in grades 5 and 8 consist of primary evidence in three STE disciplines. Each discipline includes evidence of six entry points within the same core idea. STE evidence consists of the MCAS-Alt Skills Survey plus work samples that integrate the STE content with one of eight science practices described in the 2016 Massachusetts Curriculum Framework for STE.

A detailed description of the instructions given to educators who are conducting the MCAS-Alt is provided in section 4.3, Test Administration.

Supporting Documentation

In addition to the required pieces of primary evidence, supporting documentation may be included at the discretion of the teacher to indicate the context in which the activity was conducted. Supporting documentation may include any of the following:

- photographs of the student that show how the student engaged in the context of the instructional activity
- tools, templates, graphic organizers, or models used by the student
- reflection sheet or evidence of other self-evaluation activities that document the student's self-awareness, perceptions, choices, decision-making, and self-assessment of the work he or she created and/or the learning that occurred as a result. For example, a student may respond to questions such as:
- What did I do? What did I learn?
- What did I do well? What am I good at?
- Did I correct my inaccurate responses?
- How could I do better? Where do I need help?
- What should I work on next? What would I like to learn?
- work sample description labels providing important information about the activity or work sample

4.2.1.3 Assessment Dimensions (Scoring Rubric Areas)

Trained and qualified scorers examine each piece of evidence in the strand and apply the criteria described in the *Guidelines for Scoring 2021 MCAS-Alt* (see Appendix R), using the MCAS-Alt Rubric for Scoring Each Strand, to produce a subscore for the strand based on the following:

- **completeness** of assessment materials
- **level of complexity** and alignment with learning standards in the Massachusetts curriculum frameworks in the content area being assessed
- **accuracy** of the student's responses to questions or performance of specific tasks
- **independence** demonstrated by the student in responding to questions or performing tasks
- **self-evaluation** of each task or activity (e.g., reflection, self-correction, goal-setting)
- **generalized performance** demonstrating the skill in different instructional contexts or using different materials or methods of presentation or response

Each strand is scored in each of five rubric dimensions, further described in section 4.4.3.1. Rubric dimensions and possible scores are as follows:

- Level of Complexity (score range of 1–5)
- Demonstration of Skills and Concepts (M, 1–4)
- Independence (M, 1–4)
- Self-Evaluation (M, 1, 2)
- Generalized Performance (1, 2)

(Note: a score of "M" would signify insufficient evidence or information to generate a numerical score in a dimension.)

Scores in Level of Complexity, Demonstration of Skills and Concepts, and Independence are combined to yield a strand subscore; those subscores are combined, as shown in the Analysis and Reporting Business Requirements (Appendix P) to yield an overall score in the content area. Students taking alternate assessments based on alternate academic achievement standards (AA-AAAS) receive scores of either *Progressing*, *Emerging*, or *Awareness.*

4.2.2 Test Development

4.2.2.1 Rationale

AA-AAAS is the component of the state's assessment system that measures the academic performance of students with the most significant cognitive disabilities. Students with disabilities are required by federal and state laws to participate in the statewide MCAS so their performance of skills and knowledge of content described in the state's curriculum frameworks can be assessed and so that they are visible, included, and accountable in reports of results for each school and district.

The Elementary and Secondary Education Act (ESEA) requires states to include an alternate assessment option for students with the most significant cognitive disabilities. This requirement ensures that students with the most significant cognitive disabilities receive academic instruction based on the state's learning standards, have an opportunity to "show what they know" on the state assessment, and are included in reporting and accountability. Alternate assessment results provide accurate and detailed feedback that can be used to identify challenging instructional goals for each student. When schools are held accountable for the performance of students with disabilities, these students are more likely to receive consideration when school resources are allocated.

Through use of curriculum resources provided by the DESE, teachers of students with disabilities have become adept at providing standards-based instruction at a level that challenges and engages each student, and they have informally reported unanticipated gains in student achievement.

4.2.2.2 Test Specifications

MCAS-Alt Skills Survey

Each strand must include a completed MCAS-Alt Skills Survey indicating the results of the student's performance of a broad range of skills. The information compiled in the skills survey must be used by the educator to select a targeted skill from the *Resource Guide* in the content area and strand(s) required for assessment. Only those skills (i.e., entry points and access skills) that the student was unable to perform accurately and independently at least 50 percent of the time on the MCAS-Alt Skills Survey may be selected by the student's teacher for the MCAS-Alt.

Evidence for English Language Arts (Language and Reading only) and Mathematics

Each portfolio strand must include a data chart documenting the student's performance of the targeted skill being assessed in the required content area (i.e., the percentage of accuracy and independence of each performance). Data are collected on at least eight different dates to determine the degree to which the skill has been mastered. On each date, the data must indicate the percentage of correct versus inaccurate responses given by the student, and whether the student required cues, prompts, or other assistance to respond (i.e., the overall percentage of independent responses by the student). Each data chart must include a brief description of activities conducted on each date and must describe how the activity addressed the measurable outcome being assessed. Data are collected either during routine classroom instruction or during tasks and activities set up specifically to assess the student. The data chart may include performance data from either a single activity or task; or from a series of responses to specific tasks summarized for each date.

In addition to the data chart, each strand must include at least two individual work samples (including photographs, if the evidence is too large, fragile, or temporary in nature) that documents the percentage of accuracy and independence of the student's responses on a given date, based on the measurable outcome that was also documented on the data chart.

The following information must be provided either on a Work Description or on the evidence itself:

- student's name
- date
- content area, strand/domain, and learning standard being assessed
- entry point being assessed during the activity
- a summary of the percent of student's accuracy and independence during the activity
- description of the activity

Evidence for ELA–Writing

The ELA–Writing strand requires a completed MCAS-Alt Skills Survey and at least three writing samples that demonstrate the student's expressive communication skills, based on any combination of the following text types.

- Opinion (grades 3–5)/Argument (grades 6–8 and 10)
- Informative/Explanatory
- Narrative, including Poetry

In addition to three writing samples, one *baseline* sample must be submitted which may include either an outline, completed graphic organizer, or draft of a writing assignment. The baseline sample should provide information to guide additional instruction in writing in that text type. Teachers are also required to pre-score the student's three final writing samples using a rubric provided by DESE for that purpose. See Appendix S for the Scoring Rubric for ELA–Writing.

Evidence for Next-Generation Science and Technology/Engineering (STE) Strands (Grades 5 and 8)

The format described below is intended to encourage the teaching of units of science based on a core idea, rather than assessing isolated skills. Teachers are directed to complete these steps:

Step 1: Select three (3) of the following STE disciplines

- Earth and Space Science

- Life Science
- Physical Science
- Technology/Engineering

Step 2: Conduct the STE Skills Survey available to determine the optimal grade-span at which to select entry points for the student. The STE Skills Survey must be conducted once for the entire STE content area, not for each discipline, and must include all eight science practices.

Step 3: Select a core idea within the chosen discipline that is relevant and that engages and challenges the student.

Step 4: Select at least six (6) different entry points within one core idea. At least three (3) different science practices must be addressed within the six selected entry points. This step encourages teachers to design inter-related activities that address a theme or unit of study.

Step 5: List the following information on each STE Summary Sheet:

- student's name
- date
- core idea
- entry point addressed during the activity
- numbered science practice for that entry point
- accuracy and independence for each task or response in the activity, and the summary percent
- description of the activity

Step 6: Select three work samples to include in the strand that clearly show the final product of instruction. Each sample should represent a different science practice. Photographs and/or videos may be submitted as primary evidence if they are labeled and clearly show the final product of instruction.

Evidence for High School STE Strands

Assessment formats differ depending on the educator's selection of either the next-generation or legacy disciplines described below.

Step 1: Choose one (1) of the following next-generation STE disciplines:

- Biology **OR** Introductory Physics

Step 2: Conduct the MCAS-Alt STE Skills Survey to determine the grade-span at which to select entry points in each science practice for the student. Only one skills survey is required for high school Biology and Introductory Physics.

Step 3: Select three (3) *core ideas* within the chosen discipline from the next-generation STE Resource Guide that engage and challenge the student.

For *each* core idea:

Step 4: Select three (3) entry points or access skills. Three (3) different science practices must be addressed within the selected entry points or access skills. If entry points seem too complex at the grade level of the student, select entry points from earlier grade-level clusters in the same core idea. Use the information in the STE skills survey to assist with selection.

Follow Steps 5 and 6 above for each of the three core ideas or—

Step 1: Choose one (1) of the following legacy disciplines:

- Chemistry **OR** Technology/Engineering

Step 2: Conduct the MCAS-Alt Skills Survey in each strand (using a downloadable paper format or Forms and Graphs Online) to determine the level of complexity at which to select entry points for the student.

Step 3: Use the legacy STE Resource Guide to select three (3) standards in the selected discipline.

Step 4: For each standard, submit the following:

- **One data chart** measuring the student's achievement of the measurable outcome on at least eight different dates; plus
- **At least two additional pieces of primary evidence**, plus work description forms, showing the student's achievement of the measurable outcome identified on the data chart

4.3 MCAS-Alt Test Administration

4.3.1 Preparing the MCAS-Alt for Submission

The student's MCAS-Alt must include all elements listed below. Required forms can either be photocopied from those found in the *2021 Educator's Manual for MCAS-Alt* or completed electronically using an online MCAS-Alt Forms and Graphs program available at www.doe.mass.edu/mcas/alt/resources.html.

- **Artistic cover** designed and produced by the student and inserted in the front window of the three-ring binder
- **MCAS-Alt cover sheet** containing important information about the student
- **Student's introduction** to his/her MCAS-Alt produced as independently as possible by the student using his or her primary mode of communication (e.g., written, dictated, or recorded on video or audio) describing "What I want others to know about me as a learner"
- **Verification form** signed by a parent, guardian, or primary care provider signifying that he or she has reviewed the student's completed MCAS-Alt materials or, at minimum, was invited to do so (In the event no signature was obtained, the school must include a record of attempts to invite a parent, guardian, or primary care provider to view the student's completed MCAS-Alt materials.)
- **Weekly schedule** documenting the student's program of instruction, including participation in the general academic curriculum
- **School calendar** indicating dates in the current academic year on which the school was in session; The calendar is used to verify the dates specified on the data chart and in other evidence.
- **MCAS-Alt Skills Survey** completed for each strand/domain/discipline required for assessment
- **Strand cover sheet** describing the accompanying set of evidence for a particular strand
- **Work sample description** attached to each piece of primary evidence providing required labeling information (If work sample description labels are not used, this information must be written directly on each piece.)
- **Writing scoring rubric** for ELA–Writing only completed by the teacher for each of three final writing samples
- **STE Summary Sheet** completed by the teacher (as detailed in section 4.2.2.2)

The contents listed above, plus all primary evidence and supporting documentation, constitute the student's MCAS-Alt.

4.3.2 Participation Requirements

4.3.2.1 Identification of Students

All students educated with Massachusetts public funds, including students with disabilities educated inside or outside their home districts, must be engaged in an instructional program guided by the standards in the Massachusetts curriculum frameworks and must participate in statewide assessments that correspond with the grades in which they are reported in DESE's Student Information Management System (SIMS). Students with the most significant cognitive disabilities who are unable to take the standard MCAS tests, even with accommodations, must take the MCAS-Alt, as determined by the student's IEP team or as designated in his or her 504 plan.

4.3.2.2 Participation Guidelines

A student's IEP team (or 504 plan coordinator, in consultation with other staff) determines how the student will participate in MCAS and other state- and district-wide assessments for each content area scheduled for assessment, either by taking the test routinely or with accommodations, or by taking the alternate assessment if the student is unable to take the standard test, even when accommodations are provided, because of the complexity or severity of his or her cognitive disabilities. The participation guidelines and the characteristics to consider for students taking the MCAS-Alt are described below and in the participation section of the *Educator's Manual for MCAS-Alt* (available at www.doe.mass.edu/mcas/alt/resources.html). Information on how a student with a disability will participate in state- and district-wide testing must be documented in the student's IEP or 504 plan and revisited on an annual basis. A student may take the general assessment, with or without accommodations, in one subject and the alternate assessment in another subject.

A decision-making flow chart, entitled the MCAS Decision-Making Tool for MCAS Participation (see Appendix T), was developed in 2003 and updated in 2020 and is intended for use by IEP teams to make annual decisions regarding appropriate student participation in MCAS in each content area. Recent revisions to the tool included the addition of specific criteria determining which students may be considered for accommodations when taking the standard MCAS and which are eligible to participate in the MCAS-Alt. The criteria are located online (www.doe.mass.edu/mcas/alt/essa/DesignatingStudents.html) and in Appendix U. IEP teams are strongly encouraged to use the tool to guide the team's discussion and decision-making regarding statewide assessments.

The student's team must consider the following questions each year for each content area scheduled for assessment:

- Can the student demonstrate knowledge and skills, either fully or partially, on the **standard MCAS test under routine conditions?**
- Can the student demonstrate knowledge and skills, either fully or partially, on the **standard MCAS test with accommodations**? If so, which accommodations are necessary for the student to participate?
- If no to the above questions and the student has a significant cognitive disability, see the options below to determine whether the student qualifies to take the **alternate assessment** (MCAS-Alt). (**Note:** Alternate assessments are intended only for students with the most significant cognitive disabilities who are unable to take standard MCAS tests, even with accommodations. Students should not be identified for alternate assessments based solely on a particular disability, a placement in a specific classroom or program, previous low achievement on the tests, or EL status.)

The student's team must review the options provided in Figure 4-4. Additional guidance on MCAS-Alt participation is provided in the Commissioner's memo and attachments available at www.doe.mass.edu/mcas/alt/essa/.

Figure 4-4. Participation Guidelines

OPTION 1

Characteristics of Student's Instructional Program and Local Assessment	Recommended Participation in MCAS
If the student is a) generally able to demonstrate knowledge and skills on a computer- or paper-based test, either with or without test accommodations, ***and*** is b) working on learning standards **at, near, or somewhat below grade-level expectations,**	*Then* the student should take the computer- or paper-based **MCAS test**, either with or without accommodations.

OPTION 2

Characteristics of Student's Instructional Program and Local Assessment	Recommended Participation in MCAS
If the student has a significant cognitive disability and is a) **generally unable** to demonstrate knowledge and skills on a paper-and-pencil test, even with accommodations; ***and*** is b) working on learning standards that have been **substantially modified** due to the nature and severity of his or her disability; ***or*** is c) receiving **intensive, individualized instruction** in order to acquire, generalize, and demonstrate knowledge and skills,	*Then* the student should take the **MCAS Alternate Assessment** (MCAS-Alt) in this subject.

4.3.2.3 2021 MCAS-Alt Participation Rates

Across all content areas, a total of 6,186 students, or 1.3 percent of students who took standard MCAS assessments, participated in the 2021 MCAS-Alt in one or more subjects in grades 3–10. In ELA, 5,963 students took the MCAS-Alt (1.3 percent); in mathematics, 5,987 students took the MCAS-Alt (1.3 percent); and in STE, 1,654 students took the MCAS-Alt (1.0 percent).

Additional information about MCAS-Alt participation rates is provided in the 2021 MCAS-Alt State Summary, including the comparative rate of participation in each MCAS assessment format (i.e., routinely tested, tested with accommodations, or alternately assessed), available at: www.doe.mass.edu/mcas/alt/results.html.

4.3.3 Educator Training

During October 2020, a total of 1,909 educators and administrators received training on conducting the 2021 MCAS-Alt. Attendees had the option to participate in one of three sessions: an introduction to MCAS-Alt for educators new to the alternate assessment, an update for those with previous MCAS-Alt experience, or an overview for school and district administrators.

Topics for the introduction session included the following:

- decision-making regarding which students should take the MCAS-Alt,
- alternate assessment requirements in each grade and content area,
- developing measurable outcomes using the Resource Guide to the Massachusetts Curriculum Frameworks for Students with Disabilities and collecting data on student performance and progress based on measurable outcomes.

Topics for the update session included the following:

- a summary of the previous year, including cancellation of 2020 MCAS-Alt assessment,
- changes to the MCAS-Alt requirements for 2021,
- MCAS-Alt Skills Survey,
- requirements for next-generation STE,
- interpreting MCAS-Alt Scores, and
- improving the process of selecting challenging entry points for assessment.

Topics for the administrators overview session included the following:

- a summary of the previous year, including cancellation of all 2020 MCAS assessments,
- purposes of the MCAS-Alt,
- who should take the MCAS-Alt,
- how the MCAS-Alt assesses standards-based knowledge and skills,
- supporting teachers who conduct the MCAS-Alt, principal's role in MCAS-Alt, and
- the federally mandated cap on the percentage of students who may be assessed through an alternate assessment based on alternate academic achievement standards.

In January–April 2021, a total of 1,290 educators attended virtual training and review sessions during which they were able to discuss their students' alternate assessments that were under development and have their questions answered by MCAS-Alt training specialists (i.e., expert teachers).

4.3.4 Support for Educators

A total of 46 MCAS-Alt training specialists were trained by DESE in the 2020–2021 school year to provide assistance to and support for teachers conducting the MCAS-Alt in their districts, as well as to assist DESE at Department-sponsored assessment training and review sessions in January–April 2021. In addition, DESE staff provided ongoing technical assistance throughout the year via email and telephone to educators with specific questions about their students' alternate assessments.

The MCAS Service Center provided toll-free telephone support to district and school staff regarding test administration, reporting, training, materials, and other relevant operations and logistics. The Cognia project management team provided extensive training to the MCAS Service Center staff on the logistical, programmatic, and content-specific aspects of the MCAS-Alt, including web-based applications used by the districts and schools to order materials and schedule shipment pickups. Informative scripts were used by the Service Center coordinator to train Service Center staff in relevant areas such as web support, enrollment inquiries, and discrepancy follow-up and resolution procedures.

4.4 MCAS-Alt Scoring

The MCAS-Alt reflects the degree to which a student has learned and applied the knowledge and skills outlined in the Massachusetts curriculum frameworks. The MCAS-Alt measures progress over time, as well as the highest level of achievement attained by the student on the assessed skills, considering the degree to which cues, prompts, and other assistance were required by the student in learning each skill.

Scorers were rigorously trained and qualified based on the criteria outlined in the *Guidelines for Scoring 2021 MCAS-Alt,* available in Appendix R. The *MCAS-Alt Rubric for Scoring Each Strand* has been used as the basis for scoring the MCAS-Alt since 2001 when it was first developed with assistance from teachers and a statewide advisory committee.

4.4.1 Scoring Logistics

MCAS-Alt assessments were scored in Dover, New Hampshire, through June and early July (postponed from mid-April, the beginning of scoring in a typical year, due to the extended deadline for submission in

spring 2021). DESE and Cognia trained and closely monitored scorers to ensure that scores were accurate.

Each student's MCAS-Alt was reviewed and scored by trained scorers according to the procedures described in section 4.4. Scores were entered into a computer-based scoring system designed by Cognia and DESE, and scores were frequently monitored for accuracy and completeness.

Security was maintained at the scoring site by restricting access to unscored assessments to DESE and Cognia staff, and by locking assessments in a secure location before and after each scoring day.

MCAS-Alt scoring leadership staff included several floor managers (FMs) who monitored the scoring room. Each FM managed a group of tables at the elementary, middle, or secondary level. A Table Leader (TL) was responsible for managing a single table with four to five scorers. Communication and coordination among scorers were maintained through daily meetings between FMs, TLs, and scoring leadership to ensure that critical information and uniform scoring rules were implemented across all grade clusters.

4.4.2 Recruitment, Training, and Qualification of Scoring Personnel

4.4.2.1 Scorer Training Materials

The MCAS-Alt Project Leadership Team (PLT), including DESE and Cognia staff plus four contracted teacher consultants, met daily over the course of scoring in 2021 and periodically throughout the 2020–2021 school year to accomplish the following:

- nominate prospective MCAS-Alt training specialists to serve as scoring specialists for the 2021 scoring institute;
- select sample strands to use to train, calibrate, and qualify scorers in 2021; and
- discuss which recurring issues and concerns to address during the following fall educator training sessions.

All sample strands were scored using the 2021 Guidelines for Scoring 2021 MCAS-Alt, noting any scoring concerns or discrepancies that arose during the review. Concerns were resolved by referring to guidelines and requirements in the *2021 Educator's Manual for MCAS-Alt* and by following additional scoring rules agreed upon by the PLT and subsequently addressed in the final Guidelines for Scoring 2021 MCAS-Alt.

Of the alternate assessments reviewed the previous year, several sample strands were set aside as possible exemplars to train, qualify, and calibrate scorers for the current year. These strands consisted of solid examples of each score point on the scoring rubric.

Each of these samples was scored by all four MCAS-Alt Teacher Consultants. Of the scores, only scores in exact agreement in all five scoring dimensions—Level of Complexity, Demonstration of Skills and Concepts, Independence, Self-Evaluation, and Generalized Performance—were considered as possible exemplars.

4.4.2.2 Recruitment

Through Kelly Services and other agencies, Cognia recruited prospective scorers and TLs for the MCAS-Alt Scoring Center. All TLs and many scorers had previously worked on scoring projects for other states' test or alternate assessment administrations, and all had four-year college degrees.

Additionally, the PLT recruited MCAS-Alt training specialists, many of whom had previously served as scoring specialists, to assist DESE and Cognia. Eight MCAS-Alt training specialists were selected to participate in scoring and were designated as scoring specialists to assist in verifying that scores of "M"

(indicating that evidence was missing or insufficient to determine a score) were accurate, and in the training/retraining of TLs.

4.4.2.3 Training

Scorers

Scorers were rigorously trained in all rubric dimensions. Scorers reviewed scoring rules and participated in the "mock scoring" of numerous sample portfolio strands selected to illustrate examples of each rubric score point. Scorers were given detailed instructions on how to review data charts and other primary evidence to tally the rubric area scores using a strand organizer. Trainers facilitated discussions and review among scorers to clarify the rationale for each score point and describe special scoring scenarios and exceptions to the general scoring rules.

Table Leaders and Floor Managers

In addition to the training received by scorers, TLs and FMs received training in logistical, managerial, and security procedures, as well as maintaining the accuracy, reliability, and consistency of scorers at tables under their supervision.

4.4.2.4 Qualification of Scorers

Before scoring actual student assessments, each potential scorer was required to take a qualifying assessment consisting of eight sample strands that contained a total of 172 score points. The threshold percentage for qualification on the 172 available score points was 85% (147 correct out of 172).

Scorers who did not achieve the required percentages were retrained using another qualifying assessment. Those who achieved the required percentages were authorized to begin scoring student assessments. If a scorer did not meet the required accuracy rate on the second qualifying assessment, he or she was released from scoring.

Table Leaders and Floor Managers

TLs and FMs were qualified by DESE using the same methods and criteria used to qualify scorers, except that they were required to achieve a score of 90% correct or higher on the qualifying test.

4.4.3 Scoring Methodology

Originally, a statewide task force comprised of DESE staff (from Special Education and Student Assessment offices), members of the contractor team (then Measured Progress and the University of Kentucky), and the Massachusetts Alternate Assessment Statewide Advisory Committee (a diverse stakeholder group) provided recommendations to DESE on how alternate assessments should be scored, including the criteria on which to base the scores. Some advised DESE to develop scoring criteria based only on student performance, since that is what the standard MCAS assessments measured, rather than assessing how well the student's program provided opportunities to learn and demonstrate knowledge and skills. Others felt that student achievement could not be separated from program effectiveness. In the end, a scoring rubric was developed in which three of five categories are based on student performance; two reflect the effectiveness of the student's program; and one on whether the evidence submitted was sufficient in scope and quantity to allow a score to be determined.

- Completeness: whether the submitted evidence was sufficient to allow a score to be determined

- Level of Complexity: the relative difficulty of academic tasks and knowledge attempted by the student (counts toward the final overall score)
- Demonstration of Skills and Concepts: the accuracy of the student's performance (counts toward the final overall score)
- Independence: cues, prompts, and other assistance provided to the student during tasks and activities being assessed (counts toward the final overall score)
- Self-Evaluation: the extent to which opportunities were provided for the student to evaluate, reflect upon, self-correct, set goals, and select examples of the student's own performance (context of the instruction; not counted toward the final overall score)
- Generalized Performance: the number of contexts and instructional approaches provided to and used by the student to perform tasks and demonstrate knowledge and skills (program quality; not counted toward the final overall score)

4.4.3.1 Scoring English Language Arts (except ELA–Writing), Mathematics, and Legacy Science and Technology/Engineering

Guided by a TL, scorers at each table reviewed and scored assessments from the same grade. Scorers were permitted to ask TLs questions as they reviewed assessments. In the event a TL could not answer a question, the FM provided assistance. In the event the FM was unable to answer a question, DESE staff members were available to provide clarification.

Scorers were randomly assigned an assessment to score by their TL. Scorers were required to ensure that the required strands for each grade were submitted and then to determine if each submitted strand was complete. A strand was considered complete if it included a data chart with at least eight different dates related to the same measurable outcome, and two additional pieces of evidence based on the same outcome.

Once the completeness of the assessment was verified, including the submission of a completed MCAS-Alt Skills Survey, each strand was scored in the following dimensions.

A. Level of Complexity (LOC)

B. Completeness

C. Demonstration of Skills and Concepts (DSC)

D. Independence (Ind)

E. Self-Evaluation (S-E)

F. Generalized Performance (GP)

The 2021 MCAS-Alt score distributions for all scoring dimensions are provided in Appendix J.

Scorers used an automated, customized scoring program called *AltScore* to score MCAS-Alt assessments. Scorers were guided through the scoring process by answering a series of yes/no and fill-in-the-blank questions onscreen which were used by the program to calculate the correct score and provide scorer comments to the school submitting the assessment. Use of the computer-based scoring application allowed scorers to 1) focus exclusively and sequentially on each assessment product and record the necessary information, rather than keeping track of products they had previously reviewed, and 2) automatically calculate the scores.

A. Level of Complexity

The score for Level of Complexity reflects at what level of difficulty (i.e., complexity) the student addressed curriculum framework learning standards and whether the measurable outcomes were aligned with assessment requirements and with descriptions of the activities documented in the assessment

products. Using the *Resource Guide,* scorers determined whether the student's measurable outcomes were aligned with the intended learning standard, and if so, whether the evidence was addressed at grade-level performance expectations, was modified below grade-level expectations ("entry points") or was addressed through skills in the context of an academic instructional activity ("access skills").

Each strand was given a Level of Complexity score based on the scoring rubric for Level of Complexity (Table 4-2) that incorporated the criteria listed above.

Table 4-2. Scoring Rubric for Level of Complexity

Score Point				
1	**2**	**3**	**4**	**5**
The strand reflects little or no basis in, or is unmatched to, curriculum framework learning standard(s) required for assessment.	Student primarily addresses social, motor, and communication "access skills" during instruction based on curriculum framework learning standards in this strand.	Student addresses curriculum framework learning standards that have been modified below grade-level expectations in this strand.	Student addresses a narrow sample of curriculum framework learning standards (one or two) at grade-level expectations in this strand.	Student addresses a broad range of curriculum framework learning standards (three or more) at grade-level expectations in this strand.

B. Completeness

Scorers confirmed that a "core set of evidence" was submitted and that all evidence was correctly labeled with the following information:

- the student's name,
- the date of performance,
- a brief description of the activity,
- the percentage of accuracy, and
- the percentage of independence.

If evidence was not labeled correctly, or if pieces of evidence did not address the measurable outcome stated on the Strand Cover Sheet or work description, that evidence was not scorable.

Brief descriptions of each activity on the data chart were also considered in determining the completeness of a data chart. Educators had been instructed during educator training workshops and in the *2021 Educator's Manual for MCAS-Alt* that "each data chart must include a brief description beneath each data point that clearly illustrates how the task or activity relates to the measurable outcome being assessed." One- or two-word descriptions were not likely to be considered sufficient to document the relationship between the activity and the measurable outcome and therefore would result in the exclusion of those data points from being scored.

A score of M (i.e., evidence was missing or was insufficient to determine a score) was given in both Demonstration of Skills and Concepts and Independence if

- a completed data chart documenting the student's performance of the same skill on at least eight dates was not submitted; and/or
- at least two pieces of scorable primary evidence were not submitted.

A score of M was also given if any of the following was true:

- A completed MCAS-Alt Skills Survey was not submitted for the strand.
- The data chart listed the percentages of *both* accuracy and independence at or above 80 percent at the beginning of the data collection period, indicating that the student was not

learning a challenging new skill in the strand and was instead addressing a skill he or she had already learned.
- The data chart did not document the measurable outcome on at least 8 different dates; the measurable outcome was not based on a required learning standard or strand; and/or the evidence did not indicate the student's accuracy and independence on each task or trial.
- Two additional pieces of primary evidence did not address the same measurable outcome as the data chart or were not labeled with all required information.

C. Demonstration of Skills and Concepts

Each strand is given a score for Demonstration of Skills and Concepts based on the degree to which a student gave correct (accurate) responses in demonstrating the targeted skill.

If a "core set of evidence" was submitted in a strand, it was scored for Demonstration of Skills and Concepts by first identifying the "final-1/3 time frame" during which data were collected on the data chart (or the final three data points on the chart, if fewer than 12 points were listed). Then, an average percentage was calculated based on the percentage of accuracy for:

- all data points in the final-1/3 time frame listed on the data chart, and
- all other primary evidence in the strand produced during or after the final-1/3 time frame (provided the piece was not already included and counted on the chart).

Based on the average percentage of accuracy in the data points and evidence in the final-1/3 time frame, the overall score in the strand was determined using the rubric shown in Table 4-3.

Table 4-3. Scoring Rubric for Demonstration of Skills and Concepts

Score Point				
M	**1**	**2**	**3**	**4**
The strand contains insufficient information to determine a score.	Student's performance is primarily inaccurate and demonstrates minimal understanding in this strand. (0%–25% accurate).	Student's performance is limited and inconsistent with regard to accuracy and demonstrates limited understanding in this strand. (26%–50% accurate).	Student's performance is mostly accurate and demonstrates some understanding in this strand. (51%–75% accurate).	Student's performance is accurate and is of consistently high quality in this strand. (76%–100% accurate).

D. Independence

The score for Independence reflects the degree to which the student responded without cues or prompts during tasks or activities based on the measurable outcome being assessed. For strands that included a core set of evidence, Independence was scored by identifying the final-1/3 time frame listed on the data chart (or the final three data points, if fewer than 12 points were listed). Then, an average percentage was calculated based on the percentage of independence for

- all data points during the final-1/3 time frame listed on the data chart, and
- all other primary evidence in the strand produced during or after the final-1/3 time frame (provided the piece was not already included on the chart).

Based on the average percentage of independence of the data points and evidence in the final-1/3 time frame, the overall score in the strand was determined using the rubric shown in Table 4-4.

A score of M was given both in Demonstration of Skills and Concepts and in Independence if any of the following was true:

- At least two pieces of scorable primary evidence and a completed data chart documenting the student's performance of the same skill were not submitted.
- The data chart listed the percentages of both accuracy and independence at or above 80% at the beginning of the data collection period, indicating that the student did not learn a challenging new skill in the strand and was addressing a skill he or she had already learned.
- The data chart did not document a single measurable outcome based on the required learning standard or strand on at least eight different dates, and/or did not indicate the student's accuracy and independence on each task or activity.
- Two additional pieces of primary evidence did not address the same measurable outcome as the data chart or were not labeled with all required information.

Table 4-4. Scoring Rubric for Independence

Score Point				
M	**1**	**2**	**3**	**4**
The strand contains insufficient information to determine a score.	Student requires extensive verbal, visual, and/or physical assistance to demonstrate skills and concepts in this strand. (0%–25% independent)	Student requires frequent verbal, visual, and/or physical assistance to demonstrate skills and concepts in this strand. (26%–50% independent)	Student requires some verbal, visual, and/or physical assistance to demonstrate skills and concepts in this strand. (51%–75% independent)	Student requires minimal verbal, visual, and/or physical assistance to demonstrate skills and concepts in this strand. (76%–100% independent)

E. Self-Evaluation

The score for Self-Evaluation indicates the frequency of activities in the strand that involve self-correction, task-monitoring, goal-setting, reflection, and overall awareness by the student of his or her own learning. Each strand was given a score of M, 1, or 2 based on the scoring rubric shown in Table 4-5.

Table 4-5. Scoring Rubric for Self-Evaluation, Individual Strand Score

Score Point		
M	**1**	**2**
Evidence of self-correction, task-monitoring, goal-setting, and reflection was **not found** in this strand.	Student infrequently self-corrects, monitors, sets goals, and reflects in this content area—only **one example of self-evaluation** was found in this strand.	Student frequently self-corrects, monitors, sets goals, and reflects in this content area—**multiple examples** of self-evaluation were found in this strand.

F. Generalized Performance

The score for Generalized Performance reflects the number of contexts and instructional approaches used by the student to demonstrate knowledge and skills in the strand. Each strand was given a score of either 1 or 2 based on the rubric shown in Table 4-6.

Table 4-6. Scoring Rubric for Generalized Performance

Score Point	
1	**2**
Student demonstrates knowledge and skills in **one** context or uses **one** approach and/or method of response and participation **in this strand**.	Student demonstrates knowledge and skills in **multiple** contexts or uses **multiple** approaches and/or methods of response and participation **in this strand**.

4.4.3.2 ELA–Writing

Prior to submission, teachers were asked to pre-score each of their student's three final writing samples using the state-provided Writing Scoring Rubric in Appendix S, according to the appropriate text type:

- Opinions/Arguments
- Informative/Explanatory texts
- Narrative (including Poetry)

MCAS-Alt scorers verified the completion of the MCAS-Alt Skill Survey for the strand and that the scores submitted by the teacher was based on the writing sample generated by the student, and not based on any text generated by the teacher. The rubric scores were lowered by scorers in cases where writing rubric scores did not accurately reflect the student's own work.

Writing samples were to be produced as independently as possible by the student. If teachers provided text for the student or applied their own revisions to the student's work, that must have been reflected in the rubric scores, particularly in the area of Independence. Teachers were expected to explain how edits and revisions were made and indicate the student's contribution to the creation of the sample.

Writing samples were required to be produced using the student's primary mode of communication; for example, dictated to a scribe, with the scribe assuming the use of capital letters and basic punctuation. Teachers were permitted to submit a student's constructed response to reading comprehension questions or other topics as the basis for their writing samples, even if those responses were already included in the evidence compiled for another strand.

4.4.3.3 Next-Generation Science and Technology/Engineering

The requirements for STE in grades 5 and 8 included teachers selecting any three (3) of the following STE disciplines.

- Earth and Space Science
- Life Science
- Physical Science
- Technology/Engineering

Teachers were required to create one STE strand within each of the three selected disciplines, each based on a different learning standard and core idea.

High school next-generation STE included a selection of either Biology or Introductory Physics. Teachers were required to create three strands within the one selected discipline, each based on a different learning standard and core idea.

For each strand submitted, the scorer confirmed the following using the *AltScore* program:

1. One MCAS-Alt Next-Generation STE Skills Survey was submitted for the entire content area.
2. The student's name, valid date, % of accuracy, and % independence were listed on at least six STE Summary Sheets.
3. The activities on the six STE Summary Sheets reflected the same core idea.
4. At least three STE Summary Sheets had primary evidence attached.
5. Three pieces of primary evidence reflected three different science practices.

After verifying the above, the scorer used the *AltScore* program to rate complexity, accuracy, independence, and self-evaluation for the six STE Summary Sheets.

4.4.3.4 Monitoring Scoring Quality

The FM oversees the general workflow in the scoring room and monitors overall scoring consistency and accuracy, particularly among TLs. The TLs ensure that scorers at their table are consistent and accurate in their scoring. Scoring consistency and accuracy are maintained using two methods: double-blind scoring and resolution (i.e., read-behind) scoring.

4.4.3.5 Double-Blind Scoring

In double-blind scoring, two scorers independently score a response, without knowing either the identity of the other scorer or the score that was assigned. Neither scorer knows how responses will be (or have already been) scored by another randomly selected scorer. For each scored assessment, at least one was double-scored for each scorer each morning and afternoon or, at minimum, every fifth assessment each day (i.e., 20% of the total scored by a scorer).

Scorers were required to maintain a scoring accuracy rate of at least 80% exact agreement with the TL's score. The TL retrained any scorer whose interrater consistency fell below 80% agreement. The TL reviewed discrepant scores (those that differed by two or more points from the TL's score) with the responsible scorers and determined when or if they might resume scoring.

Table 4-10 in section 4.7.4 shows the percentages of interrater agreement for the 2021 MCAS-Alt.

4.4.3.6 Resolution Scoring

Resolution scoring refers to the rescoring of an assessment by a TL and a comparison of the TL's score with the score assigned by the previous scorer. If there was exact score agreement, the first score was retained as the score of record. If the scores differed, the TL's score became the score of record.

Resolution scoring was conducted on all assessments during the first full day of scoring. After that, a rescoring was performed at least once each morning, once each afternoon, and on every fifth subsequent assessment per scorer.

The required rate of agreement between a scorer and the TL's score was 80% exact agreement. A double score was performed on each subsequent assessment for any scorer whose previous scores fell below 80% exact agreement and who resumed scoring after being retrained, until 80% exact agreement with the TL's scores was established.

4.4.3.7 Tracking Scorer Performance

A real-time, cumulative data record was maintained digitally for each scorer. Each scorer's data record showed the number of strands and complete assessments scored, plus his or her interrater consistency in each rubric dimension.

In addition to maintaining a record of scorers' accuracy and consistency over time, leadership also monitored scorers for output, with slower scorers remediated to increase their production. The overall ratings were used to enhance the efficiency, accuracy, and productivity of scorers.

4.5 MCAS-Alt Classical Item Analyses

As noted in Brown (1983), "A test is only as good as the items it contains." A complete evaluation of a test's quality must therefore include an evaluation of each item. Both *Standards for Educational and Psychological Testing* (AERA et al., 2014) and the *Code of Fair Testing Practices in Education* (Joint Committee on Testing Practices, 2004) include standards for identifying high-quality items. While the specific statistical criteria identified in these publications were developed primarily for general

assessments rather than alternate assessments, the principles and some of the techniques apply to the alternate assessment framework as well. Both qualitative and quantitative analyses are conducted to ensure that the MCAS-Alt meets these standards. Qualitative analyses are described in earlier sections of this chapter; this section focuses on quantitative evaluations.

Quantitative analyses presented here are based on the statewide administration of the 2021 MCAS-Alt and include three of five dimension scores on each task (Level of Complexity, Demonstration of Skills and Concepts, and Independence). Although the other two-dimension scores (Self-Evaluation and Generalized Performance) are reported, they do not contribute to a student's overall achievement level; therefore, they are not included in quantitative analyses.

For each MCAS-Alt subject and strand, dimensions are scored polytomously across tasks according to scoring rubrics described previously in this chapter. Specifically, a student can achieve a score of 1, 2, 3, 4, or 5 on the Level of Complexity dimension and a score of M, 1, 2, 3, or 4 for both the Demonstration of Skills and Concepts and the Independence dimensions. Dimensions within subjects and strands are treated as traditional test items, since they capture or represent student performance against the content of interest; therefore, dimension scores for each strand are treated as item scores for the purpose of conducting quantitative analyses.

Statistical evaluations of MCAS-Alt include difficulty and discrimination indices, structural relationships (correlations among the dimensions), and bias and fairness. Item-level classical statistics—item difficulty and discrimination values—are provided in Appendix I. Item-level score distributions for each item (i.e., the percentage of students who received each score point) are provided in Appendix J. Note that the Self-Evaluation and Generalized Performance dimension scores are also included in Appendix J.

4.5.1 Difficulty

Based on the definition of dimensions and dimension scores as similar to traditional test items and scores, all items are evaluated in terms of difficulty according to standard classical test theory practices. Difficulty is traditionally described according to an item's *p*-value, which is calculated as the average proportion of points achieved on the item. Dimension scores achieved by each student are divided by the maximum possible score to return the proportion of points achieved on each item; *p*-values are then calculated as the average of these proportions. Computing the difficulty index in this manner places items on a scale that ranges from 0.0 to 1.0. This statistic is properly interpreted as an "easiness index," because larger values indicate easier items. An index of 0.0 indicates that all students received no credit for the item, and an index of 1.0 indicates that all students received full credit for the item.

Items that have either a very high or very low difficulty index are considered potentially problematic, because they are either so difficult that few students get them right or so easy that nearly all students get them right. In either case, such items should be reviewed for appropriateness for inclusion on the assessment. If an assessment consisted entirely of very easy or very hard items, all students would receive nearly the same scores, and the assessment would not be able to differentiate high-ability students from low-ability students.

It is worth mentioning that using norm-referenced criteria such as *p*-values to evaluate test items is somewhat contradictory to the purpose of a criterion-referenced assessment like the MCAS-Alt. Criterion-referenced assessments are primarily intended to provide evidence of individual student progress relative to a standard rather than provide a comparison of one student's score with other students. In addition, the MCAS-Alt makes use of teacher-designed instructional activities, which serve as a proxy for test items to measure performance. For these reasons, the generally accepted criteria regarding classical item statistics should be cautiously applied to the MCAS-Alt.

A summary of item difficulty for each grade and content area is presented in Table 4-7. The mean difficulty values shown in the table indicate that, overall, students performed well on the items on the MCAS-Alt. In assessments designed for the general population, difficulty values tend to be in the 0.40 to 0.70 range for most items. Because the nature of alternate assessments is different from that of general assessments, and because few guidelines exist as to criteria for interpreting these values for alternate assessments, the values presented in Table 4-7 should not be interpreted to mean that the students performed better on the MCAS-Alt than the students who took general assessments performed on those tests.

4.5.2 Discrimination

Discrimination indices can be thought of as measures of how closely an item assesses the same knowledge and skills assessed by other items contributing to the criterion total score. That is, the discrimination index can be thought of as a measure of construct consistency. The correlation between student performance on a single item and total test score is a commonly used measure of this characteristic of an item. Within classical test theory, this item-test correlation is referred to as the item's discrimination because it indicates the extent to which successful performance on an item discriminates between high and low scores on the test. It is desirable for an item to be one on which higher-ability students perform better than lower-ability students or one that demonstrates strong, positive item-test correlation.

Considering this interpretation, the selection of an appropriate criterion total score is crucial to the interpretation of the discrimination index. For the MCAS-Alt, the sum of the three-dimension scores, excluding the item being evaluated, was used as the criterion score. For example, in grade 3 ELA, total test score corresponds to the sum of scores received on the three dimensions included in quantitative analyses (i.e., Level of Complexity, Demonstration of Skills and Concepts, and Independence) across both Language and Reading strands.

The discrimination index used to evaluate MCAS-Alt items was the Pearson product-moment correlation, which has a theoretical range of -1.00 to 1.00. A summary of the item discrimination statistics for each grade and content area is presented in Table 4-7. Because the nature of the MCAS-Alt is different from that of a general assessment, and because very few guidelines exist as to criteria for interpreting these values for alternate assessments, the statistics presented in Table 4-7 should be interpreted with caution.

Table 4-7. Summary of Item Difficulty and Discrimination Statistics by Content Area and Grade

Content Area	Grade	Number of Items	*p*-Value		Discrimination	
			Mean	Standard Deviation	Mean	Standard Deviation
ELA	3	9	0.77	0.21	0.37	0.08
	4	9	0.77	0.20	0.40	0.06
	5	9	0.78	0.20	0.36	0.11
	6	9	0.78	0.19	0.35	0.07
	7	9	0.77	0.19	0.39	0.07
	8	9	0.79	0.19	0.34	0.09
	10	9	0.78	0.19	0.34	0.12
Mathematics	3	6	0.84	0.19	0.56	0.12
	4	6	0.83	0.19	0.63	0.10
	5	6	0.84	0.19	0.58	0.12
	6	6	0.83	0.19	0.60	0.12
	7	6	0.83	0.19	0.63	0.05
	8	6	0.84	0.19	0.60	0.09
	10	15	0.84	0.18	0.37	0.09

continued

Content Area	Grade	Number of Items	*p*-Value		Discrimination	
			Mean	Standard Deviation	Mean	Standard Deviation
STE	5	12	0.80	0.18	0.40	0.15
	8	12	0.80	0.17	0.43	0.15
Biology	HS	9	0.78	0.17	0.36	0.33
Chemistry	HS	9	0.84	0.18	0.51	0.27
Introductory Physics	HS	9	--	--	--	--
Technology/Engineering	HS	9	0.79	0.16	0.43	0.21

4.5.3 Structural Relationships Among Dimensions

By design, the achievement-level classification of the MCAS-Alt is based on three of the five scoring dimensions (Level of Complexity, Demonstration of Skills and Concepts, and Independence). As with any assessment, it is important that these dimensions be carefully examined. This was achieved by exploring the relationships among student dimension scores with Pearson correlation coefficients. A very low correlation (near zero) would indicate that the dimensions are not related; a low negative correlation (approaching -1.00) indicates that they are inversely related (i.e., that a student with a high score on one dimension had a low score on the other); and a high positive correlation (approaching 1.00) indicates that the information provided by one dimension is similar to that provided by the other dimension. The average correlations among the three dimensions by content area and grade level are shown in Table 4-8.

Table 4-8. Average Correlations Among the Three Dimensions by Content Area and Grade

Content Area	Grade	Number of Items Per Dimension	Average Correlation Between*:			Correlation Standard Deviation*		
			Comp/ Ind	Comp/ Sk	Ind/ Sk	Comp/ Ind	Comp/ Sk	Ind/ Sk
ELA	3	3	0.11	0.16	0.22	0.03	0.15	0.04
	4	3	0.21	0.26	0.18	0.08	0.13	0.04
	5	3	0.13	0.19	0.14	0.04	0.15	0.07
	6	3	0.16	0.23	0.11	0.07	0.10	0.02
	7	3	0.21	0.28	0.15	0.01	0.09	0.09
	8	3	0.12	0.23	0.12	0.02	0.09	0.05
	10	3	0.20	0.15	0.16	0.03	0.17	0.13
Mathematics	3	2	0.12	0.10	0.17	0.04	0.08	0.07
	4	2	0.26	0.24	0.16	0.05	0	0.05
	5	2	0.19	0.07	0.11	0.03	0.01	0
	6	2	0.19	0.24	0.07	0.06	0.01	0.01
	7	2	0.22	0.29	0.15	0	0.01	0.01
	8	2	0.21	0.25	0.17	0.01	0.03	0.09
	10	5	0.26	0.13	0.13	0.07	0.08	0.05
STE	5	4	0.11	0.29	0.02	0.05	0.19	0.02
	8	4	0.09	0.13	-0.03	0.04	0.09	0.10
Biology	HS	3	0	-0.10	0.06	0.16	0.01	0.17
Chemistry	HS	3	--	--	-0.05	--	--	0.14
Introductory Physics	HS	3	--	--	--	--	--	--
Technology/ Engineering	HS	3	-0.12	0.25	0.04	0.07	0.40	0.15

** Comp = Level of Complexity; Sk = Demonstration of Skills and Concepts; Ind = Independence*

The average correlations between every two dimensions range from very weak (0.00 to 0.20) to weak (0.20 to 0.40), except for one—the correlation in Chemistry. It is important to remember in interpreting the information in Table 4-8 that the correlations are based on small numbers of item scores and small numbers of students and should therefore be interpreted with caution.

4.5.4 Differential Item Functioning

The *Code of Fair Testing Practices in Education* (Joint Committee on Testing Practices, 2004) explicitly states that subgroup differences in performance should be examined when sample sizes permit and that actions should be taken to ensure that differences in performance are because of construct-relevant, rather than irrelevant, factors. *Standards for Educational and Psychological Testing* (AERA et al., 2014) includes similar guidelines.

When appropriate, the standardization differential item functioning (DIF) procedure (Dorans & Kulick, 1986) is employed to evaluate subgroup differences. The standardization DIF procedure is designed to identify items for which subgroups of interest perform differently, beyond the impact of differences in overall achievement. However, because of the small number of students who take the MCAS-Alt, and because those students take different combinations of tasks, it was not possible to conduct DIF analyses. Conducting DIF analyses using groups of fewer than 200 students would result in inflated type I error rates.

4.5.5 Measuring Intended Cognitive Processes

Tables V-1 to V-6 in Summary of Alt Score Frequencies (Appendix V) describe the frequency of scores in each strand's rubric area by grade and content area. Note that not all grades and content areas will use all strands and scores in the table. Where not applicable, the table cell is marked as blank. Although scores tend toward the center of the rubric, this is an expected outcome for the population taking the alternate assessment. There is still the expected frequency of scores at the highest or lowest ends of the rubric when a substantial population has taken the test, indicating that the tests elicit evidence across the full expected range of rubric areas and measure the full range of intended cognitive processes.

4.6 MCAS-Alt Bias/Fairness

Fairness is validated through the assessment development processes, and in the development of the standards themselves, which were thoroughly vetted for bias and sensitivity. The *Resource Guide to the Massachusetts Curriculum Frameworks for Students with Disabilities* provides instructional and assessment strategies for teaching students with disabilities the same learning standards (by grade level) as general education students. The *Resource Guide* is intended to promote access to the general curriculum, as required by law, and to assist educators in planning instruction and assessment for students with the most significant cognitive disabilities. *Resource Guides* were developed by diverse panels of education experts in each content area, including DESE staff, testing contractor staff, higher education faculty, MCAS Assessment Development Committee members, curriculum framework writers, and regular and special educators. Each section was written, reviewed, and validated by these panels to ensure that each modified standard (entry point) embodied the essence of the grade-level learning standard on which it was based and that entry points at varying levels of complexity were aligned with grade-level content standards.

Specific guidelines direct educators to conduct the MCAS-Alt based on academic outcomes in the content area and strand being assessed, while maintaining the flexibility necessary to meet the needs of diverse learners. The requirements for constructing alternate assessments necessitate teaching challenging skills based on grade-level content standards to all students. Thus, all students taking the MCAS-Alt are taught academic skills based on the standards at an appropriate level of complexity.

Issues of fairness are also addressed in the scoring procedures. Rigorous scoring procedures hold scorers to high standards of accuracy and consistency, using monitoring methods that include frequent double-scoring, monitoring, and recalibrating to verify and validate assessment scores. These

procedures, along with DESE's review of each year's MCAS-Alt results, indicate that the MCAS-Alt is being successfully used for the purposes for which it was intended. Section 4.4 describes in greater detail the scoring rubrics used, selection and training of scorers, and scoring quality-control procedures. These processes ensure that bias due to differences in how individual scorers award scores is minimized.

4.7 MCAS-Alt Characterizing Errors Associated with Test Scores

As with the classical item statistics presented in section 4.5, three of the five dimension scores on each task (Level of Complexity, Demonstration of Skills and Concepts, and Independence) were used as the item scores for purposes of calculating reliability estimates. Note that, due to the way in which student scores are awarded—that is, using an overall achievement level rather than a total raw score—it was not possible to run decision accuracy and consistency (DAC) analyses.

4.7.1 MCAS-Alt Overall Reliability

In section 4.5, individual item characteristics of the 2021 MCAS-Alt were presented. Although individual item performance is an important focus for evaluation, a complete evaluation of an assessment must also address the way in which items function together and complement one another. Any assessment includes some amount of measurement error; that is, no measurement is perfect. This is true of all academic assessments—some students will receive scores that underestimate their true ability, and others will receive scores that overestimate their true ability. When tests have a high amount of measurement error, student scores are very unstable. Students with high ability may get low scores and vice versa. Consequently, one cannot reliably measure a student's true level of ability with such a test. Assessments that have less measurement error (i.e., errors are small on average, and therefore students' scores on such tests will consistently represent their ability) are described as reliable.

There are several methods of estimating an assessment's reliability. One approach is to split the test in half and then correlate students' scores on the two half-tests; this in effect treats each half-test as a complete test. This is known as a "split-half estimate of reliability." If the two half-test scores correlate highly, items on the two half-tests must be measuring very similar knowledge or skills. This is evidence that the items complement one another and function well as a group. This also suggests that measurement error will be minimal.

The split-half method requires psychometricians to select items that contribute to each half-test score. This decision may have an impact on the resulting correlation since each different possible split of the test into halves will result in a different correlation. Another problem with the split-half method of calculating reliability is that it underestimates reliability, because test length is cut in half. All else being equal, a shorter test is less reliable than a longer test. Cronbach (1951) provided a statistic, alpha (α), that eliminates the problem of the split-half method by comparing individual item variances to total test variance. Cronbach's α was used to assess the reliability of the 2021 MCAS-Alt. The formula is as follows:

$$\alpha = \frac{n}{n-1}\left[1 - \frac{\sum_{i=1}^{n}\sigma^2_{(Y_i)}}{\sigma^2_x}\right],$$

where
i indexes the item,
n is the number of items,
$\sigma^2_{(Y_i)}$ represents individual item variance, and

σ_x^2 represents the total test variance.

Table 4-9 presents Cronbach's α coefficient and raw score standard errors of measurement (SEMs) for each content area and grade.

Table 4-9. Cronbach's Alpha and SEMs by Content Area and Grade

Content Area	Grade	Number of Students	Raw Score			Alpha	SEM
			Maximum Score	Mean	Standard Deviation		
ELA	3	820	39	28.09	3.75	0.65	2.23
	4	778	39	28.21	3.68	0.68	2.08
	5	758	39	28.34	3.67	0.64	2.21
	6	751	39	28.28	3.56	0.62	2.20
	7	745	39	28.08	3.87	0.69	2.17
	8	662	39	28.46	3.72	0.61	2.33
	10	698	39	28.08	3.93	0.64	2.37
Mathematics	3	729	26	21.27	1.29	0.56	0.86
	4	715	26	21.08	1.61	0.68	0.91
	5	717	26	21.18	1.42	0.60	0.89
	6	708	26	21.06	1.58	0.64	0.95
	7	691	26	21.12	1.56	0.67	0.90
	8	601	26	21.24	1.40	0.63	0.85
	10	684	39	30.62	3.53	0.83	1.45
STE	5	653	39	29.70	3.61	0.80	1.61
	8	565	39	30.06	3.16	0.76	1.56
Biology	HS	44	39	28.73	3.83	0.70	2.10
Chemistry	HS	12	39	32.00	1.21	0.45	0.90
Introductory Physics*	HS	2	39	--	--	--	--
Technology/ Engineering	HS	33	39	29.85	3.18	0.68	1.80

**Due to the small sample size of the tested population, the calculations do not produce meaningful values.*

An alpha coefficient toward the high end (greater than 0.50) is taken to mean that the items are likely measuring very similar knowledge or skills; that is, they complement one another and suggest that the test is a reliable assessment. However, the interpretation of reliability estimate coefficient should consider the characteristics of the testing sample (such as the variability within the sample) and the test (such as the test length). For MCAS-Alt, due to the special population and the short test length, the range of the α coefficient in the 2021 assessments is reasonable.

4.7.2 Subgroup Reliability

The reliability coefficients discussed in the previous section were based on the overall population of students who participated in the 2021 MCAS-Alt. Appendix M presents reliabilities for various subgroups of interest taking MCAS-Alt. Subgroup Cronbach's α coefficients were calculated using the formula defined on the previous page, based only on the members of the subgroup in question in the computations; values are calculated only for subgroups with 10 or more students.

For several reasons, the results documented in this section should be interpreted with caution. First, inherent differences between grades and content areas preclude making valid inferences about the

quality of a test based on statistical comparisons with other tests. Second, reliabilities are dependent not only on the measurement properties of a test but also on the statistical distribution of the studied subgroup. For example, it can be readily seen in Appendix M that subgroup sample sizes may vary considerably, which results in natural variation in reliability coefficients. Moreover α, which is a type of correlation coefficient, may be artificially depressed for subgroups with little variability (Draper & Smith, 1998). Third, there is no industry standard to interpret the strength of a reliability coefficient, and this is particularly true when the population of interest is a single subgroup.

4.7.3 Performance Level SEM

The SEM and reliability statistics discussed in section 4.7.1 were based on various groups of interest taking MCAS-Alt. Tables M-14 through M-20 in Appendix M present SEM for populations of students analyzed by performance level. These results show a range of SEM from 0.54–4.12, which is reasonable and relatively stable over each grade and performance category, demonstrating that the precision of the MCAS-Alt is consistent across the full performance continuum.

As above, and for the same reasons, the results documented in this section should be interpreted with caution. Limiting the analyses to individual performance levels will reduce the variability for each subgroup when compared to the whole, which would likely indicate greater measurement error estimates in comparison to the true measurement error within the group, if it were known.

4.7.4 Interrater Consistency

Section 4.4 of this chapter describes the processes that were implemented to monitor the quality of the hand-scoring of student responses. One of these processes was double-blind scoring of at least 20 percent of student responses in all strands. Results of the double-blind scoring, used during the scoring process to identify scorers who required retraining or other intervention, are presented here as evidence of the reliability of the MCAS-Alt. A third score was required for any score category in which there was not an exact agreement between scorer 1 and scorer 2. A third score was also required as a confirmation score when either scorer 1 and/or scorer 2 provided a score of M for Demonstration of Skills and Concepts and Independence or a score of 1 for Level of Complexity.

A summary of the interrater consistency results is presented in Table 4-10. Results in the table are aggregated across the tasks by content area, grade, and number of score categories (five for Level of Complexity and four for Demonstration of Skills and Concepts and Independence). The table shows the number of items, number of included scores, exact agreement percentage, adjacent agreement percentage, the correlation between the first two sets of scores, and the percentage of responses that required a third score. This information is also provided at the item level in Tables H-17 through H-23 of Appendix H.

Table 4-10. Summary of Interrater Consistency Statistics Aggregated across Items by Content Area and Grade

Content Area	Grade	Items	Number of Score Categories	Included Scores	Percentage Exact	Percentage Adjacent	Correlation	% Third Scores
ELA	3	6	4	1,124	98.93	1.07	0.99	1.87
		3	5	660	98.79	1.06	0.85	2.88
	4	6	4	2,438	97.87	2.01	0.98	4.35
		3	5	1,484	98.72	1.01	0.89	4.31
	5	6	4	830	99.04	0.84	0.99	1.81
		3	5	478	98.54	1.26	0.84	3.14
	6	6	4	656	98.48	1.37	0.99	2.44
		3	5	388	99.23	0.52	0.75	2.32
	7	6	4	848	98.94	0.94	0.99	1.77
		3	5	518	98.84	1.16	0.93	2.51
	8	6	4	1,048	99.24	0.57	0.99	1.62
		3	5	643	98.60	1.09	0.77	4.04
	10	6	4	990	97.68	1.92	0.97	4.04
		3	5	618	99.51	0.16	0.80	3.88
Mathematics	3	4	4	726	99.45	0.55	0.98	1.65
		2	5	439	99.32	0.68	0.92	0.68
	4	4	4	1,646	98.00	2.00	0.96	3.71
		2	5	985	98.98	0.30	0.85	1.32
	5	4	4	594	98.48	1.52	0.96	2.19
		2	5	329	99.09	0.61	0.88	1.22
	6	4	4	456	98.46	1.54	0.98	3.07
		2	5	256	99.61	0.39	0.97	0.39
	7	4	4	560	98.75	1.25	0.98	1.79
		2	5	346	98.84	1.16	0.93	1.45
	8	4	4	690	99.71	0.29	0.99	0.87
		2	5	422	97.87	1.66	0.68	3.79
	10	10	4	1,040	97.69	1.83	0.91	3.56
		5	5	611	99.02	0.65	0.77	1.31
STE	5	8	4	720	99.44	0.56	0.99	0.97
		4	5	439	98.63	1.37	0.93	1.37
	8	8	4	842	99.41	0.59	0.99	1.07
		4	5	568	97.01	2.99	0.80	5.28
Biology	HS	6	4	36	100.00	0.00	1.00	0.00
		3	5	21	95.24	4.76	--	4.76
Chemistry	HS	6	4	18	100.00	0.00	1.00	0.00
		3	5	9	--	--	--	--
Introductory Physics	HS	6	4	12	100.00	0.00	1.00	0.00
		3	5	6	--	--	--	--
Technology/ Engineering	HS	6	4	32	100.00	0.00	1.00	0.00
		3	5	21	100.00	0.00	1.00	0.00

4.8 MCAS-Alt Comparability Across Years

The issue of comparability across years is addressed in the progression of learning outlined in the *Resource Guide to the Massachusetts Curriculum Frameworks for Students with Disabilities*, which provides instructional and assessment strategies for teaching students with disabilities according to the same learning standards applied to students in general education.

Comparability is also addressed in the scoring procedures. Consistent scoring rubrics are used each year along with rigorous quality-control procedures that hold scorers to high standards of accuracy and consistency, as described in section 4.4. Scorers are trained using the same procedures, models, examples, and methods each year.

Finally, comparability across years is encouraged through the classification of students into achievement-level categories, using a look-up table that remains consistent each year. While MCAS has recently transitioned to next-generation achievement levels in grades 3–8, the description of each alternate academic achievement level (shown in Table 4-11) remains relatively consistent, because alternate

academic achievement standards (i.e., levels) signify those students taking alternate assessments who perform well below the expectations of students taking the standard MCAS assessments. Therefore, this ensures that the meaning of students' alternate assessment scores is comparable from one year to the next. Names and descriptors for next-generation alternate and grade-level academic achievement standards are shown in Appendix W. Table 4-11 shows the achievement-level look-up table (i.e., the achievement level corresponding to each possible combination of dimension scores), which is used each year to combine and tally the overall content area achievement level from the individual strand scores. In addition, achievement-level distributions for each of the last three years are provided in Appendix N.

Table 4-11. MCAS-Alt Strand Achievement-Level Look-Up Table

Level of Complexity	Demonstration of Skills	Independence	Achievement Level
2	1	1	1
2	1	2	1
2	1	3	1
2	1	4	1
2	2	1	1
2	2	2	1
2	2	3	1
2	2	4	1
2	3	1	1
2	3	2	1
2	3	3	2
2	3	4	2
2	4	1	1
2	4	2	1
2	4	3	2
2	4	4	2
3	1	1	1
3	1	2	1
3	1	3	1
3	1	4	1
3	2	1	1
3	2	2	1
3	2	3	2
3	2	4	2
3	3	1	1
3	3	2	2
3	3	3	3
3	3	4	3
3	4	1	1
3	4	2	2
3	4	3	3
3	4	4	3

Level of Complexity	Demonstration of Skills	Independence	Achievement Level
4	1	1	1
4	1	2	1
4	1	3	1
4	1	4	1
4	2	1	1
4	2	2	1
4	2	3	2
4	2	4	2
4	3	1	1
4	3	2	2
4	3	3	3
4	3	4	3
4	4	1	1
4	4	2	2
4	4	3	3
4	4	4	3
5	1	1	1
5	1	2	1
5	1	3	2
5	1	4	2
5	2	1	1
5	2	2	2
5	2	3	3
5	2	4	3
5	3	1	1
5	3	2	2
5	3	3	3
5	3	4	4
5	4	1	1
5	4	2	2
5	4	3	3
5	4	4	4

4.9 MCAS-Alt Reporting of Results

4.9.1 Primary Reports

Cognia created two primary reports for the MCAS-Alt: the *MCAS-Alt Feedback Form* and the *Parent/Guardian Report.*

4.9.2 Feedback Forms

One *Feedback Form* is produced for each student who submitted the MCAS-Alt and serves as a preliminary score report intended for the educator at the school that submitted the assessment. Content area achievement level(s), strand dimension scores, and comments relating to those scores are printed on the form.

4.9.3 Parent/Guardian Report

The *Parent/Guardian Report* provides the final scores (overall content area achievement level and rubric dimension scores in each strand) for each student who submitted the MCAS-Alt. It provides background information on the MCAS-Alt, participation requirements, the purposes of the assessment, an explanation of the scores, and contact information for further information. The student's achievement level displayed for each content area is shown relative to all possible achievement levels. The student's dimension scores are displayed in relation to all possible dimension scores for the assessed strands.

Two printed copies of each report are provided: one for the parent/guardian and one to be kept in the student's temporary school record. A sample report is provided in Appendix X.

The *Parent/Guardian Report* was redesigned in 2012 with input from parents in two focus groups to include information that had previously been published in a separate interpretive guide that is no longer produced. The report was redesigned again in 2017 to parallel the layout and format of the next-generation MCAS *Parent/Guardian Report* based on next-generation MCAS tests.

4.9.4 Analysis and Reporting Business Requirements

To ensure that reported results for the MCAS-Alt are accurate relative to the collected evidence, a document delineating analysis and reporting business requirements is prepared before each reporting cycle. The analysis and reporting business requirements are observed in the analyses of the MCAS-Alt data and in reporting of results. They are included in Appendix P.

4.9.5 Quality Assurance

Quality-assurance measures are implemented throughout the entire process of analysis and reporting at Cognia. The data processors and data analysts working with MCAS-Alt data perform quality-control checks of their respective computer programs. Moreover, when data are handed off to different units within the Reporting Services Department, the sending unit verifies that the data are accurate before handoff. Additionally, when a unit receives a data set, the first step performed is verification of the accuracy of the data.

Quality assurance is also practiced through parallel processing. One production data analyst is responsible for writing all programs required to populate the individual student and aggregate reporting tables for the administration. Each reporting table is also assigned to another quality-assurance data analyst, who uses the analysis and reporting business requirements to independently program the reporting table. The production and quality-assurance tables are compared; if there is 100% agreement, the tables are released for report generation.

A third aspect of quality control involves the procedures implemented by the quality-assurance group to check the accuracy of reported data. Using a sample of students, the quality-assurance group verifies that the reported information is correct. The selection of specific sampled students for this purpose may affect the success of the quality-control efforts.

The quality-assurance group uses a checklist to implement its procedures. Once the checklist is completed, sample reports are circulated for psychometric checks and review by program management. The appropriate sample reports are then sent to DESE for review and signoff.

4.10 MCAS-Alt Validity

One purpose of the *2021 Next-Generation MCAS and MCAS-Alt Technical Report* is to describe the technical aspects of the MCAS-Alt that contribute validity evidence in support of MCAS-Alt score interpretations. According to the *Standards for Educational and Psychological Testing* (AERA et al., 2014), considerations regarding establishment of intended uses and interpretations of test results and conformance to these uses are of paramount importance in relation to valid score interpretations. These considerations are addressed in this section.

Recall that the score interpretations for the MCAS-Alt include using the results to make inferences about student achievement on the ELA, mathematics, and STE content standards; to inform program and instructional improvement; and as a component of school accountability. Thus, as described below, each section of the report (development, administration, scoring, item analyses, reliability, performance levels, and reporting) contributes to the development of validity evidence and taken together, the sections form a comprehensive validity argument in support of MCAS-Alt score interpretations.

4.10.1 Test Content Validity Evidence

Test content validity is determined by identifying how well the assessment tasks represent the curriculum and standards for each content area and grade level. The primary evidence described in section 4.2.1 describes how the range and level of complexity of the standards being assessed have been modified to fit the needs of the MCAS-Alt testing population yet retain the essential components or meaning of the standards. The MCAS-Alt content areas and strands/domains required for the assessment of students in each grade are listed in Table 4-1, providing evidence the assessment is well aligned to the same content standards applied to all Massachusetts students.

4.10.2 Internal Structure Validity Evidence

Evidence based on internal structure is presented in detail in the discussions of item analyses and reliability in sections 4.5 and 4.7. Technical characteristics of the internal structure of the assessment are presented in terms of classical item statistics (item difficulty and item-test correlation), correlations among the dimensions (Level of Complexity; Demonstration of Skills and Concepts; and Independence), fairness/bias, and reliability, including alpha coefficients and interrater consistency.

4.10.3 Validity Based on Cognitive Processes

Evidence based on cognitive processes is presented in section 4.5.5 and in Appendix V. An examination of score frequencies by content area by grade by subject shows that student scores are most common in the expected ranges for the population and that the tests measure the full range of intended cognitive processes.

4.10.4 Adequate Precision Across the Full Performance Continuum

Evidence indicating precision across the full performance continuum is presented in section 4.7.3 and in Appendix M. Standard errors of measurement calculated over students at each performance level indicate that the tests provide an adequately precise estimate of student performance across the full performance continuum.

4.10.5 Validity Based on Relations to Other Variables

The Resource Guides to the Massachusetts Curriculum Framework for Students with Disabilities (described in sections 4.1.3, 4.2.1.1, and 4.6) are used by Massachusetts educators to identify standards-based instructional goals for students. The guides also serve as the basis for the selection of the specific knowledge and skills on which the student will be assessed on the MCAS-Alt. These Resource Guides are developed through extensive collaboration with educators and experts. In essence, the Resource Guides capture the judgments of educators and experts about the curricular expectations and as such, constitute a form of external criteria. By basing each student's assessment on the guides, the educator implementing the MCAS-Alt brings his or her skills survey results and evidence collection into alignment with these judgments.

4.10.6 Response Process Validity Evidence

Response process validity evidence pertains to information regarding the cognitive processes used by examinees as they respond to items on an assessment. The MCAS-Alt directs educators to identify measurable outcomes for students based on the state's curriculum frameworks and to collect data and work samples that document the extent to which the student engaged in the intended cognitive process(es) to meet the intended goal. The scoring process is intended to confirm the student's participation in instructional activities that were focused on meeting the measurable outcome, and to provide detailed feedback on whether the instructional activities were sufficient in duration and intensity for the student to meet the intended goal.

4.10.7 Efforts to Support the Valid Reporting and Use of MCAS-Alt Data

The assessment results of students who participate in the MCAS-Alt are included in all public reporting of MCAS results and in the state's accountability system. Annual state summaries of the participation and achievement of students on the MCAS-Alt are available at www.doe.mass.edu/mcas/alt/results.html.

To ensure that all students were provided access to the Massachusetts curriculum frameworks, federal and state laws and DESE policy require that all students in grades 3–8 and 10 are assessed each year on their academic achievement and that all students are included in the reports provided to parents, guardians, teachers, and the public. The alternate assessment ensures that students with the most intensive disabilities have an opportunity to "show what they know" and receive instruction at a level that is challenging and attainable based on the state's academic learning standards.

Aside from legal requirements, another important reason to include students with significant disabilities in standards-based instruction is to explore their capacity to learn standards-based knowledge and skills. While learning "daily living skills" is critical for those students to function as independently as possible, academic skills are important for all students in terms of post-secondary, career, and community success, and are the primary focus of teaching and learning in the state's public schools. Standards in the Massachusetts curriculum frameworks are defined as "valued outcomes for all students." Evidence indicates that students with significant disabilities learn more than anticipated when given opportunities to engage in challenging instruction with the necessary support.

As a result of taking the MCAS-Alt, students with significant disabilities have become more "visible" in their schools and have a greater chance of being considered when decisions are made to allocate staff and resources to improve their academic achievement.

Appendix X shows the report provided to parents and guardians for students assessed on the MCAS-Alt. The achievement level descriptors provided on the first page of that report, as well as in Appendix W, describe the students' performance at each alternate academic achievement standard

4.10.8 Summary

The Standards for Educational and Psychological Testing (2014) define validity as "the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests" (p. 11). Elaborating on that definition, the Standards assert that "it is the interpretations of test scores for proposed uses that are evaluated, not the test itself" (p. 11) and that "validation logically begins with an explicit statement of the proposed interpretation of test scores, along with a rationale for the relevance of the interpretation to the proposed use" (p. 11). This definition applies specifically to intended interpretations and uses of test scores, rather than to the broader program of curriculum and instruction in which a testing program is embedded or to the surrounding education and school improvement policies and aspirations for student learning.

Further, the Standards state that "a sound validity argument integrates various strands of evidence into a coherent account of the degree to which existing evidence and theory support the intended interpretations of test scores for specific uses" (p. 21).

The evidence for validity and reliability presented in this chapter supports the use of the MCAS-Alt assessment to make inferences about the knowledge, skills, abilities, and achievement of students with significant disabilities based on the skills and content described in the Massachusetts curriculum frameworks for ELA, mathematics, and STE. As such, this evidence supports the use of MCAS-Alt results for the purposes of programmatic and instructional improvement and as a component of school accountability.

MCAS-Alt assessment results are sometimes aggregated with other MCAS results. Therefore, validity information with respect to reliability and content-related validity provided for MCAS also pertains, to some extent, to the MCAS-Alt. In addition, MCAS-Alt also includes reliability and dimensionality characteristics and other evidence specific to the alternate assessment, as described in Table 4-12.

Table 4-12. Summary of Validity Evidence for MCAS-Alt

Type of Validity Evidence			Section	Description of Information Provided
Content-related validity evidence			4.2.1 Appendix C	Assessment design (test blueprints aligned to MCAS blueprints but with modifications made for the range and complexity of standards); descriptions of primary evidence and supporting documentation
Cognitive processes	**4.5.5 Appendix V**	Distributions of score frequencies indicate that the tests elicit the expected range of cognitive processes for this population	4.73 Appendix V	
Precision Over the Full Continuum		Measurement error calculated over respondent subgroups at each performance level indicate that the tests are sufficiently precise over the full performance continuum		
Validity Based on Other Variables				
Reliability and subgroup statistics and scoring consistency			4.4, 4.7.4, and 4.8 Appendices H, N, R, and S 4.5 Appendix I 4.7.1 and 4.7.2 Appendix M	Procedures to ensure consistent scoring; interrater scoring statistics Classical item statistics Overall and subgroup reliability statistics
Construct-related and structural validity evidence			4.5.3 4.6	Interrelations among scoring dimensions Item bias review and procedures

References

Allen, M. J., & Yen, W. M. (1979). *Introduction to measurement theory.* Belmont, CA: Wadsworth, Inc.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

Anastasi, A., & Urbina, S. (1997). *Psychological testing* (7th ed.). Upper Saddle River, NJ: Prentice-Hall.

Austin, P. C., & Mamdani, M. M. (2006). A comparison of propensity score methods: A case-study estimating the effectiveness of post-AMI statin use. *Statistics in Medicine 25*, 2084–2106.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (1999). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

Baker, F. B. (1992). *Item response theory: Parameter estimation techniques.* New York, NY: Marcel Dekker, Inc.

Baker, F. B., & Kim, S. H. (2004). *Item response theory: Parameter estimation techniques* (2nd ed.). New York, NY: Marcel Dekker, Inc.

Brown, F. G. (1983). *Principles of educational and psychological testing* (3rd ed.). Fort Worth, TX: Holt, Rinehart and Winston.

Brown, W. (1910). Some experimental results in the correlation of mental abilities. *British Journal of Psychology 3*, 296–322.

Chicago Manual of Style (16th ed.). (2003). Chicago: University of Chicago Press.

Cai, L. (2012). flexMIRT: Flexible multilevel item factor analysis and test scoring [Computer software]. Chapel Hill, NC: Vector Psychometric Group, LLC.

Clauser, J. C., & Hambleton, R. K. (2011a). *Improving curriculum, instruction, and testing practices with findings from differential item functioning analyses: Grade 8, Science and Technology/Engineering* (Research Report No. 777). Amherst, MA: University of Massachusetts–Amherst, Center for Educational Assessment.

Clauser, J. C., & Hambleton, R. K. (2011b). *Improving curriculum, instruction, and testing practices with findings from differential item functioning analyses: Grade 10, English language arts* (Research Report No. 796). Amherst, MA: University of Massachusetts–Amherst, Center for Educational Assessment.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement 20*, 37–46.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika 16*, 297–334.

Dorans, N. J., & Holland, P. W. (1993). DIF detection and description. In P. W. Holland & H. Wainer (Eds.), *Differential Item Functioning* (pp. 35–66). Hillsdale, NJ: Lawrence Erlbaum Associates.

Dorans, N. J., & Kulick, E. (1986). Demonstrating the utility of the standardization approach to assessing unexpected differential item performance on the Scholastic Aptitude Test. *Journal of Educational Measurement 23*, 355–368.

Draper, N. R., & Smith, H. (1998). *Applied regression analysis* (3rd ed.). New York, NY: John Wiley and Sons, Inc.

Haertel, E. H. (2006). Reliability. In R.L. Brennan (Ed). *Educational measurement (pp. 65-110)*. Westport, CT: Praeger Publishers.

Haisfield, L. & Yao, E. (2018, April). *Industry standards for an emerging technology: Automated scoring*. Presented at the National Council on Measurement in Education, New York, NY.

Hambleton, R. K., & Swaminathan, H. (1985). *Item response theory: Principles and Applications*. Boston, MA: Kluwer Academic Publishers.

Hambleton, R. K., Swaminathan, H., & Rogers, J. H. (1991). *Fundamentals of item response theory*. Newbury Park, CA: Sage Publications, Inc.

Hambleton, R. K., & van der Linden, W. J. (1997). *Handbook of modern item response theory*. New York, NY: Springer-Verlag.

Holland, P. W., & Wainer, H. (1993). *Differential item functioning.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Jiang, J., Roussos, L., & Yu, L. (2017, April). *An iterative procedure to detect item parameter drift in equating items*. Paper presented at the National Council on Measurement in Education Conference, San Antonio, TX.

Joint Committee on Testing Practices. (2004). *Code of fair testing practices in education*. Washington, DC:

Kim, S. (2006). A comparative study of IRT fixed parameter calibration methods. *Journal of Educational Measurement 43*(4), 355–381.

Kolen, M. J., & Brennan, R. L. (2010). *Test equating, scaling, and linking: Methods and practices* (3rd ed.). New York, NY: Springer-Verlag.

Kolen, M. J., & Brennan, R. L. (2014). *Test equating, scaling, and linking: Methods and practices* (3rd ed.). New York, NY: Springer-Verlag.

Livingston, S. A., & Lewis, C. (1995). Estimating the consistency and accuracy of classifications based on test scores. *Journal of Educational Measurement 32*, 179–197.

Lochbaum, K.E., Flanagan, K., Walker, M., Way, D., & Zurkowski, J. (2016, June). *Continuous Flow Scoring of Prose Constructed Response: A Hybrid of Automated and Human Scoring*. Presented at the National Conference on Student Assessment (NCSA), Philadelphia, PA. Available from https://ccsso.confex.com/ccsso/2016/webprogram/Session4615.html

Lord, F. M. (1980). *Applications of item response theory to practical testing problems*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Lord, F. M., & Novick, M. R. (1968). *Statistical theories of mental test scores.* Reading, MA: Addison-Wesley.

Massachusetts Department of Elementary and Secondary Education. (2016). *Representative samples and PARCC to MCAS concordance studies*. Unpublished manuscript.

Measured Progress Psychometrics and Research Department. (2017). *MCAS 2016–2017 IRT & Mode Linking Report*. Unpublished manuscript.

Muraki, E., & Bock, R. D. (2003). PARSCALE 4.1 [Computer software]. Lincolnwood, IL: Scientific Software International.

Nadaraya, E. A. (1964). On estimating regression. *Theory of Probability and Its Applications, 9*(1), 141-142.

Nering, M., & Ostini, R. (2010). *Handbook of polytomous item response theory models*. New York, NY: Routledge.

Petersen, N. S., Kolen, M. J., & Hoover, H. D. (1989). Scaling, norming, and equating. In R. L. Linn (Ed.), *Educational Measurement* (3rd ed., pp. 221–262). New York, NY: Macmillan Publishing Company.

Rosenbaum, P. R. & Rubin, D. B. (1984). Reducing bias in observational studies using subclassification on the propensity score. *Journal of American Statistical Association 79*, 516–524.

Roussos, L. A., & Ozbek, O. Y. (2006). Formulation of the DETECT population parameter and evaluation of DETECT estimator bias. *Journal of Educational Measurement 43,* 215–243.

Spearman, C. C. (1910). Correlation calculated from faulty data. *British Journal of Psychology 3*, 271–295.

Stocking, M. L. & Lord, F. M. (1983). Developing a common metric in item response theory. *Applied psychological measurement 7*, 201–210.

Stout, W. F. (1987). A nonparametric approach for assessing latent trait dimensionality. *Psychometrika 52,* 589–617.

Stout, W. F., Froelich, A. G., & Gao, F. (2001). Using resampling methods to produce an improved DIMTEST procedure. In A. Boomsma, M. A. J. van Duijn, & T. A. B. Snijders (Eds.), *Essays on Item Response Theory* (pp. 357–375). New York, NY: Springer-Verlag.

Stuart, A. (2010). Matching methods for causal inference: a review and a look forward. *Statistical Science*. *25*(1), 1–21.

Wang, X. & Roussos, L. (2018, April). *A Simple Parametric Procedure for Detecting Drift in Anchor Items.* Paper presented at the National Council on Measurement in Education Conference, New York, NY.

Watson, G.S. (1964). Smooth regression analysis. *Sankhy: The Indian Journal of Statistics*, *26*(4), 359-372.

Wiener, D. (2002). *Massachusetts: One state's approach to setting performance levels on the alternate assessment* (Synthesis Report 48). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved 2.10.2022, from the World Wide Web: http://cehd.umn.edu/NCEO/OnlinePubs/Synthesis48.html

Wiener, D. (2005). *One state's story: Access and alignment to the GRADE-LEVEL content for students with significant cognitive disabilities* (Synthesis Report 57). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved 2.10.2022, from the World Wide Web: https://nceo.info/Resources/publications/OnlinePubs/Synthesis57.html

Yao, E., Wood, S., Lottridge, S., Rupp, A., Wendler, C., & Lochbaum, K. (2019, March). *Industry Themes for Implementing Automated Scoring*. Presented at Association of Test Publishers Innovations in Testing, Orlando, FL.

Zhang, J., & Stout, W. F. (1999). The theoretical DETECT index of dimensionality and its application to approximate simple structure. *Psychometrika 64,* 213–249.

Appendices

APPENDIX A
MODIFIED COMPETENCY DETERMINATION—FAQS

Modified Competency Determination–Frequently Asked Questions

The purpose of this document is to provide clarification on the process that the Massachusetts Department of Elementary and Secondary Education (DESE) will use to determine whether certain high school students meet modified competency determination requirements.

Background

In response to the suspension of in-person instruction and the cancellation of the spring 2020 MCAS assessments due to the COVID-19 emergency, the Board of Elementary and Secondary Education (BESE) voted to temporarily modify the competency determination (CD) requirement for certain high school students.[1] Under this change, certain students may earn their CD through successful completion of a relevant Department-identified high school course, according to the criteria below:

- **For students in grade 12 in the 2019-2020 school year** (at the time of the April 2020 BESE vote), as well as other actively enrolled students who were on track to graduate in the 2019-2020 school year, the CD will be awarded in each subject as follows:
    - *For English language arts and mathematics* – upon district certification that the student earned credit for a course aligned to the curriculum frameworks in the relevant subject matter and has demonstrated competency in that subject.
    - *For science and technology/engineering* – upon district certification that the student earned credit for a course aligned to the curriculum frameworks in the relevant subject matter and has demonstrated competency in one of the four tested disciplines (biology, chemistry, introductory physics, and technology/engineering) during their high school career.
- **For students in the classes of 2021 and 2022,** the CD will be awarded in each subject as follows:
    - *For English language arts and mathematics* – upon district certification that the student earned full credit for a relevant course aligned to the appropriate curriculum framework in that subject matter and has demonstrated competency in that subject.
    - *For science and technology/engineering* – upon demonstration that the student earned credit for a course in the relevant subject matter and demonstrated competency in one of the four tested disciplines (biology, chemistry, introductory physics, technology/engineering) during their high school career.
- **For students in the class of 2023**, the CD in science and technology/engineering shall be awarded upon demonstration that the student earned credit for a course in the relevant subject matter and demonstrated competency in one of the four tested disciplines (biology, chemistry, introductory physics, technology/engineering) during their high school career.

Frequently Asked Questions

Accessing the Competency Determination Tool

Is the modified CD process required?
Yes. All districts that will graduate students in 2022 have students who are eligible for the modified CD due to the cancellation of the 2020 MCAS assessments, and therefore must use this tool to submit information to DESE for review. Districts will not be able to issue diplomas to students who have not earned their CD via MCAS testing or this modified process.

[1] The BESE voted to modify CD requirements on four occasions: April 2020 (in ELA, mathematics, and science for students in grade 12 and those who were on track to graduate in 2020); May 2020 (in science only for students in the classes of 2021-2023); January 2021 (in ELA and mathematics for students in the class of 2021); and April 2021 (in ELA and mathematics for students in the class of 2022).

How do I report CD information to DESE?
The Department created the 'Competency Determination' application in the Security Portal, which districts must use to submit the required information.

Can I provide the required information to DESE in a different way (e.g., via email, in a dropbox, over the phone, etc.)?
No. Data must be submitted through the Security Portal's 'Competency Determination' tool, which includes a final certification by the district's Superintendent.

How do I access the 'Competency Determination' tool?
To access the 'Competency Determination' application in the Security Portal, each district must assign the *Competency Determination* security role to the individual(s) who will be responsible for submitting and certifying data. This role must be assigned in Directory Administration, by the district's Directory Administrator.

Who should be given access to the tool?
The *Competency Determination* security role should be assigned as follows:

- **For each school**, the role should be assigned to the individual(s) who will be responsible for reviewing and verifying course and credit information for each eligible student. Individuals assigned the *Competency Determination* security role for a school will only be able to see student-level information for students enrolled in that school. An individual may be assigned the role for more than one school, if appropriate.
- **For each district**, the role should be assigned to the Superintendent and any other individual(s) who require access to student-level data for eligible students in all district schools, including students educated in out-of-district settings. To formally submit the data to DESE, at least one person (the Superintendent) should be assigned the *Competency Determination* security role for the district. Only individuals with the district-level role will be able to submit the final certification for the entire district.

How does the *Competency Determination* security role work?
The role allows individuals to access the 'Competency Determination' application in the Security Portal. It can be assigned at the school level, the district level, or both. Depending on the level of access, users have different permissions:

- **When assigned at the school level**, users will only see data for the school(s) to which they have been granted access. School-level users can enter and confirm information for individual students but are not able to submit the final district-level certification to DESE. There is no overall school-level certification. An individual may be assigned the role for more than one school, and multiple individuals may be assigned the role for a single school.
- **When assigned at the district level**, users will see data for all district schools that have eligible students, as well as for any eligible out-of-district students. District-level users can enter information for any student or school. Only district-level users can submit the single, final certification for the district as a whole, and only if data has been entered completely for all schools. There is no overall school-level certification.

Student Eligibility

Which students are included in the tool?
The modified CD collection tool has been designed to collect data for two groups of students: those eligible for the modified CD in ELA, mathematics, and science (i.e., the classes of 2020-2022), and those eligible for the modified CD in science only (i.e., the class of 2023). The Department identifies eligible

students using Student Information Management System (SIMS) and Student Course Schedule (SCS) data which has been submitted to DESE by districts. For the May 2022 modified CD collection period, DESE is collecting course information for eligible students in the classes of 2020, 2021, and 2022 only, based on March 2022 SIMS. Information for students in the class of 2023 will be collected at a later time. See the Modified CD Eligibility table at the end of this document for details.

Is the modified CD an option for students with Individualized Education Programs (IEPs)?
Yes. Certain students with IEPs are eligible for the modified CD if they meet the eligibility criteria outlined in this document. Districts may graduate students with IEPs if those students: (1) have received a Free and Appropriate Public Education (FAPE), (2) have completed all local graduation requirements, and (3) have earned their CD. See *Administrative Advisory SPED 2018-2: Secondary Transition Services and Graduation with a High School Diploma* for further information on graduation requirements for students with IEPs. See the question below for specific information on students with IEPs enrolled beyond grade 12.

Excellent two-way communication with students and parents is particularly important when the student is about to exit from school. Districts should always communicate with families and confirm in writing via the IEP or the IEP Notice of Proposed School District Action (N1) that families are aware of the upcoming graduation or aging out date. Districts should contact parents to let them know that they have applied for the modified CD and to offer a Team meeting to discuss further. As described later in this document, IEP page 8 of the MA IEP forms ("Additional Information" and "Response" sections) or an N1 reflecting the student's graduation date and the parent's agreement must be submitted through the 'Competency Determination' tool during an open collection window. Districts are also reminded of their obligation to provide the student and/or parent(s) with a Summary of Student Performance (SOP) as required by 34 CFR 300.305(e)(3). Schools and districts must be prepared to provide the SOP to DESE upon request.

Are out-of-district students included?
Yes. All eligible students who are educated in out-of-district settings are included in the tool, under a single "Out of District" section that can be accessed by individuals with the district-level security role. Districts are responsible for submitting information for their out-of-district students and should communicate with their students' outplacement settings to determine whether each eligible student has fulfilled the modified CD coursework requirements, in addition to following the guidelines stated in the previous question.

Are SP students (students with IEPs enrolled beyond grade 12) included?
Students reported as SP in SIMS may be eligible for the modified CD if they have an anticipated graduation date prior to October 1, 2022, as noted in their most recent signed IEP. A student reported as SP whose anticipated graduation date on their current, signed IEP is on or after October 1, 2022, is eligible for the modified CD only if the IEP Team reconvenes and agrees to change the graduation date to a new date prior to October 1, 2022.

Excellent two-way communication with students and parents is particularly important when the student is about to exit from school. Districts should always communicate with families and confirm in writing via the IEP or N1 that families are aware of the upcoming graduation or aging out date. Districts should contact parents to let them know that they have applied for the modified CD and to offer a Team meeting to discuss further. As described later in this document, IEP page 8 of the MA IEP forms ("Additional Information" and "Response" sections) or an N1 reflecting the new date and the parent's agreement must be submitted through the Competency Determination tool during an open collection window. Districts are also reminded of their obligation to provide the student and/or parent(s) with a Summary of Student

Performance (SOP) as required by 34 CFR 300.305(e)(3). Schools and districts must be prepared to provide the SOP to DESE upon request.

What about students who transferred in on or after March 1, 2022?
Eligible students who transferred into a Massachusetts public school on or after March 1, 2022 will be included in a future modified CD collection.

What about students who earned their certificate of attainment during the 2021-2022 school year, and were reported as such in March 2022 SIMS?
These students are included in the current modified CD collection.

What about students who finished high school without a diploma prior to the 2019-2020 school year, are no longer enrolled, but were planning on taking the MCAS tests this year?
In accordance with the BESE vote, these students are not eligible for the modified CD.

How are students with Educational Proficiency Plans (EPPs) considered this year? They did not have an opportunity to take the spring EPP test. Does completing local requirements satisfy EPP requirements?
The EPP is not required for students in the classes of 2020-2022, who are eligible for the modified CD. It will be required in school year 2021-2022 for subsequent classes.

Can I add or delete students to/from the tool?
No. The Department has prepopulated the student lists based on eligibility, which was determined using data that districts submitted to DESE in previous SIMS collection periods.

We believe a student should be on our list of eligible students, but they are not included in the 'Competency Determination' tool in the Security Portal. How can our district fix this?
Please review all student eligibility information provided in this document. If you still believe that a student was omitted from your eligibility list, contact DESE's Office of Data Analysis and Reporting at data@doe.mass.edu.

Changes to the Tool

The tool looks different from previous rounds. What has changed?
In each school's section and in the out-of-district section, students have been divided into the following three groups:

1. *Data review and bulk confirmation*: Students on this list have earned full credit in at least two eligible courses in each required subject, according to the district's SCS submission. Users should review the student-level data on this page and may confirm all students at once using the "Select All" checkbox. Course and credit information for individual students can be edited as needed.
2. *Data entry and individual confirmation:* Students on this list have earned full credit in only one eligible course in a required subject or are missing course and/or credit information. Users should review the student-level data on this page and update and/or provide course and credit information where needed. Data must be confirmed for each individual student; there is no "Select All" option.
3. *SP document upload and individual confirmation:* Students on this list are in grade SP (enrolled beyond grade 12). Users should review the student-level data on this page, update and/or provide course and credit information where needed and upload the required documentation for

students who are being submitted for the CD. Data must be confirmed for each individual student; there is no “Select All” option.

Data for all students in each of the three sections must be reviewed, and if necessary, updated or provided for each school and for the out-of-district section in order to submit the final certification to DESE.

Why did you make changes to the tool this year?
By adding students in the class of 2022 to the collection, each school's student list grew substantially. The tool was updated in an effort to streamline the confirmation and submission process.

Entering Data

What student-level information is included in the tool?
Where possible, DESE has prepopulated the tool using student-level information that has previously been submitted and certified by the district through the SIMS and SCS data collections. Prepopulated data include the name, date of birth, SASID, and class/graduation year for each student who has not yet earned the CD in one or more subjects; for each subject (ELA, mathematics, and science), an indication of whether the student has already earned the CD; and, for the subject(s) in which the student has not yet earned a CD, relevant course and credit information that DESE has on file (if any).

What information am I required to provide?
For the subject(s) in which a student has not yet earned a CD, the district must review and certify the prepopulated course and credit information, or make changes as needed. In some instances, the tool may display incorrect course and/or credit information for a student, based on inaccurate data that was previously submitted to DESE by the district. In these cases, the district should correct the information as needed. Alternatively, DESE may not have any course information for a student. In those cases, no course information is prepopulated, and the district must select the appropriate course from the dropdown menu and indicate whether full credit was earned. If a student did not complete or earn credit in any of the eligible courses (and therefore would not earn the CD in that subject), the district should choose “No Course Taken” from the dropdown menu.

Additionally, districts with special education students enrolled beyond grade 12 (reported as ‘SP’ in SIMS) must indicate whether each SP student in the tool has an anticipated graduation date before October 1, 2022. For each eligible SP student who will graduate before October 1, the district must provide all required course and credit information, and must also upload one of the following two documents into the ‘Competency Determination’ tool:

- Page 8 of the MA IEP forms (“Additional Information” and “Response” sections) of the student’s most recent signed IEP. This signed page of the IEP should include information about the student’s anticipated graduation date and indicate student and/or parent agreement **with a student and/or parent signature**. Please submit the signature page *as one document attached to Page 8* if the signature is not at the bottom of Page 8.
- IEP Notice of Proposed School District Action (N1). The N1 form may be submitted in lieu of Page 8 of the student’s IEP if it contains up-to-date information about the student’s anticipated graduation date and indicates student and/or parent agreement.

Which courses meet the modified CD requirements?
The Department has identified specific courses in ELA, mathematics, and science that fulfill the modified CD requirements. The list of courses was made available to districts in May 2020 and is also available in

the 'Competency Determination' application in the Security Portal. Districts should report course information in the tool based on NCES course codes, not local course codes or names.

If a student did not earn full credit in a prepopulated grade 12 course, can we use eligible course information from an earlier grade?
Yes. The subject-specific dropdowns include eligible courses from grades 9 through 12.

What if there are students in the tool that have not yet met CD coursework requirements?
You must submit information for all students included in the tool. If a student has not yet met CD coursework requirements, that should be indicated in the tool by selecting "No Course Taken" from the course dropdown menu, selecting "No" under *Full Credit Earned*, and checking the confirmation checkbox.

I entered data for my high school. Why can't I certify and submit it to DESE?
To certify and submit the data to DESE, data must be confirmed and saved for each student in the school list(s) and for each student in the out-of-district list. The out-of-district list will only appear in the tool for users who have been assigned the *Competency Determination* security role for the district. Additionally, only users who have been assigned the role for the district are allowed to certify and submit the data to DESE.

Can I change data after it has been certified by the district?
Data may be saved (but not certified) at any time. However, once the final certification has been submitted by the district, data cannot be changed.

Modified Competency Determination Requirements and MCAS Appeals

Does this process replace the MCAS appeals process?
No. While many students are expected to be certified by their district through the modified CD process, MCAS appeals continue to be available for students who meet eligibility requirements who may not be eligible for certification by the district for the grade 12 CD modification. For example, appeals may be appropriate for students who were not enrolled in a course authorized by DESE to receive a CD; or students with disabilities in special programs and those in programs beyond grade 12.

If I already filed an MCAS appeal, should I disregard that application?
No. Both the appeals and modified CD processes may yield a CD. If an appeal was submitted and the student is also included in the modified CD process, DESE will accept whichever is the higher result. Please see above.

Timeline for Awarding the Competency Determination

What is the timeframe for submitting this information to DESE?
The Round 10 (May) modified CD collection window opens on May 4, 2022 and closes on May 24, 2022.

Will DESE implement a process to review compliance with the guidelines established for the modified competency determination?
Yes. The Department has established a process for reviewing documentation provided by districts for compliance with the guidelines of the modified CD. This process includes an examination of various factors such as the percentage of students a school or district submits for consideration. Additionally, relevant documentation for students with disabilities may be requested and reviewed.

When will DESE notify districts about final competency determination decisions?
For eligible students reported during the May 2022 modified CD collection window, DESE will begin reviewing the information submitted by districts after the application closes and intends to make final CD decisions in late May 2022.

Does submitting this information to DESE mean that a student will automatically be awarded the CD?
No. Providing this data to DESE does not constitute the awarding of the CD. The Department will notify districts about the award of the CD, and at that time the students will be eligible to receive a Massachusetts high school diploma if the school district determines they meet local graduation requirements and, in the case of students with IEPs, have been provided FAPE.

If DESE awards the CD to a student, does that mean the student automatically earns their diploma?
No. Diplomas are issued by the district, not by DESE. If DESE awards the CD to a student through this modified process, the student must still meet all other local graduation requirements and have been provided FAPE by the district before the district issues a diploma.

If DESE cannot issue CD determinations prior to my school's graduation, does this mean that these students cannot participate in the ceremonies?
This is a local decision. These students may be eligible to participate in graduation ceremonies (for example, as certificate of attainment earners) if the district determines that they have met local graduation requirements; however, they may not receive a diploma unless DESE awards the CD.

Should students who meet state and local graduation requirements after DESE has issued final CD decisions be reported as graduates in the next SIMS collection?
Yes. Students can be reported as graduates in the next SIMS collection if the district receives confirmation from DESE that the CD has been awarded in all three subjects and the student meets local graduation requirements.

Contact Information and Resources

Topic	Email	Resources
Modified CD	data@doe.mass.edu	• List of accepted courses: https://www.doe.mass.edu/mcas/accepted-courses.xlsx • Modified CD tool demonstration video: https://www.youtube.com/watch?v=6sbfC8Fbuac
MCAS testing	mcas@doe.mass.edu	https://www.doe.mass.edu/mcas/
MCAS performance appeals	mcasappeals@doe.mass.edu	https://www.doe.mass.edu/mcasappeals/
Graduation requirements	mcas@doe.mass.edu	https://www.doe.mass.edu/mcas/graduation.html

Modified Competency Determination (CD) Eligibility

Students in the Classes of 2020-2022

Students who were enrolled in grade 12 during the 2019-2020 school year, students who were on track to graduate in 2020, and students in the classes of 2021 and 2022 are eligible for the modified CD in ELA, mathematics, and science. See the MCAS Graduation Requirements website for more information.

Round (Collection period opens)	Class/ graduation year(s)	Subject(s)	Notes
Round 1 (June 2020)	2020	English language arts (ELA), mathematics, science	Students were included if they were on track to graduate at the end of the 2019-2020 school year
Round 2 (August 2020)	2020	ELA, mathematics, science	Students were included if: • They were not previously included in the June 2020 collection; • They were included in the June 2020 collection but had not yet met coursework requirements in one or more subjects; or • They were on track to graduate at the end of the 2019-2020 school year
Round 3 (December 2020)	2020	ELA, mathematics, science	Students were included if: • They were not previously included in the June or August 2020 collections; • They were included in the June or August 2020 collections but had not yet met coursework requirements in one or more subjects; or • They were on track to graduate at the end of the 2019-2020 school year
	2021	Science	Grade 12 students were included if they were not reported in grade 12 in a previous school year but had not yet met coursework requirements in science
Round 4 (March 2021)	2020	ELA, mathematics, science	SP students were included if they were included in the December 2020 collection but had not yet met coursework requirements in one or more subjects
	2021	ELA, mathematics, science	Students were included if: • They were included in the December 2020 collection but had not yet met coursework requirements in science; or • They became eligible for the modified CD in ELA and/or mathematics following the January 2021 BESE vote
Round 5 (May 2021)	2020 & 2021	ELA, mathematics, science	Grade 12 and SP students were included if they were included in the March 2021 collection but had not yet met coursework requirements in one or more subjects
Round 6 (June 2021)	2020 & 2021	ELA, mathematics, science	Grade 12 and SP students were included if they were included in the May 2021 collection but had not yet met coursework requirements in one or more subjects

Round (Collection period opens)	Class/ graduation year(s)	Subject(s)	Notes
Round 7 (August 2021)	2020 & 2021	ELA, mathematics, science	Grade 12 and SP students were included if they were included in the June 2021 collection but had not yet met coursework requirements in one or more subjects
Round 8 (October 2021)	2020, 2021, & 2022	ELA, mathematics, science	Students are included if: • They were included in the August 2021 collection, but had not yet met coursework requirements in one or more subjects; • They were reported as enrolled in grade 10 in 2020 end-of-year SIMS and were still enrolled as of 2021 end-of-year SIMS; • They were reported as enrolled in grade 11 in 2021 end-of-year SIMS; or • They were members of the graduation classes of 2020, 2021, or 2022, were still enrolled in 2021 end-of-year SIMS, and have not yet met coursework requirements in one or more subjects
Round 9 (January 2022)	2020, 2021, & 2022	ELA, mathematics, science	Students will be included if: • They were included in the October 2021 collection, but have not yet met coursework requirements in one or more subjects; or • They are enrolled in grade 12 or SP in October 2021 SIMS
Round 10 (May 2022)	2020, 2021, & 2022	ELA, mathematics, science	• They were included in the January 2022 collection and still enrolled in March 2022 SIMS, but have not yet met coursework requirements in one or more subjects; or • They are enrolled in grade 12 or SP in March 2022 SIMS

Students in the Class of 2023

Students in the class of 2023 are eligible for the modified CD in science only. See the MCAS Graduation Requirements website for more information.

Round (Collection period opens)	Class/ graduation year(s)	Subject	Notes
TBD	2023	Science	Students who remain enrolled at the time of data collection and are in the original 2023 graduation class will be eligible, even if retained while in high school.

APPENDIX B
GRADE-SPECIFIC ALDs

MCAS Next-Generation Achievement Level Descriptors
English Language Arts
August 2017

Next-Generation Achievement Level Descriptors

Exceeding Expectations

A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations

A student who performed at this level met grade-level expectations and is academically on track to succeed in the current grade in this subject.

Partially Meeting Expectations

A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations

A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

General: All grades (grades 3-8 and 10)

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Reading	Demonstrates **partial** understanding of what a text implies and states explicitly; cites **limited** textual support for conclusions; **incompletely** summarizes key details and ideas; provides a **partial** analysis of a character, an event, or an idea in grade-appropriate texts Demonstrates **partial** understanding of words and phrases used in a text; provides **limited** understanding of how structural elements, point of view, or purpose affects the content and style in text(s) Makes **basic** comparisons between texts; shows **partial** understanding of content in diverse media; **partially** evaluates and analyzes claims and evidence in text(s)	Demonstrates **sufficient** understanding of what a text implies and states explicitly; cites **solid** textual support for conclusions; **appropriately** summarizes key details and ideas; provides a **mostly complete** analysis of a character, an event, or an idea in grade-appropriate texts Demonstrates **general** understanding of words and phrases used in a text; provides **general understanding** of how structural elements, point of view, or purpose affects the content and style in text(s) Makes **appropriate** comparisons between texts; shows **solid** understanding of content in diverse media; **appropriately** evaluates and analyzes claims and evidence in text(s)	Demonstrates **comprehensive** understanding of what a text implies and states explicitly; cites **in-depth** textual support for conclusions; **skillfully** summarizes key details and ideas; provides a **sophisticated** analysis of a character, an event, or an idea in grade-appropriate texts Demonstrates **in-depth** understanding of words and phrases used in a text; provides **sophisticated** understanding of how structural elements, point of view, or purpose affects the content and style in text(s) Makes **insightful** comparisons between texts; shows **sophisticated** understanding of content in diverse media; **insightfully** evaluates and analyzes claims and evidence in text(s)
Writing	Produces **basic** writing with **limited** selection and explanation of evidence and details related to grade-appropriate texts, topics, or subject areas Produces writing with **little** development of a central idea or sequenced events, **limited** organization, and **basic** expression of ideas Exhibits **partial** awareness of task, purpose, and audience	Produces **solid** writing with **appropriate** selection and explanation of evidence and details related to grade-appropriate texts, topics, or subject areas Produces writing with **appropriate** development of a central idea or sequenced events, **moderate** organization, and **adequate** expression of ideas Exhibits **sufficient** awareness of task, purpose, and audience	Produces **clear** writing with **skillful** selection and explanation of evidence and details related to grade-appropriate texts, topics, or subject areas Produces writing with **full** development of a central idea or sequenced events, **effective** organization, and **clear** expression of ideas Exhibits **full** awareness of task, purpose, and audience

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
Language	Demonstrates **limited** reading vocabulary of general academic and domain-specific words and phrases in grade-appropriate texts Demonstrates **limited** understanding of unfamiliar words in text and shows **partial** understanding of word parts and word relationships in word meanings Demonstrates **little** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **solid** reading vocabulary of general academic and domain-specific words and phrases in grade-appropriate texts Demonstrates **solid** understanding of unfamiliar words in text and shows **sufficient** understanding of word parts and word relationships in word meanings Demonstrates **mostly consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **comprehensive** reading vocabulary of general academic and domain-specific words and phrases in grade-appropriate texts Demonstrates **comprehensive** understanding of unfamiliar words in text and shows **full** understanding of word parts and word relationships in word meanings Demonstrates **consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

August 2017

Next-Generation Achievement Level Descriptors

Exceeding Expectations
A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations
A student who performed at this level met grade-level expectations and is academically on track to succeed in the current grade in this subject.

Partially Meeting Expectations
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

Grade 3

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Reading	Demonstrates **partial** understanding of what a text states explicitly; cites **limited** textual support; demonstrates **incomplete** understanding of key details and how they support the main idea; provides a **partial** description of a character, an event, or an idea in grade 3 texts Demonstrates **partial** understanding of words and phrases (e.g., figurative language); demonstrates a **limited** understanding of structural elements and different points of view Makes **basic** comparisons between texts; shows **partial** understanding of information presented in illustrations; **partially** compares and contrasts important points in text(s)	Demonstrates **sufficient** understanding of what a text states explicitly; cites **solid** textual support; demonstrates **appropriate** understanding of key details and how they support the main idea; provides a **mostly complete** description of a character, an event, or an idea in grade 3 texts Demonstrates **general** understanding of words and phrases (e.g., figurative language); demonstrates a **general** understanding of structural elements and different points of view Makes **appropriate** comparisons between texts; shows **solid** understanding of information presented in illustrations; **appropriately** compares and contrasts important points in text(s)	Demonstrates **comprehensive** understanding of what a text states explicitly; cites **in-depth** textual support; demonstrates **in-depth** understanding of key details and how they support the main idea; provides a **comprehensive** description of a character, an event, or an idea in grade 3 texts Demonstrates **in-depth** understanding of words and phrases (e.g., figurative language); demonstrates a **clear** understanding of structural elements and different points of view Makes **effective** comparisons between texts; shows **clear** understanding of information presented in illustrations; **effectively** compares and contrasts important points in text(s)

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Writing	Produces **basic** writing with **limited** selection and explanation of facts and details related to grade 3 texts, topics, or subject areas Produces writing with **little** development of a central idea or sequenced events, **limited** organization, and **basic** expression of ideas Exhibits **partial** awareness of task, purpose, and audience	Produces **solid** writing with **appropriate** selection and explanation of facts and details related to grade 3 texts, topics, or subject areas Produces writing with **appropriate** development of a central idea or sequenced events, **moderate** organization, and **adequate** expression of ideas Exhibits **sufficient** awareness of task, purpose, and audience	Produces **clear** writing with **effective** selection and explanation of facts and details related to grade 3 texts, topics, or subject areas Produces writing with **full** development of a central idea or sequenced events, **effective** organization, and **clear** expression of ideas Exhibits **full** awareness of task, purpose, and audience
Language	Demonstrates **limited** reading vocabulary of grade 3 academic and domain-specific words and phrases Demonstrates **limited** understanding of unfamiliar words in text; shows **partial** understanding of word parts and word relationships in word meanings Demonstrates **little** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **solid** reading vocabulary of grade 3 academic and domain-specific words and phrases Demonstrates **solid** understanding of unfamiliar words in text; shows **sufficient** understanding of word parts and word relationships in word meanings Demonstrates **mostly consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **comprehensive** reading vocabulary of grade 3 academic and domain-specific words and phrases Demonstrates **comprehensive** understanding of unfamiliar words in text; shows **full** understanding of word parts and word relationships in word meanings Demonstrates **consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

Grade 4

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Reading	Demonstrates **partial** understanding of what a text implies and states explicitly; cites **limited** textual support; **incompletely summarizes** key details and main ideas; provides a **partial** description of a character, an event, or an idea in grade 4 texts Demonstrates **partial** understanding of words and phrases (e.g., figurative language); provides a **limited** understanding of structural elements and different points of view Makes **basic** comparisons between texts; shows **partial** understanding of information presented in media; **partially** explains important points and themes in text(s)	Demonstrates **sufficient** understanding of what a text implies and states explicitly; cites **solid** textual support; **appropriately** summarizes key details and main ideas; provides a **mostly complete** description of a character, an event, or an idea in grade 4 texts Demonstrates **general** understanding of words and phrases (e.g., figurative language); provides a **general** understanding of structural elements and different points of view Makes **appropriate** comparisons between texts; shows **solid** understanding of information present in media; **appropriately** explains important points and themes in text(s)	Demonstrates **comprehensive** understanding of what a text implies and states explicitly; cites **in-depth** textual support; **skillfully** summarizes key details and main ideas; provides a **comprehensive** description of a character, an event, or an idea in grade 4 texts Demonstrates **in-depth** understanding of words and phrases (e.g., figurative language); provides a **clear** understanding of structural elements and different points of view Makes **effective** comparisons between texts; shows **clear** understanding of information present in media; **effectively** explains important points and themes in text(s)

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
Writing	Produces **basic** writing with **limited** selection and explanation of facts and details related to grade 4 texts, topics, or subject areas Produces writing with **little** development of a central idea or sequenced events, **limited** organization, and **basic** expression of ideas Exhibits **partial** awareness of task, purpose, and audience	Produces **solid** writing with **appropriate** selection and explanation of facts and details related to grade 4 texts, topics, or subject areas Produces writing with **appropriate** development of a central idea or sequenced events, **moderate** organization, and **adequate** expression of ideas Exhibits **sufficient** awareness of task, purpose, and audience	Produces **clear** writing with **effective** selection and explanation of facts and details related to grade 4 texts, topics, or subject areas Produces writing with **full** development of a central idea or sequenced events, **effective** organization, and **clear** expression of ideas Exhibits **full** awareness of task, purpose, and audience
Language	Demonstrates **limited** reading vocabulary of grade 4 academic and domain-specific words and phrases Demonstrates **limited** understanding of unfamiliar words in text; shows **partial** understanding of word parts, word relationships, and nuances in word meanings Demonstrates **little** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **solid** reading vocabulary of grade 4 academic and domain-specific words and phrases Demonstrates **solid** understanding of unfamiliar words in text; shows **sufficient** understanding of word parts, word relationships, and nuances in word meanings Demonstrates **mostly consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **comprehensive** reading vocabulary of grade 4 academic and domain-specific words and phrases Demonstrates **comprehensive** understanding of unfamiliar words in text; shows **full** understanding of word parts, word relationships, and nuances in word meanings Demonstrates **consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

Grade 5

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Reading	Demonstrates **partial** understanding of what a text implies and states explicitly; provides **limited** textual support through the use of quotations or paraphrasing; **incompletely** summarizes key details and main ideas; provides a **partial** analysis of a character, an event, or an idea in grade 5 texts Demonstrates **partial** understanding of words and phrases (e.g., figurative language); provides a **limited** explanation of how structural elements or points of view influence text(s) Makes **basic** comparisons between texts; shows **partial** understanding of information present in multiple sources or media; **partially** analyzes important points and themes in text(s)	Demonstrates **sufficient** understanding of what a text implies and states explicitly; provides **solid** textual support through the use of quotations or paraphrasing; **appropriately** summarizes key details and main ideas; provides a **mostly complete** analysis of a character, an event, or an idea in grade 5 texts Demonstrates **general** understanding of words and phrases (e.g., figurative language); provides a **general** explanation of how structural elements or points of view influence text(s) Makes **appropriate** comparisons between texts; shows **solid** understanding of information present in multiple sources or media; **appropriately** analyzes important points and themes in text(s)	Demonstrates **comprehensive** understanding of what a text implies and states explicitly; provides **in-depth** textual support through the use of quotations or paraphrasing; **skillfully** summarizes key details and main ideas; provides a **comprehensive** analysis of a character, an event, or an idea in grade 5 texts Demonstrates **in-depth** understanding of words and phrases (e.g., figurative language); provides a **clear** explanation of how structural elements or points of view influence text(s) Makes **effective** comparisons between texts; shows **clear** understanding of information present in multiple sources or media; **effectively** analyzes important points and themes in text(s)

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
Writing	Produces **basic** writing with **limited** selection and explanation of facts and details related to grade 5 texts, topics, or subject areas Produces writing with **little** development of a central idea or sequenced events, **limited** organization, and **basic** expression of ideas Exhibits **partial** awareness of task, purpose, and audience	Produces **solid** writing with **appropriate** selection and explanation of facts and details related to grade 5 texts, topics, or subject areas Produces writing with **appropriate** development of a central idea or sequenced events, **moderate** organization, and **adequate** expression of ideas Exhibits **sufficient** awareness of task, purpose, and audience	Produces **clear** writing with **effective** selection and explanation of facts and details related to grade 5 texts, topics, or subject areas Produces writing with **full** development of a central idea or sequenced events, **effective** organization, and **clear** expression of ideas Exhibits **full** awareness of task, purpose, and audience
Language	Demonstrates **limited** reading vocabulary of grade 5 academic and domain-specific words and phrases Demonstrates **limited** understanding of unfamiliar words in text; shows **partial** understanding of word parts, word relationships, and nuances in word meanings Demonstrates **little** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **solid** reading vocabulary of grade 5 academic and domain-specific words and phrases Demonstrates **solid** understanding of unfamiliar words in text; shows **sufficient** understanding of word parts, word relationships, and nuances in word meanings Demonstrates **mostly consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **comprehensive** reading vocabulary of grade 5 academic and domain-specific words and phrases Demonstrates **comprehensive** understanding of unfamiliar words in text; shows **full** understanding of word parts, word relationships, and nuances in word meanings Demonstrates **consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

Grade 6

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Reading	Demonstrates **partial** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **partially** support conclusions; **incompletely** summarizes text; provides a **partial** analysis of a character, an event, or an idea in grade 6 texts Demonstrates **partial** understanding of meanings (e.g., figurative, connotative, technical) and effects (e.g., on mood) of words and phrases; demonstrates **limited** understanding of how structural elements and point of view contribute to the development of ideas Makes **basic** comparisons between texts; **partially** integrates information in different media or formats; **partially** analyzes important claims, arguments, or themes in text(s)	Demonstrates **sufficient** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **generally** support conclusions; **appropriately** summarizes text; provides a **mostly complete** analysis of a character, an event, or an idea in grade 6 texts Demonstrates **general** understanding of meanings (e.g., figurative, connotative, technical) and effects (e.g., on mood) of words and phrases; demonstrates **general** understanding of how structural elements and point of view contribute to the development of ideas Makes **appropriate** comparisons between texts; **solidly** integrates information in different media or formats; **appropriately** analyzes important claims, arguments, or themes in text(s)	Demonstrates **comprehensive** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **insightfully** support conclusions; **skillfully** summarizes text; provides a **sophisticated** analysis of a character, an event, or an idea in grade 6 texts Demonstrates **in-depth** understanding of meanings (e.g., figurative, connotative, technical) and effects (e.g., on mood) of words and phrases; demonstrates **sophisticated** understanding of how structural elements and point of view contribute to the development of ideas Makes **insightful** comparisons between texts; **skillfully** integrates information in different media or formats; **insightfully** analyzes important claims, arguments, or themes in text(s)
Writing	Produces **basic** writing with **limited** selection and explanation of evidence and details related to grade 6 texts, topics, or subject areas Produces writing with **little** development of a central idea, a claim, or sequenced events; **limited** organization; and **basic** expression of ideas Exhibits **partial** awareness of task, purpose, and audience	Produces **solid** writing with **appropriate** selection and explanation of evidence and details related to grade 6 texts, topics, or subject areas Produces writing with **appropriate** development of a central idea, a claim, or sequenced events; **moderate** organization; and **adequate** expression of ideas Exhibits **sufficient** awareness of task, purpose, and audience	Produces **sophisticated** writing with **skillful** selection and explanation of evidence and details related to grade 6 texts, topics, or subject areas Produces writing with **full** development of a central idea, a claim, or sequenced events**; skillful** organization; and **rich** expression of ideas Exhibits **full** awareness of task, purpose, and audience

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
Language	Demonstrates **limited** reading vocabulary of grade 6 academic and domain-specific words and phrases Demonstrates **limited** understanding of unfamiliar words in text and shows **partial** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **little** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **solid** reading vocabulary of grade 6 academic and domain-specific words and phrases Demonstrates **solid** understanding of unfamiliar words in text and shows **sufficient** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **mostly consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **comprehensive** reading vocabulary of grade 6 academic and domain-specific words and phrases Demonstrates **comprehensive** understanding of unfamiliar words in text and shows **full** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

Grade 7

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Reading	Demonstrates **partial** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **partially** support conclusions; incompletely summarizes text; provides a **partial** analysis of the interactions of characters, events, or ideas in grade 7 texts Demonstrates **partial** understanding of meanings (e.g., figurative, connotative, technical) and effects (e.g., on mood) of words and phrases; demonstrates **limited** understanding of how structural elements and point of view contribute to the development of ideas Makes **basic** comparisons between texts; **partially** integrates information in different media or formats; **partially** analyzes important claims, arguments, or themes in text(s)	Demonstrates **sufficient** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **generally** support conclusions; **appropriately** summarizes text; provides a **mostly complete** analysis of the interactions of characters, events, or ideas in grade 7 texts Demonstrates **general** understanding of **meanings** (e.g., figurative, connotative, technical) and effects (e.g., on mood) of words and phrases; demonstrates **general** understanding of how structural elements and point of view contribute to the development of ideas Makes **appropriate** comparisons between texts; **solidly** integrates information in different media or formats; **appropriately** analyzes important claims, arguments, or themes in text(s)	Demonstrates **comprehensive** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **insightfully** support conclusions; **skillfully** summarizes text; provides a **sophisticated** analysis of the interactions of characters, events, or ideas in grade 7 texts Demonstrates **in-depth** understanding of **meanings** (e.g., figurative, connotative, technical) and effects (e.g., on mood) of words and phrases; demonstrates **sophisticated** understanding of how structural elements and point of view contribute to the development of ideas Makes **insightful** comparisons between texts; **skillfully** integrates information in different media or formats; **insightfully** analyzes important claims, arguments, or themes in text(s)
Writing	Produces **basic** writing with **limited** selection and explanation of evidence and details related to grade 7 texts, topics, or subject areas Produces writing with **little** development of a central idea, a claim, or sequenced events; **limited** organization; and **basic** expression of ideas Exhibits **partial** awareness of task, purpose, and audience	Produces **solid** writing with **appropriate** selection and explanation of evidence and details related to grade 7 texts, topics, or subject areas Produces writing with **appropriate** development of a central idea, a claim, or sequenced events; **moderate** organization; and **adequate** expression of ideas Exhibits **sufficient** awareness of task, purpose, and audience	Produces **sophisticated** writing with **skillful** selection and explanation of evidence and details related to grade 7 texts, topics, or subject areas Produces writing with **full** development of a central idea, a claim, or sequenced events; **skillful** organization; and **rich** expression of ideas Exhibits **full** awareness of task, purpose, and audience

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
Language	Demonstrates **limited** reading vocabulary of grade 7 academic and domain-specific words and phrases Demonstrates **limited** understanding of unfamiliar words in text and shows **partial** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **little** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **solid** reading vocabulary of grade 7 academic and domain-specific words and phrases Demonstrates **solid** understanding of unfamiliar words in text and shows **sufficient** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **mostly consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **comprehensive** reading vocabulary of grade 7 academic and domain-specific words and phrases Demonstrates **comprehensive** understanding of unfamiliar words in text and shows **full** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

Grade 8

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Reading	Demonstrates **partial** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **partially** support conclusions; **incompletely** summarizes text; provides a **partial** analysis of connections among characters, events, or ideas in grade 8 texts Demonstrates **partial** understanding of meanings (e.g., figurative, ironic, allusive) and effects (e.g., on mood) of words and phrases; demonstrates **limited** understanding of how structural elements and point of view contribute to the development of ideas Provides a **basic** analysis between texts; **partially** integrates information from different media or formats; **partially** analyzes important claims, arguments, or themes in multiple texts	Demonstrates **sufficient** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **generally** support conclusions; **appropriately** summarizes text; provides a **mostly complete** analysis of connections among characters, events, or ideas in grade 8 texts Demonstrates **general** understanding of meanings (e.g., figurative, ironic, allusive) and effects (e.g., on mood) of words and phrases; demonstrates **general** understanding of how structural elements and point of view contribute to the development of ideas Provides an **appropriate** analysis between texts; **solidly** integrates information from different media or formats; **appropriately** analyzes important claims, arguments, or themes in multiple texts	Demonstrates **comprehensive** understanding of what a text implies and states explicitly; uses quotations and paraphrases to **insightfully** support conclusions; **skillfully** summarizes text; provides a **sophisticated** analysis of connections among characters, events, or ideas in grade 8 texts Demonstrates **in-depth** understanding of meanings (e.g., figurative, ironic, allusive) and effects (e.g., on mood) of words and phrases; demonstrates **sophisticated** understanding of how structural elements and point of view contribute to the development of ideas Provides an **insightful** analysis between texts; skillfully integrates information from different media or formats; **insightfully** analyzes important claims, arguments, or themes in multiple texts
Writing	Produces **basic** writing with **limited** selection and explanation of evidence and details related to grade 8 texts, topics, or subject areas Produces writing with **little** development of a central idea, a claim, or sequenced events; **limited** organization; and **basic** expression of ideas Exhibits **partial** awareness of task, purpose, and audience	Produces **solid** writing with **appropriate** selection and explanation of evidence and details related to grade 8 texts, topics, or subject areas Produces writing with **appropriate** development of a central idea, a claim, or sequenced events; **moderate** organization; and **adequate** expression of ideas Exhibits **sufficient** awareness of task, purpose, and audience	Produces **sophisticated** writing with **skillful** selection and explanation of evidence and details related to grade 8 texts, topics, or subject areas Produces writing with **full** development of a central idea, a claim, or sequenced events; **skillful** organization; and **rich** expression of ideas Exhibits **full** awareness of task, purpose, and audience

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
Language	Demonstrates **limited** reading vocabulary of grade 8 academic and domain-specific words and phrases Demonstrates **limited** understanding of unfamiliar words in text and shows **partial** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **little** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **solid** reading vocabulary of grade 8 academic and domain-specific words and phrases Demonstrates **solid** understanding of unfamiliar words in text and shows **sufficient** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **mostly consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **comprehensive** reading vocabulary of grade 8 academic and domain-specific words and phrases Demonstrates **comprehensive** understanding of unfamiliar words in text and shows **full** understanding of word parts, figurative language, word relationships, and nuances in word meanings Demonstrates **consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

August 2017

Next-Generation Achievement Level Descriptors

Exceeding Expectations
A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations
A student who performed at this level met grade-level expectations and is academically on-track to succeed in the current grade in this subject.

Partially Meeting Expectations
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

MCAS Next-Generation Achievement Level Descriptors
English Language Arts

Grade 10

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
Reading	**Partially** analyzes what a text implies and states explicitly; uses **little** evidence to support the analysis; **incompletely** identifies and analyzes the development of a central idea or theme of a text; provides a **limited** analysis of how characters, events or ideas are developed and interact across sufficiently complex texts **Partially** determines meanings (e.g., figurative, connotative, technical) of words and phrases and analyzes how they impact meaning and tone; demonstrates **limited** understanding of how structural elements and point of view contribute to the overall development of ideas or purpose Provides a **basic** analysis between texts; **partially** integrates information from different sources; **partially** analyzes and evaluates important claims, arguments, or themes in multiple texts	**Adequately** analyzes what a text implies and states explicitly; uses **sufficient** evidence to support the analysis; **appropriately** identifies and analyzes the development of a central idea or theme of a text; provides a **mostly complete** analysis of how characters, events or ideas are developed and interact across sufficiently complex texts **Appropriately** determines meanings (e.g., figurative, connotative, technical) of words and phrases and analyzes how they impact meaning and tone; demonstrates **general** understanding of how structural elements and point of view contribute to the overall development of ideas or purpose Provides an **appropriate** analysis between texts; **solidly** integrates information from different sources; **appropriately** analyzes and evaluates important claims, arguments, or themes in multiple texts	**Insightfully** analyzes what a text implies and states explicitly; uses **strong** and **thorough** evidence to support the analysis; **skillfully** identifies and analyzes the development of a central idea or theme of a text; provides a **sophisticated** analysis of how characters, events or ideas are developed and interact across sufficiently complex texts **Skillfully** determines meanings (e.g., figurative, connotative, technical) of words and phrases and analyzes how they impact meaning and tone; demonstrates **sophisticated** understanding of how structural elements and point of view contribute to the overall development of ideas or purpose Provides an **insightful** analysis between texts; **skillfully** integrates information from different sources; **insightfully** analyzes and evaluates important claims, arguments, or themes in multiple texts
Writing	Produces **basic** writing with **limited** selection and explanation of evidence and details related to sufficiently complex texts, topics, or subject areas Produces writing with **little** development of a **basic** central idea, thesis, or sequenced events; **limited** organization; and **basic** expression of ideas Exhibits **partial** awareness of task, purpose, and audience	Produces **solid** writing with **appropriate** selection and explanation of evidence and details related to sufficiently complex texts, topics, or subject areas Produces writing with **adequate** development of a **solid** central idea, thesis, or sequenced events; **moderate** organization; and **appropriate** expression of ideas Exhibits **sufficient** awareness of task, purpose, and audience	Produces **clear** and **sophisticated** writing with **skillful** selection and explanation of evidence and details related to sufficiently complex texts, topics, or subject areas Produces writing with **full** development of an **insightful** central idea, thesis, or sequenced events; **skillful** organization; and **rich** expression of ideas Exhibits **full** awareness of task, purpose, and audience

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
Language	Demonstrates **limited** reading vocabulary of sufficiently complex academic and domain-specific words and phrases **Partially** determines the meaning of unfamiliar words in text using a variety of strategies; shows **partial** understanding of various grammatical rules and literary devices in a text Demonstrates **little** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **solid** reading vocabulary of sufficiently complex academic and domain-specific words and phrases **Sufficiently** determines the meaning of unfamiliar words in text using a variety of strategies; shows **sufficient** understanding of various grammatical rules and literary devices in a text Demonstrates **mostly consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics	Demonstrates **comprehensive** reading vocabulary of sufficiently complex academic and domain-specific words and phrases **Skillfully** determines the meaning of unfamiliar words in text using a variety of strategies; shows **full** understanding of various grammatical rules and literary devices in a text Demonstrates **consistent** control of the standard English conventions of sentence structure, grammar, usage, and mechanics

MCAS Next-Generation Achievement Level Descriptors
Mathematics

Next-Generation Achievement Level Descriptors

Exceeding Expectations
A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations
A student who performed at this level met grade-level expectations and is academically on-track to succeed in the current grade in this subject.

Partially Meeting Expectations
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

MCAS Achievement Level Descriptors

Mathematics: Grades 3 through 8 and 10

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations, and Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations **On MCAS, a student at this level:**	**Meeting Expectations** **On MCAS, a student at this level:**	**Exceeding Expectations** **On MCAS, a student at this level:**
Conceptual Understanding and Procedural Knowledge	• Demonstrates partial understanding of the grade appropriate numeration system • Performs some calculations and estimations • Identifies examples of basic math facts or mathematical concepts • Mostly reads and sometimes constructs graphs, tables, and charts	• Applies understanding of the base-ten system and fractions to interpret numbers and solve problems • Performs most calculations and estimations • Describes mathematical concepts and generates examples and counterexamples of concepts • Represents data and mathematical relationships using equations, verbal descriptions, tables, and graphs	• Performs complex calculations and estimations • Selects the best representations for a given set of data • Explains relationships between models such as equations, verbal descriptions, tables, and graphs • Applies math facts and connects mathematical concepts from various areas of mathematics, and uses the concepts to develop generalizations • Recognizes and makes use of structure, discerning patterns by seeing complicated things as single objects
Problem Solving	• Applies learned procedures to solve routine problems • Uses concrete objects or pictures to help conceptualize and solve problems.	• Applies learned procedures and mathematical concepts to solve a variety of problems, including multi-step problems • Solves problems using multiple methods • Demonstrates the relationships between operations used to solve problems and the context of the problems	• Generates strategies and procedures to solve non-routine problems • Solves problems using multiple methods, evaluating reasonableness of intermediate steps leading to the standard algorithms • Draws connections between strategies • Analyzes givens, constraints, and relationships in problems, using multiple methods and appropriate tools
Mathematical Reasoning	• Applies some reasoning methods to solve routine problems	• Uses a variety of reasoning methods to solve routine and non-routine problems • Uses symbols to solve routine mathematical problems	• Reasons abstractly and quantitatively, using multiple reasoning methods to solve complex problems and provides justification for the reasoning • Decontextualizes situations and represents them symbolically
Mathematical Communication	• Identifies and uses basic terms	• Uses logical forms of representation (e.g., text, graphs, symbols) to illustrate steps to a solution	• Uses logical forms of representation (e.g., text, graphs, symbols) to justify solutions and solution strategies • Constructs viable arguments and critiques the reasoning of others, attending to precision

MCAS Next-Generation Achievement Level Descriptors
Mathematics

Next-Generation Achievement Level Descriptors

Exceeding Expectations
A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations
A student who performed at this level met grade-level expectations and is academically on-track to succeed in the current grade in this subject.

Partially Meeting Expectations
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

MCAS Achievement Level Descriptors
Mathematics: Grade 3

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations, and Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations **On MCAS, a student at this level:**	**Meeting Expectations** **On MCAS, a student at this level:**	**Exceeding Expectations** **On MCAS, a student at this level:**
Operation and Algebraic Thinking	• Determines products and quotients of whole numbers • Solves one-step word problems by multiplying and dividing within 100 with limited accuracy • Determines the unknown whole number in a multiplication or division equation • Recognizes simple arithmetic patterns	• Interprets products and quotients of whole numbers • Solves word problems by multiplying and dividing within 100 accurately • Solves two-step word problems with unknowns in equations involving all four operations • Applies the properties of multiplication • Recognizes arithmetic patterns • Recognizes products of two single-digit numbers • Uses equal groups and arrays to solve word problems involving multiplication and division within 100 • Consistently uses estimation strategies to assess the reasonableness of answers	• Creates and solves equations with unknown factors to solve word problems • Explains arithmetic patterns using the properties of operations • Uses area models to solve word problems involving multiplication and division within 100 • Recognizes products of two single-digit numbers and the related division facts
Number and Operations in Base Ten	• Uses place value to round two-digit numbers to the nearest 10 • Solves problems by adding and subtracting within 1000 using various strategies with limited accuracy	• Uses place value to round three-digit numbers to the nearest 10 • Fluently adds and subtracts within 1000 using various strategies • Solves problems involving multiplication of a one-digit whole number by multiples of 10 in the range 10-90	• Uses algorithms to add and subtract within 1000 and multiply one-digit whole numbers by multiples of 10 in the range 10-90, and explain why they work • Recognizes the relationship between addition and subtraction

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
Number and Operations – Fractions	• Visually identifies fractional parts of a whole • Recognizes equivalent fractions • Compares two fractions with like numerators or like denominators	• Identifies fractional parts of a whole • Identifies and represents fractions on number lines or other visual fraction models that are already created • Generates equivalent fractions • Represents whole numbers as fractions • Compares fractions with like numerators and denominators by reasoning about their size using visual fraction models that are already created, and symbols <, > and =	• Explains fraction equivalence • Recognizes and explains fractional equivalence of whole numbers • Creates visual fraction models to justify the size comparison made about two fractions that refer to the same whole.
Measurement and Data	• Tells, writes and measures time to the nearest minute • Identifies appropriate tools and units of measurement to solve problems • Uses line plots to solve problems • Uses scaled picture graphs and bar graphs to solve problems • Finds area by using non-standard units • Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side length	• Solves word problems involving addition and subtraction of time intervals in minutes • Selects and uses appropriate tools and units of measure to solve problems • Draws simple scaled picture graphs and bar graphs and uses them to solve one-step problems • Generates measurement data using rulers marked with halves and fourths of an inch • Creates line plots with whole numbers, halves and fourths to record and show data to solve problems • Finds area by using standard units • Relates multiplication and addition to area • Determines area by decomposing shapes into non-overlapping rectangles and adding the areas of the non-overlapping parts • Solves mathematical problems involving perimeters of polygons, including finding an unknown side length and identifies rectangles with the same perimeter and different area	• Uses estimation to solve word problems involving measurement • Draws scaled picture graphs and scaled bar graphs and uses them to solve two-step problems • Differentiates perimeter from area • Interprets scaled picture and bar graphs, and line plots • Solves mathematical and real-world problems involving perimeters of polygons, including finding an unknown side length and is able to reproduce rectangles with the same perimeter and different area
Geometry	• Identifies two-dimensional shapes based on their sides and angles • Partitions shapes into parts	• Describes two-dimensional shapes based their sides and angles • Partitions shapes into parts with equal areas and expresses the area as a unit fraction of the whole	• Compares and classifies two-dimensional shapes based on their sides and angles

MCAS Achievement Level Descriptors
Mathematics: Grade 4

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations, and Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations **On MCAS, a student at this level:**	**Meeting Expectations** **On MCAS, a student at this level:**	**Exceeding Expectations** **On MCAS, a student at this level:**
Operation and Algebraic Thinking	• Interprets a multiplication equation as a comparison • Solves multiplication and division word problems • Solves two-step word problems using the four operations with whole numbers, including problems where remainders must be interpreted • Identifies multiplication facts through 12 x 12 • Identifies factor pairs in the 1-100 range • Identifies a pattern that follows a rule	• Recognizes verbal statements of multiplicative comparisons as multiplication equations. • Represents multiplication and division word problems using drawings and equations • Uses the four operations to solve multi-step word problems and represents the problems by equations • Identifies related multiplication and division facts through 12 x 12 • Finds factor pairs in the 1-100 range and recognizes that a whole number is a multiple of each of its factors • Distinguishes between prime and composite numbers in the range 1-100 • Identifies a pattern that follows a rule and generates a pattern, given a rule	• Explains the difference between multiplicative and additive comparison • Uses equations to represent problems, and justifies solutions with estimation • Identifies multiples and their corresponding factors and distinguishes between prime and composite numbers. • Generates patterns not explicit to the rule • Uses estimation to assess the reasonableness of answers
Number and Operations in Base Ten	• Reads and writes whole numbers using base-ten number names and expanded form • Uses place value understanding to round whole numbers to the thousands place • Solves problems involving multiplication of four-digit numbers by a one-digit numbers • Solves problems involving quotients and remainders with up to three-digit dividends and one-digit divisors based on place value and properties of operations	• Uses place value to recognize that in a multi-digit number, a digit in any place represents 10 times as much as it represents in the place to its right • Compares two multi-digit numbers based on place value position using <, > and = • Uses place value understanding to round whole numbers to the ten thousands place • Adds and subtracts whole numbers using the standard algorithm • Solves problems involving multiplication of two-digit numbers by two-digit numbers • Solves problems involving quotients and remainders with up to four-digit dividends and one-digit divisors, using p the relationship between multiplication and division understanding	• Uses place value understanding to round whole numbers up to one million • Uses understanding of structure to explain the standard algorithm for addition and subtraction. • Solves problems involving multiplication of four-digit numbers by one-digit, and justifies solutions by using equations, rectangular arrays or area models. • Justifies solutions using equations, rectangular arrays, and/or area models

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
Number and Operations – Fractions	• Recognizes equivalency in fractions • Compares fractions with different numerators and different denominators by using common denominators or common numerators • Decomposes fractions into a sum of fractions and uses visual fraction models to solve problems • Multiplies a fraction by a whole number	• Explains why fractions are equivalent using visual fraction models • Consistently compares two fractions when the two fractions refer to the same whole • Consistently compares two decimals when the two decimals refer to the same whole • Compares fractions with different numerators and different denominators by comparing to a benchmark fraction • Adds and subtracts fractions with like denominators • Decomposes fractions into a sum of fractions and uses equations to solve problems • Adds and subtracts mixed numbers with like denominators by replacing with equivalent fraction and by using properties of operations or the relationship of addition and subtraction • Uses visual fraction models and equations to solve word problems involving multiplication of a fraction by a whole number • Uses decimal notation to represent fractions with denominators of 10 and 100 • Compares decimals to hundredths by reasoning about their size	• Generates equivalent fractions including fractions greater than 1 • Decomposes fractions into a sum of fractions and justifies solutions to problems with visual fraction models and equations • Justifies the conversion of a fraction with denominator of 10 to an equivalent fraction with a denominator of 100 and expresses it as a decimal
Measurement and Data	• Solves measurement problems involving whole numbers using all four operations • Solves measurement problems involving perimeter and area • Interprets data presented in line plots (dot plots) and uses addition and subtraction of fractions to solve problems involving line plots • Identifies concepts of angles and angle measurement	• Solves problems involving converting measurements from larger units to smaller units • Creates line plots (dot plots) in fractions of a unit (1/2, ¼, 1/8), to display given data, and uses addition and subtraction of fractions solve problems involving line plots • Uses a protractor to measure, sketch or interpret an angle • Finds unknown angles in diagrams • Justifies solutions to perimeter and area problems	• Reasons about relative sizes of measurement units within one system of units • Sketches an angle without a protractor

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
Geometry	• Identifies right triangles, points, lines, line segments, rays, angles, perpendicular and parallel lines, lines of symmetry	• Identifies right triangles and draws points, lines, line segments, rays, angles, perpendicular and parallel lines, in two dimensional shapes • Classifies two-dimensional shapes based on their attributes, including the presence and absence of parallel or perpendicular lines or angles of a specified size. • Recognizes lines of symmetry in two-dimensional figures and identifies line-symmetric figures	• Draws two-dimensional shapes based on attributes.

MCAS Achievement Level Descriptors
Mathematics: Grade 5

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations, and Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations **On MCAS, a student at this level:**	**Meeting Expectations** **On MCAS, a student at this level:**	**Exceeding Expectations** **On MCAS, a student at this level:**
Operation and Algebraic Thinking	• Recognizes when parentheses, brackets, or braces are appropriately used in numerical expressions • Given two rules, generates numerical patterns	• Uses parentheses, brackets, or braces to write, interpret and evaluate numerical expressions • Interprets numerical expressions without evaluating • Given two rules, identifies the relationship between corresponding terms	• Given two rules, forms and graphs ordered pairs and interprets the relationship between corresponding terms
Number and Operations in Base Ten	• Recognizes that in a multi-digit number, including a decimal, a digit in any place represents 10 times as much as it represents in the pace to its right or 1/10 of what it represents in the place to its left • Reads decimals to thousandths using base 10 numerals, number names, and expanded form • Identifies which comparison symbols to use when comparing decimals to hundredths • Uses various strategies to solve problems involving all operation with whole numbers including quotients with division limited to four-digit dividends and 2-digit divisors • Solves problems involving addition and subtraction with decimals to tenths • Identifies the quotient of whole numbers	• Uses whole number exponents to denote powers of 10 • Uses place value to round decimals to any place • Fluently multiplies multi-digit whole numbers • Writes decimals to thousandths using base ten numerals, number names, expanded form and comparison symbols • Compares decimals using base ten numerals, number names and comparison symbols <, > and = • Uses various strategies to solve problems involving all operation with whole numbers including quotients with division limited to four-digit dividends and 2-digit divisors and explains using rectangular arrays and/or area models • Applies understandings of models for decimals, place value, and properties of operations to add, subtract, multiply and divide decimals to hundredths • Solves mathematical and real-world problems involving multiplication of whole numbers and decimals to hundredths using the standard algorithm. • Uses models to find the quotients of whole numbers.	• Uses place value understanding of multi-digit numbers including decimals to explain patterns in the number of zeros and the placement of the decimal point, when multiplying a number by powers of 10. • Compares decimals using expanded form • Makes reasonable estimates of decimal results • Explains understandings of models for decimals, decimal notation, and properties of operations to add, subtract, multiply and divide decimals to hundredths • Uses the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers to understand and explain why the procedures for multiplying and dividing finite decimals make sense.

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
		• Solves problems involving all operations on decimals to hundredths.	
Number and Operations – Fractions	• Adds and subtracts fractions with like denominators (including mixed numbers) • Uses visual fraction models to multiply fractions or whole numbers by fractions • Finds areas or rectangles with fractional side lengths by tiling with unit squares • Recognizes multiplication as scaling by comparing the factors with computation	• Adds and subtracts fractions with unlike denominators (including mixed numbers) • Uses visual fraction models to solve real-world problems by multiplying fractions or whole numbers by fractions, and fractions by mixed numbers • Shows that the area of rectangles with fractional side lengths, found by tiling with unit squares, is the same as multiplying the side lengths • Recognizes multiplication as scaling by comparing the factors without computation • Interprets division of a unit fraction by a non-zero whole number and division of a whole number • Solves real-world and mathematical problems involving division of a unit fraction by a non-zero whole number and a whole number by a unit fraction	• Applies understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators in the context of solving word p problems. • Uses understanding of fraction equivalence to make sense of sums and differences of fractions and makes reasonable estimates of them. • Uses the relationship between multiplication and division of fractions to solve and explain mathematical and real-world problems including finding the area of rectangles with fractional side lengths, finding quotients of division of non-zero whole number by unit fractions

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
Measurement and Data	• Converts among different-sized measurement units within a given measurement system • Interprets and represents data presented in line plots (dot plots) to solve problems • Recognizes volume as an attribute of solid figures and calculates volume of right rectangular prisms by packing it with unit cubes, counting unit cubes, and with standard and non-standard units	• Applies conversion among different-sized measurement units within a given measurement system to solve multi-step real-world problems • Uses a line plot (dot plot) to represent data and uses operations on fractions to solve problems involving the line plots • Recognizes volume as additive and calculates volume by finding the total number of same-size units of volume required to fill a space without gaps or overlaps. • Decomposes three-dimensional shapes and finds volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes	• Uses appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume with application of the volume formula • Decomposes three-dimensional shapes and finds volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes and relate to the volume formula • Solves real world application problems requiring the application of V =l wh and V=Bh
Geometry	• Represents mathematical and real-world problems by locating points in the first quadrant • Identifies two-dimensional figures based on properties	• Represents mathematical and real-world problems by locating and graphing in the first quadrant • Classifies two-dimensional figures in a hierarchy based on properties	• Solves mathematical and real-world problems by graphing in the first quadrant and interpreting the coordinate values of points based on the context of the situation • Applies knowledge of number and length to the order and distance relationships of a coordinate plane

MCAS Achievement Level Descriptors
Mathematics: Grade 6

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations, and Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations **On MCAS, a student at this level:**	**Meeting Expectations** **On MCAS, a student at this level:**	**Exceeding Expectations** **On MCAS, a student at this level:**
The Number System	• Interprets quotients of fractions to solve problems • Identifies greatest common factors or least common multiples • Uses positive and negative numbers to describe quantities having opposite directions or values • Solves mathematical problems by using all operations on multi-digit decimals • Graphs ordered pairs in all four quadrants to solve problems • Interprets statements of order for rational numbers	• Computes quotients of fractions to solve problems • Uses prime factorization to find the greatest common factors, least common multiples to solve problems • Represents quantities in real-world context on a number line, explaining the meaning of zero • Uses the understanding of structure to explain the standard algorithm to divide multi-digit numbers • Uses the standard algorithm to fluently operate on multi-digit decimals • Finds the absolute value of a rational number by recognizing its distance from zero on the number line • Uses the standard algorithm to divide multi-digit numbers • Computes all operations on multi-digit decimals • Solve problems by graphing in all four quadrants and finds distances between points with same first coordinate or same second coordinate • Interprets and writes statements of order for rational numbers	• Applies interpretation of quotients of fractions to solving word problems • Uses visual fraction models to solve word problems involving computing quotients of fractions • Applies number theory concepts to the solution of problems. • Solves problems involving order and absolute value of rational numbers

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
Ratios and Proportional Relationships	• Identifies part to part and part to whole relationships • Uses rate language in the context of a ratio relationship • Sometimes solves unit rate problems	• Solves problems requiring part to part ratios to be converted to part to whole ratios • Consistently solves unit rate problems • Uses rate reasoning to solve problems • Finds the percent of a quantity • Uses ratio reasoning to convert measurement units within measurement systems • Interprets and manipulates models with ratios such as tape diagrams, tables, and double number lines to compare ratios	• Determines what percent of a quantity is a given amount • Explains when to use part to part ratios, and when to use part to whole ratios to solve problems • Uses ratio reasoning to convert measurement units between measurement systems • Creates models with ratios such as tape diagrams, tables, and double number lines to compare ratios • Relates mass of an object to its volume to solve problems
Expressions and Equations	• Evaluates given expressions and equations involving whole-number exponents to solve problems • Identifies parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient)	• Interprets, evaluates, and writes expressions and equations involving whole-number exponents • Views one or more parts of an expression as a single entity • Generate and identify equivalent expressions • Relates tables and graphs to equations • Writes and solves equations of the form $x + p = q$ and $px = q$ • Solves and graphs inequalities that represent a constraint or condition in a mathematical or real-world problem. • Analyzes the relationships between dependent and independent variables in real-world problems.	• Writes and graphs inequalities that represent a constraint or condition in a mathematical or real-world problem • Creates equations of the form $x + p = q$ and $px = q$ from a given situation • Uses equations to describe relationships between quantities

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
Geometry	• Solves mathematical problems involving areas of triangles, including right triangles and quadrilaterals • Solves mathematical problems involving volume of right rectangular prisms with whole number edge lengths • Represents three-dimensional figures using nets • Given coordinates of a polygon, draws the polygon on a coordinate plane	• Solves real-world problems involving areas of triangles, including right triangles and quadrilaterals by decomposing shapes, rearranging or removing pieces, and relating shapes to rectangles • Finds volume of right rectangular prisms with fractional edge lengths • Uses nets of three-dimensional figures to find the surface area • Given coordinates of a polygon on a coordinate plane, finds lengths of the sides of the polygon	• Reasons about geometric shapes and their measurements • Develops, and justifies formulas to solve mathematical and real-world problems that involve areas of triangles, including right triangles, and quadrilaterals • Applies the formula for volume of right rectangular prisms with fractional edge lengths • Applies knowledge of nets to solve mathematical and real-world problems involving surface area • Given coordinates of a polygon (without a coordinate plane), finds lengths of the sides of the polygon and applies these techniques to solve real-world problems
Statistics and Probability	• Recognizes a statistical question • Visually recognizes measures of center and variability • Interprets dot plots and histograms	• Solve problems involving finding the measures of center and variability • Constructs dot plots, histograms, box plots and circle graphs given real-world situations	• Recognizes that a data distribution may not have a definite center, and different ways to measure center can yield different values, and uses this understanding to interpret a situation • Describes and summarizes numerical data sets, identifying clusters, peaks, gaps, and symmetry in a real-world problem

MCAS Achievement Level Descriptors
Mathematics: Grade 7

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations, and Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations **On MCAS, a student at this level:**	**Meeting Expectations** **On MCAS, a student at this level:**	**Exceeding Expectations** **On MCAS, a student at this level:**
The Number System	• Represents addition and subtraction on a horizontal and vertical number line • Operates with rational numbers	• Recognizes situations in which opposite quantities combine to make zero • Operates with rational numbers in mathematical and real-world problems • Translates between rational numbers and decimals	• Translates from repeating decimal form of a rational number to fraction form • Interprets quotient and remainder of rational numbers • Applies properties of operations as strategies to add, subtract, multiply and divide
Ratios and Proportional Relationships	• Recognizes a proportional relationship • Uses ratios and proportionality to solve simple mathematical problems, including percent problems	• Represents a proportional relationship by equations • Sometimes uses ratios and proportionality to solve multi-step mathematical and real-world problems, including percent problems • Interprets the meaning of any point on a graph of a proportional relationship	• Consistently uses ratios and proportionality to solve multi-step mathematical and real-world problems, including percent problems
Expressions and Equations	• Uses properties of operations to add and subtract linear expressions • Solves simple mathematical problems using numerical and algebraic expressions and equations • Identifies simple arithmetic and geometric sequences from tables, graphs, words, and expressions. • Extends patterns in simple arithmetic and geometric sequences from tables, graphs, words, and expressions.	• Uses properties of operations to expand linear expressions • Uses properties of operations to factor linear expressions • Given a real-world problem, rewrites expressions in different forms to show understanding of the problem • Interprets the solution of an inequality in a real-world problem • Solves multi-step mathematical and real-world problems using numerical and algebraic expressions and equations • Fluently converts between different forms • Create equations and inequalities to solve problems • Graphs the solutions of an inequality	• Uses properties of operations to factor linear expressions and interprets the result in the context of a problem • Justifies solutions to multi-step problems • Analyzes patterns and determines expressions for simple arithmetic and geometric sequences using tables, graphs, words, and expressions

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
Geometry	• Draws triangles with given conditions • Applies the formulas to find the circumference of circles • Applies the formulas to find the area of two-dimensional figures, including circles • Recognizes attributes of angles (supplementary, complementary, vertical, adjacent)	• Constructs triangles with given conditions and describes some of their attributes • Describes the shape of the two-dimensional face of the figure that results from slicing three-dimensional figures. • Solves problems involving the relationship between area and circumference of circles • Solves problems involving the surface area and volume of three-dimensional shapes • Solves mathematical problems involving scale drawings • Solves multi-step problems using attributes of angles (supplementary, complementary, vertical, adjacent)	• Finds unknown supplementary, complementary, vertical, and adjacent angles by solving equations
Statistics and Probability	• Makes inferences about a population by examining the sample population • Visually compares two populations based on measures of center and variability • Differentiates between representative and non-representative samples • Identifies probability as a number between 0 and 1 • Finds probabilities of simple events	• Uses random sampling to draw inferences about a population • Recognizes the probabilities of 0 through 1 as likely, unlikely, or neither. • Develops probability models and uses it to find probabilities of events • Finds probabilities for compound events using organized lists, tables, and tree diagrams	• Evaluates probability models • Designs and uses a simulation to generate frequencies for compound events • Computes the differences of the centers as a multiple of the measure of variability for two populations

MCAS Achievement Level Descriptors
Mathematics: Grade 8

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations, and Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations **On MCAS, a student at this level:**	**Meeting Expectations** **On MCAS, a student at this level:**	**Exceeding Expectations** **On MCAS, a student at this level:**
The Number System	• Distinguishes between rational and irrational numbers	• Recognizes that rational and irrational numbers have decimal expansions • Uses rational approximations of irrational numbers to compare the size of irrational numbers • Finds approximate location of irrational numbers on the number line • Finds rational approximations of irrational numbers	• Estimates the values of expressions with irrational numbers • Converts a decimal expansion which repeats eventually to a rational number
Expressions and Equations	• Identifies the properties of integer exponents • Know that √2 is irrational • Uses and evaluates square root s of small squares • Graphs proportional relationships, and identifies the unit rate as the slope • Solves one-variable linear equations with one or many solutions • Recognizes that the point of intersection of two linear equations is the solution	• Applies the properties of integer exponents to generate equivalent expressions • Performs operations with decimals and scientific notation • Uses and evaluates cube roots of small cubes • Uses numbers in the form of a single digit times an integer power of 10 to estimate the magnitude and relationships of quantities • Uses scientific notation and chooses appropriate units of measurement for varying magnitudes • Uses linear equations and systems of linear equations to represent and solve problems. • Compares proportional relationships represented in different ways • Recognizes the difference between proportional and non-proportional in linear relationships • Solves one-variable linear equations with rational coefficients • Solves systems of two linear equations algebraically or graphically in real-world and mathematical problems	• Uses numbers in the form of a single digit times an integer power of 10 to estimate the magnitude and interpret relationships of quantities in word problems • Uses linear equations and systems of linear equations to represent, analyze, and solve problems. • Use similar triangles to explain why the slope is the same between any two distinct points on a non-vertical line in the coordinate plane • Derives the equation y=mx for a line through the origin and the equation y=mx + b for a line intercepting the vertical axis b • Estimates solutions to systems of two equations from a graph • Uses understanding of a proportional relationship and structure to interpret the meaning of b, the vertical axis intercept

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
Functions	• Identifies a relationship as a function • Interprets the equation of a linear function	• Determines the rate of change and initial value of a function from a table or graph • Compares the properties of functions represented in different ways • Writes a function to model a linear relationship • Determines the rate of change of a function from a table, graph, or description • Describes or sketches functional relationships represented graphically	• Identifies functions as linear and non-linear from graphs or equations • Interprets the rate of change of a function from a table, graph, equation, or description
Geometry	• Identifies the properties of rotations, reflections and translations • Uses the relationship among the sides of a right triangle to solve problems • Translates and reflects two dimensional figures • Uses Pythagorean theorem to find the hypotenuse	• Describes the congruence relationship between two congruent figures • Describes the effect of transformations on two-dimensional figures using coordinates • Describes the similarity relationship between two similar figures • Rotates two-dimensional figures around the origin • Finds angle sum and exterior angle of triangles, angles created when parallel lines are cut by a transversal, and angle-angle criterion for similarity of triangles • Applies the Pythagorean theorem to find distances between points on the coordinate plane • Applies the Pythagorean theorem to determine the unknown side lengths in right triangles in mathematical and real-world problems • Solves mathematical and real-world problems involving volume of cones, cylinders, and spheres	• Use informal arguments to establish facts about the angle sum and exterior angle of triangles, angles created when parallel lines are cut by a transversal, and angle-angle criterion for similarity of triangles • Justifies Pythagorean theorem and its converse • Given the volume of a cone, finds unknown dimensions of the cone • Given the volume of a cylinder, finds unknown dimensions of the cylinder • Given the volume of a sphere, finds unknown dimensions of the sphere
Statistics and Probability	• Describes the patterns associated with bivariate data • Identifies and constructs a line of best fit	• Constructs and interprets scatter plots • Constructs and interprets two-way tables • Uses the equation of a linear model to solve problems	• Interprets the slope and intercept of linear models • Analyzes scatter plots • Analyzes relative frequencies in two-way tables

MCAS Next-Generation Achievement Level Descriptors
Mathematics

Next-Generation Achievement Level Descriptors

Exceeding Expectations
A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations
A student who performed at this level met grade-level expectations and is academically on-track to succeed in the current grade in this subject.

Partially Meeting Expectations
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

MCAS Achievement Level Descriptors
Mathematics: Grade 10

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations, and Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations **On MCAS, a student at this level:**	**Meeting Expectations** **On MCAS, a student at this level:**	**Exceeding Expectations** **On MCAS, a student at this level:**
Number and Quantity	• Rewrites expressions involving integer exponents using the properties of exponents • Uses units as a way to understand problems and chooses units consistently in formulas • Chooses the scale and the origin in graphs and data displays • Identifies significant figures in recorded measures and computed values based on the context given and the precision of the tools used to measure • Identifies appropriate quantities for the purpose of descriptive modeling	• Rewrites expressions involving radical and rational exponents using the properties of exponents • Performs operations on rational and irrational numbers • Determines whether the solution of operations on two numbers would be rational or irrational • Interprets units consistently in formulas and uses units to solve multi-step problems. • Interprets the scale and the origin in graphs and data displays • Defines appropriate quantities for the purpose of descriptive modeling • Chooses a level of accuracy appropriate to limitations on measurement when reporting quantities • Describes the effects of approximate error in measurement and rounding on measurements and on computed values from measurements	• Explains how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of radical exponents • Explains why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational
Algebra	• Usually interprets parts and structures of linear expressions • Chooses an equivalent form of an expression to reveal properties of the quantity represented by the expression • Identifies, combines, and expands like terms when performing operations on polynomial expressions • Creates linear equations and inequalities in one variable and uses them to solve problems • Creates equations in two variables to represent relations between quantities • Graphs the equations on coordinate axes with labels and scales	• Consistently interprets parts of an expression based on real-world context • Usually interprets the structure of quadratic and exponential expressions with integer exponents • Factors polynomial expressions • Creates quadratic and exponential equations in one variable and uses them to solve problems • Creates equations with more than two variables • Represents constraints by linear equations/ inequalities and by systems of linear equations/inequalities • Constructs viable arguments to justify or refute a solution method for linear equations/inequalities	• Interprets complicated expressions by viewing one or more of their parts as a single entity • Chooses and produces an equivalent form of an expression to explain properties of the quantity represented by the expression • Completes the square in a quadratic expression to reveal the maximum or minimum value of the function it defines • Recognizes that the system of polynomials is similar to the system of integers in that they are both closed under certain operations • Interprets solutions of linear equations or inequalities as viable or non-viable options in a modeling context

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
	• Rearranges formulas to highlight a quantity of interest using the same reasoning as in solving equations • Solves and explains each step in solving linear equations and inequalities in one variable • Solves system of linear equations exactly and approximately • Knows that the graph of an equation in two variables is the set of all its solutions • Graphs the solutions of linear inequality in two variables	• Usually solves linear equation/inequalities in one variable involving absolute value • Solves a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically • Finds and is able to explain the solutions of linear equations y = f(x) and y = g(x) approximately, using technology to graph the functions and make tables of values • Graphs the solution set of a system of linear inequalities in two variables	• Uses the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions • Derives the quadratic formula • Recognizes when solutions of a quadratic equation results in non-real solutions and write them as $a \pm bi$ for real numbers a and b • Proves that, given a system of equations in two variables, replacing one equation by the sum of that equation and a multiple of the other to produces a system with the same solutions
Functions	• Knows the structure of a function and uses function notation to evaluate and interpret functions • Distinguishes between an arithmetic and a geometric sequence • Interprets key features of graphs and tables for a function that models a relationship • Calculates and interprets the average rate of change of a function presented symbolically or as a table • Graphs linear functions to show intercepts • Compares properties of functions each represented algebraically, graphically, numerically in tables, or by verbal descriptions • Distinguishes between situations that model linear functions and exponential functions • Constructs linear functions given a graph, a description of a relationship, or input-output pairs • Draws comparisons between exponential and linear graphs	• Interprets symmetries of graphs and tables in terms of the quantities • Relates the domain of a function to its graph • Estimates the rate of change from a graph. • Graphs functions and uses the properties of functions to create equivalent functions • Interprets zeros, maximum/minimum values, and symmetry of the graph • Writes quadratic and exponential functions to describe relationship between quantities • Determines an explicit expression or steps for calculation from a context • Writes arithmetic and geometric sequences both recursively and with an explicit formula • Identifies the effect on a graph of a function by replacing $f(x)$ with $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k • Finds the inverse of a linear function • Constructs exponential functions given a graph, a description of a relationship, or input-output pairs • Draws comparisons between exponential and quadratic graphs • Interprets the parameters in a linear function	• Recognizes that sequences are functions that are sometimes defined recursively • Interprets relative maximums and minimums and end behavior of graphs and tables in terms of the quantities • Uses graphs to show relative maximums and minimums; symmetries; and end behavior • Graphs piecewise-defined functions, including step functions • Creates equivalent functions to explain different properties of the function • Uses process of completing the square in a quadratic function to show zeros, maximum/minimum values, and symmetry of the graph • Determines a recursive process, or steps for calculation from a context • Uses recursive and explicit formulas to model situations, and translates between the two forms • Utilizes technology to experiment with cases and illustrates an explanation of the effects on the graph of linear, quadratic, exponential, or absolute value functions • Interprets the parameters in an exponential function
Geometry	• Knows precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc	• Uses geometric descriptions of rigid motions to solve problems • Applies properties of polygons to the solutions of problems	• Develops definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:

	• Represents rigid transformations in the plane
	• Compares transformations that preserve distance and angle to those that do not and identifies a sequence of transformations that will carry a given figure onto another
	• Finds angle sum and exterior angle of triangles, angles created when parallel lines are cut by a transversal, and angle-angle criterion for similarity of triangles
	• Uses congruence and similarity criteria for triangles to solve problems
	• Uses Pythagorean Theorem to solve right triangles
	• Uses coordinates to compute perimeters of polygons and areas of triangles and rectangles
	• Uses volume formulas for cylinders, cones, and spheres to solve problems
		• Verifies experimentally the properties of dilations given by a center and a scale factor
		• Uses congruence and similarity criteria for triangles to prove relationships in geometric figures
		• Knows that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles
		• Uses Pythagorean Theorem to solve right triangles in applied problems
		• Identifies relationships among inscribed angles, radii, and chords
		• Uses the fact that the length of the arc intercepted by an angle is proportional to the radius to solve problems
		• Uses the slope criteria for parallel and perpendicular lines to solve geometric problems
		• Finds the point on a directed line segment between two given points that partitions the segment in a given ratio
		• Uses volume formulas for pyramids to solve problems
			• Explains how the criteria for triangle congruence follow from the definition of congruence in terms of rigid motions
			• Makes formal geometric constructions
			• Proves theorems about:
			  ○ triangles
			  ○ parallelograms
			  ○ circles
			  ○ polygons
			• Proves the Pythagorean Theorem using triangle similarity
			• Explains the relationship between the sine and cosine of complementary angles.
			• Uses trigonometric ratios to solve right triangles in applied problems
			• Uses relationships among inscribed angles, radii, and chords to solve problems
			• Derives the formula for the area of a sector.
			• Derives the equation of a circle to find the center and the radius
			• Derives the equation of a parabola given a focus and directrix
			• Uses coordinates to prove simple geometric theorems algebraically, including the distance formula and its relationship to the Pythagorean Theorem
			• Proves the slope criteria for parallel and perpendicular lines
			• Uses dissection arguments, Cavalieri's principle, and informal limit arguments to give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone

Statistics and Probability	• Represents data with plots on the real number line • Usually uses statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets • Usually interprets differences in shape, center, and spread in the context of the	• Consistently uses statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets • Consistently interprets differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers) • Recognizes possible associations and trends in the data contained in a two-way frequency table	• Applies the addition rule and interprets the answer in terms of the model • Distinguishes between correlation and causation • Knows that the conditional probability of A given B is P(A and B)/P(B) and uses it to solve problems • Explains the concepts of conditional probability and independence in everyday language and everyday situations

	Partially Meeting Expectations On MCAS, a student at this level:	Meeting Expectations On MCAS, a student at this level:	Exceeding Expectations On MCAS, a student at this level:
	data sets, accounting for possible effects of extreme data points (outliers) • Interprets relative frequencies in the context of the data • Represents data on two quantitative variables on a scatter plot and describes how the data are related • Fits a linear function for a scatter plot that suggests a linear association and interprets the slope and the intercept of the model • Informally assesses the fit of a function by plotting and analyzing residuals • Describes events as subsets of a sample space using characteristics of the outcomes, or as unions, intersections, or complements of other events • Constructs and interprets two-way frequency tables of data when two categories are associated with each object being classified	• Fits a linear function to the data and uses the fitted function to solve problems in the context of the data • Computes and interprets the correlation coefficient of a linear fit • Distinguish between dependent and independent events • Uses a two-way table to approximate conditional probabilities • Recognizes the concepts of conditional probability and independence in everyday language and everyday situations • Applies the addition rule to calculate probabilities	

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Next-Generation Achievement Level Descriptors

Exceeding Expectations
A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations
A student who performed at this level met grade-level expectations and is academically on-track to succeed in the current grade in this subject.

Partially Meeting Expectations
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Grade 5

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
Understanding and Application of Disciplinary Core Ideas	Demonstrates a partial understanding of some scientific concepts and processes by identifying and sometimes describing or providing evidence for these concepts and processes. Uses some basic scientific terms in common scientific examples.	Demonstrates a solid understanding of many scientific concepts and processes by mostly describing, explaining, and providing evidence for these concepts and processes. Mostly applies appropriate scientific terms in a variety of applications, including common science examples and some novel situations.	Demonstrates a comprehensive, in-depth understanding of many scientific concepts and processes by consistently describing, explaining, and providing evidence for these concepts and processes. Consistently applies scientific terms in appropriate contexts in both common science examples and many novel situations.
Understanding and Application of Scientific and Engineering Practices	Identifies a testable, scientific question for an investigation. Completes a simple, commonly used model. Uses simple graphs or data to draw general conclusions about a familiar scientific investigation or phenomena. Identifies evidence to support a claim. Describes a benefit or drawback of simple design features given a familiar device or prototype.	Develops some testable, scientific questions for an investigation. Completes or uses a model and describes some strengths and weaknesses of the model. Analyzes multiple sources of data, including graphs and tables, to draw conclusions about a familiar scientific investigation or phenomena. Provides some evidence to support a claim and constructs basic explanations for scientific phenomena or results from an investigation. Analyzes design features of a familiar device or prototype and describes a benefit or drawback of the design.	Consistently develops testable, scientific questions for an investigation. Creates a model, consistently describes the strengths and weaknesses of the model, and provides information for how to improve the model. Analyzes multiple sources of data, including graphs and tables, to draw conclusions about a novel or complex scientific investigation or phenomena. Provides several pieces of evidence to support a claim and constructs thorough explanations for scientific phenomena or results from an investigation.

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
			Analyzes design features of a novel device or prototype and constructs an explanation for how the design features meet criteria for success or are limited by constraints.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Earth and Space Science

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
ESS1. Earth's Place in the Universe	Identifies the Sun, the Moon, and Earth in a model. Recognizes that the Sun is a star. Recognizes that people at different locations on Earth may experience day and night at the same time. Given a pattern of moon phases, selects the Moon phase that completes the pattern. Recognizes that shadows change over the course of a day because of the apparent movement of the Sun. Supports a claim with evidence that an environment has changed over time, such as a forested area that was once covered by water. Classifies whether geologic structures were formed by erosion or deposition.	Completes a model of the Sun, the Moon, and Earth and mostly describes the movements of each. Recognizes that the Sun is the only star in our solar system. Constructs an explanation for why people on Earth experience day and night. Describes how the Moon reflects the Sun's light and makes a pattern over approximately one month. Uses a model to show the pattern of the Moon over a week or a month. Completes a model showing the relationship between a shadow's length and the position of the Sun in the sky. Generally, describes the processes of erosion or deposition. Identifies the relative age of rock layers based on the position of the rock layers.	Develops a model of the Sun, the Moon, and Earth and consistently describes the movements of each. Explains why the Sun appears brighter than other stars. Constructs an explanation with evidence for why people at one location on Earth are experiencing day while people at another location on Earth are experiencing night. Explains how the Moon's reflection of the Sun's light and the orbit of the Moon are responsible for the phases of the Moon. Constructs an explanation for why the length and direction of a shadow changes during a day. Constructs an explanation with evidence of how erosion and deposition can change geologic structures or an area over time.
ESS2. Earth's Systems	Uses weather data tables or simple graphs to describe one of the following: precipitation, wind speed, or temperature for an area. Differentiates between two different types of climates. Completes a simple model of the water cycle.	Analyzes simple weather data patterns to describe expected weather for an area. Analyzes climate data for several different regions and describes differences in weather patterns. Recognizes that different regions can have different climate types.	Analyzes and interprets graphs and tables to draw conclusions about various weather patterns. Explains the difference between weather and climate and uses climate data to draw conclusions about the expected weather patterns of different climate types (e.g., desert, tropical, tundra).

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
	Identifies on a map where a volcano or earthquake is likely to occur. Recognizes evidence of weathering or erosion in a diagram or simple description. Interprets simple graphs to draw general conclusions about the relative amounts of fresh and saltwater on Earth.	Completes a model of the water cycle and describes what is happening in most of the water cycle stages. Analyzes a map to locate where mountain ranges, ocean trenches, volcanoes, and earthquakes are likely to occur. Describes the processes of weathering and erosion and applies them to common examples, such as landslides, canyons, valleys, etc. Analyzes a map to identify water sources as fresh or saltwater, including fresh water stored in glaciers and polar ice caps.	Develops a model of the water cycle, including absorption and surface runoff, and describe how heat energy is needed for water to cycle. Explains why mountain ranges, ocean trenches, volcanoes, and earthquakes occur at plate boundaries. Explains how landscapes change due to weathering and erosion and provides examples of each process. Describes different sources of fresh water and saltwater and explains why it is important to understand the relative amounts of these types of water on Earth.
ESS3. Earth and Human Activity	Categorizes some common examples of renewable and nonrenewable energy resources. Identifies one way to reduce human impact on the environment for a given situation. Identifies one design solution to reduce the impact of a weather event, such as a hurricane, or other natural event, such as an earthquake, on humans. Identifies a testable question about a filter to determine how well the filter will work.	Explains why some sources of energy are considered renewable and others are not. Consistently categorizes energy sources as either renewable or nonrenewable. Describes different ways to reduce human impact on the environment for a given situation. Identifies multiple design solutions to reduce the impact of a weather event or other natural event on humans. Develops a testable question about how to improve the design of a filtering system and provides information about how to answer the question.	Explains how humans have impacted the environment in different ways and constructs explanations for how to reduce those impacts on the environment. Identifies multiple design solutions to reduce the impact of a weather event or other natural event on humans and explains how each design solution could reduce the impact. Develops testable questions about how to make several improvements to the design of a filtering system and provides evidence for how the improvements will better filter the water.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Life Science

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
LS1. From Molecules to Organisms: Structures and Processes	Completes a model of an organism's life cycle and describes the importance of one stage of the life cycle. Supports a claim with evidence about how the function of an animal or plant structure helps it to survive. Recognizes that photosynthesis is important for the survival of a plant.	Compares the life cycles of two organisms and describes similarities between the two life cycles, including the importance of some of the stages. Supports claims with evidence about how different functions of animal or plant structures helps the animal or plant to survive. Completes a model showing some of the inputs (sunlight, air, water) or outputs (sugars) of photosynthesis.	Constructs an explanation for why each stage of the life cycle is important, using example of both plants and animals. Supports claims with evidence about how several structures of animals and plants allow for the survival, growth, and reproduction of different organisms. Develops a model showing the inputs and outputs of photosynthesis and explains the importance of photosynthesis for the survival and growth of a plant.
LS2. Ecosystems: Interactions, Energy, and Dynamics	Analyzes a simple food web or other model and identifies the ecological role of some of the organisms. Recognizes that the energy organisms depend on originates from the Sun. Describes one way animals and plants use energy. Identifies the function of a composter and one design element of a composter. Identifies a type of organism (bacteria or fungi) that breaks down dead organisms.	Analyzes a food web or other model, identifies the ecological roles of several of the organisms, and describes some of the roles of the organisms. Analyzes a model and describes the flow of energy through a simple food web. Analyzes several composter designs and describes some advantages and disadvantages of each design. Describes the importance of decomposers in recycling matter back to the soil.	Analyzes food webs and other models and consistently describes the ecological roles of the organisms. Completes a model to show energy transfer through a food web and describes how energy is transferred from one organism to another. Analyzes several composter designs, describes several advantages and disadvantages of each, and explains which composter is best to use. Explains what would happen to an ecosystem without decomposers and explains how decomposers recycle matter back into both the soil and air.

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
LS3. Heredity: Inheritance and Variation of Traits	Provides observable evidence that traits are inherited from a parent. Recognizes that some basic characteristics are inherited, while others are a result of the environment.	Analyzes data and draws some conclusions about familiar traits that are inherited and characteristics that are a result of the environment.	Analyzes novel data and draws conclusions about traits that are inherited and characteristics that are a result of the environment.
LS4. Biological Evolution: Unity and Diversity	Identifies the type of environment where an organism once lived based on fossilized remains. Supports a claim with one piece of evidence for how some individuals within a population may have a survival advantage over other individuals in the population. Uses evidence, such as an organism's structure, to describe how an organism is well adapted to its environment. Recognizes what may happen to an organism if its environment changes and it is unable to move away or adapt to the changing environment.	Classifies fossils based on their physical characteristics, including the type of environment where the fossilized organism once lived. Supports a claim with several pieces of evidence for how some individuals within a population may have a survival advantage over other individuals in the population. Identifies an example of how an organism is well adapted to its environment. Describes what will happen to a population if individuals within that population are unable to reproduce.	Constructs an explanation for why the fossil record is incomplete due to many organisms not being fossilized. Given data about the characteristics of a novel organism, draws conclusions and explains how the organism is well adapted to its environment. Explains, with evidence, if an organism is likely to survive environmental changes. Explains why reproduction is critical to the survival of a species.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Physical Science

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
PS1. Matter and Its Interactions	Analyzes a simple particle model of matter and identifies the phase of the substance. Completes a graph to show the masses of substances after a phase change or after a chemical reaction. Analyzes a simple set of data to determine the best material to use in a common situation, based on the material's characteristic properties. Determines if a chemical reaction occurred or if a mixture was formed during an investigation and provides one piece of evidence to support the claim.	Analyzes a particle model of a substance before and after a phase change to determine phases of the substance and the phase change that occurred. Constructs an explanation about how mass is conserved during a phase change or a chemical reaction. Analyzes a set of data about materials, identifies the best material to use in a given situation, and provides evidence for the reasoning. Develops a question to determine if a chemical reaction occurred or if a mixture was formed during an investigation and provides possible answers to the question with pieces of evidence to support the answers.	Analyzes particle models of substances before and after phase changes to determine the phase change that occurred and describes whether heat was added or removed. Describes an investigation that could be used to show that mass is conserved during a phase change or chemical reaction. Analyzes multiple sets of data to determine the best materials to use in a variety of different situations, based on the material's characteristic properties. Supports the conclusions with evidence from the data. Describes an investigation that could be used to determine if a chemical reaction will occur or if a mixture will be formed when two substances are combined and includes information about evidence that would be needed to make the determination.
PS2. Motion and Stability: Forces and Interactions	Interprets a diagram to determine if balanced forces are acting on an object. Labels a model showing the direction of the gravitational force on an object on Earth. Identifies if two magnets will be attracted to each other or repelled from each other based on the magnets' orientations.	Determines if the motion of an object will change, based on a diagram showing the forces acting on the object. Describes how friction affects the motion of an object. Completes a model showing the direction of the gravitational force on multiple objects that are on or near the surface of Earth.	Completes a diagram of the forces acting on an object based on whether the object is at rest, moving at a constant speed, or changing speed and explains the reasoning. Describes how different surface textures affect friction. Constructs an explanation about the gravitational force exerted by Earth on objects always being toward the center of Earth.

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
	Recognizes that either an attractive or a repulsive force exists between two magnets.	Completes a model of the poles on several magnets based on whether the magnets attract each other or repel each other.	Describes an investigation that could be used to determine the poles of magnets and explains what evidence could be used to make this determination.
PS3. Energy	Interprets a graph that shows the relationship between speed and kinetic energy. Identifies one type of energy that is produced when a collision occurs. Describes one way that energy can be moved from one place to another. Interprets a familiar situation to describe one way that stored energy is converted to another type of energy.	Describes the relationship between the speed of an object and the kinetic energy of that object. Describes the energy conversions that take place when two objects collide. Interprets a given scenario and describe one way that energy is transferred in the scenario. Describes two energy conversions in a given situation including kinetic energy being converted to electrical energy and/or stored energy being converted into another type of energy.	Completes a graph showing the kinetic energy of object as the speed of the object changes and explains why the graph should be completed in that way. Constructs an explanation about the energy conversions that take place when two objects collide and supports the explanation with evidence. Analyzes a novel scenario and describes multiple ways that energy is transferred from place to place and how energy is converted in multiple ways.
PS4. Waves and Their Applications in Technologies for Information Transfer	Recognizes that waves can cause an object to move. Uses a simple model of a wave to show that the wave has a regular pattern. Recognizes that light must be reflected off an object and enter the eye for the object to be seen. Given a communication system, identifies one component (encoder, decoder, receiver, sender) of the system.	Generally, describes that waves carry energy and can cause objects to move. Completes a model showing that a wave has a regular pattern of motion. Develops a model to show how light reflects off an object and enters the eye so the object can be seen. Describes at least two components of a given communication system.	Constructs an explanation about how an object can be moved by the energy of a wave. Explains how objects are seen by the eye, using evidence from a given scenario. Consistently describes the components of a communication system for a given scenario.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Technology and Engineering

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations ***On MCAS, a student at this level:***	**Meeting Expectations** ***On MCAS, a student at this level:***	**Exceeding Expectations** ***On MCAS, a student at this level:***
ETS1. Engineering Design and ETS3. Technological Systems	Identifies a criterion for success and a constraint when given a simple design problem. Identifies one solution to a simple engineering design problem. Analyzes different representations of a simple design solution and chooses the most appropriate one for a given situation. Identifies the importance of a prototype. Identifies the difference between an innovation and an invention.	Describes several criteria for success and constraints when given a design problem. Generates a solution to an engineering design problem and generally explains how the solution could be successful based on evidence. Analyzes different representations of a design solution, chooses the most appropriate representation for the given situation, and explains the reasoning. Identifies several design features of a prototype and explains how these features are important to the design of the prototype. Analyzes a design feature of a prototype and explains the importance of a prototype. Describes one innovation to an existing technology. Provides an example of an invention, including common examples and some novel examples.	Explains how certain criteria for success and constraints will impact the solution to a design problem. Generates two or more solutions to an engineering design problem and explains in detail how the solutions could be successful and identifies possible failure points for each solution. Describes an appropriate representation for a design solution and explains the reasoning. Describes several design features of prototypes and explains the benefits and possible limitations of each. Explains why prototypes are constructed and explains the importance of redesigning a prototype. Explains why a novel technology is an innovation or an invention, given a description of the technology.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Next-Generation Achievement Level Descriptors

Exceeding Expectations
A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations
A student who performed at this level met grade-level expectations and is academically on-track to succeed in the current grade in this subject.

Partially Meeting Expectations
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Grade 8

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
Understanding and Application of Disciplinary Core Ideas	Demonstrates a partial understanding of some scientific concepts and processes by identifying and sometimes describing or providing evidence for these concepts and processes. Uses some basic scientific terms in common scientific examples.	Demonstrates a solid understanding of many scientific concepts and processes by mostly describing, explaining, and providing evidence for these concepts and processes. Mostly applies appropriate scientific terms in a variety of applications, including common science examples and some novel situations.	Demonstrates a comprehensive, in-depth understanding of many scientific concepts and processes by consistently describing, explaining, and providing evidence for these concepts and processes. Consistently applies scientific terms in appropriate contexts in both common science examples and many novel situations.
Understanding and Application of Scientific and Engineering Practices	Identifies a testable, scientific question for an investigation. Completes a simple, commonly used model. Uses simple graphs or data to draw general conclusions about a familiar scientific investigation or phenomena. Identifies evidence to support a claim. Describes a benefit or drawback of simple design features given a familiar device or prototype.	Develops some testable, scientific questions for an investigation. Completes or uses a model and describes some strengths and weaknesses of the model. Analyzes multiple sources of data, including graphs and tables, to draw conclusions about a familiar scientific investigation or phenomena. Provides some evidence to support a claim and constructs basic explanations for scientific phenomena or results from an investigation. Analyzes design features of a familiar device or prototype and describes a benefit or drawback of the design.	Consistently develops testable, scientific questions for an investigation. Creates a model, consistently describes the strengths and weaknesses of the model, and provides information for how to improve the model. Analyzes multiple sources of data, including graphs and tables, to draw conclusions about a novel or complex scientific investigation or phenomena. Provides several pieces of evidence to support a claim and constructs thorough explanations for scientific phenomena or results from an investigation. Analyzes design features of a novel device or prototype and constructs an explanation for how the design features meet criteria for success or are limited by constraints.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Earth and Space Science

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
ESS1. Earth's Place in the Universe	Completes a model of the Earth-Sun-Moon system to show either a solar or a lunar eclipse. Identifies the basic pattern of the moon phases. Recognizes that the tilt of Earth's axis causes the seasons. Recognizes that gravity affects high and low tides, Earth's orbit, and the Moon's orbit. Recognizes that the Milky Way galaxy contains many solar systems, and that Earth is one planet within our solar system. Identifies the bottom layer of rock as the oldest and the top layer of rock as the youngest. Identifies some of the processes that play a role in the formation of rock.	Develops a model showing the positions of the Sun, the Moon, and Earth during a solar or a lunar eclipse. Completes a model of the moon phases. Compares the intensity of sunlight at different locations on Earth during different seasons of the year. Analyzes models to determine where high and low tides occur based on the position of the Moon. Describes the role that gravity plays in orbital motions. Orders the planets, our solar system, the Milky Way galaxy, and the universe by their relative sizes. Analyzes a model showing several layers of rock and draws conclusions about the relative ages of the fossils found in the rock layers. Uses rock layers and fossil evidence to describe how the geology of a particular area has changed over time, such as from a sea floor to a forest.	Constructs an explanation for why people see solar and lunar eclipses on Earth. Constructs an explanation for why people on Earth observe the phases of the Moon. Analyzes a graph to describe how changes in the duration and intensity of sunlight during a year determines the seasons. Supports conclusions with evidence from the graph. Completes models showing where high and low tides occur and explains why there are high and low tides in these locations. Compares and draws conclusions about the force of gravity on planets, moons, asteroids, comets, etc. in our solar system. Analyzes a model showing several layers of rock containing a fault to draw a conclusion about the relative age of the fault. Constructs an explanation for how rock layers and geologic structures, such as canyons, volcanoes, mountains, and beaches, are formed through weathering, erosion, heat, pressure, and/or deposition.

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
ESS2. Earth's Systems	Uses a model to show that geologic structures, such as volcanoes and mountain ranges, are formed where plates are pushed together. Recognizes that surface structures continue to change over time due to geologic processes, such as weathering, erosion, glaciation, and the movement of Earth's plates. Completes a model showing the primary steps of the water cycle. Analyzes weather data and draws simple conclusions about the precipitation and temperature of an area. Recognizes that temperatures near the ocean are more stable than temperatures of inland locations.	Uses a model to describe the role of convection currents in the movement of Earth's plates and identifies where convection currents occur. Describes how geologic processes form and shape geologic structures, such as mid-ocean ridges, mountains, and volcanoes, and cause geologic events, including earthquakes, landslides, and volcanic eruptions. Analyzes maps and other evidence to draw conclusions about the movement of Earth's plates. Describes the role of solar energy and gravity in the water cycle. Describes the weather conditions that typically occur when cool and warm air masses collide.	Constructs an explanation for how the movement of Earth's plates causes various geologic events, such as earthquakes, volcanic eruptions, and tsunamis. Uses data to explain the relative time scales different geologic structures form over. Supports a claim about the movement of Earth's plates using several pieces of evidence, such as the shapes of continents and the locations of specific fossils and types of rock. Describes evidence that glaciers were once present in an area. Constructs an explanation for how each stage of the water cycle is dependent upon energy from the Sun and/or the Earth's gravity. Describes how air masses move and how the movement of air masses affects the weather in an area.
ESS3. Earth and Human Activity	Analyzes a basic map to draw general conclusions about the distribution of minerals or fossil fuels on Earth. Identifies one way that humans can mitigate the impact of increases in human population on natural resources and the environment. Analyzes a simple graph or data table to draw conclusions about how climate change is affecting an area.	Provides a partial explanation for why some resources, such as fossil fuels, water, and mineral/ores, are unevenly distributed on Earth. Describes various ways that humans can mitigate the overuse of Earth's resources, such as using renewable energy sources, recycling, using public transportation, etc. Analyzes data to describe how climate change is affecting an ecosystem and describes one way that humans can reduce the effects of climate change on the ecosystem.	Explains why natural resources are unevenly distributed on Earth. Analyzes data, including graphs and maps, to draw conclusions about how humans use natural resources and identifies some ways human can mitigate the overuse of these resources. Constructs an explanation using evidence that human activities, such as fossil fuel combustion, agriculture, and deforestation, have played a role in rising global temperatures over the past century. Describes several ways humans can mitigate the effects of climate change.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Life Science

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
LS1. From Molecules to Organisms: Structures and Processes	Recognizes that animal, plant, and bacterial cells have some shared characteristics and some different characteristics. Recognizes some parts of a cell and the function of some cell parts. Describes two body systems and how they work together. Identifies some behaviors and structures of plants and animals that enables them to survive and successfully reproduce. Identifies a characteristic that is inherited and a characteristic that is mostly a result of the environment. Recognizes that all organisms need an energy source and nutrients to survive.	Uses the characteristics of cells to categorize an organism as an animal, plant, or bacteria. Given a diagram of a cell, identifies the cell parts and describes most functions of the cell parts. Generally, describes how different body systems work together. Provides evidence for how some organisms are able survive and reproduce more than other organisms. Analyzes information about an organism to determine which characteristics are inherited and which characteristics are mostly a result of the environment. Describes how carbohydrates, proteins, and fats are broken down to support cell growth and to release energy (cellular respiration).	Compares animal, plant, and bacterial cells and identifies both similarities and differences between them. Consistently describes the functions of cell parts. Describes how the interactions between body systems can be affected by a condition or disease based on the functions of the body systems. Explains how various structures and behaviors can provide survival and reproductive advantages to plants and animals. Uses evidence to explain why some characteristics are inherited and other characteristics are a result of both inheritance and the environment. Using a model, explains how food molecules are broken down and rearranged to provide nutrients for cell growth and energy for cellular processes.

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
LS2. Ecosystems: Interactions, Energy, and Dynamics	Interprets graphs to determine whether the size of a population increased, decreased, or stayed the same. Identifies one ecological relationship (competitive, predator-prey, parasitic, or mutually beneficial) when given a description of the interaction of two organisms. Recognizes that the biodiversity of a population is positively correlated with its size. Identifies how an ecosystem and how an organism living in the ecosystem can be helped by a human action.	Analyzes population data, including graphs, to describe changes in the size a particular population over time. Identifies several ecological relationships when given the interactions of organisms in an environment (including analyzing a food web). Completes models to show the cycling of matter through photosynthesis, cellular respiration, and decomposition. Uses a model of an ecosystem to describe how a disruption to the ecosystem can have an effect on an organism in the ecosystem. Describes multiple ways how the biodiversity of a population can be increased. Describes several ways an ecosystem and the organisms living in the ecosystem can be helped by human actions.	Constructs an explanation for the reasons why populations grow versus decline over time. Analyzes a complex food web and describes the ecological roles of the organisms. Consistently describes the roles of producers, primary, secondary, tertiary consumers, and decomposers in a model. Develops a model to show the cycling of matter and energy through an ecosystem, including the role of photosynthesis, cellular respiration, and decomposition. Uses a model of an ecosystem to construct an explanation with evidence for how a natural or manmade disruption to the environment can affect multiple populations in the ecosystem. Evaluates competing designs for protecting an ecosystem and its inhabitants from threats such as climate change, habitat loss, pollution, or overharvesting of resources.
LS3. Heredity: Inheritance and Variation of Traits	Uses a model to show that chromosomes are made up of genetic information. Identifies one benefit of sexual reproduction or one benefit of asexual reproduction. Recognizes that offspring from sexual reproduction inherit genes and characteristics from two parents. Analyzes a simple Punnett square to determine the expected percentage of offspring with a certain trait.	Completes a model to show that chromosomes hold genes and genes hold the instructions for proteins. Describes mutations as changes to genes. Identifies examples of mutations that are harmful, beneficial, or neutral to changes in traits of an organism. Describes some of the benefits and drawbacks of sexual versus asexual reproduction. Completes a Punnett square to determine the expected percentage of offspring that will inherit certain genotypes (allele pairs) and phenotypes (traits).	Develops a model to show that chromosomes are made up of genes and that genes contain the instructions for proteins, which determine the inherited characteristics of an organism. Describes how a mutation may be harmful, neutral, or beneficial to an organism depending on its interactions with the environment. Constructs an explanation for why some organisms benefit from asexual reproduction while other organisms benefit from sexual reproduction. Develops a model to show that sexual reproduction results in sets of chromosomes (found in the nucleus) from each parent, and therefore an allele for each gene is inherited from each parent.

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
LS4. Biological Evolution: Unity and Diversity	Analyzes fossil evidence to draw conclusions about different organisms living at different times. Compares a structure in a living organism to a structure from a fossilized organism and draws a conclusion about their similarity. Recognizes that individuals with certain inherited characteristics have a higher probability of surviving than individuals without those characteristics. Identifies one difference between natural selection and artificial selection.	Analyzes fossil evidence to describe how the environment in an area has changed over geologic time. Explains how living and fossilized organisms can have similar body structures with similar or different functions. Identifies examples of natural selection and generally explains why they are examples of natural selection. Compares examples of natural selection and artificial selection.	Constructs an explanation using fossil evidence for how similar structures can be used to infer whether two types of organism share a recent common ancestor. Constructs an explanation for how a trait can become more common in a population over time due to natural selection. Describes advantages and disadvantages of both natural and artificial selection.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Physical Science

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
PS1. Matter and Its Interactions	Identifies that all living and non-living things are made-up of atoms. Identifies that mixtures can be separated by physical means. Using data, identifies one piece of evidence that a chemical reaction or a physical change occurred. Interprets a particle model to determine the three states of matter shown in the model. Recognizes that a new substance is formed when a chemical reaction occurs. Given data, determines if energy is being absorbed or released in a chemical reaction. Calculates the density of an object given its mass and volume.	Completes a model showing how atoms form compounds and molecules. Describes how mixtures are made up of pure substances that can be separated by physical means. Using data, identifies multiple pieces of evidence that a chemical reaction or a physical change occurred. Partially describes how particle motion, spatial arrangement, or temperature of a substance change when thermal energy is added to or removed from the substance. Completes a bar graph to show the conservation of mass in a chemical reaction or a physical change. Given a chemical reaction, identifies if it is exothermic and endothermic based on whether or not thermal energy is released or absorbed. Describes, compares, and calculates the densities of different materials.	Analyzes a chemical formula to determine the number of each type of atom that makes up a given molecule. Analyzes data to determine which substances are pure substances. Explains the difference between a chemical reaction and a physical change and provides multiple pieces of evidence to support the explanation. Consistently describes how particle motion, spatial arrangement, and temperature of a substance change when thermal energy is added to or removed from the substance. Relates temperature to a measure of average kinetic energy and recognizes that temperature/kinetic energy does not change as a substance is changing state. Supports a claim that matter is not created or destroyed during a chemical reaction or a physical change, using evidence from an investigation. Describes the difference between an endothermic and exothermic reaction. Supports the description with evidence from a chemical reaction. Determines whether an object would float or sink in water due its density and supports the answer with evidence.

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
PS2. Motion and Stability: Forces and Interactions	Given a model, recognizes that an object that applies a force to another object will also experience a force acting on it. Recognizes that the speed of an object will change if the mass of the object changes and the forces acting on the object are constant. Recognizes that the speed of an object will change if the forces acting on the object are not balanced. Recognizes that two positive charges or two negative charges will repel each other, and a negative charge and a positive charge will attract each other. Completes a model, to show that gravitational forces are always attractive. Using a model, describes how an object can exert forces on another object, even when the objects are not in contact with each other.	Analyzes models to draw conclusions about the forces acting on objects during a collision. Completes a graph to show how the change in speed of an object, with a constant net force acting on it, depends on the mass of the object. Completes a model to show whether the speed of an object will increase, decrease, or remain constant based on the forces acting on an object. Completes a model to show how the distance between two electric charges or the magnitudes of the charges affects the strength of the forces between the charges. Describes how the mass of objects affects the gravitational forces on the objects. Completes a model of the electric, magnetic, or gravitational field around an object.	Develops models to show the forces acting on objects before, during, and after a collision. Develops a model to show how the change in speed of an object depends on the mass of the object and the net force acting on the object. Uses data to construct an explanation about how the distance between two electric charges or the magnitudes of the charges affects the strength of the force between the charges. Develops a model showing the relative magnitudes of gravitational forces acting between two objects. Completes a model of the electric, magnetic, or gravitational field between two objects.
PS3. Energy	Interprets a graph to show how the kinetic energy of an object relates to the speed of the object, or vice versa. Interprets data to describe what will happen to an object's kinetic energy as its potential energy decreases. Identifies the flow of thermal energy from hot to cold. Identifies an example of conduction, radiation, or convection. Describes how it takes more time to heat an object that has more mass than an object (of the same material) with less mass. Using a graph, determines how an increase in average kinetic energy of an object results in an increase in temperature.	Completes a graph to show how the kinetic energy of an object relates to the speed of the object, or vice versa. Analyzes information, including graphics and data, and generally describes how the kinetic and potential energies of an object compare at different heights, when energy is conserved. Analyzes the conversions of different types of potential energy into kinetic energy and vice versa to draw conclusions about energy conservation. Generally, describes how thermal energy is transferred through conduction, radiation, and convection and generally describes ways this heat flow can be increased or decreased in a given situation. Analyzes data and draws conclusions to describe how certain materials will better conduct thermal energy compared to others.	Uses a graph to show how the kinetic energy of an object relates to the speed of the object, or vice versa, and explains the reasoning. Analyzes information, including graphics and data, and consistently describes how the kinetic and potential energies of an object compare at different heights, and is able to explain that energy is conserved. Explains how different types of potential energies are converted to kinetic energy and vice versa. Explains how thermal energy is transferred through conduction, radiation, and convection and fully describes ways the rate of this heat flow can be increased or decreased in a given situation. Constructs an explanation to show the relationships among the amount of energy transferred between objects, how well materials of the objects retain or radiate heat, the masses of the objects, and the

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
		Describes how average kinetic energy is related to temperature.	changes in the average kinetic energies of the object's materials.
PS4. Waves and Their Applications in Technologies for Information Transfer	Completes a model of a wave to show its frequency, amplitude, or wavelength. Given a model, sometimes identifies where waves are reflected, absorbed, or transmitted through a material. Identifies when a signal is either encoded or transmitted.	Compares two waves' frequencies, amplitudes, and wavelengths, and sometimes describes how these characteristics will affect the waves. Completes a model showing reflection, absorption, and transmission of a wave, including how waves are refracted. Describes the processes of encoding and transmitting.	Compares two or more waves' frequencies, amplitudes, and wavelengths, and consistently describes how these characteristics will affect the pattern of a wave. Develops a model to explain how waves are reflected, absorbed, or transmitted in a given situation, including how waves are refracted.

MCAS Next-Generation Achievement Level Descriptors
Science and Technology/Engineering

Technology and Engineering

Student results on the MCAS tests are reported according to four achievement levels: *Exceeding Expectations, Meeting Expectations, Partially Meeting Expectations,* and *Not Meeting Expectations.* The descriptors below illustrate the knowledge and skills students demonstrate on MCAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.

	Partially Meeting Expectations *On MCAS, a student at this level:*	**Meeting Expectations** *On MCAS, a student at this level:*	**Exceeding Expectations** *On MCAS, a student at this level:*
ETS1. Engineering Design	Identifies criteria and constraints of a design problem. Identifies one solution to a simple problem. Uses a simple design matrix to determine the best solution. Sometimes solves simple scale problems, given the actual measurement or the scaled measurement. Analyzes a design feature of a prototype and identifies the importance of a prototype.	Describes some criteria and constraints of a design problem. Describes a solution to a problem and explains how it could be successful based on evidence. Uses a design matrix to draw conclusions about possible solutions. Solves scale problems, given the actual measurement or the scaled measurement. Generally, describes appropriate design features of a prototype and describes the importance of a prototype.	Describes several criteria and constraints of a design problem. Describes several solutions to a problem and explains their limitations and benefits based on evidence. Uses a design matrix to draw conclusions about possible solutions and explains the reasoning. Explains when a scale drawing should be used and determines an appropriate scale for a given situation. Consistently describes appropriate design features of prototypes for a given situation.
ETS2. Materials, Tools, and Manufacturing	Recognizes basic properties of common materials (such as wood, metal, and plastic). Given data, chooses a material for a design problem given its characteristics. Given a set of tools, chooses the best tool for a given task. Identifies and describes some of the manufacturing processes (forming, separating, conditioning, assembling, finishing, quality control, and safety). Identifies an advantage or a disadvantage of using a computer or a human for a given task.	Describes properties (such as flexibility, ductility, hardness, thermal conductivity, electrical conductivity, and melting point) of common materials and generally uses the materials for appropriate design solutions. Describes the best tools to use for a given situation. Generally, describes a few steps of the manufacturing process in a given situation. Provides an advantage and a disadvantage of using a computer or a human for a given task.	Evaluates different materials and determines the best materials to use for a given design problem. Explains the reasoning, giving both drawbacks and benefits of the materials. Consistently describes several steps of the manufacturing process in a given situation. Provides multiple advantages and/or disadvantages of using a computer or a human for a given task.

	Partially Meeting Expectations *On MCAS, a student at this level:*	Meeting Expectations *On MCAS, a student at this level:*	Exceeding Expectations *On MCAS, a student at this level:*
ETS3. Technological Systems	Identifies and describes the functions of some components of a communication system (source, encoder, transmitter, receiver, decoder, and storage). Given a diagram, identifies and describes some of the functions of some components of a vehicle (structural, propulsion, guidance, suspension, and control subsystems). Given a diagram, identifies and describes some of the parts of a structural system (foundation, decking, wall, and roofing). Given a diagram, identifies a force (tension, torsion, compression, and shear) acting on a structure. Given a transportation, structural, or communication system, identifies some of the components of an engineering system: inputs, processes, outputs, and feedback.	Completes a model and describes the functions of several components of a communication system. Completes a model and describes most of the functions of some components of a vehicle. Identifies and describes most of the parts of a given structural system. Identifies and describes two forces acting on a shown structure. Identifies live and dead loads for a given scenario. Given a transportation, structural, or communication system, identifies and describes several components of an engineering system.	Develops a model and describes the functions of the components of a communication system. Develops a model and describes most of the functions of the components of a transportation system. Consistently identifies and describes the parts of a given structural system. Consistently identifies and describes forces acting on a shown structure. Describes live and dead loads for a given scenario. Given a transportation, structural, or communication system, consistently identifies and describes components of an engineering system.

APPENDIX C

TEST DESIGN AND BLUEPRINT SPECIFICATIONS

2021 Grades 3 & 4—ELA

Common		Session 1		Session 2		Total	
		Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
	SR1	9	13	15	21	24	34
	SR2	2		3		5	
	CR	0	0	1	3	1	3
	ES	1	7	0	0	1	7
	Total Items	12	20	19	24	31	44

Item Types: 1 SR1 = MC; 2 SR2 = TEI, TECR, 2-pt MC, EBSR; 3 CR (hand scored); 7 ES (hand scored)

Reporting Categories	G3/4	
Reading	65%	+/-5%
Language	25%	+/-5%
Writing	10%	+/-5%
Totals	**100%**	

2021 Grade 5—ELA

Common		Session 1		Session 2		Total	
		Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
	SR1	9	13	15	21	24	34
	SR2	2		3		5	
	CR	0	0	0	0	0	0
	ES	1	7	1	7	2	14
	Total Items	12	20	19	28	31	48

Item Types: 1 SR1 = MC; 2 SR2 = TEI, TECR, 2-pt MC, EBSR; 3 CR (hand scored); 7 ES (hand scored)

Reporting Categories	G5	
Reading	55%	+/-5%
Language	25%	+/-5%
Writing	20%	+/-5%
Totals	**100%**	

2021 Grades 6–8—ELA

Common		Session 1		Session 2		Total	
		Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
	SR1	9	13	15	21	24	34
	SR2	2		3		5	
	CR	0	0	0	0	0	0
	ES	1	8	1	8	2	16
	Total Items	12	21	19	29	31	50

Item Types: 1 SR1 = MC; 2 SR2 = TEI, TECR, 2-pt MC, EBSR; 3 CR (hand scored); 7 ES (hand scored)

Reporting Categories	G6-8	
Reading	55%	+/-5%
Language	25%	+/-5%
Writing	20%	+/-5%
Totals	**100%**	

2021 Grade 10—ELA

Common		Session 1		Session 2		Total	
		Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
	SR1	12	12	9	9	21	21
	SR2	4	8	3	6	7	14
	CR	0	0	0	0	0	0
	ES	2	16	0	0	2	16
	Total Items	18	36	12	15	30	51

Item Types: 1 SR1 = MC; 2 SR2 = TEI, TECR, 2-pt MC, EBSR; 3 CR (hand scored); 7 ES (hand scored)

Reporting Categories	G6-8	
Reading	55%	+/-5%
Language	25%	+/-5%
Writing	20%	+/-5%
Totals	100%	

2021 Grade 3—Mathematics

Common	Session 1		Session 2		Total	
	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
MS1	18	18	18	18	36	36
HS3	2	6	2	6	4	12
Total Items	20	24	20	24	40	48
Matrix (Equating and/or Field Test) per form	**Session 1**		**Session 2**		**Total**	
	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
Total Items	2	2	2	4	4	6
Total Student Experience	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
	22	26	22	28	44	54

	Max Points	Scored	
Item Types:	1	MS1	MC/S/FIB
	1	MS1	TEI
	3	HS3	OR

Reporting Category		Percents	Points
OA	Operations & Algebraic Thinking	30%	14-15
NBT	Number & Operations in Base Ten	15%	7–8
NF	Number & Operations-Fractions	20%	9-10
MD	Measurement & Data	25%	12
G	Geometry	10%	4-5

2021 Grade 4–6—Mathematics

Common	Session 1		Session 2		Total	
	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
MS1	17	17	17	17	34	34
MS2	1	2	1	2	2	4
HS4	2	8	2	8	4	16
Total Items	20	27	20	27	40	54
Matrix (Equating and/or Field Test) per form	**Session 1**		**Session 2**		**Total**	
	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
Total Items	2	2-3	2	5-6	4	7-8
Total Student Experience	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
	22	29-30	22	32-33	44	61-62

	Max Points	Scored	
Item Types:	1	MS1	MC/S/FIB
	1	MS1	TEI
	2	MS2	
	4	HS4	OR

Reporting Category		G4		G5		G6	
		Percents	Points	Percents	Points	Percents	Points
G	Geometry	20%	10-11	15%	8	15%	8
RP	Ratios & Proportional Relationships	20%	10-11	30%	16	20%	10-11
NS	The Number System	30%	16	25%	13–14	20%	10-11
EE	Expressions & Equations	20%	10-11	20%	10–11	30%	16
SP	Statistics & Probability	10%	5-6	10%	5–6	15%	8

2021 Grade 7–8—Mathematics

Common	Session 1		Session 2		Total	
	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
MS1	17	17	17	17	34	34
MS2	1	2	1	2	2	4
HS4	2	8	2	8	4	16
Total Items	20	27	20	27	40	54
Matrix (Equating and/or Field Test) per form	**Session 1**		**Session 2**		**Total**	
	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
Total Items	3	6-7	3	6-7	6	12-14
Total Student Experience	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
	23	33-34	23	33-34	46	66-68

	Max Points	Scored	
Item Types:	1	MS1	MC/S/FIB
	1	MS1	TEI
	2	MS2	
	4	HS4	OR

Reporting Category		G7		G8	
		Percents	Points	Percents	Points
G	Geometry	15%	8	30%	16
RP	Ratios & Proportional Relationships	20%	10-11	5%	3
NS	The Number System	20%	10-11	35%	19
EE	Expressions & Equations	25%	13-14	10%	5-6
SP	Statistics & Probability	20%	10-11	20%	10-11

2021 Grade 10—Mathematics

Common	Session 1		Session 2		Total	
	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
MS1	16	16	16	16	32	32
MS2	3	6	3	6	6	12
HS4-OR	2	8	2	8	4	16
Total Items	21	30	21	30	42	60
Matrix (Equating and/or Field Test) per form	**Session 1**		**Session 2**		**Total**	
	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
Total Items	5	12	5	12	10	24
Total Student Experience	Number	Tot Pts	Number	Tot Pts	Number	Tot Pts
	26	42	26	42	52	84

	Max Points	Scored	
Item Types:	1	MS1	MC/S/FIB
	1	MS1	TEI
	2	MS2	
	4	HS4	OR

	New	
Reporting Categories	% (+/- 5%)	Total # of Pts
Number & Quantity	15%	9
Algebra & Functions	35%	21
Geometry	35%	21
Statistics & Probability	15%	9

2021 Grades 5 & 8—STE

Common		**Session 1**			**Session 2**			**Total**	
		Quantity	**Total points**		**Quantity**	**Total points**		**Quantity**	**Total points**
	Module (stimulus)	1	0	**Module (stimulus)**	1	0	**Module (stimulus)**	2	0
	MS1	3	3	MS1	3	3	MS1	6	6
	HS3	1	3	HS3	1	3	HS3	2	6
	Discrete			**Discrete**			**Discrete**		
	MS1	12	12	MS1	14	14	MS1	26	26
	MS2	2	4	MS2	1	2	MS2	3	6
	HS2	1	2	HS2	1	2	HS2	2	4
	HS3	1	3	HS3	1	3	HS3	2	6
	Total Items	20	27	**Total Items**	21	27	**Total Items**	41	54
Matrix (Equating and/or Field Test) per form		**Session 1**			**Session 2**				
		Number of Items	**Total points**		**Number of Items**	**Total points**			
	Total	4	6	**Total**	3	4			
Total Student Experience		**Number of Items**	**Total points**		**Number of Items**	**Total points**		**Number**	**Total points**
	Session 1	24	33	**Session 2**	24	31	**Total Items**	48	64

Blueprints

		Grade 5		Grade 8	
Code	**Reporting Categories**	**%**	**Points**	**%**	**Points**
1	Earth and Space Science	26	14	25	13-14
2	Life Science	26	14	25	13-14
3	Physical Science	26	14	25	13-14
4	Technology/Engineering	22	12	25	13-14

Cognitive Skill	**%**	**Points**
Understanding/Applying	35-50	19-27
Analyzing	40-50	22-27
Evaluating/Creating	10-20	6-11

Computer Test	
Item Types:	machine scored 1 or 2 points (MS1 or MS2)
	human scored 2 or 3 points (HS2 or HS3)
Module:	a stimulus with three MS1 and one HS3 (6 points)

APPENDIX D

NEXT GENERATION MCAS COMMITTEE MEMBERSHIP

English Language Arts

2019–21 Assessment Development Committee Members

Name		Grade	Affiliation	District
Last	First			
Benedetto	MaryBeth	3	Madeline English School	Everett
Gentile	Brian	3	Blanchard Memorial School	Acton-Boxborough
Grace	Colleen	3	Hatherly Elementary	Scituate
Kelty	Megan	3	Armstrong School	Westborough
Maucione	Lisa	3	DeMello School	Dartmouth
Chaitra	McCarty	3	Hyannis West	Barnstable
Olson	Cindy	3	Parkview School	Easton
Perrault	Alyssa	3	Salemwood School	Malden
Ripley	Danika	3	Dolbeare Elementary	Wakefield
Verdolino	Nancy	3	Memorial Elementary School	Hopedale
Walsh	Meghan	3	John A. Crisafulli School	Westford
Wright	Brittany	3	Kane Elementary	Marlborough
Diaz	Karen	4	District	West Springfield
Feigelman	Allison	4	Ferryway School	Malden
Ferguson	Jean	4	Alcott Elementary	Concord
Gallant	Mary	4	Morse School	Cambridge
McLean	Deidre	4	W.A. Berkowitz	Chelsea
Merrill	Corey	4	Community Day Charter Public	Community Day (network)
Primiano	Karen	4	Mary Rowlandson Elementary	Nashoba Regional School District
Rabias	Susan	4	Shaughnessy School	Lowell
Sturges	Lisa	4	Hatherly Elementary	Scituate
Traficante	Amy	4	Anna Ware Jackson School	Plainville
Traverso	Jennifer	4	District	Westford
White	Lisa	4	Plymouth Public Schools	Plymouth
Devine	Lisa	5	Hill Elementary	Revere
Downes	Kathryn	5	Boston Collegiate Charter School	Boston
Franty	Olivio	5	Richard J. Murphy K-8	Boston
James	Julie	5	Wamsutta Middle School	Attleboro
Krasowski	Sarah	5	Lincoln-Thomson Elementary School	Lynn
Manning	Mary Claire	5	Highland Elementary School	Westfield
Marino	Monica	5	Tilton Elementary	Haverhill
Messer	Marsha	5	White Brook Middle School	Easthampton
Newell	Melissa	5	District	Lowell

Name		Grade	Affiliation	District
Last	First			
Peritz-Smith	Ivy	5	Old Mill Pond Elementary	Palmer
Rumbelow	Alison	5	Mary Rowlandson Elementary	Nashoba Regional School District
True	Kelly	5	District	Groton Dunstable
Austin	Meghan	6	KIPP Academy	Boston
Barney	Sara	6	Robert J. Coelho Middle School	Attleboro
Campbell	Brian	6	Wellesley Middle School	Wellesley
DiSarcina	Jennifer	6	Eliot K-8 Innovation School	Boston
Jacob-Dolan	Peter	6	Bedford High School & John Glenn Middle School	Bedford
McPartland	Jennifer	6	District	East Bridgewater
Moro	Elizabeth	6	Richardson Middle School	Dracut
Moroso	Taylor	6	W.L. Chenery Middle School	Belmont
Pettengill	Alecia	6	Williams Middle School	Longmeadow
Sayles	Julia	6	Fuller Middle School	Framingham
Terranova	Christina	6	Salemwood	Malden
Vowels	Heather	6	Lynnfield Middle School	Lynnfield
Angell	Elizabeth	7	Atlantic Middle School	Quincy
Bettano	Judith	7	J. Henry Higgins Middle School	Peabody
Bettencourt	Nicholas	7	Elizabeth Hastings Middle	Fairhaven
Cangemi	Pamela	7	Williams Middle School	Longmeadow
Jordan	Colleen	7	Silver Lake Regional Middle School	Silver Lake Regional
Mahedy	Carol	7	Mattacheese Middle School	Dennis-Yarmouth RSD
McConchie	Ann	7	Nauset Regional Middle School	Orleans
Murray	Claire	7	KIPP Academy	Boston
Stanton	Jessica	7	Littleton Middle School	Littleton
Tobiasson	Kathleen	7	Quinn Middle School	Hudson
Weber	Heidi	7	Southbridge Middle School	Southbridge
Weigle	Katharine	7	Prospect Hill Academy Middle School	Prospect Hill Academy Charter
Beck	Kimberly	8	Breed Middle School	Lynn
Blanchard	Deborah	8	Athol Royalston Middle School	Athol Royalston RSD
Byers	Kathleen	8	Somerset Middle School	Somerset
Dickey	Brian	8	Central Office	Springfield
Feerick	Ellyn	8	Holten-Richmond Middle School	Danvers
Kehrl	Brian	8	Mashpee Middle-High School	Mashpee
Looby	Emily	8	Oxford High School	Oxford
Palladino	Kathryn	8	Greater Lowell Technical High School	Greater Lowell

Name		Grade	Affiliation	District
Last	First			
Plosky	Carolyn	8	McCall Middle School	Winchester
Quinn	Anita	8	Agawam Junior High School	Agawam
Sulzmann	Anne	8	Mount Greylock Regional High School	Mount Greylock
Whitaker	Mary	8	Lunenburg Middle High School	Lunenburg
Bronstein	Susanne	10	Ashland High School	Ashland
Cangemi	Charles	10	Ludlow High School	Ludlow
Cunningham	Eamon	10	Milford High School	Milford
Fialho	Luis	10	Springfield Central High School	Springfield
Hayes-Frohock	Kristin	10	Dracut High School	Dracut
Higgins	Wilbur	10	Dartmouth High School	Dartmouth
Hill	Andrew	10	Upper Cape Cod Regional Technical School	Upper Cape Cod
Iannibelli	Maryellen	10	Lynnfield High School	Lynnfield
Ridolfi	Patricia	10	Marshfield High School	Marshfield
Schindler McDonald	Audrey	10	East Boston High School	Boston
Trinh	Courtney	10	Southeastern Regional Vocational Technical High School	Southeastern Regional
Viera	Allison L.	10	Georgetown Middle High School	Georgetown

Mathematics

2019–21 Assessment Development Committee Members

Name		Grade	Affiliation	District
Last	First			
Cleaves	Wendy	3	Quabbin Regional Schools	Quabbin
Edwards	Kathleen	3	Edgar Hooks Elementary	Chelsea
Gutierrez	Rebecca M.	3	Newton Elementary	Greenfield
Hopson	Sarah	3	District	Agawam
Kelley	Brian	3	Parmenter Elementary School	Franklin
Larocque	Kathleen	3	S.Christa McAuliffe Elementary	Lowell
Larssen	Monica	3	Brightwood Elementary	Springfield
Mulholland	Stacey	3	Abbot Elementary	Westford
Pontius	Elizabeth	3	Dennis-Yarmouth Public Schools	Dennis-Yarmouth
Powers	Jennifer	3	District	Plymouth
Rush	Judy	3	District	Pittsfield
DeSimone	Stacey	4	Tobin Montessori	Cambridge
Duggan	Marie	4	George H Potter Elementary	Dartmouth
Fehr	Megan	4	Guilmette Elementary	Lawrence
Gilmartin	Deborah	4	Thomson Elementary	North Andover
Hubert	Laura	4	Berkowitz Elementary School	Chelsea
Johnston	Christine	4	Roberta G. Doering School	Agawam
Fay	Kelly	4	Rebecca Johnson Elementary School	Springfield
Marchesiani	Jennifer	4	District	Plymouth
Massa	Michelle	4	Welch School	Peabody
Milton	Jill	4	District	Norwood
Stillman	Erin	4	King Elementary	Framingham
Tuttman	Howard	4	Albert N. Parlin School	Everett
Biagini	Joyce	5	Daniel Webster Elementary School	Marshfield
Carlson	Kara	5	Nantucket Intermediate School	Nantucket
Dorer	Sarah	5	Lt. Job Lane Elementary School	Bedford
Goldney	Lisa	5	Hill Elementary School	Revere
Hollister	Susan	5	Stearns Elementary School	Pittsfield
LaFleur	Tami	5	Attleboro Public Schools	Attleboro
O'Gorman	Mary	5	District	Westford
Pagnani	Alison	5	Grace F. Cole School	Norwell
Raposa	Laura	5	District	Littleton
Andrews	Jessica	6	Wareham Middle School	Wareham
Bowman	Adrienne	6	Ohrenberger School	Boston

Name		Grade	Affiliation	District
Last	First			
Buchanan	Susan	6	Dupont Middle School	Chicopee
Carlotto	Susan	6	Westfield Intermediate School	Westfield
D'Ambrosia	Elizabeth	6	Qualters Middle School	Mansfield
Duffy	Mark	6	District	Pembroke
Edmonds	Margaret	6	Memorial Middle School	Fitchburg
Glennon	Julia	6	North Attleboro Middle School	North Attleboro
Leonardi	Kathleen	6	Agawam Junior High	Agawam
Stearns	Sharon	6	Easton Middle School	Easton
Theriault-Regan	Brenda	6	District	Tewksbury
Torkomian	Michele	6	Coelho Middle School	Attleboro
Agruso	Cynthia	7	Agawam Junior High School	Agawam
Anusauskas	Cathy	7	Hopkinton Middle School	Hopkinton
Brown	Anne	7	Dartmouth Middle School	Dartmouth
Gwiazda	Jeffrey	7	District	Lowell
Lorusso	Melissa	7	Somerset Middle School	Somerset
Mazzone	Monique	7	Auburn Middle School	Auburn
Olmstead	Chantele	7	Emily G. Wetherbee School	Lawrence
O'Rourke	Megan	7	Medway Middle School	Medway
Sauriol	Jennifer	7	Hamilton Wenham	Hamilton Wenham
Solomon	Stacey	7	District	Boston
Tarallo	Susan	7	Millbury Memorial Junior/Senior High School	Millbury
Wolfson	Karen	7	District	Sudbury
Black	Amanda	8	Holten-Richmond Middle School	Danvers
Carpenter	Michele	8	Auburn Middle School	Auburn
Grindle	Elizabeth	8	Scituate High School	Scituate
Howell	Pamela	8	Nauset Regional Middle School	Nauset
Johnston	Mark	8	Lynn Classical High School	Lynn
MacMurray	Jennifer	8	Qualters	Mansfield
Mahmoud	Aliyah	8	John D. O'Bryant School of Math and Science	Boston
McGuire	Shannon	8	Greater New Bedford Regional Vocational HS	New Bedford
Perez	Kate	8	Westfield Middle School	Westfield
Santiago-Lizardi	Filiberto	8	James P. Timilty MS	Boston
Wooley	Stephanie	8	John T. Nichols	Middleborough
Zogby	Marianne	8	Annie Sullivan Middle School	Franklin
Belanger	Ann Marie	10	Greater New Bedford Regional Vocational Technical High School	Greater New Bedford

Name		Grade	Affiliation	District
Last	First			
Casello	Mary	10	Milford High School	Milford
Collins	Andrea	10	Greater Lowell Technical High School	Greater Lowell
Faivre	Karynn	10	Chicopee High School	Chicopee
Fedora	Robin	10	Minnechaug Regional High School	Hampden-Wilbraham
Foley	Jean	10	Brockton High School	Brockton
Hebert	Kimberly	10	Agawam High School	Agawam
Johnson	Deatrice	10	Central Office	Springfield
Miles	Victoria	10	Middleborough High School	Middleborough
Pillai	Jayashree	10	Natick High School	Natick
Stick	Marvin	10	UMass Lowell	Higher Ed
Yun	Yujuan	10	Boston Adult Technical	Boston

Science and Technology/Engineering (STE)

2019–21 Assessment Development Committee Members

Name		Grade	Affiliation	District
Last	First			
Cabral	Andrea	5	Dighton Middle School	Dighton Rehoboth Regional
Collins	Carolyn S.	5	District	Wellesley
DiLiegro	Lenore	5	A.C. Whelan Elementary School	Revere
Downie	Tierra	5	Rebecca M. Johnson	Springfield
Elich	Kathleen	5	Cushing, Hatherly, Wampatuck, Jenkins	Scituate
Hogan	Janet	5	Mansfield High School	Mansfield
Lynch	Janet	5	Grew Elementary	Boston
MacNeil	Janet	5	District	Cambridge
Scollan	Bridget	5	Guilmette Middle School	Lawrence
Skirvan	Christine	5	Oak Ridge School	Sandwich
Sullivan	Kathleen	5	Salemwood	Malden
Turmel	Kathy	5	Methuen Public Schools	Methuen
Anderson	Beth	8	Gibbons Middle School	Westborough
Bonnar	Roslyn	8	McCarthy Middle School	Chelmsford
Cruse	Celeste	8	Lawrence School	Falmouth
Facques	Karen	8	Hawthorne Brook Middle School	North Middlesex Regional School District
Fitzgibbon	Timothy	8	Henderson K-12 School	Boston
Franz	Mary	8	Holten Richmond Middle School	Danvers
Maestas	Gary	8	Roosevelt Middle School	New Bedford
Militello	Stacey	8	Oak Middle School	Shrewsbury
O'Connor	Sean	8	West Middle School	Andover
Reddish	Karen	8	Nauset Regional Middle School	Nauset
Styckiewicz	Taylor	8	Bellamy Middle School	Chicopee
Zamora	Miguel	8	Falmouth High School	Falmouth
Copen	Joshua	HS Intro Physics	High School of Science and Technology	Springfield
DiBiasio	Kenneth	HS Intro Physics	Tantasqua Regional High School	Tantasqua and Union 61 Districts
Eckels	Marna	HS Intro Physics	Dearborn STEM Academy	Boston
Flanagan	Erin Marie	HS Intro Physics	Wachusett Regional High School	Wachusett Regional

Name		Grade	Affiliation	District
Last	First			
Foster	Gita	HS Intro Physics	Weston High School	Weston
Jumper	Kevin	HS Intro Physics	Southeastern	Southeastern Regional School District
Lidington	Kathryn	HS Intro Physics	Hull High School	Hull
Morey	Shannon	HS Intro Physics	Abbott Lawrence Academy at Lawrence HS	Lawrence Public Schools
Newton	Kristin	HS Intro Physics	Cambridge Rindge and Latin School	Cambridge
Shapiro	David	HS Intro Physics	Natick High School	Natick
Snyder	Joshua	HS Intro Physics	North Brookfield Jr/Sr High School	North Brookfield
Winston	Amy	HS Intro Physics	Newton North HS	Newton
Bottcher	Arlyn	HS Biology	Dartmouth High School	Dartmouth
Bruell	Carol	HS Biology	Chelmsford High School	Chelmsford
Curtin	Lisa	HS Biology	Somerville High School	Somerville
Davidson	Tom	HS Biology	West Springfield High School	West Springfield
Drummond	Jillian	HS Biology	Foxborough High School	Foxborough
Dube	Jennifer	HS Biology	Greater Lawrence Technical School	Greater Lawrence Regional Technical High School
Fitch-Tewfik	Jennifer	HS Biology	Southeastern Regional	Southeastern Regional School District
Genovese	Elizabeth	HS Biology	Chelsea High School	Chelsea
Hannon	Kelly	HS Biology	Watertown High School	Watertown
Menice	Constance	HS Biology	Westford Academy	Westford
Nagelin	AnnMarie	HS Biology	Mystic Valley Regional Charter School	Mystic Valley Regional Charter School
St. Amand	Ronald	HS Biology	District	Springfield

Bias Committee Members

2019–21

Last Name	First Name	District or Affiliation
Cahoon	Mary	Fall River Public Schools
Callahan	Judy	Pittsfield Public Schools
Charbonneau	Nichole	Old Rochester Public Schools
Ernst	Amanda	Lowell Public Schools
Houle	Zachary	Pittsfield Public Schools
Mahmud	Amatul	Cambridge Public Schools
Martin, Dr.	Paula	Quinsigamond Community College
McLaughlin	Maria	Methuen Public Schools
Miller	Tammi	Seekonk Public Schools
Reardon	Maria	Natick Public Schools
Rudd	Michael	Baystate Academy Charter Public School
Strus	Jinnee	Gardner Public Schools
Tahiliani	Priya	Boston Public Schools
Westerman	Kara	Spencer East Brookfield Public Schools

APPENDIX E

ACCESSIBILITY FEATURES AND TEST ACCOMMODATIONS

Accessibility and Accommodations Manual for the 2020–2021 MCAS Tests and Retests

Including Participation Requirements for Students with Disabilities and English Learners

Updated: January 2021

This document was prepared by the
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Commissioner

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Purpose of This Manual

The Massachusetts Department of Elementary and Secondary Education is providing you with the *Accessibility and Accommodations Manual for the 2020–2021 MCAS Tests and Retests.* The accessibility and accommodations policies in this manual will apply to students taking all MCAS tests and retests.

Educators will need to become familiar with the MCAS accessibility and accommodations policies since they provide guidance on the use of individualized supports for student participation in MCAS. Test coordinators and administrators should also review this manual to determine those accessibility features and accommodations that must be documented for each student in the Student Registration/Personal Needs Profile (SR/PNP) (the procedure used by schools to register students for MCAS), and to receive the necessary accommodated test editions.

This manual provides guidance and information about:

- MCAS participation requirements for students with disabilities, students who are English learners (ELs), and ELs with disabilities; and which students with disabilities should be considered for an alternate assessment; and
- the availability, selection, and use of
    - *universal accessibility features*, which provide tools and supports for *all* students;
    - *designated accessibility features* intended for *all* students, but which must be authorized by the principal; and
    - *test accommodations* for students with disabilities and students who are ELs.

Schools may request guidance from the Department throughout the year as they plan for the use of test accommodations and other supports for the students who need them. Please contact Student Assessment Services at mcas@doe.mass.edu or 781-338-3625 with any questions.

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I. Overview of MCAS Accessibility and Accommodations

A. Introduction

All students, including students with disabilities and ELs, will be required to participate in all MCAS assessments that are scheduled for students in their grade, including

- students enrolled in public schools
- students enrolled in charter schools
- students enrolled in innovation schools, including virtual schools
- students enrolled in educational collaboratives
- students enrolled in approved and unapproved private special education schools and programs within and outside Massachusetts
- students receiving educational services in institutional settings
- students in the custody of the Department of Children and Families (DCF)
- students in the custody of the Department of Youth Services (DYS)

Students must participate in grade-level tests that correspond with the grade in which they are reported to the Department's Student Information Management System (SIMS).

Selection of accessibility features and accommodations should proceed according to the test format (computer or paper) to be used by the student. The assessment options indicated on the following pages are based upon (a) accommodations research; (b) generally accepted practices and procedures currently in use for statewide assessments; (c) "legacy" MCAS accommodations policies; and (d) the recommendations of Massachusetts stakeholders who were members of the MCAS Accessibility and Accommodations Work Group.

The application of universal design principles to the MCAS assessments, in conjunction with the accessibility and accommodations policies described in this manual, are intended to reduce barriers to participation in the MCAS assessments for *all* students, not just students with disabilities and English learners. While many computer-based accessibility features are unique to online testing, others can be applied to paper-based testing for students who are unable to take tests on a computer. In addition, increased flexibility for local administrators has been incorporated in test administration procedures in response to input and requests from local educators for greater autonomy in determining the testing conditions within their schools.

To assist schools in providing and tracking the use of accessibility features and accommodations during testing, the Department recommends that test coordinators develop a table or spreadsheet prior to test administration that lists **where**, **when**, and **with whom** students will be testing, and which accessibility features and accommodations each student will need, to ensure that students receive all accessibility features and/or accommodations to which they are entitled.

B. What's New and Notable for School Year 2020–2021?

- Accommodated editions of **computer-based** tests will be available, including text-to-speech, screen reader, compatible assistive technology, and American Sign Language (ASL) video editions of grade 10 (and grade 11) mathematics. Accommodated **paper-based** test forms will be available in large-print, Braille, and Spanish-English for the grade 10 and grade 11 mathematics tests.
- High school Science Technology and Engineering tests will continue to be administered only as "legacy" **paper-based** tests, with paper-based accommodated forms available.
- Computer-based "web extensions" will be available in **spring 2021** for students who use the **speech-to-text** and/or **word prediction** accommodations, and this is listed in their IEP and/or 504 plan. Web extensions are described on pages 20, 24, 25, and 29 of this manual and in greater detail in the Department' *Guidelines for Using Assistive Technology as an MCAS Test Accommodation*.
- An **alternative cursor/mouse** will be available for selection by all students on computer-based tests. See page 4 for details.
- **Pre-approved graphic organizers and supplemental mathematics and STE reference sheets** (available here) have recently been revised to reflect input from educators and curriculum experts.
- Appendix A has been added describing the ***Procedures for Scribing and Transcribing Student Responses***.
- A new *MCAS Grade-Level and Competency Manual* has been developed for students who will participate in MCAS through this option. This information is no longer included in the *Educator's Manual for MCAS-Alt*.
- Updated computer- and paper-based practice tests are available, including accommodated editions. Students using accommodated forms, including text-to-speech and the new "web extensions," should become familiar with these features and the basic functionality of the computer-based testing platform (TestNav) prior to testing. The Department encourages each student to take online practice tests and also view the student tutorial prior to actual test administration. Narrated training modules are also available.
- Decisions about test participation for each student with a disability (including ELs with disabilities) must be made by the IEP team and listed in the student's IEP, or be included in a 504 plan, for each content area test. Decisions include the following:
    - Which **accommodations** the student needs to participate in MCAS testing, according to the policies outlined in this manual.
    - Whether the student with a disability (or recently-arrived EL) requires a **paper- rather than a computer-based test**, and if so, in which subjects.
    - The **EL accommodations** listed in Section VI of this manual must be considered for all English learners (ELs) with or without disabilities. Accommodations decisions must be made by an informal team of adults familiar with the EL student and documented in writing using the sample

(or similar) form provided in Appendix B.
    - If **accessibility features** are needed by a student with a disability, the Department encourages listing these to guarantee that they will be provided on the test.

- The following must be provided to *all* students on MCAS tests, including students with disabilities and ELs:
    - Untimed test sessions until the end of the school day, as needed
    - Blank scratch paper (including blank, lined, or graph paper)
    - Assistance as needed from a test administrator in using the computer-based testing platform

Accessibility features and accommodations for MCAS tests are listed in the following categories:

- **Universal Accessibility Features** (UF): Tools and supports that are available to *all* students, either on the computer-based tests or their paper-based equivalents (see pp. 4–5).
- **Designated Accessibility Features** (DF): Flexible test administration procedures that may be used with *any* student at the discretion of the principal (or designee). These include changes in the location of test settings, group size, seating of students, and scheduling of test administrations (see p. 5–6).
- **Accommodations** (A): Specific supports available only to students with disabilities and English learners. Team members and educators responsible for developing IEPs and 504 plans must make decisions regarding which accommodations to provide and list these in the plan of each student (see pp. 16–22). We encourage districts to list accommodations for EL students using the sample form entitled Documentation of MCAS Accommodations for an EL Student (in Appendix B) which must be kept on file at the school.
- **"Special Access" Accommodations** (SAs): Formerly called *nonstandard accommodations*, these may be provided to students who meet certain guidelines and criteria (see pp. 22–25).
- **English Learner Accommodations** (EL): Several accommodations are available to ELs who do not have disabilities. See pp. 28–31 for details and a description of the relative suitability of each accommodation for students at beginning, intermediate, and advanced levels of English proficiency.

Accessibility and accommodations policies will also be described in the *MCAS Principal's Administration Manual* (PAM), available this winter.

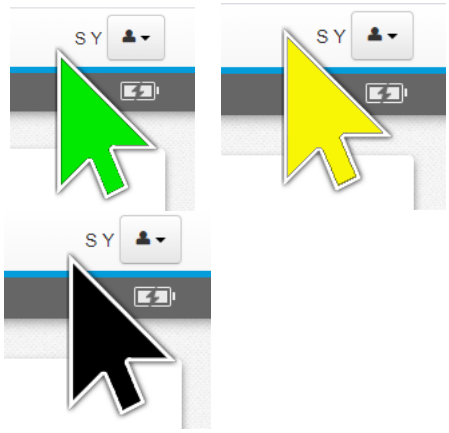
II. Accessibility Features for All Students

A. Universal Accessibility Features (UFs)

Universal Accessibility Features are tools and supports that are available to *all* students on the MCAS tests that are either built into the MCAS computer-based test platform or provided by a test administrator on the computer- or paper-based test. Although most universal accessibility features will be available on the day of the test to *any* student who wishes to use them, some *must* be **requested in advance** in the Student Registration/Personal Needs Profile (SR/PNP), the student registration system located in PearsonAccess^{next} (PAN). The "*(SR/PNP)*" designation in Table 1 below refers to an accessibility feature or accommodation that must be documented and/or requested in the SR/PNP prior to the start of testing.

Table 1. *Universal Accessibility Features* Available to All Students

#	Computer-Based Testing	Paper-Based Testing
UF1	**Highlighter tool** Four highlighter colors are offered: blue, pink, green, and orange	**Highlighter** Colored highlighters and/or colored pencils may be used by students taking paper-based tests. See *Principal's Administration Manual* for details.
UF2 *(SR/PNP)*	**Alternative background and font color** The student can select a color combination for text and background. 	**Colored overlays or tinted lens(es)**
UF3	**Magnifier or Zoom tool** Magnifier tool enlarges part of the screen; Zoom tool enlarges or reduces the entire screen by pressing Ctrl + or Ctrl -	**Magnification tool/device** or low-vision aid
UF4 *(SR/PNP)*	**NEW for Spring 2021** **Alternate Cursor/Mouse Pointer tool**	**Enlarged pencil/modified writing instrument**

#	Computer-Based Testing	Paper-Based Testing
	The student can select an enlarged and colored cursor.  **Medium Sized White, Large Sized White, Extra-Large Sized White**  **Extra-Large Green, Extra-Large Yellow, Extra-Large Black** **Note:** Pointers are not shown in actual size which will differ according to the size of the student's computer screen.	
UF5	**Line reader tool** Masks text so only part of the text can be viewed at one time	**Tracking device**, such as a straight edge or similar tool
UF6 *(SR/PNP)*	**Answer masking** Student selects which answer choices will be shown on the screen	**Mask text or answer(s)** using a blank card or cutout
UF7	**Answer eliminator** Student marks an "X" through each answer option he or she believes is incorrect	**Use a pencil to eliminate answer choices** in test booklet (not answer bubbles)
UF8	**Item flag/bookmark**	**Use a blank place marker** to mark a question for later review (Note: post-its are *not* allowed)
UF9	**Audio aid** (e.g., amplification device) (**Note**: smartphones may not be used)	**Audio aid** (e.g., amplification device) (Note: smartphones may not be used)
UF10	**Notepad** for notes or calculations	**Scratch paper** is required for all students

#	Computer-Based Testing	Paper-Based Testing
UF11	**Test administrator reads aloud selected words** (or **signs selected words**, in the case of a student who is Deaf or Hard-of-Hearing) on the Mathematics and/or Science and Technology/Engineering (STE) tests, as requested by the student. The student may point to a **word or phrase** that he or she needs read aloud or signed. Test administrator quietly reads aloud or signs the selected word to the student. Students using this feature may be tested alongside other students in groups of any size.	
UF12	**Test administrator redirects student's attention to the test** without coaching or assisting the student to answer any questions (e.g., test administrator reminds student to stay focused; it is not permissible to say, "Add more to your response" or "Make sure to answer all questions.")	
UF13	**Test administrator reads aloud, repeats, or clarifies *general test administration directions* from the Test Administration Manual scripts** to student, as needed.	

B. Designated Accessibility Features (DFs)

Although most students will be tested in their regular classrooms according to the guidelines and schedule intended for all students, principals have the flexibility to test *any* student, including non-disabled and non-EL students, using the designated accessibility features described in Table 2, as long as all requirements for testing conditions, test security, and staffing are met.

It is advisable, although not required, to include designated accessibility features in the Individualized Education Plan (IEP) or 504 plan of a student with a disability who requires them.

Table 2.
***Designated Accessibility Features* available to any student, at the principal's discretion**

#	Designated Accessibility Feature
DF1	**Small group test administration** (May include up to a total of 10 students.)
DF2	**Individual (one-to-one) test administration** (Student must be tested in a separate setting.)
DF3	**Frequent brief supervised breaks**
DF4	**Separate or alternate test location**
DF5	**Seating in a specified area** of the testing room, including the use of a study carrel
DF6	**Adaptive or specialized furniture** (e.g., seating, desk, or lighting)
DF7	**Noise buffer,** such as noise-canceling earmuffs/headphones or white noise (**Note:** music or other recordings may *not* be played, unless granted as a *unique accommodation* by the Department. See pp. 14-15)
DF8	**Familiar test administrator**
DF9	**Student reads test aloud to self**: Student must be tested in a separate setting, unless a low-volume device (e.g., a Whisperphone™) is used.
DF10	**Specific time of day**
DF11	**"Stop Testing" policy**: The student should be given the opportunity to attempt each test session). If the student does not appear to be responding to test questions after a period of 15–20 minutes, the test administrator may ask if the student is finished. If so, the test administrator may collect the student's test materials and the student can either sit quietly or be excused from the test setting.

III. MCAS Participation Requirements for Students with Disabilities

A. Background

The information in this manual is intended to guide decision-making by Individualized Education Program (IEP) teams and 504 plan coordinators as to *how* a student with a disability will participate in MCAS. Students with disabilities are required to participate in all MCAS assessments scheduled for students in their grade. Students with significant cognitive disabilities who are unable to take the standard tests, even with accommodations, must take the MCAS Alternate Assessment (MCAS-Alt).

B. Definition of a Student with a Disability

For the purpose of MCAS participation, a student with a disability is defined as a student with an approved Individualized Education Program (IEP) provided under the Individuals with Disabilities Education Improvement Act of 2004 and the Massachusetts General Laws, Chapter 71B; or a plan provided under Section 504 of the Rehabilitation Act of 1973 (i.e., a "504 plan").

C. Participation Requirements for Students with Disabilities

State and federal education laws mandate that *all* students with disabilities who are educated with Massachusetts public funds participate in annual statewide assessments, including students enrolled in public schools, educational collaboratives, and approved and unapproved private special education schools, and students in the custody of the Department of Children and Families (DCF) or the Department of Youth Services (DYS).

Students with disabilities must participate in grade-level tests that correspond with the grade in which they are reported in the Department's Student Information Management System (SIMS).

Only a student's IEP team can make decisions about which test accommodations are appropriate for the student and whether the student should take the standard or alternate assessment. Assessment decisions for students with disabilities are made on an annual basis in each content area for each student and must be listed in the IEP. If the student has a 504 plan rather than an IEP, then the 504 plan must also include this information. The principal is responsible for ensuring that each student is assessed using the test format and accommodations listed in the student's IEP or 504 plan.

English Learners (ELs) with Disabilities

EL students, both with and without disabilities, must participate in all MCAS assessments required for students in their grade, regardless of the number of years they have been enrolled in U.S. schools, with one exception: **EL students who first enrolled in a U.S. school after March 1, 2020**, are *not required* to take the spring 2021 MCAS ELA tests, although schools have the *option* to assess first-year EL students in ELA.

EL students with disabilities are entitled to receive test accommodations and to participate in the MCAS Alternate Assessment (MCAS-Alt), as determined by their IEP team or 504 plan. See additional information on the participation of EL students in MCAS beginning on page 26

Students Diagnosed with Concussions

The Department has issued guidelines and MCAS testing policies for students who are returning to school after being diagnosed with a concussion. Please refer to this information before making decisions about MCAS testing for a student who has had a concussion.

D. Decision-Making Guidelines for MCAS Participation

This section provides guidelines for IEP team members and staff who develop 504 plans to determine how each student with a disability will participate in MCAS.

The student's IEP team or 504 plan coordinator should address the questions below and consider options 1, 2, and 3 in the chart on pages 8-10:

- Can the student demonstrate knowledge and skills, either fully or partially, on the **standard MCAS test under routine conditions**?
- Can the student demonstrate knowledge and skills, either fully or partially, on the **standard MCAS test with accommodations**? If so, which accommodations are necessary for the student to participate?
- If no to the above questions, see the options below to determine whether the student should take the **alternate assessment** (MCAS-Alt).

  (**Note: Alternate assessments** are intended only for students with significant cognitive disabilities who are unable to take standard MCAS tests, even with accommodations.

The student's IEP team or 504 plan coordinator must make a separate decision for each subject scheduled for assessment. A student may take the standard test in one subject and the alternate assessment in another. These decisions may be revised each time the team convenes.

Characteristics of Student's Instructional Program and Local Assessment	Recommended Participation in MCAS
OPTION 1 ***If the student is*** a) generally able to demonstrate knowledge and skills on a computer- or paper-based test, either with or without test accommodations, ***and*** is b) working on learning standards **at or near grade-level expectations,** ***or*** is c) working on learning standards that have been modified and are **somewhat below grade-level expectations** due to the nature of the student's disability,	***Then*** the student should take the computer- or paper-based **MCAS test**, either with or without accommodations.

Characteristics of Student's Instructional Program and Local Assessment	Recommended Participation in MCAS
OPTION 2 ***If the student is*** a) an individual with a **significant cognitive disability**, ***and*** is b) **generally unable** to demonstrate knowledge and skills on a computer- or paper-based test, even with accommodations, ***and*** is c) working on learning standards that have been **substantially modified** due to a *significant cognitive disability*, ***and*** is d) receiving **intensive, individualized instruction** in order to acquire, generalize, and demonstrate knowledge and skills,	***Then*** the student should take the **MCAS Alternate Assessment (MCAS-Alt)** in this subject**.**

E. Further Guidance on Designating Students for the MCAS-Alt (Option 2)

IEP teams should **not** designate a student for an alternate assessment solely because he/she:

- is frequently absent from school;
- has not received instruction in the general curriculum;
- has a particular disability (e.g., all students with intellectual disabilities should not automatically be designated for the MCAS-Alt);
- is placed in a program or classroom where it is expected that students will take the MCAS-Alt;
- has taken an alternate assessment in the past (since this is an annual decision);
- has previously failed the MCAS test;
- is an English learner;
- is economically disadvantaged ;
- is a child in foster care;
- requires assistive technology or an augmentative communication system that has not been provided;
- attends a school in which the IEP team may have been influenced to designate the student

for an alternate assessment in order to receive disproportionate credit toward the school's accountability rating.

Please refer to the Commissioner's memorandum regarding MCAS-Alt eligibility criteria.

Characteristics of Student's Instructional Program and Local Assessment	Recommended Participation in MCAS
OPTION 3 ***If the student is*** a) working on learning standards **at or near grade-level expectations** ***and*** is b) **sometimes able** to take a computer- or paper-based test, either without or with one or more test accommodation(s) ***but*** c) has a **complex and significant disability*** that does not allow the student to fully demonstrate knowledge and skills on a computer- or paper-based test of this duration, * See Section F for examples of complex and significant disabilities for which the student may require an alternate assessment.	***Then*** the student should take the computer- or paper-based **MCAS test**, if possible, with necessary accommodations. ***However*** the team may recommend that the student submit a "grade-level" or "competency" portfolio when the severity and complexity of the disability prevent the student from demonstrating knowledge and skills on the computer- or paper-based MCAS test, even with the use of accommodations.

F. Students with Complex and Significant Disabilities Who May Require a "Grade-Level" or "Competency" Portfolio (Option 3)

When the nature and complexity of a student's disability present significant barriers or challenges to standardized computer- or paper-based testing, even with the use of accommodations; and the student is working at or close to grade-level expectations, the

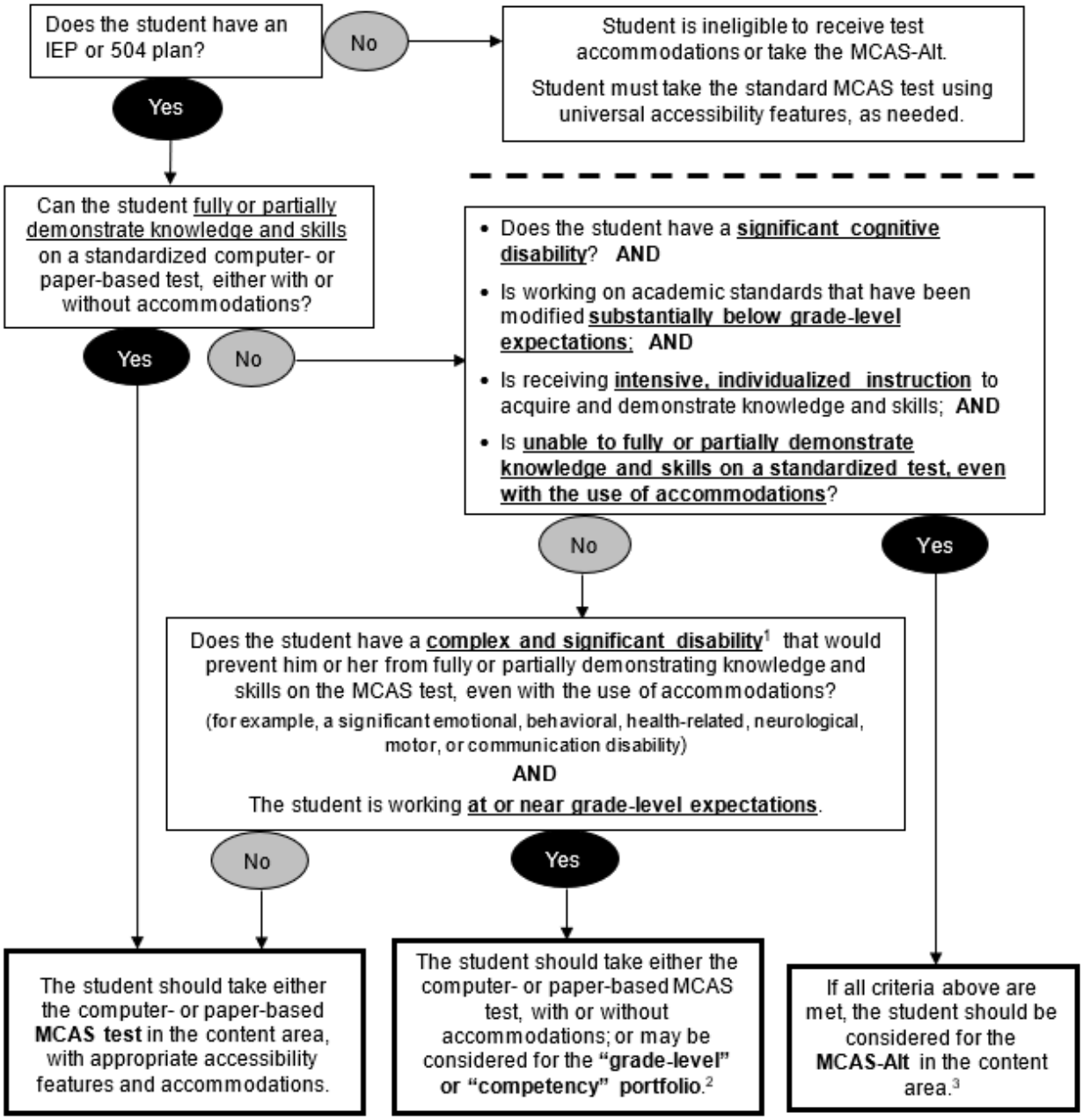
student's IEP team or 504 plan coordinator may determine that the student should participate either in the "grade-level" (grades 3–8) or "competency" (high school) portfolio in one or more subjects. More information on "grade-level" and "competency" portfolios is available in the MCAS Grade-Level and Competency Manual.

The following examples are provided to expand the team's understanding of students who may be appropriate for the "grade-level" or "competency" portfolios in unique circumstances:

- a student with a significant emotional, behavioral, or other disability, who is unable to maintain sufficient concentration to participate in standard MCAS testing, even with accommodations;
- a student with a significant health-related disability, neurological disorder, or other complex disability, who cannot meet the demands of a prolonged test administration;
- a student with a significant motor, communication, or other disability, who requires more time than is reasonable or available for testing, even with the allowance of extended time (i.e., the student is unable to complete a test session in a single school day).

G. Decision-Making Tool for MCAS Participation by Students with Disabilities

The decision chart shown below may be used by IEP teams and 504 plan coordinators to make annual decisions regarding appropriate student participation in MCAS. Make separate decisions in *each content area* being assessed: ELA, mathematics, and science and technology/engineering.



[1] See page 10 of this manual for additional details on "complex and significant disabilities."

[2] See the *MCAS Grade-Level and Competency Portfolio Manual* for details on submission of "grade-level" and "competency" portfolios.

[3] Students who take the MCAS-Alt in high school will not earn a Competency Determination in the assessed subject and therefore will not be eligible to earn a high school diploma.

IV. MCAS Accommodations for Students with Disabilities

A. Background and Purpose

The information in this section is intended to guide decision-making regarding the selection, use, and evaluation of accommodations for MCAS testing. As required by 34 CFR 300.160, the state is providing districts with these guidelines for the provision of appropriate accommodations on the MCAS tests, and stipulating that IEP teams and 504 plan coordinators carefully identify and select only those accommodations for each assessment that are needed by the student and do not invalidate the score. IEP teams should be trained annually on these guidelines. Please read the following information carefully.

B. Accommodations for Students with Disabilities

1. Purpose of Test Accommodations

A test accommodation is a change in the way a test is administered or the way in which a student responds to test questions. Test accommodations are intended to accomplish the following:

- offset the effects of the student's disability and remove barriers to participation in the assessment
- provide the necessary conditions for a student to demonstrate knowledge and skills effectively on statewide assessments
- provide the opportunity to report test results for students who require accommodations
- provide test results that are comparable to those of students who did not receive accommodations
- yield results that do not affect the validity or reliability of the interpretation of scores for their intended purposes

Based on the information and guidance found on the following pages, the IEP or 504 plan for each student with a disability must be reviewed and revised as needed, either during routinely scheduled meetings prior to testing or through the IEP amendment process. The principal is responsible for ensuring that each student is provided with the test accommodations listed in his or her IEP or 504 plan during testing. It is also advisable (though not required) to list the *designated accessibility features* (see Table 2) in the plans of students to ensure these will be provided.

Use of test accommodations should never replace appropriate and rigorous instruction based on grade-level standards in the subject being tested.

2. Eligibility for Test Accommodations

ELIGIBLE: students with disabilities served by an IEP or 504 plan

The right of a student with a disability to receive allowable accommodations on MCAS tests is protected by both federal and state laws. The student's IEP or 504 plan must specify precisely which MCAS accommodation(s) he or she will receive, and the IEP must be approved by the parent/guardian (or student over 18) before an accommodation may be used by the student. Similarly, a student's 504 plan must already be in place or under development. In cases where a 504 plan is under development, the school personnel responsible for writing the plan must have already met and agreed upon the necessary MCAS accommodation(s) before the accommodation may be provided.

NOT ELIGIBLE: students without documented disabilities and students with disabilities who are not served by an IEP or 504 plan

A student who does not have a documented disability and is not served by either an IEP or 504 plan is not eligible to receive accommodations on MCAS tests, regardless of whether the student already receives support or accommodations during classroom instruction.

3. General Requirements for Use of Test Accommodations

The use of accommodations is based on the individual needs of a student with a disability and may only be provided when all of the following conditions have been met:

a) The student **has a disability** that is documented in an IEP or 504 plan and **requires the use of one or more accommodations** to participate in MCAS testing.

AND

b) The accommodation is listed in this manual (or prior written approval has been obtained from the Department for a unique accommodation); the **accommodation is listed** in the student's IEP under "State- and District-Wide Assessment;" and the **IEP has been signed** by the student's parent(s)/guardian(s) prior to the date of test administration; or is listed as an MCAS accommodation in a 504 plan developed for the student.

AND

c) The student **uses the accommodation routinely** (with rare exceptions) during classroom instruction and assessment in the subject, both before and after the MCAS test is administered, and the student is **comfortable and familiar** with its use. Use of an accommodation during routine instruction does not *necessarily* qualify a student to receive the same accommodation during MCAS testing; for example, the student must meet additional criteria to receive a ***special access* accommodation** on an MCAS test.

AND

d) If a ***special access*** **accommodation** will be provided, the student meets all of the criteria to receive the accommodation, as shown in Table 5.

IEP teams must reconvene at least annually and determine which accommodations will be needed for state- and district-wide assessments.

Accommodations may **not**

- alter, explain, simplify, paraphrase, or eliminate any test question, reading passage, writing prompt, or multiple-choice answer option;
- provide verbal or nonverbal clues or suggestions that hint at or give away the correct response to the student;
- contradict test administration requirements or result in a violation of test security; for example:
  - test questions may not be modified, reordered, or reformatted in any way for any student;
  - paper-based tests may not be photocopied, photographed, scanned, altered, or duplicated;
  - screen shots of computer-based tests may not be taken or reproduced;
  - English-language dictionaries are allowed **only** for legacy ELA Composition retest sessions. English-language dictionaries are **not** permitted for any student on next-generation MCAS tests.

If the above conditions have been met and the accommodation is listed in the IEP or 504 plan, the accommodation(s) **must be provided** to the student during MCAS testing. If an accommodation is provided that does not meet the conditions stated above or that is not listed in a student's plan, the student's test score may be **invalidated**.

In the event a student was provided a test accommodation that was *not* listed in his or her IEP or 504 plan, or if a student was *not* provided a test accommodation listed in his or her plan, the school should immediately contact the Department at 781-338-3625 or by email at mcas@doe.mass.edu.

4. Updating IEPs and 504 Plans

IEPs and 504 plans should be updated as needed for all students with disabilities prior to the spring 2021, and other test and retest, MCAS administrations throughout the year to reflect the most current needs of each student, and policies and accommodations described in this manual. Proper notation of accommodations in students' IEPs and 504 plans will ensure that students receive all the necessary supports to which they are entitled.

Virtually all students are expected to take the next-generation MCAS tests using the computer-based testing platform (TestNav) and be given an opportunity to view the tutorial and take online practice tests prior to test administration.

5. If a Student Refuses an Accommodation

If a student refuses to use an accommodation listed in his or her plan during testing, the school should document in writing that the student refused the accommodation and keep the documentation on file at the school. The student should be told that the accommodation will remain available during testing should they need it. The student should *not* be asked to sign an agreement acknowledging that they have refused an accommodation, nor should they be asked to waive their right to receive an accommodation that is listed in their IEP or 504 plan. A sample form (optional) for documenting a student's refusal of an accommodation is available in Appendix C.

If a student refuses an accommodation, and the IEP team agrees that the listed accommodation is no longer needed by the student, the accommodation should be removed from the plan at the next scheduled meeting (or listed in the plan "as requested by the student"). Written approval must be obtained from the parent/guardian (or student over 18 years of age) for new or amended IEPs before a change in accommodations can go into effect.

Similarly, 504 plans must reflect only those accommodations that are required by the student as determined by the educators familiar with the student. Consent by the parent/guardian is *not* required for a new or amended 504 plan, although the parent/guardian must be notified of any changes.

6. Unique Accommodations Requests

If a student with a disability or an English learner requires an accommodation that is not listed in Tables 1–6, the school may request approval from the Department for the use of the unique accommodation.

Unique accommodations may **not** accomplish any of the following:

- fundamentally change the test or the construct being measured by the test,
  OR
- assist the student to obtain the answers to test questions,
  OR
- violate test security requirements.

The school may request approval (via email) for use of a unique accommodation by submitting the request to mcas@doe.mass.edu at least two weeks prior to testing. If approved by the Department, the IEP or 504 plan of the student must be amended.

7. Process for Selecting and Evaluating MCAS Accessibility Features and Accommodations for Students with Disabilities

Accommodations are intended to offset the effects of a disability to allow a student to

participate effectively in MCAS testing. When selecting testing accommodations, educators should consider the following:

- ***Determine the learning challenges*** *the student is experiencing.*
  - *Look at the student's classroom performance, not just the nature or type of disability.*
- ***Brainstorm the use of various accommodations and universal and designated accessibility features*** *with IEP team members and other adults familiar with the student.*
  - *What supports were used successfully with students who have similar learning profiles?*
- ***Try out the accessibility features and accommodation(s)*** *in different instructional and assessment settings and make adjustments as needed.*
  - *Be sure the student is comfortable using the accessibility feature or accommodation and becomes familiar with its use.*
- ***Evaluate whether the accessibility feature or accommodation addresses the student's need.***
  - *If not, revise the plan to provide accommodation(s) and supports accordingly.*
- ***If the accessibility feature or accommodation addresses the challenge****,*
  - *determine whether the accessibility feature or accommodation is allowed for MCAS testing in the subject (see Tables 1–5 elsewhere in this manual); and*
  - *develop or amend the IEP or 504 plan accordingly, listing each accommodation (required) or accessibility feature (optional) for the specific MCAS test(s).*

8. Description of MCAS Accommodations

Tables 3–5 list the MCAS accommodations available to students with disabilities on the computer-based test, and where applicable, the comparable accommodation on the paper-based test. **Note:** the paper-based accommodations described below also apply to legacy MCAS retests. MCAS accommodations are grouped into the following categories:

- **Test Presentation:** allowable changes to the format in which the test is presented to the student (Table 3);
- **Response:** allowable changes to the procedures, supports, or devices used to facilitate a student's response to test questions (Table 4); and
- **Special Access:** accommodations intended for a small number of students to offset the effects of a disability that would otherwise severely limit or prevent their participation in the assessment, and that may somewhat impact the interpretation of the test results (Table 5); and
- **EL accommodations:** available to all ELs with and without disabilities on MCAS tests (Table 6)

Note: Accommodations listed with the "*(SR/PNP)*" designation in the tables below must be identified in the Student Registration/Personal Needs Profile for each student in PearsonAccess^{next}.

Table 3. *Test Presentation Accommodations* for Students with Disabilities

Test Presentation Accommodations		
#	**Computer-Based Test**	**Paper-Based Test**
A1 *(SR/PNP)*	**Paper-based edition** of the MCAS test may be administered as an accommodation to a student who is unable to use a computer or take the computer-based test due to a disability. (**Note:** This must be listed as an accommodation in the student's IEP or 504 plan)	N/A
A2 *(SR/PNP)*	N/A (See UF3 and UF4 on page 4 for information on screen magnification and alternate cursor/mouse.)	**Large print** (approximately 18-point font size on 11x17-inch paper) • All responses in the large-print booklet **must be transcribed** verbatim from the large-print booklet to the student's combined test & answer booklet (or standard answer booklet for legacy tests) and returned according to instructions in the PAM, so student will receive credit for his or her work. • Large-print special instructions will accompany the large-print test. • Students may either use the **large-print booklet** to respond to test questions, in which case the answers will need to be transcribed, either by the student (at the time of testing) or a test administrator (anytime during the test window); **OR** the student may write answers directly in the **combined test & answer booklet**. IEPs and 504 plans should indicate how students taking the large-print test will record their answers.
A3.1 *(SR/PNP)* A3.2 *(SR/PNP)*	A3.1 – **Screen reader:** ONLY for a student who is blind or visually impaired and uses the assistive technology program JAWS or NVDA • If the student will use a screen reader, a separate hard-copy Braille edition test with the appropriate Braille graphics must also be ordered for the student. • All answers must be entered onscreen, either by the student or test administrator.	A3.2 – **Braille edition** (hard copy) • All answers must be either **scribed** or **transcribed** verbatim into the student's combined test & answer booklet and returned according to instructions in the PAM so the student will receive credit for his or her work. • Braille special instructions will accompany the Braille test. • See Appendix D for a schedule of the transition to Unified English Braille (UEB).

<table>
<tr><th colspan="3">Test Presentation Accommodations</th></tr>
<tr><th>#</th><th>Computer-Based Test</th><th>Paper-Based Test</th></tr>
<tr><td></td><td colspan="2">Previewing Braille test content by test administrators: Under secure conditions supervised by the principal, Braille test administrators may review Braille test materials up to four days prior to testing once they are received by the school for the purpose of preparing to orient the student. Test materials may not be removed from the school. Braille test administrators who review the test prior to testing will be asked to sign non-disclosure agreements.</td></tr>
<tr><td>A4.1
(SR/PNP)
and
A4.2
(SR/PNP)</td><td>A4.1 – Text-to-speech (TTS) digital text read aloud on the computer-based MCAS Mathematics and Science and Technology/ Engineering tests
TTS may be used either with or without headphones.
If a TTS-enabled version of the computer-based test is used with headphones, the student may be tested in a typical-size group. If student will not use headphones, student must be tested individually in a separate setting.
Students should view the tutorial and take an online TTS practice test prior to testing. If the student is unable to use the TTS feature, but has this accommodation listed in his or her plan, a human reader may be substituted.
TTS for ELA is a special access accommodation (SA 1.1). See Table 5 for guidelines and criteria to receive this accommodation.</td><td>A4.2 – Kurzweil 3000 electronic text reader
Kurzweil 3000 test editions are available for the following tests:
High school legacy STE tests (Chemistry and Technology/Engineering;
High School Biology and Introductory Physics tests, ONLY if legacy paper-based-based versions will be administered in June 2021 (schools will be notified in winter 2021)
February 2021 high school Biology test
Legacy ELA Composition retest
Legacy ELA Reading Comprehension retest (special access accommodation SA 1.3 – see Table 5)
Legacy Mathematics retest
Kurzweil 3000 tests are in read-only format. Responses must be recorded in the student's combined test & answer booklet.
Kurzweil 3000 special instructions will be sent to the school with the test.</td></tr>
<tr><td>A5
(SR/PNP)</td><td colspan="2">Human read-aloud for the Mathematics and Science and Technology/Engineering computer- or paper-based tests
A human reader may either read aloud 1) the computer-based test logged in to a nearby computer or sitting next to the student; or 2) the paper-based test.
The test must be administered in a separate setting, either individually or to a small group of 2–5 students (or up to 10 students for the legacy ELA Composition retest), all of whom are being provided the human read-aloud accommodation.
The entire test must be read word-for-word, exactly as it appears. The test administrator may not provide assistance to the student regarding the meanings of words, intent of any test item, or responses to test items. The test administrator should read with emphasis only when indicated by bold or italicized text.
(Note: Reading aloud selected words on the Mathematics and/or Science and Technology/Engineering (STE) tests, as requested by the student, is UF10.)</td></tr>
</table>

Test Presentation Accommodations		
#	**Computer-Based Test**	**Paper-Based Test**
	• For students who require text read aloud, IEP teams should consider whether TTS is preferable to a human reader (or vice versa) and list this in each student's IEP or 504 plan (e.g., "text-to-speech is preferable, but human reader is acceptable"). • Test administrators who review the test, including human readers, will be asked to sign non-disclosure agreements. • **Note: Reading aloud the ELA tests or legacy ELA Reading Comprehension retest** is a *special access* accommodation (SA1). See Table 5 for guidelines and criteria to receive this accommodation.	
A6.1 *(SR/PNP)*	**Human signer** for the Mathematics, Science and Technology/Engineering tests, and ELA test questions (but NOT reading passages) • The test must be signed exactly as it appears. The signer may not provide assistance to the student regarding the meaning of words, intent of any test item, or responding to test questions. The signer may finger-spell key words in addition to providing the sign for a term. The signer may sign emphasis only when indicated by bold or italicized text. • The test must be administered in a **separate setting**, either **individually** or to a **small group of 2–5 students**, all of whom are receiving the human signer accommodation. • **Note:** If preferred, selected words, phrases, or sections of the Mathematics and/or Science and Technology/Engineering test(s) may be signed to the student, as requested, rather than signing the entire test. • **Signing the ELA reading passages and legacy ELA Reading Comprehension retest passages** is a special access accommodation (SA2). See Table 5 for guidelines and criteria to receive this accommodation. • **Previewing test content by human signers**: Under secure conditions supervised by the principal, interpreters may review test materials up to four days prior to testing once they become available, either online or shipped to the school, for the purpose of preparing to sign the test. Test materials may not be removed from the school nor accessed online outside of the school. Test administrators and interpreters who review the test prior to testing will be asked to sign non-disclosure agreements.	
A6.2 *(SR/PNP)*	**ASL video** edition of the computer-based spring 2021 MCAS grade 10 Mathematics, spring 2021 Grade 11 Mathematics, and An embedded ASL video is built into these computer-based tests. • Students may turn on, off, pause, and control the signing speed of the ASL video. The size of the ASL video may be adjusted (using the "control + or -" keys) and it may be moved around on the computer screen. • Students should view the tutorial and take **online ASL practice tests** prior to testing to become familiar with all of the features of the ASL video player. If the	N/A (See A6.1 for Human Signer)

Test Presentation Accommodations		
#	**Computer-Based Test**	**Paper-Based Test**
	student is unable to use the ASL video, but has this accommodation listed in his or her plan, a human signer may be substituted.	
A7	**Human signer for <u>test directions only</u>** for a student who is Deaf or Hard-of-Hearing	
A8	**Track test items** by assisting the student to move from one test question to the next	

Table 4. *Response Accommodations* for Students with Disabilities

<table>
<tr><th colspan="3">Response Accommodations</th></tr>
<tr><th>#</th><th>Computer-Based Test</th><th>Paper-Based Test</th></tr>
<tr><td>A9
(SR/PNP)</td><td colspan="2">
Use a Department approved graphic organizer, checklist, or supplemental reference sheet for ELA, Mathematics, and/or Science and Technology/Engineering tests

Only the approved ELA organizers and supplemental mathematics reference sheets made available by the Department may be used as accommodations on ELA and Mathematics tests. Graphic organizers without text may also be used without Department approval by students who have this accommodation listed in their IEP or 504 plan.

Notes:

Approved graphic organizers and supplemental reference sheets are available on the <u>Department's website.</u> These have been developed for use on next-generation MCAS tests based on: the most current versions of the curriculum framework standards measured by the tests; the MCAS test design; expectations for how student essays and text-based responses will be scored; and previously approved versions and proposed changes submitted by schools.
A student may use no more than three different approved graphic organizers or two supplemental reference sheets per test session.
For Science and Technology/Engineering tests in grades 5, 8, and high school, a student may use a <u>sample reference sheet,</u> if available, or submit a customized reference sheet for Department approval (see Appendix E)
Individualized graphic organizers and reference sheets for the following tests ONLY may be submitted to the Department for approval according to the schedule below.

<table>
<tr><th>Test Administration Date</th><th>MCAS Test</th><th>Reference Sheet Submission Deadline</th></tr>
<tr><td>February 2021</td><td>February Biology</td><td>January 8, 2021</td></tr>
<tr><td>April 2021</td><td>Grades 5 and 8 STE</td><td>February 26, 2021</td></tr>
<tr><td>June 2021</td><td>High School STE</td><td>April 23, 2021</td></tr>
</table>
For the tests/retests listed in the table above:

Students may continue to use individualized ELA graphic organizers, supplemental mathematics reference sheets and checklists, and individualized STE reference sheets provided they have been submitted and approved by the Department prior to testing.
All individualized organizers, checklists, and reference sheets submitted for approval

</td></tr>
</table>

<table>
<tr><th colspan="3">Response Accommodations</th></tr>
<tr><td></td><td colspan="2">must be accompanied by a completed cover sheet (see Appendix E).
• Individualized mathematics reference sheets approved prior to the 2018–2019 school year must be resubmitted for approval for use on the 2020–2021 retests and STE tests.

Notes on the use of graphic organizers for ELA <u>retests:</u>
• The student may use no more than three different graphic organizers per test session.
• Graphic organizers and checklists may not include definitions, specific examples, or sentence starters.

Notes on the use of individualized reference sheets for Mathematics <u>retests</u>:
• The reference sheet must:
○ be developed in response to the student's specific learning needs;
○ be no more than 3 pages in length; and
○ conform to the <u>Approval Guide for Individualized Mathematics Reference Sheets</u>.</td></tr>
<tr><td>A10.1
(SR/PNP)
and
A10.2
(SR/PNP)</td><td colspan="2">Scribe responses for the Mathematics, Science and Technology/Engineering tests, and/or legacy ELA Reading Comprehension retest using either:
• human scribe (A10.1) who will record the student's responses verbatim (i.e., as dictated by the student) at the time of testing, either onscreen (computer-based test) or in the student's combined test & answer booklet (paper-based test). The student must be tested in a separate setting. Test administrators (and/or sign interpreters) who review the test will be asked to sign non-disclosure agreements. (See Appendix A for specific guidance on providing the scribe accommodation)

If a student is unable to use his or her hand or arm at the time of testing due to a recent fracture, injury, or recovery from surgery, the scribe accommodation may be provided
○ if this is listed in a 504 plan or an approved IEP (Department approval is not required);
OR
○ in cases where a 504 plan is under development, and the staff responsible for writing the plan have already met and agreed upon the need for the scribe accommodation before providing it to the student.

• speech-to-text (A10.2); a speech recognition program or device that converts spoken to written language (other than a smartphone) used to generate responses to test questions.

NEW for Spring 2021 Students using the speech-to-text accommodation will be able to use a speech-to-text "web extension" that functions within TestNav. This compatible assistive technology will allow students to dictate their responses directly into the computer-based test without using a separate, adjacent (external) device.
The web extension for speech-to-text will function only on the computer-based grades 5 and 8 STE tests; the high school Biology test; and (if listed in a student's IEP or 504 plan as a special access accommodation) the ELA tests. The web extension for speech-to-text does not function on mathematics or Introductory Physics computer-based tests due to incompatibility with the Equation Editor answer box used for open responses. Refer to the <u>Guidelines for Using Assistive Technology as an MCAS Test Accommodation for a step-by-step guide to</u> accessing and using <u>this feature</u>.</td></tr>
<tr><td>A11</td><td>N/A</td><td>Responses recorded by student on special paper, rather than in the combined test & answer booklet.</td></tr>
</table>

Response Accommodations		
		• Responses **must be transcribed** into the student's combined test & answer booklet by a test administrator *anytime during the test window*. • If the **student transcribes** his or her own responses, then transcription must occur *during the test session* and be completed on the day in which the test session began.
A12 *(SR/PNP)*	N/A	**Typed responses** • Responses must be printed out, one per page, and inserted in the student's combined test & answer booklet with all required information on each page (see the Principal's Administration Manual). • Transcription of typed responses into the combined test & answer booklet is NOT required. • After printing out, responses must be deleted from the word processor or device.
A13	**Student records responses on a recording device** (other than a smartphone) for the purpose of playing back and transcribing recorded segment(s). Student may use text-to-speech software or an audio recording device. Responses must be deleted from any external devices once they have been transcribed into the student's combined test & answer booklet.	
A14	**Responses signed onto video (for a student who is Deaf or Hard-of Hearing)**, then transcribed by the student onscreen or into the answer booklet during playback. The video must be deleted after transcription.	
A15	**Monitor placement of responses** in the appropriate area onscreen or in the combined & answer test booklet by the test administrator	
A16	**Refreshable Braille Display/Braille note-taker** (specific external device used in conjunction with screen reader for student who is blind or has a vision impairment). A hard-copy edition of the Braille test must also be ordered.	**Braille note-taker** (specific external device used in conjunction with hard-copy Braille test) Note: Braille notes should be returned with the school's nonscorable shipment.
A17	**Braille writer** (specific external device used in conjunction with screen reader and hard-copy Braille test)	**Braille writer** (specific external device used in conjunction with the hard-copy Braille test). A printout of each response may be generated and inserted in the student's answer booklet, with all required information on each page (also see the Principal's Administration Manual).

A note regarding the transcription of student responses: The process of transcribing a student's responses onscreen or into his or her combined test & answer booklet by a test administrator (e.g., from the large print answer booklet) may occur at any time during the testing window, and must be monitored and supervised by the principal, test coordinator, or another test administrator. Details on transcribing responses are provided in Appendix A.

9. *Special Access Accommodations* for Students with Disabilities

Special access (formerly called "nonstandard") accommodations are intended for use by a *very small number of students* who would not otherwise be able to access the test because a disability severely limits or prevents them from performing the skill in question. Teams must exercise caution when considering whether a student requires a special access accommodation, since these accommodations may alter part of what the test is designed to measure. Teams must carefully review the guidelines and criteria described for each special access accommodation listed in Table 5.

Test results for students who took the test using special access accommodations must be interpreted with caution by parents and schools who should not infer that the student has expertise in the skill being accommodated. A notation will accompany the results of students who use a *special access* accommodation.

The Department will review each district's rate of use of special access accommodations. To ensure that IEP teams and 504 plan coordinators carefully review and apply appropriate criteria for use of special access accommodations, districts must do the following:

- train members of IEP teams and 504 plan coordinators on the guidelines for the selection and use of accommodations, including *special access* accommodations, listed in Table 5; and
- revise the IEPs and 504 plans of students with disabilities as needed.

Although test accommodations should generally be consistent with accommodations used for instruction, **the use of a *special access* accommodation during instruction does not automatically qualify a student to receive the same accommodation on an MCAS test**, unless the student meets the guidelines and criteria described on the following pages.

IEP and 504 teams are encouraged to make consistent, appropriate, and defensible decisions regarding the use of *special access* accommodations for each student based on locally administered diagnostic assessments, and to amend the IEPs and 504 plans of students who have been previously designated for special access accommodations, but who do not meet the criteria listed in Table 5.

Table 5. *Special Access Accommodations* for Students with Disabilities

Special Access Accommodations	
#	**Computer- and Paper-Based Tests**
SA1.1 *(SR/PNP)* and SA1.2 *(SR/PNP)* and SA1.3 *(SR/PNP)*	**Text-to-speech** (SA1.1) **or Human read-aloud** (SA1.2) **for next-generation ELA tests; or Kurzweil 3000** (SA1.3) **electronic text reader or Human read-aloud** (SA1.2) **for the legacy ELA Reading Comprehension retest**, including oral presentation of test questions, response options, and passages. • text-to-speech may be used either with or without headphones; • a human reader may either read aloud 1) the **computer-based test** logged in to a nearby computer or sitting next to the student; or 2) the **paper-based test**. This accommodation is intended for a small number of students with disabilities that **severely limit or prevent them from reading**, as documented in locally administered diagnostic evaluations. The student must meet all of the following criteria: • be **virtually unable to read**, even after varied and repeated attempts to teach the student to do so (i.e., the student is at the very beginning stages of learning to read, and not simply reading below grade level), as determined by locally administered diagnostic evaluations; and

Special Access Accommodations	
#	**Computer- and Paper-Based Tests**
	• receive **ongoing intervention** to learn the skill of reading; and • use this accommodation routinely (except during instruction in learning to read). The human read aloud (SA1.2) may also be provided to a student who is blind or has a visual impairment and uses a screen reader and/or has not yet learned (or is unable to use) Braille on the tests and retests listed above. If the student will use a screen reader, a separate hard copy Braille test edition will be sent to the school to allow the student to access the appropriate Braille graphics (see accommodation A3.1). The student • may be tested in a typical-sized group if using text-to-speech *with* headphones; • must be tested individually in a separate setting if text-to-speech will be used *without* headphones; and • may be tested in a group of up to five students if a human reader will be used.
SA2 *(SR/PNP)*	**Human Signer for next-generation ELA tests or legacy ELA Reading Comprehension retest**, including reading passages, questions, and answer options, for a student who is Deaf or Hard-of-Hearing This accommodation is intended for students who are Deaf or Hard-of-Hearing, and who are **severely limited or prevented from reading**, as documented in locally administered diagnostic evaluations. The student must meet all of the following criteria: • be **virtually unable to read** (i.e., decode text), even after varied and repeated attempts to teach the student to do so (i.e., the student is at the very beginning stages of learning to read, and not simply reading below grade level), due to a documented disability and/or history of early and prolonged lack of exposure to and use of language; and • uses this accommodation routinely, except during reading instruction; and • receives ongoing intervention to learn the skill. The student must be tested in a group of no more than five students, unless approval is obtained from the Department to increase the group size in rare circumstances.
SA3.1 *(SR/PNP)* and SA3.2 *(SR/PNP)*	**Scribe responses on the ELA test or ELA Composition retest**, using either: • **a human scribe** (SA3.1) who records the student's responses verbatim during testing (See Appendix A for guidelines on scribing student responses) OR • **speech-to-text** (SA3.2), a speech recognition program that converts spoken language to written text, used under the direct supervision of a test administrator to generate responses to test questions **NEW for Spring 2021** Students using the speech-to-text *special access* accommodation for the ELA test or ELA Composition retest will be able to use a speech-to-text "web extension" that functions within TestNav. This compatible assistive technology will allow students to dictate their responses directly into the computer-based test without using a separate adjacent (external) device. Refer to *Guidelines for Using Assistive Technology as an MCAS Test Accommodation* for a step-by-step guide on accessing and using this feature**.** These accommodations are intended for a student who either: 1. has a **language-processing (or other) disability** and requires the dictation of virtually all written responses to a scribe or an electronic speech-to-text conversion device to

Special Access Accommodations	
#	**Computer- and Paper-Based Tests**
	generate responses. OR 2. who is unable to use his or her hand or arm at the time of testing due to a **fracture, severe injury, or recovery from surgery.** In this case, the accommodation must either be a. listed in a 504 plan or an approved IEP (additional approval by the Department is *not* required); OR b. in cases where a 504 plan is under development, school personnel responsible for writing the plan must have already met and agreed upon the necessary MCAS accommodation(s) before a student may be provided the accommodation(s).
SA4 *(SR/PNP)*	**Calculation device or other mathematics tool** (including addition/subtraction or multiplication/division tables; or manipulatives) on the *non-calculator session* of the Mathematics test or retest This accommodation is intended for a small number of students with documented disabilities that **severely limit or prevent them from performing basic calculations** without a calculation device or other mathematics tool, as documented in locally administered diagnostic evaluations, even after varied and repeated attempts to teach the student to do so. The student must meet all of the following criteria: • be **virtually unable to calculate** (i.e., unable to perform single-digit addition, subtraction, multiplication, or division without a calculation device or other mathematics tool); and • uses the calculation device or tool during routine instruction in mathematics; and • receives ongoing intervention to learn the skill. The student's IEP or 504 plan must specify which calculation device or tool will be used (e.g., calculator or multiplication table). Manipulatives and other mathematics tools (excluding calculators and arithmetic tables) must be approved by the Department prior to their use on MCAS tests. Please contact Student Assessment Services at 781-338-3625 or mcas@doe.mass.edu to request approval.
SA5 *(SR/PNP)*	**Spell-checker for the ELA test or ELA Composition retest**, including an external spell-checking device for the paper-based test; or in conjunction with the typed response accommodation for the paper-based test This accommodation is intended for a small number of students with disabilities that **severely limit or prevent them from spelling correctly**, even after varied and repeated attempts to teach the student to do so. The student must meet all of the following criteria: • be **virtually unable to spell simple words** (i.e., at the beginning stages of learning how to spell), as documented by locally-administered diagnostic evaluations; and • produces understandable written work only when provided this accommodation, which the student uses during routine instruction; and • receives ongoing intervention to learn the skill. The student may *not* use grammar check or access the internet during the test.

Special Access Accommodations	
#	**Computer- and Paper-Based Tests**
SA6 *(SR/PNP)*	**Word prediction for the ELA test and ELA Composition retest**: Word prediction provides a student with a bank of frequently or recently used words after the student keyboards the first few letters of a word. **NEW for Spring 2021** Students using the word prediction *special access* accommodation for the ELA test or ELA Composition retest will be able to use a word prediction "web extension" that functions within TestNav. This compatible assistive technology will allow students to use word prediction assistive technology within TestNav without using a separate, adjacent (external) device. Refer to the *Guidelines for Using Assistive Technology as an MCAS Test Accommodation* for a step-by-step guide on accessing and using this feature**.** For paper-based tests, a word prediction application must be used at a separate external computer station and a test administrator or the student must transcribe the selected word(s) on the student's onscreen test or into the student's answer booklet. (See Appendix A for information and guidelines on transcribing student responses.) This accommodation is intended for a small number of students who: 1. have a disability that **severely limits or prevents them from recalling and processing language** in order to generate written responses; AND 2. can access written expression only through the use of word prediction software, application, or device during routine instruction in order to generate written responses. Test administrators who review the test will be asked to sign non-disclosure agreements. During testing, internet access must be turned off/restricted; and functions that *automatically* select words for the student must be turned off.

V. MCAS Participation Requirements for Students Who Are English Learners (ELs)

EL students must participate in all MCAS tests scheduled for their grades, regardless of the language program and/or services they are receiving or the amount of time they have been in the United States, with one exception: Spring 2021 ELA testing is *optional* for EL students who enrolled in U.S. schools **after March 1, 2020** and who were not reported in the March 2020 SIMS report. ELA testing is also optional for EL students from Puerto Rico who are in their first year of enrollment in a Massachusetts school. District staff should refer to the *Graduation Requirements for Displaced Puerto Rico High School Students* who may wish to obtain a diploma from Puerto Rico.

Schools may elect to administer the MCAS ELA tests to first-year ELs and *must* administer the ACCESS for ELLs test to first-year and all other EL students, even those who have opted out of English language programs and services. **First-year EL students *must* also participate in MCAS Mathematics and Science and Technology/Engineering tests**, although results will be reported for diagnostic purposes only and students' results will not be included in school and district summary results or in state accountability reporting. For first-year ELs who participate in ELA testing, results will be provided at the school level and will be used for Competency Determination purposes for grade 10 students.

EL Participation Requirements for Spring 2021 MCAS Tests

	Content Area Test		
	ELA	**Mathematics**	**Science and Tech/Eng**
First-Year EL Students[1]	*Optional*[2]	Required	Required
All Other Students	Required	Required	Required

[1] Results for first-year EL students are **not** included in MCAS school and district summary results.
[2] Optional, provided that the student has participated in ACCESS for ELLs testing.

Questions regarding the **identification screening, placement, and reclassification of EL students** should be directed to the Office of English Language Acquisition and Academic Achievement at 781-338-3584 or via email at el@doe.mass.edu. For additional details, refer to the Guidance on Identification, Assessment, Placement, and Reclassification of English Learners.

Foreign Exchange Students

Foreign exchange students who are coded in SIMS as #11 under "Reason for Enrollment" in grades 3–8 and 10, and who are determined to be English learners, are required to participate in the MCAS tests specified for the grade in which they are reported. These students are also required to participate in ACCESS for ELLs testing if they are reported in SIMS as English learners.

VI. MCAS Accessibility and Accommodations for EL Students

In addition to the accessibility features listed elsewhere in this manual that are available to English learners, several accommodations are also available to ELs, as described in Table 6. Table 7 describes the relative suitability of each accommodation for students who are at beginning, intermediate, and advanced levels of English proficiency.

A. Individuals Involved in Selecting Accessibility Features and Accommodations for EL Students

Decisions about which universal and designated accessibility features, and which accommodations, are appropriate for an EL student should be made by a group of educators familiar with the student. The decisions of the decision-making team must be documented using either the sample form for **Documentation of MCAS Accommodations for an EL Student** provided in Appendix B, or using a similar, locally designed form.

Individuals involved in the decision-making process may include any of the following:

- the student
- the student's English as a Second Language (ESL) educator
- school administrator (principal/assistant principal)
- general educator (content area teacher)
- special educator (if appropriate)
- parent or guardian

Decision-making teams are encouraged to determine appropriate accessibility features and accommodations for EL students as early as possible in the school year to ensure that the student is familiar with their use. The student should not be introduced to an accessibility feature or accommodation on the day of the assessment. Accessibility features and accommodations are intended to remove barriers and allow EL students to demonstrate their knowledge and skills more effectively.

B. Guidelines for Selecting and Evaluating Accessibility Features and Accommodations for EL Students

Because a student's level of English language proficiency is transitional and the student's linguistic needs will differ from one year to the next, universal and designated accessibility features and accommodations should be examined and revised annually as the EL student makes progress toward attaining English proficiency.

1. Decision-Making Procedures

The following procedures may be used to make appropriate decisions regarding the selection of accessibility features and accommodations for EL students:

- After examining the range of supports allowed on MCAS tests that may help the EL student access the curriculum and take assessments more effectively, the student's classroom teacher should ask him- or herself the following:
    - *Has a particular accessibility feature and/or accommodation been used successfully in the past to assist students in similar situations and at similar English proficiency levels?*
- After trying out the selected supports during routine instruction to determine whether they meet the student's needs, the teacher should ask him- or herself the following questions:
    - *Does the feature and/or accommodation help the student overcome the barrier posed by his or her developing English language proficiency?*
    - *Is the student comfortable using the feature or accommodation?*
- The teacher should observe the student using the accessibility feature or accommodation in the classroom (or if possible, across different classrooms and school settings) and inform members of the decision-making team which accessibility features or accommodations seem appropriate and effective.
- Based on the accessibility feature(s) and/or accommodations listed in this manual that were used successfully in the classroom, the teacher can select the appropriate features and/or accommodations for use on the MCAS tests.
- The teacher should document the final decisions on the use of specific accessibility features or accommodations, either on the sample form provided in Appendix B or using a similar locally developed form and maintain this information in the student's file.

2. Involving Students in Selecting and Using Accommodations

The more an EL student is involved in the accommodation selection process, the more likely the accommodations are to be accepted and used by the student. As students' English proficiency increases, and especially as students reach adolescence and the desire to be more independent increases, students can help determine when the support is no longer useful. Students are likely to increase their self-advocacy abilities over time and ensure that they receive the selected supports during testing. Teachers and other adults should play a role in assisting students to advocate on their own behalf regarding their need for and use of accessibility features and accommodations.

It is important to introduce the use of selected features and accommodations as early as possible in the school year to familiarize students with their use and determine their effectiveness. Accommodations should never be provided for the first time on a statewide assessment.

C. Accommodations for Students Who Are English Learners (ELs)

In addition to universal features and designated features available to all students, the accommodations listed in Table 6 are available to all ELs, either with or without disabilities, on MCAS tests.

Note that *some* EL accommodations must be **requested in advance** in the Student Registration/Personal Needs Profile (SR/PNP) in PearsonAccess^{next}. The names of accommodations and the process for their selection are identical to accommodations for students with disabilities, although the EL accommodations have unique codes (e.g., EL1.).

Table 6. Accommodations for Students Who Are ELs

#	Accommodations for EL Students
EL1 *(SR/PNP)*	**Paper-based editions** of the next-generation tests may be administered to a first-year EL student (i.e., a student in his or her first calendar year of enrollment in a U.S. school) with a low level of English proficiency, or an EL who has little or no familiarity with technology. (Note: Administering the ELA test to a first-year EL student is *optional*)
EL2	**Approved Bilingual Word-to-Word Dictionary and Glossary** (English/Native language) (Note: this accommodation is also available to former ELs)
EL3.1 *(SR/PNP)* and EL3.2 *(SR/PNP)* and EL3.3 *(SR/PNP)*	**Text-to-speech (TTS)** (EL3.1) for next-generation computer-based Mathematics, grades 5 and 8 Science and Technology/Engineering, and/or high school Biology or Introductory Physics (STE); or **Human read-aloud** (EL 3.2) for next-generation computer-based or paper-based Mathematics; Science and Technology/Engineering tests; legacy Mathematics or ELA *Composition* retests; or **Kurzweil 3000** (EL3.3) for legacy paper-based Mathematics retests, ELA Composition retests, and/or legacy high school Science and Technology/Engineering tests • If administering the paper-based test with a human reader, the test must be read word for word in English, exactly as written. The test administrator may not provide assistance to the student regarding the translation or meaning of words. The test administrator should read with emphasis only when indicated by bold or italicized text. • If a human reader is used, the test must be administered in a separate setting either **individually** or to a **group of 2–5 students** all of whom are receiving the human reader accommodation. • A student using the TTS-enabled English-only edition of the computer-based test with **headphones** may be tested in a typical-size group. If *not* using headphones, then student must be tested in a separate setting. **Note:** Reading aloud **selected words** on the Mathematics and/or Science and Technology/ Engineering tests is UF10. (See Table 1.)
EL4.1 *(SR/PNP)* and	**Scribe or speech-to-text** for Mathematics test responses, STE test responses, and/or legacy ELA *Reading Comprehension* retest responses, consisting either of: • **human scribe** (EL4.1), who records student's responses verbatim *at the time of testing*.

#	Accommodations for EL Students
EL4.2 *(SR/PNP)*	See Appendix A for specific guidance on providing the scribe accommodation; or • a **speech-to-text** (EL4.2) program that converts spoken language to written text, used under the direct supervision of a test administrator to generate responses to test questions. **NEW for Spring 2021** Students using the speech-to-text accommodation will be able to use a speech-to-text "web extension" that functions within TestNav. This assistive technology is compatible with TestNav and will allow students to dictate their responses directly into the computer-based test without using a separate adjacent (external) device. The web extension for speech-to-text is only available for ELs on the computer-based grades 5 and 8 STE tests and the high school Biology test. **It is not available to ELs on the ELA tests; nor does the speech-to-text web extension function on the mathematics and Introductory Physics computer-based tests** due to incompatibility with the Equation Editor answer box used for open responses on those tests. Refer to the *Guidelines for Using Assistive Technology as an MCAS Test Accommodation* for a step-by-step guide to accessing and using this feature**.**
EL5	**Test administrator reads aloud/repeats/clarifies general administration directions in English** (from the Test Administration Manual scripts)
EL6	**Test administrator reads aloud/repeats/clarifies general administration directions** (from the Test Administration Manual scripts) **in student's native language**, if native language speaker is available
EL7	**Spanish-English** version of the Grade 10 Mathematics test or retest (and spring 2021 grade 11 mathematics test) • Spanish-English tests are available in computer- and paper-based formats; legacy retests are paper-based only. Paper-based tests consist of English-Spanish facing pages (side-by-side); and computer-based tests consist of "stacked" Spanish text above English text. • Intended for Spanish-speaking EL students who have been in the U.S. less than 3 years. Student may respond either in Spanish or English. (Note: For all other MCAS test versions, students must respond in English.)

Table 7 provides guidance regarding the suitability of EL accommodations based on the English language proficiency (ELP) level of the student.

Table 7. Guidance on Selecting Accommodations for English Learners

KEY for Table 7:

- ● **Highly recommended** for use by English learners at this ELP level
- ⊙ **Recommended** for use by English learners at this ELP level
- ○ **May not be appropriate** for students at this ELP level

#	Accommodation	Most Likely to Benefit English Language Learners at the Following		
		Beginning	Intermediate	Advanced
EL1	**Paper-based editions** of the next-generation tests may be administered to a first-year EL student (i.e., in the first calendar year of enrollment in a U.S. school) with a low level of English proficiency and/or no familiarity with technology.	⊙	○	○
EL2	Approved **bilingual word-to-word dictionary** and glossary (English/Native Language)	○	●	●
EL3.1 and EL3.2	**Text-to-speech** (EL3.1) for the next-generation computer-based Mathematics or Science Technology/Engineering (STE) tests (in English *only);* OR **Human read-aloud** (EL3.2) for Mathematics, STE, or legacy ELA Composition retest	●	⊙	○
EL4.1 and EL4.2	**Human scribe** (EL4.1) or **speech-to-text** (EL4.2) for Mathematics and/or Science and Technology/ Engineering test responses, or legacy ELA Reading Comprehension retest	●	⊙	○
EL5	Test administrator reads aloud/repeats/clarifies general administration **directions in English**	●	⊙	○
EL6	Test administrator reads aloud/repeats/clarifies general administration **directions in student's native language**	●	⊙	○
EL7	**Spanish-English** version of the Grade 10 Mathematics test or retest	●	⊙	○

Appendix A

Procedures for Scribing and Transcribing Student Responses

A human scribe (A10.1, EL4.1, SA3.1) or speech-to-text (A10.2, EL4.2, SA3.2) are accommodations that allow students to either provide their responses orally to a test administrator who will write or keyboard the responses directly onscreen (or into the student's test booklet) or into a speech recognition device that translates spoken words into digital text. Students who receive this accommodation may respond to test questions either through:

- verbal dictation to a human scribe
- a speech-to-text device or other augmentative/assistive communication device (e.g., picture/word board)
- signing (e.g., American Sign Language, signed English, Cued Speech),
- gesturing or pointing
- eye-gazing

Guidelines for Administering the Human Scribe Accommodation (A10.1, EL4.1, SA3.1)

- A scribe may administer this accommodation only to **one student at a time** during a test session. The student must be tested in a separate setting.
- If scribing responses into a paper-based test booklet, the scribe must produce legible text. For computer-based tests, the scribe will type directly into the student's computer-based test.
- The scribe must transcribe the student's responses verbatim and may not prompt, correct, or question the student regarding the content of the responses.
- The scribe may request that the student restate (or sign) words, phrases, or sentences, as needed. The scribe may not edit or alter the student's dictated response in any way.
- A student using a scribe must be given the same opportunities as other students to plan and draft a written response. The scribe may write an outline, plan, or draft as directed by the student, and must record the draft response or outline exactly as dictated.

Additional guidance for scribing next-generation ELA tests and legacy ELA composition retests (SA3.1):

- When scribing, the scribe may assume that each sentence begins with an upper-case letter and ends with a period. All other capitalization, punctuation, and paragraph breaks are the responsibility of the student.
- After the student has finished dictating his or her response(s), the scribe must:
    - ask the student to review the draft and make any necessary edits, including capitalization, punctuation, spelling, and paragraph breaks.

- either allow the student to make edits independently or direct the scribe to make the edits.
- not assist the student in making decisions during the editing process.

Guidelines for Transcribing Student Responses

Circumstances may occur during test administration that may require a test administrator to **transcribe** a student's responses into a combined test & answer booklet, answer booklet, or onscreen. Transcribing responses by a test administrator may occur at any time until the end of the test window under secure conditions supervised by the principal (or designee). These situations may include:

- answers recorded in the wrong section of, or in an incorrect, combined test & answer booklet, answer booklet, or computer-based test.
- a student took the test using a special test format requiring that answers be transcribed; e.g., Braille, large print. (Braille responses must be transcribed by persons fluent in Braille).
- a student uses speech-to-text software, or augmentative communication, or an assistive technology device (**that is not compatible with TestNav**) and prints responses for transcription by a test administrator.
- A student recorded answers on blank paper, instead of in the required combined test & answer booklet, answer booklet of computer-based test, as an accommodation.
- The combined test & answer booklet or document becomes unusable; e.g., torn, wrinkled, or contaminated.

In cases where a student's responses must be transcribed *after* test administration is completed, the following steps must be followed:

- at least two persons must be present during any transcription of a student's responses. At least one of the individuals must be an authorized test administrator; the other a principal or designee.
- the student's response must be transcribed verbatim into the combined test & answer booklet (or separate answer booklet for legacy tests) or computer-based test.
- the student's original printed responses must either be securely shredded or returned with the school's nonscorable materials.

APPENDIX B

Sample Form

Documentation of MCAS Accommodations for an EL Student

Use this form or a locally developed form to document the selection of **MCAS accessibility features and accommodations** for each EL student. Available accessibility features and accommodations are listed in the *Accessibility and Accommodations Manual for the 2020–2021 MCAS Tests/Retests*. This form or the locally developed form should be completed within 60 days of the start of school year or student's date of enrollment and must be **updated annually**. If the EL is a student with a disability, accommodations decisions for EL students with disabilities must also be documented in the student's IEP or 504 plan.

Student Name: _____

School Year: _____

Grade: _____SASID: _____

School: _____District: _____

Name of staff and others who determined the test accommodations and features for the student:

Teacher(s)

_____

Others (including student and/or parent)

_____

_____

If the **parent** and/or **student** were not part of the decision-making process, then they should be notified of the features and accommodations the student will receive on the tests.

Directions: Indicate below the **accessibility features and accommodations** that will be provided to the student on MCAS tests.

Accessibility Feature or Accommodation Needed by the EL Student for Testing	Notes/Comments
(Continue on additional pages as needed.)	

APPENDIX C

Sample Form (Optional)

Student Accommodation Refusal

If a student refuses an accommodation listed in his or her IEP or 504 plan, the school should document in writing that the student refused the accommodation, and the accommodation must be offered and remain available to the student during testing.

This form can be completed and placed in the student's file, and a copy sent to the parent. IEP teams, 504 plan coordinators, and educators making MCAS accommodations decisions for ELs should consider this information when making future accommodations decisions for the student. Use of this form is encouraged, but not required.

Student Name: _____ **Date**: _____

Grade: _____ SASID: _____

School: _____

District: _____

MCAS Test: _____

Test Administrator: _____

Accommodation(s) refused by student _____

_____

Reason for refusal: _____

_____

_____

Comments:

_____

_____

Keep this form on file at the school.
Do *not* submit this form with your school's test materials.

APPENDIX D

Timeline for the Transition of MCAS tests to Unified English Braille (UEB)

The state's transition to Unified English Braille (full UEB/UEB Technical) from English Braille American Edition (EBAE) and Nemeth Code will continue according to the calendar shown below for school years 2020–2021 and 2021–2022. UEB symbol sheets will be provided with MCAS UEB Braille test materials. All tests listed below are "next generation" unless noted as "legacy."

School Year	
Fall 2020–Spring 2021	**Fall 2021–Spring 2022**

EBAE with Nemeth Code:
• Spring 2021 ELA and Mathematics (Grade 11 and Retests - legacy)
• March 2021 ELA and Mathematics Retests (legacy)
 	
UEB Technical (full UEB):
• Spring 2021 ELA and Mathematics (Grade 11 and Retests - legacy)
• February Biology
• Spring 2021: All grades 3–8 and grade 10 MCAS tests, including:
  ○ ELA and Mathematics
  ○ Biology and Intro Physics
  ○ Chemistry and Tech/Eng
	UEB Technical (full UEB):
	• November 2021 ELA and Mathematics Retests
	• February 2022 Biology and Introductory Physics
	• March 2022 ELA and Mathematics Retests
	• Spring 2022: All grades 3–8 and grade 10 MCAS tests, including:
	  ○ ELA and Mathematics
	  ○ Biology and Intro Physics

APPENDIX E

Submitting Customized Materials for Approval
for MCAS Science and Technology/Engineering Tests and ELA and Mathematics Retests

Instructions: This cover sheet must accompany all requests for approval to use customized materials for accommodation A9. Customized material may *only* be used on MCAS STE tests in grades 5, 8, and high school; and legacy mathematics and ELA retests. Please complete and submit this form to the Department's Student Assessment Services Office by email to mcas@doe.mass.edu.

Please submit a **separate cover sheet for each content area** (English Language Arts, Mathematics, or Science and Technology/ Engineering).

Materials submitted after the deadline(s) shown below may not be reviewed before the testing window begins.

Responses will be sent approximately ten school days after a request is received. Please contact the Student Assessment Services Unit at 781-338-3625 with any questions. Retain documentation on file for three years.

Contact Information

Name:	Date:
School Name:	District Name:
Telephone Number:	Fax Number:
Email:	Resubmittal (Check one): ☐ Yes ☐ No

Accommodation A9 Customized Materials Submitted

Place a check mark next to each material being submitted for approval.

☐ Legacy ELA Graphic Organizer	☐ Legacy Math Reference Sheet
☐ Legacy STE or Other Checklist	☐ STE Reference Sheet

MCAS TEST ADMINISTRATION

Place a check mark next to each test administration for which the material will be used.
(Submission deadline in parentheses)

☐ May Legacy retests (4/2/2021)	☐ February Biology (1/8/2021)
☐ High School STE (4/23/2021)	☐ Grades 5 and 8 STE (2/26/2021)

Principal or Designee Statement

The principal or designee of the school must sign below to acknowledge the following:
I have reviewed the Department's policy for administering customized materials for accommodation A9 .

Name: Signature (or Electronic Signature): Date:

Approval/Denial of Request – For Department Use Only

Database number: Date Received Date of Response ☐ Email ☐ Fax

☐ Approved ☐ Approved with Changes ☐ Denied Date Reviewed

APPENDIX F

ACCOMMODATION FREQUENCIES

Table F-1. Numbers of Students with IEPs/504 Plans Tested with and without Accommodations by Content Area and Grade*

Content Area	Grade	Total Number of Students Tested	Total Number of Students with IEPs/504 Plans Tested with Accommodations	Total Number of Students with IEPs/504 Plans Tested without Accommodations
ELA	3	62,874	7,648	6,530
	4	64,362	9,879	5,738
	5	64,732	10,852	5,464
	6	65,792	11,473	5,269
	7	66,884	11,578	5,288
	8	66,901	11,376	5,557
	10	63,658	9,839	5,393
	Total	**455,203**	**72,645**	**39,239**
Mathematics	3	63,009	8,567	5,631
	4	64,530	10,606	4,999
	5	64,796	11,447	4,800
	6	65,826	11,787	4,906
	7	66,909	11,842	4,973
	8	67,008	11,632	5,263
	10	63,412	9,945	5,188
	Total	**455,490**	**75,826**	**35,760**
STE	5	64,657	11,052	5,175
	8	52,308	9,255	4,526
	Total	**116,965**		

**Includes English Learners with IEP/504 Plans.*

Table F-2. Numbers of English Learners (ELs) without Disabilities Tested with and without EL Accommodations by Content Area and Grade

Content Area	Grade	Total Number of ELs Tested with EL Accommodations	Total Number of ELs Tested without EL Accommodations
ELA	3	183	6,705
	4	144	5,356
	5	127	3,389
	6	137	2,610
	7	82	2,956
	8	82	3,045
	10	186	2,830
	Total	**941**	**26,891**
Mathematics	3	3,284	3,612
	4	2,781	2,750
	5	2,091	1,457
	6	1,390	1,363
	7	1,528	1,516
	8	1,548	1,585
	10	1,410	1,597
	Total	**14,032**	**13,880**
STE	5	2,067	1,464
	8	1,127	1,099
	Total	**3,194**	**2,563**

Table F-3. Numbers of Students with IEPs/504 Plans Tested with Accommodations by Accommodation Type and Grade—ELA

Accommodation Description	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10
Paper-Based Test Edition	544	577	431	264	195	260	767
Large Print Test Edition	12	5	17	16	8	10	14
Screen Reader Edition	5	2	3	6	8	2	3
Compatible Assistive Technology	16	4	8	14	8	11	14
Braille Test Edition	1	0	5	2	2	0	5
Human Read-Aloud as a Special Access Accommodation	946	995	736	618	475	387	540
Human Signer as a Special Access Accommodation	15	21	9	19	16	25	12
Text-to-Speech as a Special Access Accommodation	952	1,079	1,088	1,213	1,235	1,166	757
Human Scribe as a Special Access Accommodation	760	898	802	622	455	354	200
Speech-to-Text as a Special Access Accommodation	303	365	402	358	309	243	130
Typed Responses	11	17	22	24	14	29	173
Spell-checker as a Special Access Accommodation	253	353	474	602	667	679	592
Word Prediction as a Special Access Accommodation	126	168	219	239	279	278	170
Graphic Organizer / Supplemental Reference Sheet	6,849	9,122	10,287	11,018	11,230	11,017	8,902
Web Extension	219	275	259	214	188	151	87
Total*	**11,012**	**13,881**	**14,762**	**15,229**	**15,089**	**14,612**	**12,366**

** The totals may differ from those in Table D-1 because individual students may have more than one accommodation.*

Table F-4. Numbers of Students with IEPs/504 Plans Tested with Accommodations by Accommodation Type and Grade—Mathematics

Accommodation Description	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10
Paper-Based Test Edition	531	576	426	277	207	269	797
Large Print Test Edition	15	5	14	18	13	12	17
Screen Reader Edition	4	2	1	1	6	3	4
Compatible Assistive Technology	6	6	7	17	6	11	5
Braille Test Edition	1	0	5	1	2	0	4
Human Read-Aloud	1,900	2,190	1,887	1,545	1,177	980	873
Human Signer	19	27	13	31	22	32	2
Text-to-Speech	3,709	4,664	4,985	4,964	4,657	4,059	1,707
ASL Video Edition	N/A	N/A	N/A	N/A	N/A	N/A	13
Human Scribe	731	907	855	701	507	390	240
Speech-to-Text	253	309	404	383	343	288	124
Typed Responses	7	8	11	16	8	14	7
Calculation Device as a Special Access Accommodation	430	636	908	1,201	1,522	1,731	1,861
Spanish-English Edition	N/A	N/A	N/A	N/A	N/A	N/A	38
Graphic Organizer / Supplemental Reference Sheet	6,754	9,007	10,234	10,868	11,070	10,851	8,729
Total*	**14,360**	**18,337**	**19,750**	**20,023**	**19,540**	**18,640**	**14,421**

** The totals may differ from those in Table D-1 because individual students may have more than one accommodation.*

Table F-5. Numbers of Students with IEPs/504 Plans Tested with Accommodations by Accommodation Type and Grade—STE

Accommodation Description	Grade 5	Grade 8
Paper-Based Test Edition	395	255
Large Print Test Edition	13	8
Screen Reader Edition	1	3
Compatible Assistive Technology	3	7
Braille Test Edition	5	0
Human Read-Aloud	1,808	797
Human Signer	11	29
Text-to-Speech	4,798	3,039
Human Scribe	801	333
Speech-to-Text	467	268
Typed Responses	16	15
Calculation Device	17	33
Spell-checker	12	24
Graphic Organizer / Supplemental Reference Sheet	9,758	8,641
Web Extension	200	97
Total*	**18,305**	**13,549**

** The totals may differ from those in Table D-1 because individual students may have more than one accommodation.*

Table F-6. Numbers of English Learners without Disabilities Tested with EL Accommodations by Accommodation Type and Grade—ELA[1]

Accommodation Description	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10
Paper-Based Test Edition[2]	55	18	10	1	5	7	81
Total	**55**	**18**	**10**	**1**	**5**	**7**	**81**

1 DESE does not collect data on three EL accommodations available for the next-generation ELA tests (Approved Bilingual Word-to-Word Dictionaries, Test Administrator Clarifies General Directions in English, and Test Administrator Clarifies General Directions in Native Language).

2 The Paper-Based Test Edition accommodation is only available to first-year English learners.

Table F-7. Numbers of English Learners without Disabilities Tested with EL Accommodations by Accommodation Type and Grade—Mathematics

Accommodation Description	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10
Paper-Based Test Edition[1]	55	18	10	1	5	8	76
Human Read-Aloud	190	157	152	81	105	80	43
Text-to-Speech	3,014	2,576	1,911	1,289	1,407	1,442	467
Human Scribe	29	40	30	21	18	13	5
Speech-to-Text	67	43	50	24	15	26	11
Spanish-English Edition	N/A	N/A	N/A	N/A	N/A	N/A	823
Total	**3,355**	**2,834**	**2,153**	**1,416**	**1,550**	**1,569**	**1425**

1 The Paper-Based Test Edition accommodation is only available to first-year English learners.

Table F-8. Numbers of English Learners without Disabilities Tested with EL Accommodations by Accommodation Type and Grade—STE

Accommodation Description	Grade 5	Grade 8
Paper-Based Test Edition[1]	10	9
Human Read-Aloud	159	51
Text-to-Speech	1,884	1,051
Human Scribe	33	9
Speech-to-Text	62	40
Total	**2,148**	**1,160**

1 The Paper-Based Test Edition accommodation is only available to first-year English learners.

APPENDIX G
NEXTGEN SCORING SPECIFICATIONS

MCAS NextGen 2020-2021

Scoring Specifications

Part A:

Client-Specific Scoring Specifications

Part B:

General Scoring Guidelines & Best Practices

Contract Name:	**MCAS 2020-2021 Next Gen 3-8 and HS**	**Year:**	**2020-2021**
Contract Code:			
Contact Information:	**Program Manager(s): John Miller, Erin Clark, Dezarae Blossomgame and Mark Peters**		
	Scoring: Sandy Sinclair, Vince McGroary, Meredith Newbould, *Andrea Kuegel, SarahJuhlin, and Rozanna Gaines **Scoring Project Manager: Aaron Wozmak**		

Admin Name:	**Spring 2020-2021 ELA and Mathematics Gr 3-8 and Gr 10, Sci Gr 5 & 8 and Civics Gr 8**		
Testing Platform:	**☐ iTester ☒Other: TestNav**		
Scoring Platform:	**☒ iScore ☐ OSCAR ☒ Other: ePEN Gr 3-8 ELA-Mathematics Operational**		
Admin Type:	**☒ Operational**	**☒ Field Test:** **☒ Standalone** **☒ Embedded** **☐ N/A**	**Note:** Standalone: Civics (Pilot) Embedded: Mathematics, ELA, and Science
Required Client Meetings:	**Benchmarking**	**☒ GenEd ☐ SPED ☐ Internal ☐ N/A**	

Table 1 - Estimated Student Count per Grade

Content	3	4	5	6	7	8	HS	Other
Mathematics	Total 65,000 PBT 2% CBT 98%	Total 66,000 PBT 2% CBT 98%	Total 66,000 PBT 2% CBT 98%	Total 68,000 PBT 1% CBT 99%	Total 70,000 PBT 1% CBT 99%	Total 71,000 PBT 1% CBT 99%	Total TBD PBT 10% CBT 90%	
ELA	Total 65,000 PBT 2% CBT 98%	Total 66,000 PBT 2% CBT 98%	Total 66,000 PBT 2% CBT 98%	Total 68,000 PBT 1% CBT 99%	Total 70,000 PBT 1% CBT 99%	Total 71,000 PBT 1% CBT 99%	Total TBD PBT 3% CBT 90%	
Science			Total 66,000 PBT 2% CBT 98%			Total 71,000 PBT 1% CBT 99%		
Civics						State Task: Total 2,400 PBT 0% CBT 100% EOC: Total 4,300 PBT 0% CBT 100%		

Alternative Languages (specify language, content, and grade levels involved)

Spanish Mathematics High School only

Table 2 - Scope of Work

The 2020-2021 MCAS consists of both operational and matrix test items.
This chart outlines the number and type of each item per grade.
Cognia manages all aspects of scoring, including the work of Pearson, the subcontractor, which conducts operational scoring for grades 3-8 in ELA and Mathematics. Pearson recruits for their assigned scoring activities.

	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade HS
ELA	1 OP ES 4-3 1 OP CR3 2 EQ CR3 1 EQ ES4-3 4 FT ES 4-3 8 FT CR3	1 OP ES 4-3 1 OP CR3 2 EQ CR3 1 EQ ES4-3 4 FT ES 4-3 8 FT CR3	2 OP ES 4-3 1 EQ ES 5-3 9 FT ES 4-3	2 OP ES 5-3 2 EQ ES 5-3 8 FT ES 5-3	2 OP ES 5-3 2 EQ ES 5-3 8 FT ES 5-3	2 OP ES 5-3 2 EQ ES 5-3 8 FT ES 5-3	2 OP ES 5-3 *31 FT ES 5-3
Mathematics	4 OP OE3 10 FT OE3 *We will notscore both EQ CRs in grade 3	4 OP OE4 2 EQ OE4 10 FT OE4	4 OP OE4 2 EQ OE4 7 FT OE4	4 OP OE4 1 EQ OE4 7 FT OE4 *We will only scoreone EQ CR in grade 6	4 OP OE4 2 EQ OE4 7 FT OE4	4 OP OE4 2 EQ OE4 7 FT OE4	4 OP OE4 2 EQ OE4 27 FT OE4
Science			2 OP CR2 4 OP CR3 1 EQ CR2 2 EQ CR3 5 FT CR2 17 FT CR3			2 OP CR2 4 OP CR3 1 EQ CR2 2 EQ CR3 5 FT CR2 17 FT CR3	
Civics (Pilot)						2 Forms pertask: EOC: State Task 1 6 FT ET2 2 FT ET1 2 FT ET 4 State Task 2 6 FT ET2 2 FT ET1 2 FT ET 4 State Task 4 6 FT ET2 2 FT ET 4	

OP = Operational
FT = Field Test
CR3 = 3-point Constructed Response
ET# = #-point extended text item
ES = 2 trait Essay - GR 3-5: 0-4 & 0-3 points, Gr 6-HS: 0-5 & 0-3 points
OE3 = 0-3 point open ended response item; OE4 = 0-4-point open ended response item
EQ = Equating items (also listed below)
*31 ELA items are being field-tested but only 26 will be fully scored. Scoring leadership will recommend the other 5 items will be excluded pending DESE approval

Table 3 - Quality Control Tools				
Qualifying Sets	☒ **OP**	**QTY:** 2 sets	**Notes:** Scorers are required to take Qualification Set 2 if thethreshold is not met on Qualification Set 1.	
	☒ **FT**	**QTY:** 1 set	**Notes:**	
	Other: PT	**QTY: 1 set**	**Notes:** Civics pilot test: 1 qual set	
Qualification Threshold (%)	**Leadership:** **Exact:** 80% **Exact + Adjacent: 9**0%, 1 Discrepant allowed		**Scorers:** **Exact:** 70% **Exact + Adjacent: 9**0%, 1 Discrepant allowed	
	Clarification notes: For multi-trait ELA items, the passing thresholds must be met on each individual trait.			
Read-Behind Rate	**Minimum daily requirement per Scorer:** All Grades and Content Areas: • 10 responses minimum for a full day. This number will be proportionate for shifts that do notlast an entire day.			
Double-Blind Rate	**Minimum (%):** Operational scoring Grades 3-8 ELA Mathematics: 10%Operational scoring Sci 5 & 8: 10% Operational HS: 100% Field Test 3-8 ELA: 20% Field Test 3-8 Mathematics: 10% Field Test 5 & 8 Sci: 10% Field Test HS ELA and Mathematics: 10% Pilot Test 8 Civics: 500-600 responses: 100%			
Recalibration Sets	☒ **Standalone** ☐ **Embedded** ☐ **N/A**	**Number of recalibration sets:**	1 set	
		Number of responses per set:	5 responses	
	When Administered?	Beginning on the second day of operational scoring for each item and each day untilscoring of each item is complete.		
	Recal Notes:	See addendum (Comparison of Cognia/Pearson terminology) for details regardingprocess applied by Pearson		
Validity Responses	**Required?** ☒ **Yes** ☐ **N/A**	**Preset percentage:** Operational Grades 3-8 ELA: 6% days 1 & 2, 4% day 3 Operational Grades 3-8 Mathematics: 3% days 1 & 2, 2% day 3		
	Item types/ content requiring validity	Operational Grades 3-8 ELA Mathematics		
	Additional Contract Requirements:	See addendum (Comparison of Cognia/Pearson terminology) for details regardingprocess applied by Pearson		

<table>
<tr><th colspan="4">Table 3 - Quality Control Tools—Continued</th></tr>
<tr><td rowspan="3">Voiding</td><td>Threshold:</td><td colspan="2">Grade HS ELA and Mathematics, Grades 5 & 8 Sci: <70% based on daily Compilation Report

Grades 3-8 ELA and Mathematics: <65% based on cumulative validity performance</td></tr>
<tr><td>Frequency of voiding:</td><td colspan="2">Daily</td></tr>
<tr><td>Threshold for scorer removal:</td><td colspan="2">At the discretion of Scoring Leadership</td></tr>
<tr><td>Equating Items</td><td colspan="3">☒ Yes - Operational Grades 3-8 and HS
☐ N/A</td></tr>
<tr><td></td><td colspan="3">Additional information:</td></tr>
<tr><td rowspan="3"></td><td rowspan="2">Required?
☒ Yes
☐ N/A</td><td>Quantity:</td><td>200 responses</td></tr>
<tr><td>Asset number(s):</td><td>ELA-
Gr 3 – EL308855, EL308857, EL626052459
Gr 4 – EL307728, EL307729, EL624655949
Gr 5 – EL626356806
Gr 6 – EL626869132, EL303519(49500)
Gr 7 – EL292181, EL628749729
Gr 8 – EL623953378, EL290818
Mathematics-
MA623656013
MA623654449
MA311581
MA250543
MA704359678
MA311366
MA307339
MA298139
MA703943185
MA316886
MA314812
MA297652
Science:
SC802761427
SC264893
SC803732869
SC809178849
SC816343670
SC814258458</td></tr>
<tr><td colspan="3">Additional information:</td></tr>
</table>

Table 4 - Staffing Requirements:		
Staffing Level:	**Minimum Education Requirements:**	**Specific Degree Requirements:**
Scorer	3-8: • 48 college credits AND • passed at least 2 college classes related to the contentarea being scored High School: • 4-year college degree AND • A degree related to the content area being scoredOR • 2 classes related to the content area being scoredand demonstrated scoring experience in the content area	• Must be at least 18 years of age. • Cannot be under contract to Massachusetts schools, including as teachers, administrations, and para-professionals.
Scoring Team Leader	Grades 3-8: • 4-year college degree AND • Passed at least 2 college classes related to the contentarea being scored. High School: • 4-year college degree AND • At least 4 classes related to the content area beingscored. OR • 2 classes related to the content area being scoredand demonstrated scoring experience in the content area.	• Must be at least 18 years of age. • Cannot be under contract to Massachusetts schools, including as teachers, administrations, and para-professionals.
Scoring Supervisor	Grades 3-8: • 4-year college degree AND • Passed at least 2 college classes related to the contentarea being scored. High School: • 4-year college degree AND • At least 4 classes related to the content areabeing scored. OR • Fewer than 4 classes in the content area with approval from the DESE.	• Must be at least 18 years ofage • Cannot be under contract to Massachusetts schools, including as teachers, administrations, and para-professionals
Additional requirements:		

Table 5 - Scoring Platform Additional Set-up

AI Scoring	☐ **Yes (1st score)** ☒ **Yes (2nd score)** ☐ **N/A**	**AI Scoring Notes:**	Only for items approved by DESE
Arbitration Rules	☐ **Adjacent** ☒ **Discrepant**	**Arbitration Notes:**	
Practice Set within iScore	☐ **Yes** ☒ **N/A**	**Notes:** Scoring of MCAS practice sets are an integral part of scorer training and will include adiscussion of each practice response, revealing the actual score and explaining the scoring rationale	

Score of Record

Score Source	Resolution
Arbitration score and read-behind score both provided	Latest read-behind score is the score-of-record
Arbitration score (no read-behind performed)	Arbitration score is the score-of-record
Two read-behind scores (no arbitration performed)	If Read-behind score is provided by 2 STLs, the later read-behind score is the score-of-record
One read-behind score	Read-Behind score is the score-of-record
Two Scores	If the first score and second score differ by 1 point, the first scoreshall be used as the final score (Cognia setting)

Flag Codes

☒ Crisis (41)	☒ Off Topic (44)	

Reject Codes

☒ Blank (B-21)	☒ Unreadable (U-51)	☒ Wrong Location (W-52)	☒ Non-English (F-53)
☐ Off Topic (O-54)	☐ Illegible (I-55)	☐ Quarantine (Q-56)	☐ Insufficient Amount to Score (A-57)
☐ Refusal to Score (R-58)	☐ Repeats the Prompt (P-59)	☐ Typed Sheet/NSR (T-60)	☐ Escalate (61)
☐ No Score (N-62)	☐	☐	☐

Defining information of flag and reject codes can be found in Part B, Section 5.2

Table 6 – Examples of iScore Reports

Read-Behind Summary

Choose Response Code: RDCC025 Choose Time Frame: 08/27/2018

Submit Export To Excel

Contract: --------
Grade: --------
Content: ---------

			Read Behind							
Name	ID#	Scored	Total RB	% RB	Exact	% Exact	Adj	% Adj	Disc	% Disc
	17112	227	19	8.4	14	73.7	5	26.3	0	0
	19537	163	16	9.8	14	87.5	2	12.5	0	0
	18034	266	15	5.6	12	80	3	20	0	0
	21212	163	15	9.2	12	80	3	20	0	0
	20855	365	19	5.2	18	94.7	1	5.3	0	0
	21239	443	18	4.1	15	83.3	3	16.7	0	0
	21343	426	18	4.2	15	83.3	3	16.7	0	0
	19556	213	16	7.5	15	93.8	1	6.3	0	0
	19832	341	18	5.3	16	88.9	1	5.6	1	5.6
	18104	305	15	4.9	13	86.7	2	13.3	0	0
	19545	385	20	5.2	16	80	3	15	1	5
	19419	255	17	6.7	16	94.1	1	5.9	0	0
	15836	379	19	5	18	94.7	1	5.3	0	0
	Total	3931	225	5.7	194	86.2	29	12.9	2	0.9

Double-Blind Summary

Reader Double Behind Summary **Contract: ----------** **Grade: --------** **Content: --**

Choose Response Code: RDCC025 Choose Time Frame: 08/27/2018

Submit Export To Excel

			Double Blind							
Name	ID#	Scored	Total DB	% DB	Exact	% Exact	Adj	% Adj	Disc	% Disc
	17112	227	22	9.7	17	77.3	5	22.7	0	0
	19537	163	15	9.2	15	100	0	0	0	0
	18034	266	25	9.4	19	76	6	24	0	0
	21212	163	15	9.2	11	73.3	4	26.7	0	0
	20855	365	29	7.9	23	79.3	6	20.7	0	0
	21239	443	35	7.9	29	82.9	6	17.1	0	0
	21343	426	49	11.5	43	87.8	5	10.2	1	2
	19556	213	24	11.3	24	100	0	0	0	0
	19832	341	31	9.1	23	74.2	8	25.8	0	0
	18104	305	32	10.5	28	87.5	3	9.4	1	3.1
	19545	385	37	9.6	33	89.2	4	10.8	0	0
	19419	255	17	6.7	12	70.6	5	29.4	0	0
	15836	379	30	7.9	26	86.7	4	13.3	0	0
ZZ Total	999999	3931	361	5.3	303	83.9	56	15.5	2	0.6

Scorer/Item Qualification Summary

Reader/Item Qualification Summary **Contract: ----------**
Grade: -------- **Content: ----------**

Choose Qualification Type Qual1 ☑ Display Reader Names

Submit Export To Excel

Name	ID#	RDCC025	RDCC026	RDCC027	RDCC028	RDCC029	RDCC030	RDCC031	Total Completed CRRs	# Pass	# Fail	% Pass
	Total Passed	**15**	**4**	**17**	**18**	**4**	**4**	**12**	**74**			
	Total Failed	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**4**			
	Total Number	**17**	**4**	**18**	**18**	**4**	**4**	**13**	**78**			
	59806	P/9	P/10	P/10	P/10	P/10	P/8	P/8	7	7	0	100
	18498			P/7	P/10				2	2	0	100
	21056							P/8	1	1	0	100
	20904			F/3	P/9				2	1	1	50
	17112	P/9							1	1	0	100
	17030							P/8	1	1	0	100
	15567			P/10	P/9				2	2	0	100
	21185							P/7	1	1	0	100
	15555			P/9	P/10				2	2	0	100
	17411	P/9	P/10				P/10		3	3	0	100
	19537	P/10							1	1	0	100
	16827							F/6	1	0	1	0
	17130							P/10	1	1	0	100
	17099			P/8	P/9	P/10			3	3	0	100
	22028							P/8	1	1	0	100
	21401			P/10	P/10				2	2	0	100
	20031			P/7	P/10				2	2	0	100
	18034	P/9							1	1	0	100
	20867			P/9	P/10				2	2	0	100

Compilation Report

Compilation Report Contract: 1225 ReadBK2 Grade: 06 Content: Reading

Choose
Response Code: RDCC045 Choose Date: 9/26/2017 Location: All

Message:

Submit Export To Excel

Void	Reader Name	MPID	Scored	Recal	Exact Recal	Read Behind	Compilation	Exact	%Exact	Adj	%Adj	Disc	%Disc	%Exact + %Adj
Review		67571	0	5	1.0	0	5	1.0	20.0	4.0	80.0	0.0	0.0	100.0
Review		65166	147	5	4.0	10	15	10.0	67.0	5.0	33.0	0.0	0.0	100.0
Retrain		60890	113	5	3.0	12	17	12.0	71.0	5.0	29.0	0.0	0.0	100.0
Retrain		66826	120	5	3.0	12	17	12.0	71.0	5.0	29.0	0.0	0.0	100.0
Retrain		65793	188	5	3.0	11	16	13.0	81.0	3.0	19.0	0.0	0.0	100.0
		65532	111	5	4.0	12	17	14.0	82.0	3.0	18.0	0.0	0.0	100.0
		60751	244	5	5.0	12	17	14.0	82.0	2.0	12.0	1.0	6.0	94.0
		80231	149	5	5.0	12	17	14.0	82.0	2.0	12.0	1.0	6.0	94.0
		80264	145	5	5.0	13	18	15.0	83.0	3.0	17.0	0.0	0.0	100.0
		64851	139	5	5.0	13	18	15.0	83.0	3.0	17.0	0.0	0.0	100.0
		66712	125	5	5.0	13	18	15.0	83.0	3.0	17.0	0.0	0.0	100.0
		66311	297	5	5.0	15	20	17.0	85.0	3.0	15.0	0.0	0.0	100.0
		60737	114	5	4.0	10	15	13.0	87.0	2.0	13.0	0.0	0.0	100.0
		66051	181	5	5.0	12	17	15.0	88.0	2.0	12.0	0.0	0.0	100.0
		80082	151	5	5.0	11	16	14.0	88.0	2.0	13.0	0.0	0.0	101.0

Pearson AI Scoring Process

During the Spring Administration

- Grades 5-8
  - Use IEA as the 10% read behind score on the eight essay prompts (2 per grade)
- Grades 3-4
  - Start out with smart routed models
  - Use IEA as the 10% read behind score on the two essay prompts (1 per grade) for those responses that fall in the part of the score range for which IEA passes the acceptance criteria
    - Note that if IEA is confident on the score for one trait, but not the other, IEA will not score either trait and humans will score the response in its entirety
    - Grade 3: IEA will score just the 0's on Idea Development (and the corresponding 0and 1's on Conventions)
    - Grade 4: IEA will score the non-0's on Idea Development (and the correspondingscores on Conventions)
      - Retrain "on the fly" using human scored operational data to supplement original fieldtest data
      - Once the retrained IEA scoring model passes the acceptance criteria on all score points
    - IEA will rescore all responses as the 10% read behind score After the Spring Administration
- Grades 3-8
  - IEA will score the remaining 90% of the responses so that we have an IEA score and a human score on all responses and can perform additional performance analyses
- Grade 10
  - We will repeat the study we did in 2019
    - Train IEA on the prompts administered in 2021 using ~6K responses per prompt
    - Score the remaining responses
    - Compare Human-Human performance with IEA-Human performance

In training the IEA engine with a set of human-scored responses, typically 2/3 of the responses areused to train the engine and the remaining 1/3 are held out to evaluate performance. The MCAS models were trained using 2019 field test prompts, responses, and human-scored data. Within that data, approximately 2,000 responses per prompt received a first human
score and 20% received a blind 2nd score. IEA trained on ~1,300 responses per trait, randomly selectedto represent the operational distribution. Once the engine was trained, the models were evaluated based on the remaining ~650 responses per trait.

The data was evaluated based on the industry-standard criteria for automated scoring shown in the table below.

Measure	Threshold
Pearson R QWK	>= 0.70
Kappa	>= 0.40
Exact Agreement	>= 65% (or greater than Human-Human)
By Score Point Agreement	>=50% (or greater than Human-Human)
SMD	Within |0.15|

Training results were presented to DESE and the MA TAC. Approval was received to use IEA as the 10%2nd score in grades 5-8. Grades 3 and 4 will be re-evaluated during the June human scoring window asmore operational responses become available to supplement the IEA engine.

Pearson Recruiting Process

Pearson Human Resource Recruitment Overview

Pearson will recruit diverse professional individuals with experience and educational backgrounds that meets all contractual requirements. The Pearson School Assessments Human Resource business partnerswill ensure hiring of qualified and diverse individuals to fill scoring positions so that the workplace is equally represented with various experiences and skills.

All employees must undergo degree verification and criminal background checks. Pearson prioritizes previous hires to receive offers.

All employees will complete onboarding tasks including the latest Pearson Code of Conduct, Employee Handbook, and the technical requirements of their project. Candidates will be asked to sign and completea confidentiality form. Employees must sign and agree to the terms as a requirement of employment.

Pearson will ensure completion of all onboarding tasks for each employee prior to their project start date.Notifications will be sent from Human Resources to remind individuals of any open tasks. Hiring recordsthat display a candidate's status in the project will be provided to stakeholders on a regular basis.

Personal Information Guidelines are managed through a controlled document. Data is stored within the Human Resource system and requires secure access.

This table provides a comparative overview of the scoring terminology and scoring practices as applied by Cognia and by Pearson.

Scoring Terminology & Practices		
	Cognia	**Pearson**
	Staffing Hierarchy	
Differences	Scoring Content Specialist Scoring Supervisor Scoring Team Leader Scorer	Scoring Content Specialist Scoring Director Scoring Supervisor Scorer
	Read-Behinds	**Backreads**
Differences	> Scoring Supervisors and Scoring Team Leaders do not know the score that was assigned by the scorer prior to their own evaluation of the student response.	> Scoring Directors and Scoring Supervisors know the score that was assigned by the scorer prior to their own evaluation of the student response. > Scoring Directors and Scoring Supervisors can select specific responses to backread based on scorer performance.
Similarities	> Conducted throughout the course of scoring by Scoring Leadership. > Scorers are not aware of which responses are designated/selected for read-behinds or backreading. > It provides an immediate real-time snapshot of a scorer's accuracy and the opportunity to provide individualized counseling as needed. > Scoring Supervisors/Scoring Directors have access to all responses that were reviewed and may compare scores to verify the accuracy and consistency of scoring. > Scoring management has the ability to conduct a review of all read-behind and backreading work.	
	Double-Blind Scoring	**Second Scoring**
Similarities	> Double-blind Scoring/Second Scoring provides statistics on scorer-to-scorer agreement. > Double-blind Scoring/Second Scoring is the practice that refers to a method where the same response is routed to two scorers. > The response is independently and anonymously reviewed by each scorer. > In Double-blind Scoring/Second Scoring, neither scorer knows which response will be (or already has been) scored by another randomly selected scorer.	
	Arbitration	**Resolution**
Similarities	> Scoring Leadership does not know the identity of the two scorers who caused the discrepancy prior to adjudication/resolution. > Scoring Leadership does not know the scores that were assigned by the two scorers prior to adjudication/resolution. > Any double-blind/second score response with discrepant scores greater than one point (for items with three or more score points) is sent to the arbitration/resolution queue. > The response is evaluated by scoring leadership and the expert score is used to resolve the scoring discrepancy.	
	Embedded Responses	**Validity Responses**
Differences	> Embedded Responses are used to monitor the scorer's accuracy of scoring. > Responses are approved by the Scoring Content Specialist and loaded into iScore for blind distribution to scorers at random points during the scoring the first two days of scoring an item. > Scorers who fall below the 70% exact and 90% exact-plus-adjacent accuracy standard are provided counseling and additional read-behind monitoring.	> Validity papers are used to monitor the scorer's accuracy of scoring. > Responses are approved by scoring leadership and distributed to scorers based on a percentage of their total number of responses scored. > For the first two days, validity responses routed to scorers comprise 6% of their responses for ELA and 3% for mathematics. > Starting with the third day of live scoring, these rates are reduced to 4% for ELA and 2% for mathematics. > Alert messages are issued to scorers who do not meet minimum validity metrics after 10 validity responses. If after an additional five validity responses, the scorer does not improve, ePEN automatically blocks that scorer, and launches a 10-response targeted calibration set.

Scoring Terminology & Practices (cont'd)		
	Cognia	Pearson
	Seeded Responses	
Similarities	> Seeded responses are used to evaluate the consistency of scoring across years. > It is a step in the equating process that compares OE equating scores from the previous year with those of the current year using the same set of student responses with a new set of scorers. > 200 random seeded papers are pulled from the 2,500 representative sample of OE equating items from the previous year. > The responses are placed in the queue among other operational responses for the item and scored by qualified scorers . > Any equating items that show significant scoring differences between years will be flagged for review.	
	Compilation Report	
Differences	> The Compilation Report shows, for each scorer, the total number of responses scored, the number of read-behind responses, and the Daily Recalibration Set. > The Compilation Report shows the percentage of exact, adjacent, and discrepant scores across Read-Behinds and Daily Recalibration Sets. > Scorers below standard are highlighted in red at the top of the report.	> The Compilation Report shows, for each scorer, the combined scorer performance on Validity papers, backreads, and second scoring.
	Voiding Scorer Work	
Differences	> The Compilation Report is the primary tool used to determine if work should be voided. > Scorers who do not meet a 70% exact/90% exact plus adjacent on the Compilation Report are voided and responses are returned to the queue to be rescored by qualified scorers.	> Validity papers are the primary tool used to determine if work should be voided. > Scorers are required to attain at least 70% exact agreement and 90% exact-plus-adjacent agreement on this calibration set to continue scoring that item. If the scorer passes the targeted calibration, ePEN is unblocked and the scorer regains admission to operational responses. > Scorers are required to continue maintaining scoring standards for validity, as validity statistics continue to be checked every 10 validity responses. If validity falls below scoring standards at any of these subsequent intervals, scorers are released from the project and scores are reset.
Similarities	Scoring management reserves the right to void any scorer's work at any time during the scoring process when deemed necessary.	

Confidentiality and Acknowledgement

In return for employment and wages from Pearson, I agree to the following Terms and Employee Conduct Requirements.

TERM of EMPLOYMENT

I understand that Pearson has not guaranteed me any duration of employment. I may voluntarily leave Pearson, and Pearson may terminate my employment at any time for any reason or for no reason at all.

I have not made any verbal or written agreements which in any way limit my ability to work for Pearson or which require fees or other compensation for my gaining employment at Pearson, except:

I understand and acknowledge that as a Temporary Employee I am not eligible for any company-provided benefits other than as required by statute, regulation, or contract.

The HANDBOOK

I understand that the Pearson Temporary Employee Handbook (also, simply called "the handbook") supersedes all prior oral or written statements by Pearson on its employment policies, guidelines, and benefits.

I understand that the polices in the handbook govern my employment with Pearson and I am responsible for understanding all the information it contains.

I understand that Pearson has the right to revise, supplement or rescind the policies described in the handbook or to change or deviate from them at any time without notice, in its sole discretion.

I agree to conduct myself according to the guidelines set forth in the handbook.

I understand the handbook is neither an employment contract nor an agreement guaranteeing employment for any specified period of time.

SEXUAL HARASSMENT PREVENTION

I have read the Pearson Equal Employment Opportunity Policy and completed the Pearson Sexual Harassment training.

I understand that I have the right to work in an environment free from sexual harassment. If I feel I am being harassed, I have the right and responsibility to communicate this directly to the harasser or to a non-involved supervisor.

I understand these policies and will adhere to them.

CONFIDENTIALITY

Both during and after my employment with Pearson, I agree not to use or reveal to others any information about Pearson's products or business except as required by employment to Pearson. This includes information I learn while working for Pearson, which I have been told or reasonably know to be information which is confidential, or which is the subject of reasonable efforts to preserve its confidentiality.

I will not reveal to anyone: 1) training instructions and or procedures; 2) scoring trends; 3) any details about the scoring system; 4) any results of scoring either before or after completion of the scoring.

I agree not to use or reveal any proprietary or confidential information from any customer or other third-party that is made available to me during my employment.

MEDIA and PUBLICITY

Pearson Public Relations, the Corporate Marketing Committee and Corporate Marketing Communications subcommittee, maintain and oversee all media relations and news release policies used within all Pearson business units. The media relations and news release policies cover all interactions with the news media and distribution of news releases. Therefore, employees are not authorized to talk with members of the news media about Pearson's business. I agree to tell any reporter, journalist or freelance writer that he or she will need to speak to the appointed corporate media contact.

I understand that reporters, television crews and photographers are not allowed in Pearson buildings or on Pearson property without prior approval from Pearson's public relations department. If Pearson grants permission, all media personnel must sign a confidentiality form and must also be escorted by a Pearson employee at all times.

I agree not to speak to the media in any manner, or answer any questions about Pearson's products, services, or business, or the nature, duration and, scope of the work I do for Pearson. I will not discuss any information that is not generally known or readily accessible outside Pearson. This includes, but is not limited to: information about computer hardware, software or components, services, customers, suppliers, internal methods and techniques, or marketing and distribution plans and activities. These obligations will exist even after I leave Pearson's employment regardless of how or why my employment ends.

BUILDING SECURITY
(if applicable)

I understand that I must always wear my badge in unobstructed view (the front upper part of the body, chest area, on my outer clothing).

I agree to not lend my badge to anyone, even other Pearson employees. Because my badge is the property of Pearson, I agree to return it at the end of my employment.

I agree to report the loss or misplacement of my badge to the Supervisor/Site Manager as soon as possible. Badges may only be replaced with written permission from the Site Manager.

I agree not to allow anyone into or out of a secured area without a badge; I will escort such an individual to the security or reception area to receive a badge.

PUBLIC COMPUTERS and WIRELESS NETWORKING

I agree that I will not access Pearson's secure web site or scoring system via a public computer. I understand that a "public computer" is defined as a computer used by multiple users in a public venue including but not limited to a public library, Internet Café, copy shop, coffee shop or other public area.

I further agree that I will not access Pearson's secure web site or scoring system via a public wireless network. A "wireless public network" is defined as an unsecured wireless network utilized by multiple users.

I understand that the prohibition on wireless public networks includes but is not limited to the following locations: a library, Internet Café, airport, copy shop, coffee shop or other public venue.

Additionally I agree that in the event I connect to the Internet using a wireless network in my residence I will secure the wireless network through either Wired Equivalency Privacy (WEP) or Wi-Fi Protected Access (WPA) encryption.

file:///C:/Users/uboadre/Downloads/SilkRoad Onboarding - Confidentiality and Acknowledgement Form.html 1/2

I further agree that I will enable the highest level of encryption that is supported by my wireless networking device.

PROPERTY of PEARSON

I agree that any of Pearson's equipment, materials or information must remain the property of Pearson. I must not use or remove such property unless required by my job duties. I understand that immediately upon the termination of my employment with Pearson, I must return all Pearson-owned property. This includes, but is not limited to, confidential or proprietary business information of Pearson, computer files, diskettes, documents (paper or electronic), computer databases, manuals, computer equipment, computer software, files, money, securities, keys, credit cards, handbooks, financial and other reports, notes and all other information or property held or used by me during my employment.

If I am working at a location other than the scoring facility, I will follow procedures developed by Pearson for receiving and returning or destroying confidential information that I have received.

RETURN and DESTRUCTION

I agree to promptly return to Pearson, at any time, upon the request of Pearson, all written materials containing or reflecting any Proprietary Information (including all copies or reproductions) and I agree to destroy in a secure manner all documents, memoranda, notes and other writing whatsoever (including copies, extracts or other reproductions) prepared by me based on the information contained in the Proprietary Information. If so requested by Pearson, I agree to provide written confirmation to Pearson of my compliance with the terms of this Section.

CREATIVE WORKS

If I invent, write, develop, create or design (including software) any work for Pearson's business or expected research, that creative work becomes the sole property of Pearson.

I therefore give Pearson ownership rights, including all copyrights, patents or trade secret rights resulting from such work and agree to sign whatever papers are necessary to record Pearson's ownership rights in those works. I recognize that Pearson has not promised, nor have I accepted, any monetary payment except for my normal wages and benefits as an employee.

SATISFACTION of DEBTS

I agree to adhere strictly to the procedures established by Pearson for handling any debts or expenses I may incur related to my employment for which Pearson may be liable (that is, business expenses).

CONFLICT of INTEREST

I agree not to accept work directly or indirectly (through a third party), make a contract, or engage in any activities incompatible with the duties or scope of my employment for Pearson for one year. Such conflict of interest includes working for a commercial test preparation organization, unless such specifically formed by a school or school district which does not involve a third-party test preparation company or organization. These obligations will exist even after I leave Pearson's employment regardless of how or why my employment ends.

DRUG TESTING POLICY-Applies only to Employees in Iowa City, IA, Cedar Rapids, IA and Austin, TX

I hereby certify that Pearson has provided me with a copy of its Drug Testing policy. I have read and do understand the policy and agree to fully comply with the terms and conditions of the policy

Code of Conduct

I have read Pearson's Code of Conduct contained in the Temporary Employee Handbook and understand it.

LEGAL TERMS

I understand that any actions I take that are contrary to these acknowledgments could result in legal actions by Pearson to protect its interests in its intellectual property rights and the integrity and security of Pearson's assessment processes.

I understand that if any part of this Agreement is determined to be invalid or unenforceable for any reason, in whole or in part, the remaining provisions of this Agreement will remain in full effect to the fullest extent allowed by applicable law.

Sample	Sample	2021-04-24
Employee Name (please type or print)	Employee Signature	Date

Part B
Cognia General Scoring Guidelines & Best Practices

Contents

1 Preface

This document represents Cognisa's comprehensive best practices and standard operating proceduresfor evaluating and scoring student work. Procedures will be implemented depending on the specific requirements of each client. All client-related details and applicable contractual requirements are specified in Part A of this document: Client-Specific Scoring Guidelines.

2 Scoring Services Staffing

The following table summarizes key positions held by members of Scoring Services and describes theirgeneral responsibilities.

Position	Description
Senior Vice President of Operations for Assessment Services	Oversees all aspects of operational and scoring-related activities within the division of Assessment Services.
Project Managers – Scoring	Manage scoring-related activities, deliverables, and scheduling of tasks.
Director, Scoring Content &Quality	Oversees the all content-related deliverables of the Scoring ContentSpecialists and their respective Scoring Content Group Manager.
Director, Scoring Operations& Logistics	Oversees and coordinates the operations and logistics of all scoringactivities, creates budgets, and establishes scoring schedules.
iScore Operations Manager	Maintains Cognia's scoring platform (iScore), manages other scoring systemsas needed, and coordinates data deliverables between Scoring Services and Reporting team.
Scoring Operations Managers	Oversee scoring logistics, recruitment of contingent workforce, facility requirements and security.
Scoring Content GroupManagers	Manage Scoring Content Specialists within content areas of ELA/Social Studies and Science/Mathematics, oversee workflow processes, and ensure qualityand production of scoring.
Scoring Content Specialists	Supervise the scoring of their respective content areas within their assigned contracts. Responsibilities include finalizing the selection of all scoring training materials and facilitating benchmarking and rangefinding meetings.They also train and supervise scoring leadership and monitor the training and scoring of items for their assigned projects. Scoring Content Specialists have the overall responsibility of ensuring accurate and consistent scoring according to the approved client guidelines for their content area and contracts.
Scoring Supervisors	Scoring Supervisors work under the guidance of a Scoring Content Specialist. They are responsible for training assessment items and ensuring consistency across assigned grades, content, and assessment administrations. They also respond to questions during scorer training and throughout scoring and monitor the quality and production of ongoing scoring.
Scoring Team Leader (STL)	Scoring Team Leaders work under the supervision of Scoring Supervisors and lead a small group of scorers. STLs are responsible for quality control by performing read-behinds and providing coaching as needed.
Scorers	Scorers review, evaluate, and assign scores to student work based on client-specific scoring standards.

2.1 Pre-Scoring Logistics

A. Employee Recruitment

Cognia HR and its staffing partners are responsible for the recruitment of all scoring personnel. Cognia seeks to employ scoring staff with a wide range of educational backgrounds and professional experience. Cognia will recruit individuals who meet or exceed the contract-specific requirements to fillscorer and scoring leadership positions. All scoring associates are vetted for appropriate educational requirements through collection and review of their post-secondary transcripts. Candidates with backgrounds in education are also noted during this process. Depending on client preferences, Cognia will seek to customize the recruitment effort by including some or excluding all scoring associates from the client state. Potential associates must submit documentation, including transcripts and resumes, toverify employment eligibility. Prior to hiring, all associates are advised of the scoring systems' minimumtechnical requirements.

If hired, all scoring associates will be required to sign and abide by a non-disclosure/confidentialityagreement which emphasizes the confidential and proprietary nature of all work and materials associated with all scoring activities. (See Attachment)

After hiring and before the onset of each scoring event, information on demographics and educationalbackground will be collected again as additional employment verification measure. Further contractualspecifics as related to scoring associates' educational backgrounds are detailed in Part A of this document: Client-Specific Scoring Guidelines.

2.2 The Benchmarking Process

A. Operational Benchmarking

This activity occurs after operational administration of an assessment and prior to scoring it. It typically involves identifying additional suitable student responses (either from the pool of FT responses or from the pool of available OP responses to an item) inorder to supplement existing scoring materials or to populate additional training or quality control materials.

B. Field Test Benchmarking

The activity of benchmarking occurs after administration of a Field Test and prior to scoring a Field Test. To prepare for benchmarking, scoring leadership review the assessment item and any associated stimuli, the scoring rubric, and scoring notes (whenavailable). All students completed the assessment, their responses are loaded into the scoring system. Scoring leadership will log into the scoring system and start viewing student responses. After becoming familiar with both the assessment item and the student responses, scoring leadership will start assigning preliminary scores to

appropriate responses and submit them to a separate folder in the scoring system. Within that folder, benchmarking staff can designate responses to specific sets of

responses depending on the most appropriate use, e.g., anchor set, practice set, qualification set(s), or an extra set which stores responses for potential substitutions orfor the assembly of supplemental training materials. Once the sets are created and reviewed, the benchmarking process for each field test item is completed and the itemis ready for either benchmarking meetings or rangefinding meetings.

2.3 Benchmarking vs. Rangefinding Meetings

A difference between benchmarking and rangefinding meetings are the participating key stakeholders and the associated meeting facilitation. Key stakeholders in benchmarking meetings are representatives from Scoring Services, Content Development, and State EducationAgency (SEA) content staff. In addition, rangefinding meetings also include participation by educators.

In a benchmarking meeting, it is the SEA content staff who define the scoring parameters for anitem and they sign off on core training materials. The meeting itself is an open-forum discussion during which all meeting participants discuss how responses fare against the scoring rubric.
While the goal is that all meeting participants agree on the scores after thorough discussions, itis the SEA content staff who have the final say and give final approval of the scores for all reviewed student responses.

In a rangefinding meeting, educators are the ones who provide the interpretive framework of the scoring standards. While the entire group (Scoring Services, Content Development, SEA, educators) reviews a body of student work, it is the educators who are tasked with reaching consensus on the score(s) they assign to each reviewed response. In doing so, educators interpret the scoring rubric and thereby define the range of each score point level of the scoringrubric by consensus-scoring student work associated with an item.

The details as provided in Part A: Client-Specific Scoring Guidelines will outline the applicablemeeting forum.

2.4 Scorer Training

A. Process and Materials

Scorer training will begin with an introduction to scoring and an overview of the assessment program. This could include the purpose and goal of the assessment program, any specific characteristics of the test and/or the testing population. There will also be a general discussion about the security, confidentiality, and proprietary nature of the assessment, all scoring materials,and Cognia’s scoring procedures.

Training materials will be available to scorers during scoring and may include:

- Student prompt and associated stimuli
- Scoring rubric
- Item sample response and training notes (when provided by content development team)
- Anchor Set
  - Clear examples that include mid-range student responses at each score point (when available)
  - Presented in score point order
- Practice Set
  - May include student work that demonstrates the cut-points between adjacent score points and/or atypical responses
  - May include examples of all score points (when available)
  - Presented in random order
  - Scorer accuracy can be captured and reported
  - Scoring Supervisor will review each practice set response (if required)

2.5 Training Sequence

A Scoring Content Specialist or Scoring Supervisor will lead the training for each item. Training may occur through a recorded, interactive training module, or through an online training system. Regardless of the method of training, the approach will follow this sequence:

1. Review of the student prompt, associated stimuli, the scoring rubric, associated sample responses, and training notes
2. Review of the anchor set
3. Analysis and discussion of each anchor response, its assigned score and associated, detailed scoring rationale
4. Scoring of responses in the practice set(s) to be scored independently to replicate theactual scoring process
5. Discussion of each practice response, revealing the actual score assigned to the studentresponse and explaining the scoring rationale
6. Methodical review of all scoring criteria while paying particular attention to the finelines that determine the cut-points between adjacent score points
7. Question and answer segment addressing any remaining scorer questions
8. Administration of a client-specific number of qualification sets, each consisting of 10pre-scored responses, scored independently, and deployed randomly to each scorer
9. Review of qualification results after each set before scorers are admitted to subsequentqualification set(s)
10. Start scoring live student responses

2.6 The Qualification Process

Qualification sets are used to ensure that scorers have successfully internalized the scoring standards before they begin scoring each item. General qualification guidelines for operational items are:

- Each qualification set will contain 10 responses.

- The number of qualification sets administered are client-specific. Typically, operational items contain two qualifying sets to provide a second opportunity after re-training.
- Qualification sets are administered through Cognia's proprietary iScore system or another compatible scoring system. Responses are distributed to the scorers unscored and in random order.
- In order to qualify, scorers are required to meet the passing threshold as determined by the client and as specified in Part A: Client-Specific Scoring Guidelines
- Scorers who do not pass qualification will not be allowed to score the item. They will either be trained on a different item or dismissed from the scoring project.
- Responses included in the qualification set must be approved for use by the Scoring Content Specialist or Assistant Scoring Content Specialist. Depending on client-specifications, responses may also have to be approved by the client and/or be part of materials approved in a range-finding or benchmarking meeting.

Note:
Scoring Team Leaders receive the same training and undergo the same qualification process as scorers. However, STLs may be trained on some or all items in advance during a separate leadership training. This provides an additional opportunity to absorb the training materials andit prepares them to fulfill their role during scorer qualification.

2.7 Consensus Scoring Approach

When the total number of student responses received is small, Cognia may recommend applying the consensus scoring approach. In this approach, a select group of highly experienced scorers will train and qualify on each item and then proceed by scoring the small number of student responses together in pairs, working side-by-side, and discussing each response to reach a consensus score. Using this approach, scorers are constantly calibrating with each other to provide accurate and consistent scoring for the small number of student responses. When the consensus scoring approach is used, quality control tools designed for high n-counts of student responses are not applicable.

3 Scoring System

3.1 Overview

The scoring of student responses will be conducted through Cognia's iScore or another compatible scoring system which displays images that are received through data transfer from the online computer-based testing platform or through scanned images of paper-based tests. Ininstances of rendering issues with any paper-based test books, scoring will occur by referring tothe actual test book and the scores will be manually entered into the scoring system.

The scoring system does not display any student or school identifiable information. Security is maintained during scoring through a highly secure server-to-server interface. It ensures that images are only accessible to those who will be scoring each item or to scoring management. Allresponses are tracked through a unique booklet code that is matched to the student records during data processing.

Each scoring day scorers are asked to review the anchor materials and the rubric of an ongoing item. There will also be a broader group refresher upon resumption of scoring

following a recess(e.g., a weekend or disruption of delivery). Each scoring day typically concludes with a debrief meeting with the Scoring Content Specialist, the Scoring Supervisors, and, if desired, client staff members to recap the day and address any issues that may need resolution.

During the course of scoring, scorers may encounter student responses that indicate the possibility of cheating or some type of testing irregularity. Scorers will score this type of studentresponse based on its own merits and then refer it to the Scoring Content Specialist and ProjectManager for further processing and client notification. Any potential score change request by the client can be made prior to final reporting.

3.2 Condition Codes

Scoring Services makes every attempt to score each student response. However, when a response does not conform to the score point parameters as defined in the scoring rubric, condition codes can be employed. Responses that are flagged will receive a numeric score butwill undergo supervisory review. Responses that are rejected will not receive a numeric score but will receive a second read.

Flags:

- **Crisis:** Response indicates that a student may present a danger to themselves or others, the student or another child is in danger, there are indications of sexual or physical abuse, or other specific criteria as specified by the client. (Please refer to section 7 for the handling process)
- **Off Topic**: A response that is not related to the task/prompt administered or is also not avalid attempt at responding to any task/prompt on the assessment
- Rejects:
- **Blank:** No deliberate marks in the answer space
- **Unreadable:** A rendering issue or obstructed student response
- **Wrong Location**: A clearly legitimate response to another item on the assessment
- **Insufficient Amount to Score**: The response contains an insufficient amount of student work to score
- **Illegible**: Tiny or poor handwriting (for PBT), spelling that cannot be deciphered, or other conditions that render the student work indecipherable
- **Refusal**: The response clearly indicates a refusal on the part of the student to address the prompt or participate in the assessment
- **Repeats the Prompt**: The response copies the prompt or portions of it and offers noattempt to respond to the task/prompt
- **No Score**: Any other circumstance (as defined by the client) that prevents the assignment ofa numeric score
- **Non-English**: The response is written in a language other than English (or in a Spanish assessment in a language other than Spanish), or is a mix of English (Spanish) and another language but lacks sufficient English (Spanish) to provide a score.

Responses that are identified as Unreadable or Wrong Location undergo a separate resolution process. They will be routed to the Scoring Content Specialist or Scoring Supervisor. Responseswill be reviewed, and the appropriate score assigned. Furthermore:

- **Unreadable** responses (PBT only) will be reviewed by consulting the student's original test booklet or by requesting a re-scan of the student work. If the response can be read through either method, the appropriate score will be assigned. Completely unreadable responses will not receive a numeric score.
- **Wrong Location** responses (PBT only) will be reviewed by a Scoring Supervisor or Scoring Content Specialist. Their broader access to the scoring system allows them to review all student work and assign the appropriate score for each response. Wrong locations can onlybe scored when the student was evidently attempting to respond to another item on the assessment.

3.3 Quality Control

Note: not all quality control measures listed in this section are applicable to every clientcontract.

While all scorers must first train and qualify to gain access to scoring student work, they must also maintain acceptable levels of accuracy to continue scoring. The scoring system provides theopportunity to employ multiple quality control tools in order to monitor accuracy and consistency throughout scoring.

Depending on client specifications, STLs may also score responses each day. In doing so, they arealso subject to all quality control tools and statistics. While in a scoring capacity, the Scoring Supervisor or Scoring Content Specialist will conduct read-behinds on STLs. STLs may also encounter validity papers during their course of scoring.

3.4 Read-Behind Scoring

Read-behind scoring allows the STLs and Scoring Supervisors to monitor the performance ofeach scorer. It provides an immediate real-time snapshot of a scorer's accuracy and the opportunity to provide individualized coaching or re-training as needed.

Read-behinds are generated in the scoring system at the request of the STL. Scorers are not aware which responses are designated for read-behinds. Cognia's scoring platform allows for blind scoring of read-behinds. The STL conducts each read-behind without prior knowledge of the assigned score. After the STLs submit their score, they can reveal the score assigned by thescorer and provide counseling as needed.

The number of read-behinds conducted per scorer will vary and STLs will focus their attention on scorers as needed. Conducting read-behinds is an ongoing process throughout the day. STLswill conduct more read-behinds on scorers who are at the lower threshold of accuracy and require counseling. Cognia will adhere to contract requirements as outlined in Part A.

To further ensure the accuracy of the STLs, scoring leadership has the ability to review their read-behind work. The Scoring Supervisor has access to all responses that were reviewed andmay compare scores to verify the accuracy and consistency of scoring.

3.5 Double-Blind Scoring

While read-behinds measure scorer accuracy in relationship to leadership, double-blind

scoring provides statistics on scorer-to-scorer agreement, or inter-rater reliability. Double-blind scoring is the practice that refers to a method whereby the same response is routed to two scorers. Theresponse is independently and anonymously reviewed by each scorer. In double-blind scoring, scorers do not know which response will be (or already has been) scored by another randomly selected scorer.

3.6 Validity Responses

The deployment of validity responses can provide an additional opportunity to compare andmonitor the quality of scoring. The process is set up to meet the following criteria:

- Validity responses are identified from a pool of responses and pre-scored according to the scoring standards as expressed in the anchor set and the scoring rubric
- Pre-scored validity responses are loaded into the live scoring queue
- Validity responses look identical to live student responses such that scorers can't tell the difference between the two
- Validity responses can be launched at any time during the scoring project
- The insertion rate of validity responses is fully customizable in the scoring platform. Please refer to the Client-Specific Scoring Guidelines in Part A of this document.
- Scoring leadership may select validity responses either from recently scored responses, unscored responses, rangefinding meeting materials, or they may use previously administered validity responses for the item. In order to qualify as a validity response, it must be approved for use by the Scoring Content Specialist or other designated leadership staff. Depending on contract specifics, validity papers may also either be part of the approved rangefinding set or be approved by the client.

3.7 Recalibration Sets

Another option in Cognia's suite of quality control measures is the administration of recalibration sets. Beginning on the second day of scoring an item, scorers will take a recalibration set prior to starting scoring to ensure they remain calibrated to the scoring standards. Recalibration sets consist of pre-scored responses. Recalibration sets will include avariety of score points, but they will not always include an example of each score point.

Recalibration sets reinforce the scoring decisions of the training materials and prevents scorer drift throughout the project. Scorers who demonstrate continued understanding of the scoring standard will be allowed to start scoring for the day. Scorers who struggle with the recalibrationresponses will review them with scoring leadership, comparing the responses to the Anchor Set responses and the scoring rubric. Once the review is complete, scoring leadership will determinewhether the scorer may begin scoring the item for that day.

Scoring leadership may select recalibration responses from recently scored responses, unscoredresponses, rangefinding meeting materials, or they may use previously administered recalibration responses for the item. In order to qualify as a recalibration response, it must be approved for use by the Scoring Content Specialist or other designated leadership staff.
Depending on contract specifics, recalibration papers may also either be part of the

approvedrangefinding set or be approved by the client.

3.8 Voiding Scorer Work

When scorers meet or exceed accuracy standards, they will continue to have access to studentresponses and may continue to score. If scorers fall below the established accuracy threshold,they will be retrained and Scoring leadership will determine whether a scorer is allowed to resume scoring.

The scoring system allows Cognia to void a scorer's work. If a scorer fails to maintain accuracystandards, his or her work for the impacted time frame will be invalidated, and the affected student responses will be routed to other qualified scorers for re-scoring.

3.9 Crisis and Alert Responses

Scorers are trained to identify crisis or alert responses. These include responses which indicate that a student may present a danger to themselves or others, the student or another child is in danger, thereare indications of sexual or physical abuse, and/or other criteria as specified by the client.

As soon as a crisis or alert response is identified, the Scoring Content Specialist will notify the Scoring Project Manager who may reach out to the Program Manager. Student demographic information andcopies of the student response are posted to designated client staff members.

3.10 Scorer Monitoring Reports

To monitor the accuracy, consistency, and pace of scoring, the scoring system generates a variety of reports to allow scoring leadership to monitor all aspects of a complex assessment program. These reports show both the overall performance of the scoring project as well as immediate and real-timescorer level data and provide the opportunity to monitor an individual, the group, and the overall project.

STLs and Scoring Supervisors have access to a select number of reports which aids them in monitoring and ensuring quality scoring. Scoring Content Specialists and scoring management have access to all quality and production reports in the scoring system. Clients will also have access to a variety of qualityand production reports in the scoring system, including interpretive guides, when applicable.

The following is a summary of the most commonly used reports in iScore, Cognia's proprietary scoringsystem:

- The **Read-Behind Summary Report** shows the total number of read-behind responses conducted per scorer and shows the number and percentage of responses that were in exact, adjacent, and discrepant agreement between the scorer and the STL. The report also provides an overall statistical summary of all scorers working on the item. The report has both a daily anda cumulative option.
- The **Double-Blind Summary Report** shows the total number of double-blind responses read by ascorer and will note the number and percentages of exact, adjacent, and discrepant

scores. The report also provides an overall statistical summary of all scorers working on the item. The reporthas both a daily and cumulative option.

- The **Daily Embedded Summary Report** shows the total number of validity responses read by ascorer and will note the number and percentages of exact, adjacent, and discrepant scores.
- The **Qualification Statistics Report** lists each scorer by name and ID#, identifies which qualification sets each scorer has taken and the respective pass or fail status for each set.
- The **Summary Report** shows each item and the total number of student responses to be scoredfor each item. During ongoing scoring, it also shows the number of responses that have alreadybeen scored for each item and the number of double-blind scores provided.
- The **Score Point Distribution Report** shows the total number of student responses per assignedscore point. The report offers both a daily and a cumulative option.
- The **Compilation Report** shows, for each scorer, the total number of responses scored, the number of read-behind responses and the number of scored recalibration responses (both individually and combined), and the percentage of exact, adjacent, and discrepant scores assigned in comparison to read-behinds and recalibration responses.

3.11 Distributed Scoring

Cognia has implemented a distributed scoring model that provides our clients with accurate, reliable, and timely results. Our distributed scoring model adheres to the same requirements as Cognia's center-based scoring model. The following security features are implemented to support the secure nature of distributed scoring:

- Two-Factor Authentication login protocol which prevents unauthorized users from gaining access to the scoring system and materials.
- The scoring system and materials are housed within a secure scoring kiosk which disables any print and download functions.

The communication process between scoring leadership and scorers is managed via a communication tool (e.g., Zoom, MS Teams, Skype) to support regular face-to-face check-ins. All scoring associates arerequired to utilize a webcam to maintain direct communication and facilitate positive identification.

3.12 Cognia Facilities

Cognia currently maintains facilities in Dover, NH; Alpharetta, GA; and Menands, NY. Cognia reservesthe right to decide on the appropriateness of their utilization depending on any potentially existing health risks to its employees and/or the suitability for use of these facilities.

These facilities are locked, and admission is limited to authorized staff. Access is monitored by a securitysystem that only admits staff with an electronic access card. This card also serves as Cognia identification card which must be worn at all times while in the building.

Addendum

Non-Mutual Non-Disclosure Agreement

This Confidentiality and Non-Disclosure ("Agreement") is made on **«Effective_Date»,** by and between Cognia™, Inc., with a physical address of 9115 Westside Parkway, Alpharetta, Georgia 30009, a 501(c)(3) non-profit organization incorporated under the laws of the State of Georgia, United States ofAmerica, and **«Name»,** with a principal address of **«Address1», «City», «State» «Postal Code»,** and taken together, known as ("the Parties").

WHEREAS, "Name" intends to offer services such as but not limited to; scoring and/or distributed scoring for Cognia through a temporary agency service arrangement with such servicesperformed either in facilities arranged by Cognia or location(s) identified by temporary agency agreement with "Name" (the "Transaction"); and

WHEREAS, the Parties may disclose certain confidential and proprietary information to each other forthe purpose of evaluating the Transaction, and the Parties mutually agree to enter into a confidential relationship with respect to the disclosure by one or each (the "Disclosing Party") to the other (the "Recipient") of such proprietary and confidential information; and

NOW, THEREFORE, the Parties, intending to be legally bound, agree as follows:

Definition of Confidential Information. For purposes of this Agreement, "Confidential Information" means (1) any and all information, data, design, memoranda, models, prototypes, equipment and/or other material, of a confidential, non-public or proprietary nature, including, without limitation, information relating to or regarding the products or services developed or being developed by the Disclosing Party, information regarding intellectual property (including ideas that may be subject to patent, trade mark, service mark or trade secret protection) and other rights, techniques, research, development, samples, marketing, sales, know-how, operations, distribution, strategy, services, applications, promotions, advertising, costs, prices,business plans, financial statements, software, source code, and firmware and process information and such information relating to the Disclosing Party's existing and prospective invention, business partners, and customers, (2) documents and information that are marked ordesignated with a word or symbol indicating that the document or information should be considered confidential, such as "Confidential", "Proprietary", or "Privileged", (3) documents and information that the Disclosing Party informs the Recipient, either in writing or orally, are confidential, and (4) information that is a trade secret or the confidential or proprietary information of a third party, which is obtained from the Disclosing Party, irrespective of whetherit is in tangible or intangible form, irrespective of whether it was communicated orally, in writingor on any other record bearing media and irrespective of whether it was marked or designated as confidential in connection with the disclosure.

Notwithstanding the foregoing, the term "Confidential Information" does not include informationwhich: was in the public domain prior to the Recipient's receipt of same from the Disclosing Party, or which subsequently becomes part of the public domain by publication or otherwise, other than by the wrongful act of the Recipient; information which the Recipient can show by reasonable proof was in its

possession prior to the Recipient's receipt of same from the Disclosing Party and which was not acquired directly or indirectly from the Disclosing Party; information which is independently developedby the Recipient without reference to or reliance upon the Confidential Information of the disclosing party and without breach of this Agreement; or that the Parties agree in writing is not proprietary or confidential.

Confidentiality. Recipient agrees to treat as confidential all Confidential Information provided to it by Disclosing Party or Disclosing Party's representatives, whether disclosed before or after the date of thisAgreement. In no event, including the breach of this Agreement or any other agreement between the Parties, shall either Party allow the disclosure of any Confidential Information disclosed to it by the Disclosing Party except as permitted under the terms of this Agreement or with the prior written consentof the Disclosing Party. The Parties shall take commercially reasonable steps to prevent the unauthorized disclosure, use, dissemination, or publication of the Confidential Information and shall protect such Confidential Information to the same extent that it protects its own confidential and proprietary information, but in no event using less than a reasonable standard of care. This Agreement shall be binding on all directors, officers, stockholders, members, managers, employees, agents, representatives, successors and assigns of the Recipient (collectively, "Agents"), and Recipient shall take commercially reasonable steps to assure that its Agents to whom Confidential Information is disclosed maintain the confidential nature of the Confidential Information. Recipient shall immediately notify the Disclosing Party upon discovery of any loss or unauthorized disclosure of the Confidential Information of the Disclosing Party.

Use. Recipient agrees that the Confidential Information shall be used solely for purposes of the Transaction and in connection with any transaction entered into by the Parties. Recipient shall not disclose any Confidential Information to any other party. Recipient further agrees that it is prohibited from using the Confidential Information for its competitive advantage, or to further its own business, professional or economic position. Neither the execution of this Agreement nor the transmission of anyConfidential Information by the Disclosing Party to the Recipient shall constitute a conveyance or transfer to the Recipient of any right, title, interest or license in the Confidential Information.

Term. This Agreement shall be in effect for a period of three (3) years from the latter-dated signaturebelow. The obligations contained herein shall survive until the earlier of (a) an exception to what is Confidential Information set forth in Section 1 is met, or (b) one (1) year after the expiration of this Agreement; provided, however, each Party's trade secrets shall be subject to those obligations hereinand survive until they are no longer a trade secret.

Remedies. Because of the unique nature of the Confidential Information, Recipient agrees that breachof this Agreement will result in the irreparable harm to the Disclosing Party. Therefore, in addition to any and all other remedies available at law or in equity, the Disclosing Party shall be entitled to injunctive or equivalent relief enjoining the breach of this Agreement, without the necessity of posting bond or other surety. In the event of a breach of this Agreement by the Recipient, the Recipient agreesto pay reasonable fees incurred by the Disclosing Party to protect its rights under this Agreement including, without limitation, attorneys' fees and other costs to bring any lawsuit, action, or proceeding necessary to protect the Disclosing Party's rights. These remedies in addition to any rights by temporary agency related to employment law or dismissal for cause.

Governing Law; Venue. This Agreement shall be governed, interpreted, and/or construed in accordance with the laws of the State of Georgia without giving effect to choice of laws principles that require the application of the law, regulation or rule of a different state. Recipientand Disclosing Party hereby agree that any legal proceeding involving a dispute between Disclosing Party and Recipient concerning any aspect of this Agreement shall be brought solelyin a State court located within the State of Georgia or the United States District Court for Georgia.

Return or Destruction of Confidential Information. After the performance of the services relating to the Transaction, Recipient agrees to destroy all Confidential Information and all documents containing Confidential Information Securely or Return to Cognia all Confidential Information held in the parties' position immediately (including any copies, notes, or abstracts,in any media).

Amendment and Assignment. This Agreement may be amended only upon mutual writtenagreement by

the Disclosing Party and the Recipient. This Agreement and the rights and obligations contained herein are not assignable. Nothing in this Agreement obligates the parties to enter into the Transaction

Severability. In case any provisions (or portions thereof) contained in this Agreement shall, for any reason, be held invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect the other provisions of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein. If, moreover, any one or more of the provisions contained in this Agreement shall for any reason be held to be excessively broad as to duration, geographical scope, activityor subject, it shall be construed by limiting and reducing it, so as to be enforceable to the extent compatible with the applicable law as it shall then appear.

Notices. All notices or reports or secure return of materials permitted or required under this Agreement will be in writing and will be delivered by electronic mail or by certified or registeredmail, return receipt requested, and will be deemed given upon personal delivery, five (5) days after deposit in the mail, or upon acknowledgment of receipt of electronic transmission.
Notices will be sent to the addresses set forth at the end of this Agreement or such otheraddress as either Party may specify in writing.

Entire Agreement. This Agreement is the final, complete, and exclusive agreement of the Partieswith respect to the subject matters hereof and supersedes and merges all prior discussions between the Parties with respect to such matters.

Counterparts; Signatures. This Agreement may be executed by one party as identified in thefirst paragraph, which shall be deemed an original for all purposes and all of which will constitute a single instrument. Facsimile signatures shall be deemed original and binding signatures.

Survival. All duties and obligations with regard to the protection of Confidential Informationshall survive any termination of the discussions relating to the Transaction.

Parties hereby accept the terms and obligations set forth in this Agreement.

IN WITNESS WHEREOF, the parties, intending to be legally bound, hereto have executed this Agreement made effective as of the day and year set forth above.

By:	«Name»
Signature:	
Print Name:	Click or tap here to enter text.
Title:	Click or tap here to enter text.
Date:	Click or tap here to enter text.

[Non-Mutual Confidentiality and Non-Disclosure Agreement – Signature Page]

Email Legal@cognia.org

ADDRESS FOR RETURN OF MATERIALS:

Cognia
9115 Westside Parkway
Alpharetta, GA 30009

APPENDIX H
INTERRATER CONSISTENCY

Table H-1. Item-Level Interrater Consistency Statistics by Grade—ELA

Grade	Item	Number of		Percent		Correlation	LW Kappa
		Score Categories	Responses Scored Twice	Exact	Adjacent		
3	EL625963791	4	2,861	75.29	24.57	0.73	0.800
	EL735736712#SCORE_TRAIT_Conv	4	2,960	83.24	16.66	0.78	0.850
	EL735736712#SCORE_TRAIT_Ideadev	5	2,960	80.61	18.99	0.82	0.859
4	EL810046581	4	3,141	73.70	25.57	0.79	0.771
	EL812949238#SCORE_TRAIT_Conv	4	3,100	80.35	19.55	0.88	0.853
	EL812949238#SCORE_TRAIT_Ideadev	5	3,100	82.58	16.94	0.92	0.891
5	EL736478825#SCORE_TRAIT_Conv	4	3,131	70.97	28.94	0.80	0.753
	EL736478825#SCORE_TRAIT_Ideadev	5	3,131	71.35	28.33	0.82	0.778
	EL806033603#SCORE_TRAIT_Conv	4	3,198	72.05	27.20	0.80	0.711
	EL806033603#SCORE_TRAIT_Ideadev	5	3,198	70.76	28.49	0.81	0.714
6	EL735440256#SCORE_TRAIT_Conv	4	3,200	75.75	24.25	0.87	0.809
	EL735440256#SCORE_TRAIT_Ideadev	6	3,200	70.81	28.97	0.89	0.816
	EL807016586#SCORE_TRAIT_Conv	4	3,201	76.66	23.34	0.89	0.818
	EL807016586#SCORE_TRAIT_Ideadev	6	3,201	67.82	32.18	0.88	0.790
7	EL807349832#SCORE_TRAIT_Conv	4	3,258	68.63	30.11	0.84	0.750
	EL807349832#SCORE_TRAIT_Ideadev	6	3,258	64.24	33.55	0.82	0.737
	EL807456720#SCORE_TRAIT_Conv	4	3,265	71.42	28.09	0.85	0.756
	EL807456720#SCORE_TRAIT_Ideadev	6	3,265	65.85	32.77	0.84	0.740
8	EL810463548#SCORE_TRAIT_Conv	4	3,257	73.44	25.97	0.87	0.803
	EL810463548#SCORE_TRAIT_Ideadev	6	3,257	65.58	32.48	0.89	0.794
	EL810733917#SCORE_TRAIT_Conv	4	3,244	75.89	23.77	0.87	0.808
	EL810733917#SCORE_TRAIT_Ideadev	6	3,244	67.32	30.89	0.88	0.784
10	EL800341748#SCORE_TRAIT_Conv	4	67,273	77.37	21.61	0.85	0.729
	EL800341748#SCORE_TRAIT_Ideadev	6	67,273	62.70	35.41	0.84	0.711
	EL805452873#SCORE_TRAIT_Conv	4	68,134	74.76	24.25	0.83	0.722
	EL805452873#SCORE_TRAIT_Ideadev	6	68,134	61.73	35.35	0.83	0.707

**Caution should be used when interpreting the sums of exact and adjacent percentages for ELA items. This is because resolutions are done by item in ELA, and it is entirely possible that only one trait (either idea development or conventions) on a writing item has a non-adjacent score. For instance, if the idea development score for an item were non-adjacent, the item would also receive a third score for conventions, even if it initially received an exact or adjacent score for conventions.*

Table H-2. Item-Level Interrater Consistency Statistics by Grade—Mathematics

Grade	Item	Number of		Percent		Correlation	LW Kappa
		Score Categories	Responses Scored Twice	Exact	Adjacent		
3	MA261859A	4	3,095	90.37	8.95	0.96	0.920
	MA286750A	4	3,041	94.54	5.39	0.98	0.953
	MA286750A_PA	4	67	94.03	5.97	0.97	0.979
	MA297399A	4	3,100	93.23	6.71	0.96	0.945
	MA735851787	4	3,086	95.92	4.08	0.97	0.959
4	MA287484	5	3,190	94.73	5.20	0.98	0.962
	MA716535935	5	3,186	97.39	2.45	0.99	0.978
	MA800780932	5	3,196	90.55	9.17	0.97	0.935
	MA801035466	5	3,186	78.22	21.00	0.92	0.855
5	MA624359515	5	3,170	81.51	15.46	0.94	0.877
	MA624376704	5	3,137	84.79	14.25	0.93	0.893
	MA624377498	5	3,192	91.20	8.55	0.97	0.943
	MA704359650	5	3,136	95.18	4.62	0.99	0.970
	MA704359650_PA	5	65	92.31	6.15	0.97	0.976
6	MA311694	5	3,265	84.59	14.30	0.95	0.899
	MA703249688	5	3,235	89.46	9.95	0.95	0.923
	MA713830373	5	3,209	89.47	10.19	0.97	0.933
	MA713830373_PA	5	21	85.71	9.52	0.92	0.721
	MA713831396	5	3,207	90.80	8.67	0.97	0.936
	MA713831396_PA	5	31	96.77	0.00	0.96	0.872
7	MA295745	5	3,204	94.57	4.90	0.96	0.948
	MA295758	5	3,296	91.44	8.50	0.97	0.941
	MA311144	5	3,236	85.38	13.94	0.94	0.899
	MA804701799	5	3,226	94.05	5.61	0.98	0.963
8	MA301714	5	3,219	83.38	15.66	0.95	0.910
	MA311437	5	3,203	83.86	14.77	0.94	0.902
	MA704855478	5	3,289	90.91	8.48	0.95	0.925
	MA713930945	5	3,298	85.90	13.58	0.95	0.891
	MA713930945_PA	5	34	88.24	11.76	0.96	0.967
10	MA301486	5	67,244	81.56	17.42	0.93	0.870
	MA301486_ES	5	936	93.80	5.88	0.91	0.939
	MA306482	5	66,640	91.90	7.74	0.98	0.950
	MA306482_ES	5	887	95.72	4.28	0.93	0.964
	MA311164	5	66,224	89.64	9.84	0.98	0.942
	MA311164_ES	5	841	96.67	3.21	0.93	0.954
	MA801462169	5	67,047	90.65	8.92	0.97	0.936
	MA801462169_ES	5	919	97.82	2.18	0.97	0.950

Table H-3. Item-Level Interrater Consistency Statistics—STE

Grade	Item	Number of Score Categories	Number of Responses Scored Twice	Percent Exact	Percent Adjacent	Correlation	LW Kappa
5	SC310001	4	3,577	68.63	28.77	0.82	0.767
	SC315791	4	3,175	77.92	21.57	0.77	0.815
	SC315804	4	3,208	84.48	15.21	0.88	0.893
	SC630226702	3	3,177	71.55	26.16	0.68	0.724
	SC804958319	3	3,158	94.52	5.22	0.96	0.898
	SC815582307_PA	4	67	73.13	16.42	0.66	0.900
8	SC292029	4	2,600	86.50	12.77	0.89	0.893
	SC719258218	4	2,620	80.65	18.66	0.85	0.860
	SC719857887	4	2,748	63.36	32.79	0.76	0.751
	SC804368074	3	2,717	82.22	17.41	0.83	0.836
	SC809268358	4	2,675	82.32	16.41	0.74	0.837
	SC810864808	3	2,517	86.45	13.15	0.86	0.890

Table H-4. Validity Constant Proportion of Exact Agreement by Score Points

Subject	Grade	Ncat	Ntot	Exact	Score Point 0	1	2	3	4	5
ELA	3	3	134	91.13	92.33	94.56	85.49	--	--	--
		4	3,874	88.88	90.58	92.57	81.72	73.57	--	--
		5	1,926	89.85	94.53	86.89	88.40	81.05	89.63	--
	4	3	388	90.52	97.20	84.89	85.37	--	--	--
		4	4,184	87.58	92.07	93.34	78.53	72.57	--	--
		5	1,920	90.16	97.05	90.13	85.71	68.18	67.19	--
	5	4	4,141	90.73	97.53	92.09	84.91	76.93	--	--
		5	3,775	88.52	96.20	91.27	87.87	70.33	38.60	--
	6	4	3,927	88.68	93.04	88.60	85.25	87.87	--	--
		5	122	92.76	100	93.50	93	93	67	--
		6	3,805	83.77	89.16	90.79	84.64	65.29	66.59	64.33
	7	4	4,118	85.52	95.70	83.20	74.61	83.31		
		6	4,118	83.63	93.81	92.97	77.6	64.09	58	48.44
	8	4	3,910	87.15	96.75	85.68	80.92	85.37	--	--
		5	133	90.95	89	93	93.94	69.80	--	--
		6	3,777	81.91	94.61	90.14	81.84	63.24	53.64	62.38
Mathematics	3	4	4,387	97.4	98.73	96.59	97.28	97.36	--	--
	4	5	4,860	95.82	99.13	96.45	92.08	94.82	97.69	--
	5	5	4,383	93.74	98.05	87.25	93.6	93.28	97.88	--
	6	5	4,549	93.5	96.96	91.16	93.53	91.38	97.25	--
	7	5	4,784	93.74	97	97.86	91.87	90.29	88.70	--
	8	5	4,666	93.61	95.90	95.62	91.38	88.15	96.09	--

Table H-5. Item-level Validity Statistics—ELA Grade 3

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point				
					0	1	2	3	4
EL308855	Overall	3	N	134	39	54	41	0	0
			Percent	91.1	92.3	94.6	85.5		
EL308857	Overall	4	N	132	40	67	14	11	0
			Percent	81.0	87.6	87.9	64.5	36.0	NA
EL625963791	Overall	4	N	1816	318	1147	280	71	0
			Percent	88.9	84.4	94.9	78.2	55.1	NA
EL626052459	Conventions	4	N	126	39	76	8	3	0
			Percent	88.9	100.0	89.5	37.4	66.7	NA
	Idea Development	5	N	126	33	82	8	1	2
			Percent	82.5	93.8	84.1	37.5	0.0	50.0
EL735736712	Conventions	4	N	1800	361	832	446	161	0
			Percent	89.4	95.3	90.0	85.3	84.4	NA
	Idea Development	5	N	1800	658	535	463	78	66
			Percent	90.4	94.6	87.3	89.3	82.1	90.8

Table H-6. Item-level Validity Statistics—ELA Grade 4

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point				
					0	1	2	3	4
EL307728	Overall	3	N	132	63	61	8	0	0
			Percent	93.3	93.8	95.2	75.0		
EL307729	Overall	4	N	129	40	64	14	11	0
			Percent	87.7	85.0	95.5	93.0	45.0	
EL624655949	Conventions	3	N	128	50	55	23	0	0
			Percent	89.9	100.0	81.8	87.2		
	Idea Development	3	N	128	62	43	23	0	0
			Percent	88.3	98.5	74.4	87.2		
EL810046581	Overall	4	N	2135	455	882	502	296	0
			Percent	87.6	93.4	96.0	80.5	65.3	NA
EL812949238	Conventions	4	N	1920	212	1157	377	174	0
			Percent	87.6	90.6	91.2	75.4	86.7	NA
	Idea Development	5	N	1920	819	542	385	79	95
			Percent	90.2	97.0	90.2	85.7	68.2	67.2

Table H-7. Item-level Validity Statistics—ELA Grade 5

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point				
					0	1	2	3	4
EL626356806	Conventions	4	N	183	72	63	32	16	0
			Percent	94.0	98.7	97.0	77.9	94.0	
	Idea Development	4	N	183	72	63	32	16	0
			Percent	89.6	90.4	95.2	87.2	69.0	NA
EL736478825	Conventions	4	N	1875	656	422	480	317	0
			Percent	88.7	97.4	89.5	84.3	76.4	
	Idea Development	5	N	1875	583	495	480	227	90
			Percent	84.7	97.8	86.5	87.3	60.4	36.5
EL806033603	Conventions	4	N	1900	892	475	307	226	0
			Percent	92.5	98.1	93.3	86.4	76.9	
	Idea Development	5	N	1900	791	568	315	218	8
			Percent	92.0	95.0	95.5	88.8	80.7	62.5

Table H-8. Item-level Validity Statistics—ELA Grade 6

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point					
					0	1	2	3	4	5
EL303519	Conventions	4	N	122	25	60	14	23	0	0
			Percent	89.4	100.0	78.4	100.0	100.0		
	Idea Development	5	N	122	25	60	14	14	9	0
			Percent	92.8	100.0	93.5	93.0	93.0	67.0	
EL626869132	Conventions	4	N	116	52	27	0	37	0	0
			Percent	89.6	90.5	96.0		83.8		
	Idea Development	6	N	116	39	40	0	10	10	17
			Percent	85.3	100.0	94.8		60.0	50.0	65.0
EL735440256	Conventions	4	N	1843	538	474	563	268	0	0
			Percent	91.4	97.0	88.9	87.8	92.2		
	Idea Development	6	N	1843	547	465	561	100	156	14
			Percent	88.8	96.9	90.4	88.0	76.9	70.3	35.6
EL807016586	Conventions	4	N	1846	403	497	517	429	0	0
			Percent	85.8	87.6	89.1	82.1	84.8		
	Idea Development	6	N	1846	356	544	517	178	134	117
			Percent	78.7	76.0	90.9	80.9	59.0 cx	63.5	67.7

Table H-9. Item-level Validity Statistics—ELA Grade 7

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point					
					0	1	2	3	4	5
EL292181	Conventions	4	N	113	37	12	37	27	0	0
			Percent	83.2	100.0	92.0	64.8	81.6		
	Idea Development	6	N	113	5	44	30	30	4	0
			Percent	78.8	100.0	84.0	80.0	73.5	25.0	
EL628749729	Conventions	4	N	123	36	4	35	48	0	0
			Percent	91.6	100.0	50.3	79.9	97.9		
	Idea Development	6	N	123	1	39	35	4	37	7
			Percent	82.8	100.0	84.3	76.7	75.0	89.4	71.1
EL807349832	Conventions	4	N	1874	815	316	393	350	0	0
			Percent	88.9	95.5	87.9	80.2	84.3		
	Idea Development	6	N	1874	480	651	369	214	12	148
			Percent	88.2	97.9	98.3	82.9	64.0	24.8	65.4
EL807456720	Conventions	4	N	2008	592	554	585	277	0	0
			Percent	82.1	95.5	80.6	71.2	79.8		
	Idea Development	6	N	2008	625	521	585	207	34	36
			Percent	79.7	90.6	87.7	74.2	62.6	15.0	25.0

Table H-10. Item-level Validity Statistics—ELA Grade 8

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point					
					0	1	2	3	4	5
EL290818	Conventions	4	N	115	20	28	28	39	0	0
			Percent	91.4	80.2	92.9	92.9	94.9		
	Idea Development	6	N	115	20	28	28	19	10	10
			Percent	87.9	100.0	85.9	92.9	89.5	80.0	60.4
EL623953378	Conventions	4	N	133	33	57	33	10	0	0
			Percent	88.7	84.8	85.9	93.9	100.0		
	Idea Development	5	N	133	18	72	33	10	0	0
			Percent	90.9	89.0	93.0	93.9	69.8		
EL810463548	Conventions	4	N	1840	473	529	433	405	0	0
			Percent	87.3	98.6	84.0	81.3	84.8		
	Idea Development	6	N	1840	473	529	398	223	122	95
			Percent	82.7	97.0	85.0	83.7	67.3	56.5	63.9
EL810733917	Conventions	4	N	1822	389	623	363	447	0	0
			Percent	86.7	96.4	86.8	78.3	84.8		
	Idea Development	6	N	1822	342	674	359	204	209	34
			Percent	80.7	90.9	94.3	78.9	56.4	50.7	58.5

Table H-11. Item-level Validity Statistics—Mathematics Grade 3

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point			
					0	1	2	3
MA261859A	Overall	4	N	1134	268	347	235	284
			Percent	97.9	99.3	97.4	98.7	96.5
MA286750A	Overall	4	N	1077	275	274	276	252
			Percent	99.4	99.3	98.9	99.3	100.0
MA297399A	Overall	4	N	1058	215	329	293	221
			Percent	97.5	99.0	97.5	97.0	96.5
MA735851787	Overall	4	N	1118	257	522	190	149
			Percent	94.9	97.3	94.3	93.0	95.9

Table H-12. Item-level Validity Statistics—Mathematics Grade 4

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point				
					0	1	2	3	4
MA250543	Overall	5	N	185	64	54	26	14	27
			Percent	97.8	100.0	98.2	100.0	85.7	96.3
MA287484	Overall	5	N	1171	38	402	333	308	90
			Percent	97.0	94.7	97.5	96.0	97.7	97.8
MA311581	Overall	5	N	41	7	8	9	10	7
			Percent	97.6	100.0	87.5	100.0	100.0	100.0
MA716535935	Overall	5	N	1304	377	427	328	84	88
			Percent	98.1	98.9	96.6	99.1	97.8	98.8
MA800780932	Overall	5	N	1121	41	176	304	318	282
			Percent	93.2	100.0	95.5	82.6	95.6	99.4
MA801035466	Overall	5	N	1038	391	298	97	151	101
			Percent	93.9	99.5	95.3	81.6	86.1	92.1

Table H-13. Item-level Validity Statistics—Mathematics Grade 5

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point				
					0	1	2	3	4
MA311366	Overall	5	N	43	12	8	13	6	4
			Percent	95.4	100.0	100.0	100.0	83.3	75
MA624359515	Overall	5	N	1047	204	366	123	158	196
			Percent	91.2	98.6	87.4	83.8	86.8	98.9
MA624376704	Overall	5	N	1075	518	295	133	109	20
			Percent	90.9	97.6	77.5	91.9	92.8	100.0
MA624377498	Overall	5	N	1070	212	196	289	207	166
			Percent	95.6	96.7	92.9	95.2	97.6	95.9
MA704359650	Overall	5	N	1105	192	198	302	206	207
			Percent	97.0	100.0	94.5	97.0	95.2	98.5
MA704359678	Overall	5	N	43	1	13	5	9	15
			Percent	90.7	100.0	100.0	60.0	77.7	100.0

Table H-14. Item-level Validity Statistics—Mathematics Grade 6

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point				
					0	1	2	3	4
MA307339	Overall	5	N	37	5	6	11	7	8
			Percent	100.0	100.0	100.0	100.0	100.0	100.0
MA311694	Overall	5	N	1052	211	175	260	167	239
			Percent	92.3	95.2	94.2	91.2	79.6	98.3
MA703249688	Overall	5	N	1167	56	326	405	230	150
			Percent	91.7	94.7	81.6	94.8	96.9	96.0
MA713830373	Overall	5	N	1143	211	317	189	227	199
			Percent	97.0	100.0	95.3	94.6	96.9	98.9
MA713831396	Overall	5	N	1150	44	399	279	252	176
			Percent	92.8	93.4	94.2	92.9	88.9	94.9

Table H-15. Item-level Validity Statistics—Mathematics Grade 7

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point				
					0	1	2	3	4
MA295745	Overall	5	N	1196	57	477	229	136	297
			Percent	90.4	100.0	98.8	85.1	75.8	85.9
MA295758	Overall	5	N	1106	173	570	97	147	119
			Percent	97.1	95.4	98.9	89.7	95.2	99.2
MA311144	Overall	5	N	1156	111	225	275	303	242
			Percent	90.5	97.3	94.6	91.3	87.7	86
MA316886	Overall	5	N	37	17	2	8	10	0
			Percent	97.3	100.0	100.0	100.0	90.0	NA
MA703943185	Overall	5	N	35	7	9	9	0	10
			Percent	100.0	100.0	100.0	100.0	NA	100
MA804701799	Overall	5	N	1254	405	164	327	311	47
			Percent	96.7	97.0	95.8	97.3	96.9	91.2

Table H-16. Item-level Validity Statistics—Mathematics Grade 8

UIN	Trait	Ncat	Stat	Overall Exact Agreement	Agreement by Score Point				
					0	1	2	3	4
MA297652	Overall	5	N	35	3	5	8	12	7
			Percent	100.0	100.0	100.0	100.0	100.0	100.0
MA301714	Overall	5	N	1114	191	223	248	206	246
			Percent	91.6	96.2	90.9	89.9	81.7	98.7
MA311437	Overall	5	N	1128	192	287	260	222	167
			Percent	92.7	98.4	95.6	89.6	83.4	98.7
MA314812	Overall	5	N	33	13	0	0	10	10
			Percent	96.9	100.0	NA	NA	100.0	90.0
MA704855478	Overall	5	N	1206	252	607	97	111	139
			Percent	94.9	95.6	99.3	89.4	83.2	87.1
MA713930945	Overall	5	N	1150	138	230	226	297	259
			Percent	94.8	92.0	90.3	95.6	97.2	96.9

Table H-17. Item-Level Interrater Consistency Statistics—Alt/ELA

Grade	Item	Number of		Percent		Correlation
		Score Categories	Responses Scored Twice	Exact	Adjacent	
3	comp1	5	220	98.64	0.91	0.72
	comp2	5	220	99.55	0.45	0.95
	comp3	5	220	98.18	1.82	0.89
	ind1	4	196	100	0	1
	ind2	4	193	100	0	1
	ind3	4	173	98.84	1.16	0.99
	sk1	4	196	98.98	1.02	0.97
	sk2	4	193	98.45	1.55	0.91
	sk3	4	173	97.11	2.89	0.98
4	comp1	5	496	99.6	0	0.89
	comp2	5	494	98.79	1.01	0.89
	comp3	5	494	97.77	2.02	0.89
	ind1	4	437	98.17	1.83	0.97
	ind2	4	380	97.63	2.37	0.96
	ind3	4	402	97.01	2.99	0.97
	sk1	4	437	99.08	0.69	0.94
	sk2	4	380	98.16	1.84	0.95
	sk3	4	402	97.01	2.49	0.96
5	comp1	5	159	98.11	1.26	0.67
	comp2	5	161	99.38	0.62	0.95
	comp3	5	158	98.10	1.90	0.90
	ind1	4	147	99.32	0.68	0.99
	ind2	4	135	99.26	0.74	0.99
	ind3	4	133	99.25	0.75	0.99
	sk1	4	147	100	0	1
	sk2	4	135	98.52	1.48	0.95
	sk3	4	133	97.74	1.50	0.97
6	comp1	5	129	100	0	1
	comp2	5	130	100	0	1
	comp3	5	129	97.67	1.55	0.56
	ind1	4	121	98.35	1.65	0.98
	ind2	4	103	97.09	2.91	0.97
	ind3	4	104	100	0	1
	sk1	4	121	100	0	1
	sk2	4	103	100	0	1
	sk3	4	104	95.19	3.85	0.95
7	comp1	5	173	99.42	0.58	0.96
	comp2	5	174	98.85	1.15	0.92
	comp3	5	171	98.25	1.75	0.93
	ind1	4	155	100	0	1
	ind2	4	136	97.06	2.94	0.93
	ind3	4	133	98.50	1.50	0.98

continued

Grade	Item	Number of		Percent		Correlation
		Score Categories	Responses Scored Twice	Exact	Adjacent	
7	sk1	4	155	100	0	1
	sk2	4	136	100	0	1
	sk3	4	133	97.74	1.50	0.97
8	comp1	5	213	98.59	0.94	0.67
	comp2	5	216	98.61	1.39	0.82
	comp3	5	214	98.60	0.93	0.82
	ind1	4	182	100	0	1
	ind2	4	175	98.29	1.71	0.97
	ind3	4	167	99.40	0.60	0.99
	sk1	4	182	99.45	0.55	0.98
	sk2	4	175	100	0	1
	sk3	4	167	98.20	0.60	0.96
10	comp1	5	205	100	0	1
	comp2	5	206	99.51	0	0.70
	comp3	5	207	99.03	0.48	0.81
	ind1	4	185	97.84	1.62	0.88
	ind2	4	152	97.37	1.97	0.87
	ind3	4	158	98.73	1.27	0.99
	sk1	4	185	98.92	0.54	0.88
	sk2	4	152	98.03	1.97	0.91
	sk3	4	158	94.94	4.43	0.95

**The percentages of exact agreement, adjacent agreement and third score do not necessarily sum to 1 due to the scoring rules. The most prevalent case is when a strand contains a score of "M" (indicating a required component is missing/incomplete) within a rubric area. Any instance of an "M" by scorer 1 or 2 must be confirmed by an expert scorer (scorer 3). Even if scorer 1 and 2 both agree on an "M", the third scorer would still provide a confirmation or overturning score. The third scorer will also review strands at random to provide oversight on a particular scorer or even portfolios that are of interest.*

Table H-18. Item-Level Interrater Consistency Statistics—Alt/Mathematics

Grade	Item	Number of		Percent		Correlation	% Third Score*
		Score Categories	Responses Scored Twice	Exact	Adjacent		
3	comp1	5	219	99.09	0.91	0.92	0.91
	comp5	5	220	99.55	0.45	0.94	0.45
	ind1	4	174	99.43	0.57	0.99	1.72
	ind5	4	189	100	0	1	1.59
	sk1	4	174	98.85	1.15	0.96	1.72
	sk5	4	189	99.47	0.53	0.98	1.59
4	comp1	5	495	98.79	0.40	0.83	1.62
	comp3	5	490	99.18	0.20	0.88	1.02
	ind1	4	405	97.53	2.47	0.97	3.46
	ind3	4	418	98.09	1.91	0.97	4.31
	sk1	4	405	98.77	1.23	0.96	3.21
	sk3	4	418	97.61	2.39	0.90	3.83
5	comp2	5	166	98.80	0.60	0.83	1.81
	comp3	5	163	99.39	0.61	0.96	0.61
	ind2	4	148	98.65	1.35	0.98	2.03
	ind3	4	149	99.33	0.67	0.99	2.01
	sk2	4	148	97.97	2.03	0.92	2.70
	sk3	4	149	97.99	2.01	0.91	2.01
6	comp2	5	128	99.22	0.78	0.94	0.78
	comp5	5	128	100	0	1	0
	ind2	4	117	100	0	1	1.71
	ind5	4	111	97.30	2.7	0.98	4.50
	sk2	4	117	98.29	1.71	0.93	2.56
	sk5	4	111	98.20	1.80	0.95	3.60
7	comp1	5	172	98.84	1.16	0.94	1.74
	comp4	5	174	98.85	1.15	0.92	1.15
	ind1	4	136	99.26	0.74	0.99	0.74
	ind4	4	144	97.92	2.08	0.96	2.78
	sk1	4	136	99.26	0.74	0.98	0.74
	sk4	4	144	98.61	1.39	0.96	2.78
8	comp2	5	210	97.14	2.38	0.71	4.29
	comp4	5	212	98.58	0.94	0.66	3.3
	ind2	4	172	99.42	0.58	0.99	1.16
	ind4	4	173	100	0	1	0.58
	sk2	4	172	100	0	1	1.16
	sk4	4	173	99.42	0.58	0.98	0.58

continued

Grade	Item	Number of		Percent		Correlation	% Third Score*
		Score Categories	Responses Scored Twice	Exact	Adjacent		
HS	comp1	5	48	95.83	2.08	0.72	6.25
	comp2	5	140	99.29	0.71	0.81	0.71
	comp3	5	133	100	0	1	0
	comp4	5	172	99.42	0	0.79	0.58
	comp5	5	118	98.31	1.69	0.66	2.54
	ind1	4	40	97.50	2.50	0.97	2.5
	ind2	4	121	97.52	2.48	0.95	4.13
	ind3	4	115	96.52	2.61	0.85	3.48
	ind4	4	149	96.64	2.68	0.91	4.70
	ind5	4	95	98.95	1.05	0.98	2.11
	sk1	4	40	100	0	1	2.50
	sk2	4	121	97.52	2.48	0.9	3.31
	sk3	4	115	98.26	0.87	0.91	3.48
	sk4	4	149	97.99	1.34	0.88	4.70
	sk5	4	95	97.89	1.05	0.84	2.11

**The percentages of exact agreement, adjacent agreement and third score do not necessarily sum to 1 due to the scoring rules. The most prevalent case is when a strand contains a score of "M" (indicating a required component is missing/incomplete) within a rubric area. Any instance of an "M" by scorer 1 or 2 must be confirmed by an expert scorer (scorer 3). Even if scorer 1 and 2 both agree on an "M", the third scorer would still provide a confirmation or overturning score. The third scorer will also review strands at random to provide oversight on a particular scorer or even portfolios that are of interest.*

Table H-19. Item-Level Interrater Consistency Statistics—Alt/STE

Grade	Item	Number of		Percent		Correlation	% Third Score*
		Score Categories	Responses Scored Twice	Exact	Adjacent		
5	comp1	5	145	98.62	1.38	0.93	1.38
	comp2	5	148	99.32	0.68	0.97	0.68
	comp3	5	140	97.86	2.14	0.89	2.14
	comp4	5	6	--	--	--	--
	ind1	4	116	100	0	1	0.86
	ind2	4	121	99.17	0.83	0.99	0.83
	ind3	4	118	98.31	1.69	0.99	1.69
	ind4	4	5	--	--	--	--
	sk1	4	116	99.14	0.86	0.93	0.86
	sk2	4	121	100	0	1	0.83
	sk3	4	118	100	0	1	0.85
	sk4	4	5	--	--	--	--
8	comp1	5	181	96.13	3.87	0.77	5.52
	comp2	5	189	98.41	1.59	0.87	3.17
	comp3	5	177	96.61	3.39	0.77	6.78
	comp4	5	21	95.24	4.76	0.79	9.52
	ind1	4	134	99.25	0.75	0.99	0.75
	ind2	4	142	99.30	0.70	1	0.7
	ind3	4	130	98.46	1.54	0.99	2.31
	ind4	4	15	100	0	1	0
	sk1	4	134	100	0	1	0.75
	sk2	4	142	100	0	1	0.70
	sk3	4	130	99.23	0.77	0.97	1.54
	sk4	4	15	100	0	1	0

**The percentages of exact agreement, adjacent agreement and third score do not necessarily sum to 1 due to the scoring rules. The most prevalent case is when a strand contains a score of "M" (indicating a required component is missing/incomplete) within a rubric area. Any instance of an "M" by scorer 1 or 2 must be confirmed by an expert scorer (scorer 3). Even if scorer 1 and 2 both agree on an "M", the third scorer would still provide a confirmation or overturning score. The third scorer will also review strands at random to provide oversight on a particular scorer or even portfolios that are of interest.*

Table H-20. Item-Level Interrater Consistency Statistics—Alt/HS Admin*

Content Area	Item	Score Categories	Number of Responses Scored Twice
Biology	comp1	5	7
	comp2	5	7
	comp3	5	7
	ind1	4	6
	ind2	4	5
	ind3	4	7
	sk1	4	6
	sk2	4	5
	sk3	4	7
Chemistry	comp1	5	3
	comp2	5	3
	comp3	5	3
	ind1	4	3
	ind2	4	3
	ind3	4	3
	sk1	4	3
	sk2	4	3
	sk3	4	3
Introductory Physics	comp1	5	2
	comp2	5	2
	comp3	5	2
	ind1	4	2
	ind2	4	2
	ind3	4	2
	sk1	4	2
	sk2	4	2
	sk3	4	2
Technology/Engineering	comp1	5	7
	comp2	5	7
	comp3	5	7
	ind1	4	6
	ind2	4	5
	ind3	4	5
	sk1	4	6
	sk2	4	5
	sk3	4	5

**The percentages of exact agreement, adjacent agreement and third score are too low to report.*

APPENDIX I

ITEM-LEVEL CLASSICAL STATISTICS

Table I-1. Item-Level Classical Test Theory Statistics—ELA Grade 3

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL625963791	CR	26,163	0.41	0.59	2
EL735736712	ES	26,166	0.19	0.68	2
EL284948	SR	26,163	0.53	0.52	0
EL735650731	SR	26,166	0.83	0.50	0
EL735720857	SR	26,166	0.81	0.65	0
EL625956377	SR	26,163	0.59	0.43	0
EL284949	SR	26,163	0.71	0.47	0
EL625955513	SR	26,163	0.31	0.35	0
EL625955796	SR	26,163	0.66	0.51	0
EL625962061	SR	26,163	0.52	0.47	0
EL735752249	SR	26,166	0.48	0.37	0
EL284943	SR	26,163	0.55	0.51	0
EL625961096	SR	26,163	0.77	0.45	1
EL625956196	SR	26,163	0.42	0.37	0
EL630945115	SR	26,163	0.65	0.50	0
EL625956672	SR	26,163	0.70	0.56	0
EL625959734	SR	26,163	0.78	0.45	0
EL735535111	SR	26,166	0.53	0.47	0
EL735653115	SR	26,166	0.66	0.46	0
EL284950	SR	26,163	0.67	0.57	0
EL735726219	SR	26,166	0.64	0.65	0
EL735629990	SR	26,166	0.51	0.53	0
EL735722199	SR	26,166	0.55	0.60	1
EL625959920	SR	26,163	0.71	0.69	0
EL735619614	SR	26,166	0.74	0.56	0
EL625957401	SR	26,163	0.64	0.57	0
EL735655419	SR	26,166	0.58	0.45	0
EL284946	SR	26,163	0.40	0.48	0
EL284944	SR	26,163	0.55	0.53	0
EL735534612	SR	26,166	0.69	0.56	0

Table I-2. Item-Level Classical Test Theory Statistics—ELA Grade 4

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL810046581	CR	26,640	0.44	0.68	1
EL812949238	ES	26,673	0.33	0.81	1
EL812952378	SR	26,673	0.62	0.62	1
EL812877459	SR	26,673	0.82	0.45	0
EL809949160	SR	26,640	0.73	0.44	0
EL291032	SR	26,640	0.71	0.50	0
EL291033	SR	26,640	0.81	0.56	0
EL812878729	SR	26,673	0.63	0.54	0
EL291029	SR	26,640	0.66	0.54	0
EL810084405	SR	26,640	0.71	0.53	0
EL812943115	SR	26,673	0.80	0.44	0
EL812941713	SR	26,673	0.54	0.39	0
EL291035	SR	26,640	0.57	0.48	0
EL810000435	SR	26,640	0.59	0.39	0
EL812938303	SR	26,673	0.61	0.51	0
EL810057059	SR	26,640	0.64	0.43	0
EL810048797	SR	26,640	0.61	0.47	0
EL291039	SR	26,640	0.69	0.58	0
EL810080136	SR	26,640	0.55	0.48	0
EL809950008	SR	26,640	0.59	0.61	0
EL812951483	SR	26,673	0.74	0.60	0

continued

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL812878059	SR	26,673	0.76	0.41	0
EL812936582	SR	26,673	0.63	0.43	0
EL810079080	SR	26,640	0.64	0.45	0
EL812935959	SR	26,673	0.79	0.57	0
EL812937722	SR	26,673	0.61	0.49	0
EL810055968	SR	26,640	0.57	0.62	1
EL810082669	SR	26,640	0.40	0.48	0
EL291341	SR	26,640	0.69	0.61	0
EL810078292	SR	26,640	0.43	0.60	0
EL810107042	SR	26,640	0.63	0.42	0

Table I-3. Item-Level Classical Test Theory Statistics—ELA Grade 5

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL736478825	ES	26,631	0.34	0.77	1
EL806033603	ES	26,737	0.38	0.77	1
EL284554	SR	26,631	0.68	0.52	0
EL284550	SR	26,631	0.67	0.33	0
EL736478536	SR	26,631	0.56	0.64	0
EL805955585	SR	26,737	0.56	0.53	0
EL736467737	SR	26,631	0.76	0.32	0
EL284552	SR	26,631	0.70	0.47	0
EL284560	SR	26,631	0.52	0.38	0
EL806031849	SR	26,737	0.60	0.45	0
EL805957484	SR	26,737	0.61	0.55	0
EL805940359	SR	26,737	0.65	0.50	0
EL805943442	SR	26,737	0.78	0.48	0
EL827627427	SR	26,631	0.45	0.42	0
EL284561	SR	26,631	0.83	0.46	0
EL736469872	SR	26,631	0.78	0.55	0
EL736473790	SR	26,631	0.54	0.45	0
EL736474369	SR	26,631	0.65	0.32	0
EL805960800	SR	26,737	0.68	0.63	0
EL736470482	SR	26,631	0.51	0.39	0
EL736473519	SR	26,631	0.43	0.41	0
EL736475762	SR	26,631	0.61	0.50	0
EL736471910	SR	26,631	0.76	0.42	0
EL805937738	SR	26,737	0.84	0.53	0
EL284551	SR	26,631	0.77	0.47	0
EL284557	SR	26,631	0.87	0.49	0
EL805953548	SR	26,737	0.79	0.40	0
EL827625874	SR	26,631	0.66	0.42	0
EL806032735	SR	26,737	0.63	0.47	0
EL805945946	SR	26,737	0.73	0.49	0
EL805950210	SR	26,737	0.82	0.36	0

Table I-4. Item-Level Classical Test Theory Statistics—ELA Grade 6

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL807016586	ES	26,502	0.40	0.84	1
EL735440256	ES	26,425	0.40	0.81	1
EL302777	SR	26,425	0.62	0.53	0
EL736248371	SR	26,425	0.67	0.57	0
EL808245411	SR	26,502	0.71	0.42	0
EL302776	SR	26,425	0.52	0.48	0
EL807001596	SR	26,502	0.64	0.42	0
EL807009150	SR	26,502	0.74	0.39	0
EL302779	SR	26,425	0.67	0.46	0
EL302786	SR	26,425	0.69	0.46	0
EL807002174	SR	26,502	0.71	0.42	0
EL736250247	SR	26,425	0.55	0.40	0
EL827430074	SR	26,425	0.41	0.22	0
EL735550535	SR	26,425	0.51	0.50	0
EL736179101	SR	26,425	0.72	0.52	0
EL735554315	SR	26,425	0.58	0.54	0
EL808246461	SR	26,502	0.60	0.44	1
EL807011414	SR	26,502	0.62	0.44	0
EL805862435	SR	26,425	0.44	0.52	0
EL807062301	SR	26,502	0.48	0.60	0
EL807010236	SR	26,502	0.47	0.45	0
EL736241262	SR	26,425	0.56	0.50	0
EL302788	SR	26,425	0.80	0.52	0
EL807011890	SR	26,502	0.69	0.46	0
EL735777933	SR	26,425	0.70	0.49	0
EL302787	SR	26,425	0.50	0.41	0
EL736249096	SR	26,425	0.66	0.48	0
EL302782	SR	26,425	0.65	0.53	0
EL807061702	SR	26,502	0.68	0.29	0
EL736178377	SR	26,425	0.54	0.62	0
EL302785	SR	26,425	0.69	0.39	0
EL806979864	SR	26,502	0.75	0.51	0

Table I-5. Item-Level Classical Test Theory Statistics—ELA Grade 7

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL807349832	ES	26,360	0.36	0.79	1
EL807456720	ES	26,369	0.38	0.82	1
EL307962	SR	26,360	0.74	0.41	0
EL807439180	SR	26,369	0.60	0.49	0
EL807354129	SR	26,360	0.62	0.49	0
EL307948	SR	26,360	0.56	0.50	0
EL807438350	SR	26,369	0.50	0.43	0
EL807365314	SR	26,360	0.60	0.60	0
EL307973	SR	26,360	0.50	0.42	0
EL807445842	SR	26,369	0.53	0.36	0
EL807354764	SR	26,360	0.82	0.56	0
EL807435581	SR	26,369	0.78	0.51	0
EL807351804	SR	26,360	0.50	0.54	0
EL807366496	SR	26,360	0.73	0.50	0
EL807365831	SR	26,360	0.72	0.41	0
EL807354565	SR	26,360	0.69	0.46	0
EL807360122	SR	26,360	0.65	0.50	0
EL807437999	SR	26,369	0.49	0.47	0
EL807432481	SR	26,369	0.62	0.48	0
EL307974	SR	26,360	0.67	0.42	0

continued

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL807434187	SR	26,369	0.51	0.59	0
EL807433511	SR	26,369	0.70	0.50	0
EL307963	SR	26,360	0.51	0.35	0
EL807353731	SR	26,360	0.71	0.47	0
EL807443512	SR	26,369	0.81	0.51	0
EL807443094	SR	26,369	0.84	0.50	0
EL307970	SR	26,360	0.87	0.40	0
EL807445116	SR	26,369	0.57	0.39	0
EL807443849	SR	26,369	0.49	0.60	0
EL807355021	SR	26,360	0.73	0.50	0
EL807366049	SR	26,360	0.75	0.50	0
EL307971	SR	26,360	0.68	0.43	0

Table I-6. Item-Level Classical Test Theory Statistics—ELA Grade 8

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL810733917	ES	26,222	0.40	0.80	1
EL810463548	ES	26,289	0.42	0.86	2
EL810133273	SR	26,289	0.72	0.54	0
EL302250	SR	26,222	0.66	0.53	0
EL810358526	SR	26,222	0.69	0.41	0
EL815005831	SR	26,222	0.73	0.58	0
EL302246	SR	26,222	0.68	0.42	0
EL302248	SR	26,222	0.64	0.53	0
EL809713456	SR	26,289	0.64	0.71	0
EL302251	SR	26,222	0.80	0.46	0
EL303224	SR	26,222	0.75	0.45	0
EL810562108	SR	26,222	0.69	0.39	0
EL809734614	SR	26,289	0.75	0.53	0
EL302260	SR	26,222	0.65	0.44	0
EL810439521	SR	26,289	0.68	0.56	0
EL810456981	SR	26,289	0.54	0.44	0
EL810351551	SR	26,222	0.62	0.34	0
EL812849329	SR	26,289	0.76	0.54	0
EL810357209	SR	26,222	0.69	0.61	0
EL302256	SR	26,222	0.58	0.38	0
EL810222585	SR	26,289	0.50	0.55	0
EL809711064	SR	26,289	0.65	0.46	0
EL812838757	SR	26,289	0.60	0.50	0
EL810562694	SR	26,222	0.73	0.39	0
EL809863460	SR	26,289	0.73	0.55	0
EL810561207	SR	26,222	0.79	0.45	0
EL810561824	SR	26,222	0.72	0.53	0
EL303225	SR	26,222	0.68	0.46	0
EL810563002	SR	26,222	0.51	0.39	0
EL810356239	SR	26,222	0.67	0.45	0
EL810436835	SR	26,289	0.60	0.44	0
EL827744691	SR	26,222	0.88	0.49	0

Table I-7. Item-Level Classical Test Theory Statistics—ELA Grade 10

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
EL805452873	ES	63,486	0.60	0.82	1
EL800341748	ES	63,486	0.64	0.84	1
EL804053888	SR	63,486	0.55	0.37	0
EL800249600	SR	63,486	0.85	0.47	0
EL800257204	SR	63,486	0.83	0.43	0
EL800240362	SR	63,486	0.78	0.52	0
EL807276303	SR	63,486	0.87	0.49	0
EL800250365	SR	63,486	0.72	0.40	0
EL807277697	SR	63,486	0.74	0.50	0
EL800257616	SR	63,486	0.83	0.43	0
EL800250954	SR	63,486	0.81	0.47	0
EL802979581	SR	63,486	0.55	0.43	0
EL804336890	SR	63,486	0.60	0.48	0
EL807275492	SR	63,486	0.81	0.49	0
EL800466044	SR	63,486	0.80	0.53	0
EL800570709	SR	63,486	0.81	0.52	0
EL800566021	SR	63,486	0.82	0.49	0
EL800478450	SR	63,486	0.90	0.54	0
EL800560218	SR	63,486	0.66	0.46	0
EL800567570	SR	63,486	0.77	0.59	0
EL800432086	SR	63,486	0.64	0.22	0
EL804336978	SR	63,486	0.79	0.60	1
EL800462714	SR	63,486	0.81	0.41	0
EL800258159	SR	63,486	0.56	0.34	0
EL800361479	SR	63,486	0.79	0.54	0
EL800562653	SR	63,486	0.74	0.59	0
EL800558814	SR	63,486	0.71	0.35	0
EL800625013	SR	63,486	0.67	0.51	0
EL800251724	SR	63,486	0.88	0.48	0
EL807250794	SR	63,486	0.75	0.52	0

Table I-8. Item-Level Classical Test Theory Statistics—Mathematics Grade 3

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA735851787	CR	26,250	0.25	0.75	1
MA297399A	CR	26,091	0.46	0.79	1
MA261859A	CR	26,250	0.52	0.77	1
MA286750A	CR	26,091	0.44	0.77	1
MA309747	SA	26,250	0.46	0.68	1
MA714453A	SA	26,250	0.78	0.47	0
MA735765953	SA	26,091	0.53	0.62	2
MA736066577	SA	26,250	0.39	0.60	0
MA293509	SA	26,250	0.39	0.64	0
MA713507891	SA	26,091	0.65	0.50	0
MA735657470	SA	26,250	0.61	0.39	0
MA703072628	SA	26,091	0.26	0.40	1
MA735763771	SA	26,250	0.43	0.63	1
MA218578A	SA	26,250	0.31	0.50	0
MA297454	SR	26,250	0.65	0.56	0
MA306285	SR	26,091	0.44	0.47	0
MA287674	SR	26,091	0.71	0.35	0
MA734752934	SR	26,091	0.42	0.48	0
MA310859	SR	26,091	0.50	0.59	0
MA299999	SR	26,250	0.71	0.60	0
MA261818	SR	26,091	0.55	0.50	0
MA306369	SR	26,091	0.36	0.41	0

continued

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA735734045	SR	26,091	0.47	0.67	3
MA293494	SR	26,091	0.73	0.59	0
MA735847023	SR	26,091	0.46	0.57	0
MA285973A	SR	26,091	0.73	0.55	0
MA735663821	SR	26,250	0.37	0.58	0
MA735664932	SR	26,091	0.44	0.40	2
MA735765953	SR	26,091	0.53	0.62	2
MA802236949	SR	26,250	0.18	0.35	1
MA713536927	SR	26,091	0.61	0.52	1
MA714453A	SR	26,250	0.78	0.47	0
MA703072628	SR	26,091	0.26	0.40	1
MA736066577	SR	26,250	0.39	0.60	0
MA802238054	SR	26,091	0.39	0.50	3
MA218578A	SR	26,250	0.31	0.50	0
MA735954511	SR	26,250	0.39	0.64	1
MA735655717	SR	26,250	0.67	0.53	0
MA310880	SR	26,091	0.37	0.32	0
MA311276	SR	26,250	0.66	0.47	0
MA252337	SR	26,250	0.77	0.51	0
MA735763771	SR	26,250	0.43	0.63	1
MA309747	SR	26,250	0.46	0.68	1
MA303412	SR	26,250	0.37	0.25	0
MA306313	SR	26,250	0.48	0.27	0
MA311275	SR	26,250	0.53	0.49	0
MA306297	SR	26,091	0.39	0.57	0

Table I-9. Item-Level Classical Test Theory Statistics—Mathematics Grade 4

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA801035466	CR	26,721	0.43	0.78	1
MA716535935	CR	26,493	0.31	0.73	0
MA287484	CR	26,493	0.57	0.76	0
MA800780932	CR	26,721	0.57	0.81	0
MA221898	SA	26,493	0.54	0.57	0
MA800629956	SA	26,721	0.20	0.36	0
MA302483	SA	26,493	0.26	0.52	1
MA311568	SA	26,721	0.52	0.57	1
MA704649496	SA	26,721	0.70	0.53	0
MA303317	SA	26,721	0.38	0.57	1
MA803730594	SA	26,721	0.18	0.49	0
MA800763292	SA	26,721	0.41	0.65	1
MA299681	SA	26,493	0.46	0.56	0
MA800727128	SA	26,721	0.46	0.56	0
MA736379417	SA	26,721	0.66	0.62	1
MA803956738	SA	26,493	0.54	0.62	0
MA714226701	SA	26,493	0.58	0.74	0
MA803746135	SA	26,493	0.56	0.63	1
MA311568	SR	26,721	0.52	0.57	1
MA800577964	SR	26,721	0.70	0.66	1
MA736381196	SR	26,721	0.43	0.65	2
MA311558	SR	26,721	0.70	0.43	0
MA297973	SR	26,721	0.81	0.40	0
MA247729	SR	26,493	0.42	0.61	0
MA307079	SR	26,721	0.92	0.36	0
MA713631637	SR	26,721	0.51	0.74	1
MA311554	SR	26,493	0.62	0.46	0
MA704649496	SR	26,721	0.70	0.53	0
MA303321	SR	26,493	0.59	0.65	0

continued

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA803746135	SR	26,493	0.56	0.63	1
MA800727128	SR	26,721	0.46	0.56	0
MA803846674	SR	26,493	0.76	0.53	1
MA306940	SR	26,721	0.33	0.45	0
MA311574	SR	26,493	0.63	0.52	1
MA736459765	SR	26,493	0.24	0.48	0
MA800763292	SR	26,721	0.41	0.65	1
MA800661015	SR	26,493	0.70	0.49	1
MA306993	SR	26,493	0.46	0.52	0
MA311543	SR	26,493	0.58	0.50	0
MA803742735	SR	26,493	0.52	0.51	0
MA713673616	SR	26,493	0.33	0.57	0
MA229063	SR	26,721	0.46	0.64	2
MA800628900	SR	26,721	0.31	0.50	1
MA803956738	SR	26,493	0.54	0.62	0
MA713629341	SR	26,493	0.27	0.52	0
MA800629956	SR	26,721	0.20	0.36	0
MA270627	SR	26,721	0.71	0.52	0

Table I-10. Item-Level Classical Test Theory Statistics—Mathematics Grade 5

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA624377498	CR	26,773	0.44	0.79	1
MA624359515	CR	26,469	0.56	0.79	1
MA704359650	CR	26,773	0.46	0.78	1
MA624376704	CR	26,469	0.30	0.74	1
MA802284503	SA	26,469	0.37	0.59	0
MA221208	SA	26,469	0.49	0.54	0
MA804579588	SA	26,469	0.56	0.54	0
MA704359410	SA	26,469	0.45	0.72	1
MA800662477	SA	26,773	0.26	0.48	0
MA301605	SA	26,773	0.79	0.48	0
MA715102381	SA	26,469	0.60	0.51	0
MA802285965	SA	26,773	0.26	0.58	0
MA306456	SA	26,773	0.75	0.51	0
MA715102137	SA	26,469	0.41	0.62	0
MA802381243	SR	26,773	0.23	0.50	0
MA311279	SR	26,773	0.58	0.57	0
MA800652607	SR	26,773	0.44	0.56	1
MA715102381	SR	26,469	0.60	0.51	0
MA704359410	SR	26,469	0.45	0.72	1
MA262140	SR	26,469	0.69	0.49	0
MA800650803	SR	26,469	0.34	0.39	0
MA801763240	SR	26,469	0.21	0.43	0
MA808834267	SR	26,469	0.24	0.43	1
MA298021	SR	26,773	0.64	0.62	0
MA280476	SR	26,469	0.69	0.58	0
MA802306160	SR	26,773	0.56	0.59	0
MA803876799	SR	26,469	0.66	0.37	0
MA306435	SR	26,773	0.47	0.34	0
MA297992	SR	26,773	0.59	0.47	0
MA801656092	SR	26,469	0.36	0.56	2
MA802284503	SR	26,469	0.37	0.59	0
MA273791	SR	26,773	0.72	0.55	0
MA803875524	SR	26,469	0.59	0.43	0
MA311339A	SR	26,469	0.39	0.25	0
MA204869	SR	26,469	0.64	0.51	0

continued

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA301157	SR	26,773	0.59	0.35	0
MA802282875	SR	26,773	0.34	0.58	0
MA248869	SR	26,773	0.38	0.44	0
MA221208	SR	26,469	0.49	0.54	0
MA301160	SR	26,773	0.32	0.37	0
MA301167	SR	26,469	0.31	0.28	0
MA261200	SR	26,773	0.49	0.32	0
MA303315	SR	26,773	0.67	0.53	0
MA802285965	SR	26,773	0.26	0.58	0
MA301169	SR	26,469	0.33	0.46	0

Table I-11. Item-Level Classical Test Theory Statistics—Mathematics Grade 6

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA713831396	CR	26.513	0.38	0.79	1
MA311694	CR	26.513	0.55	0.77	1
MA713830373	CR	26.292	0.56	0.80	1
MA703249688	CR	26.292	0.40	0.79	1
MA735778671	SA	26.513	0.49	0.56	1
MA805283567	SA	26.513	0.36	0.53	0
MA299673	SA	26.513	0.56	0.59	0
MA311708	SA	26.292	0.19	0.58	0
MA736449649	SA	26.513	0.22	0.60	1
MA800180478	SA	26.292	0.47	0.55	0
MA800173241	SA	26.513	0.51	0.51	1
MA624254582	SA	26.292	0.36	0.55	0
MA736370121	SA	26.292	0.41	0.56	0
MA805186387	SA	26.513	0.24	0.65	0
MA736069855	SR	26.513	0.54	0.52	0
MA311652	SR	26.513	0.40	0.51	0
MA800440516	SR	26.292	0.73	0.54	0
MA736063629	SR	26.513	0.37	0.54	1
MA800171425	SR	26.513	0.40	0.47	0
MA805280133	SR	26.292	0.31	0.36	1
MA301222	SR	26.513	0.42	0.41	0
MA805283567	SR	26.513	0.36	0.53	0
MA800166010	SR	26.513	0.57	0.38	0
MA282262	SR	26.513	0.57	0.63	0
MA736368137	SR	26.513	0.60	0.58	0
MA800173241	SR	26.513	0.51	0.51	1
MA296350	SR	26.513	0.41	0.54	0
MA307225	SR	26.513	0.89	0.34	0
MA311660	SR	26.292	0.39	0.41	0
MA307272	SR	26.292	0.79	0.25	0
MA736364876	SR	26.513	0.37	0.51	1
MA714275582	SR	26.292	0.39	0.42	1
MA805179243	SR	26.513	0.31	0.32	1
MA800160765	SR	26.292	0.21	0.54	1
MA736071864	SR	26.292	0.68	0.45	0
MA800162299	SR	26.292	0.37	0.40	0
MA800180478	SR	26.292	0.47	0.55	0
MA272172	SR	26.292	0.60	0.53	0
MA703149889	SR	26.292	0.62	0.50	1
MA736370121	SR	26.292	0.41	0.56	0
MA736449649	SR	26.513	0.22	0.60	1
MA805109765	SR	26.292	0.35	0.39	1
MA713679240	SR	26.292	0.51	0.65	0
MA805100264	SR	26.292	0.11	0.35	0
MA805111931	SR	26.292	0.25	0.37	0

Table I-12. Item-Level Classical Test Theory Statistics—Mathematics Grade 7

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA295758	CR	26,166	0.45	0.80	1
MA311144	CR	26,430	0.38	0.78	2
MA804701799	CR	26,430	0.31	0.78	2
MA295745	CR	26,166	0.20	0.73	3
MA290543	SA	26,166	0.62	0.52	0
MA713848308	SA	26,166	0.23	0.66	0
MA703876323	SA	26,430	0.23	0.68	1
MA804636572	SA	26,430	0.49	0.62	0
MA804635424	SA	26,166	0.24	0.56	0
MA713848011	SA	26,430	0.54	0.62	1
MA804683024	SA	26,430	0.44	0.61	0
MA802884644	SA	26,166	0.33	0.48	0
MA713848115	SA	26,430	0.22	0.60	0
MA228065	SA	26,430	0.63	0.61	0
MA703881868	SA	26,166	0.55	0.71	0
MA306646	SA	26,166	0.45	0.66	0
MA239637	SA	26,430	0.74	0.50	0
MA298205	SA	26,430	0.24	0.63	1
MA311105	SA	26,166	0.27	0.61	1
MA703881868	SR	26,166	0.55	0.71	0
MA311089	SR	26,166	0.27	0.39	0
MA713848251	SR	26,166	0.40	0.44	0
MA289832	SR	26,430	0.55	0.55	0
MA713847883	SR	26,430	0.52	0.65	0
MA272445	SR	26,430	0.44	0.65	0
MA306636	SR	26,430	0.39	0.46	0
MA303692	SR	26,166	0.38	0.30	0
MA713848011	SR	26,430	0.54	0.62	1
MA804442802	SR	26,430	0.40	0.34	0
MA306486	SR	26,430	0.68	0.59	0
MA804683024	SR	26,430	0.44	0.61	0
MA713848322	SR	26,166	0.20	0.43	0
MA306596	SR	26,166	0.45	0.40	0
MA802884644	SR	26,166	0.33	0.48	0
MA713848115	SR	26,430	0.22	0.60	0
MA259191	SR	26,430	0.77	0.54	0
MA713848086	SR	26,166	0.24	0.60	0
MA298180	SR	26,166	0.77	0.36	0
MA272464	SR	26,166	0.57	0.53	0
MA272764	SR	26,166	0.57	0.31	0
MA228065	SR	26,430	0.63	0.61	0
MA235431	SR	26,166	0.30	0.54	0
MA713848308	SR	26,166	0.23	0.66	0
MA703876323	SR	26,430	0.23	0.68	1
MA303731	SR	26,166	0.35	0.48	0
MA306615	SR	26,430	0.47	0.51	0
MA282219	SR	26,430	0.56	0.54	0
MA306614	SR	26,430	0.56	0.43	0
MA290543	SR	26,166	0.62	0.52	0

Table I-13. Item-Level Classical Test Theory Statistics—Mathematics Grade 8

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA704855478	CR	26,263	0.33	0.79	2
MA713930945	CR	26,111	0.56	0.76	0
MA311437	CR	26,111	0.37	0.77	2
MA301714	CR	26,263	0.34	0.86	3
MA800754030	SA	26,111	0.59	0.66	1
MA800475610	SA	26,263	0.33	0.56	1
MA715919853	SA	26,111	0.45	0.65	0
MA804543815	SA	26,111	0.44	0.63	0
MA715919745	SA	26,111	0.61	0.61	0
MA804152353	SA	26,263	0.56	0.62	0
MA800744715	SA	26,111	0.22	0.62	1
MA800675775	SA	26,111	0.24	0.52	0
MA228379	SA	26,263	0.82	0.43	0
MA715919560	SA	26,263	0.22	0.57	1
MA311403	SA	26,263	0.33	0.63	0
MA307425	SA	26,263	0.25	0.66	1
MA297651	SA	26,111	0.50	0.57	0
MA704832888	SA	26,263	0.30	0.64	1
MA800475061	SA	26,263	0.42	0.61	0
MA307585	SR	26,111	0.71	0.52	0
MA800475061	SR	26,263	0.42	0.61	0
MA301470	SR	26,263	0.57	0.44	0
MA804152353	SR	26,263	0.56	0.62	0
MA800475590	SR	26,111	0.82	0.39	0
MA804576324	SR	26,111	0.52	0.49	0
MA283255	SR	26,263	0.61	0.52	0
MA715919560	SR	26,263	0.22	0.57	1
MA298198	SR	26,263	0.35	0.40	0
MA715919758	SR	26,111	0.48	0.35	0
MA229570	SR	26,111	0.46	0.49	0
MA804543815	SR	26,111	0.44	0.63	0
MA284198	SR	26,111	0.67	0.47	0
MA307603	SR	26,263	0.73	0.52	0
MA800754030	SR	26,111	0.59	0.66	1
MA307539	SR	26,111	0.41	0.40	0
MA287597	SR	26,111	0.51	0.45	0
MA804155665	SR	26,263	0.33	0.53	0
MA311422	SR	26,263	0.57	0.53	0
MA704833231	SR	26,263	0.30	0.41	0
MA311427	SR	26,263	0.62	0.50	0
MA715919853	SR	26,111	0.45	0.65	0
MA704832888	SR	26,263	0.30	0.64	1
MA800974248	SR	26,111	0.31	0.60	0
MA304463	SR	26,263	0.29	0.21	0
MA800475640	SR	26,111	0.78	0.37	0
MA252991	SR	26,263	0.71	0.32	0
MA804535094	SR	26,111	0.36	0.61	0
MA715919745	SR	26,111	0.61	0.61	0
MA800475610	SR	26,263	0.33	0.56	1
MA800744715	SR	26,111	0.22	0.62	1

Table I-14. Item-Level Classical Test Theory Statistics—Mathematics Grade 10

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
MA801462169	CR	63197	0.47	0.78	2
MA301486	CR	63197	0.48	0.83	2
MA306482	CR	63197	0.42	0.86	3
MA311164	CR	63197	0.37	0.83	3
MA805375756	SA	63197	0.63	0.48	0
MA713284889	SA	63197	0.36	0.76	2
MA804378663	SA	63197	0.65	0.65	1
MA713808063	SA	63197	0.67	0.49	0
MA713582168	SA	63197	0.25	0.64	0
MA713284889	SR	63197	0.36	0.76	2
MA288073	SR	63197	0.69	0.39	0
MA713582515	SR	63197	0.65	0.63	0
MA713374659	SR	63197	0.5	0.33	0
MA315724	SR	63197	0.53	0.35	0
MA308748	SR	63197	0.55	0.41	0
MA271551	SR	63197	0.58	0.46	0
MA713736418	SR	63197	0.5	0.63	0
MA269065	SR	63197	0.5	0.52	0
MA313794	SR	63197	0.57	0.48	0
MA735579398	SR	63197	0.47	0.72	0
MA735672697	SR	63197	0.59	0.64	1
MA804167582	SR	63197	0.61	0.5	0
MA313802	SR	63197	0.65	0.47	0
MA294190	SR	63197	0.59	0.51	0
MA736046677	SR	63197	0.36	0.54	0
MA805375756	SR	63197	0.63	0.48	0
MA307950	SR	63197	0.64	0.33	0
MA311181	SR	63197	0.47	0.41	0
MA315735	SR	63197	0.81	0.38	0
MA274103	SR	63197	0.53	0.65	0
MA315690	SR	63197	0.6	0.38	0
MA801044495	SR	63197	0.51	0.56	0
MA735977246	SR	63197	0.56	0.67	0
MA718054087	SR	63197	0.61	0.56	0
MA314963	SR	63197	0.68	0.53	0
MA311217	SR	63197	0.53	0.54	0
MA717850352	SR	63197	0.61	0.58	0
MA281663	SR	63197	0.62	0.41	0
MA315410	SR	63197	0.52	0.41	0
MA300986	SR	63197	0.6	0.61	0
MA713582168	SR	63197	0.25	0.64	0
MA306580	SR	63197	0.63	0.47	0
MA735576321	SR	63197	0.64	0.47	1
MA303447	SR	63197	0.34	0.18	0
MA713845687	SR	63197	0.5	0.41	0
MA804378663	SR	63197	0.65	0.65	1

Table I-15. Item-Level Classical Test Theory Statistics—STE Grade 5

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
SC315791	CR	26,286	0.45	0.66	1
SC310001	CR	26,190	0.52	0.66	1
SC815582307	CR	26,856	0.48	0.63	0
SC804958319	CR	26,190	0.40	0.60	1
SC630226702	CR	26,952	0.35	0.61	1
SC315804	CR	26,952	0.27	0.68	1
SC736171343	SR	26,856	0.76	0.58	0
SC803832570	SR	26,856	0.66	0.49	0
SC309746	SR	26,286	0.68	0.37	0
SC814159782	SR	26,952	0.77	0.55	0
SC806381763	SR	26,190	0.33	0.30	0
SC629641756	SR	26,190	0.46	0.26	0
SC315952	SR	26,856	0.62	0.45	0
SC815544154	SR	26,856	0.70	0.48	0
SC629859053	SR	26,856	0.32	0.40	0
SC630226369	SR	26,856	0.76	0.49	0
SC814668478	SR	26,952	0.73	0.53	0
SC717726918	SR	26,856	0.52	0.57	0
SC815573979	SR	26,856	0.52	0.34	0
SC735434845	SR	26,856	0.60	0.40	0
SC315801	SR	26,952	0.63	0.40	0
SC804038252	SR	26,952	0.45	0.30	0
SC710846043	SR	26,856	0.61	0.59	0
SC315799	SR	26,952	0.66	0.57	0
SC315784	SR	26,952	0.72	0.46	0
SC814675449	SR	26,952	0.69	0.61	0
SC630070423	SR	26,856	0.67	0.42	0
SC736232773	SR	26,952	0.81	0.42	0
SC736173851	SR	26,952	0.59	0.49	0
SC633242830	SR	26,952	0.67	0.42	0
SC815459442	SR	26,952	0.79	0.40	0
SC815568663	SR	26,856	0.49	0.56	1
SC736170570	SR	26,856	0.62	0.50	0
SC629849945	SR	26,952	0.44	0.32	0
SC736074336	SR	26,952	0.43	0.38	0
SC291220	SR	26,286	0.62	0.34	0
SC291182	SR	26,286	0.34	0.23	0
SC815577223	SR	26,856	0.40	0.28	0
SC315798	SR	26,952	0.72	0.54	0
SC309963	SR	26,856	0.49	0.40	0
SC735433920	SR	26,952	0.47	0.43	0

Table I-16. Item-Level Classical Test Theory Statistics—STE Grade 8

Item Number	Type	N	Difficulty	Discrimination	Percent Omitted (%)
SC719258218	CR	26,431	0.26	0.64	2
SC810864808	CR	25,646	0.36	0.68	2
SC719857887	CR	26,470	0.42	0.72	1
SC292029	CR	25,607	0.27	0.64	2
SC804368074	CR	26,431	0.48	0.63	1
SC809268358	CR	25,646	0.30	0.52	1
SC717183001	SR	26,470	0.76	0.48	0
SC291724	SR	25,646	0.59	0.31	0
SC803557417	SR	26,470	0.66	0.53	0
SC630764722	SR	25,607	0.53	0.32	0
SC719857291	SR	26,470	0.74	0.51	0
SC804375322	SR	26,431	0.35	0.30	0
SC229371	SR	26,470	0.71	0.39	0
SC299484	SR	26,470	0.66	0.40	0
SC633360994	SR	26,431	0.46	0.38	0
SC628463599	SR	26,431	0.81	0.42	0
SC707532836	SR	26,470	0.30	0.33	0
SC291918	SR	25,646	0.37	0.25	0
SC723656572	SR	26,431	0.77	0.47	0
SC313186	SR	26,431	0.37	0.39	0
SC719152661	SR	26,470	0.76	0.46	0
SC723657934	SR	26,431	0.45	0.38	0
SC804130460	SR	26,470	0.71	0.63	1
SC804132105	SR	26,470	0.58	0.63	0
SC815158796	SR	26,431	0.57	0.54	0
SC803556783	SR	26,431	0.54	0.51	0
SC265278	SR	25,607	0.45	0.36	0
SC814970319	SR	26,470	0.62	0.52	0
SC630736120	SR	26,431	0.84	0.43	0
SC735480271	SR	26,431	0.26	0.37	0
SC631668894	SR	26,470	0.38	0.35	0
SC718826967	SR	26,431	0.57	0.40	0
SC299436	SR	26,470	0.57	0.50	0
SC294085	SR	26,431	0.82	0.49	0
SC282034	SR	26,470	0.75	0.28	0
SC291896	SR	26,431	0.48	0.48	0
SC723657309	SR	26,431	0.29	0.38	0
SC289719	SR	25,646	0.69	0.49	0
SC803427566	SR	26,431	0.85	0.50	0
SC631748218	SR	26,431	0.43	0.58	0
SC816333719	SR	26,470	0.78	0.49	0

Table I-17. Item-Level Classical Test Theory Statistics—Alt/ELA

Grade	Item Number	Item Type	N	Difficulty	Discrimination
3	comp1	OR	820	0.59	0.29
	comp2	OR	820	0.59	0.32
	comp3	OR	820	0.58	0.32
	ind1	OR	798	0.95	0.43
	ind2	OR	741	0.95	0.41
	ind3	OR	743	0.86	0.50
	sk1	OR	798	0.98	0.26
	sk2	OR	741	0.97	0.37
	sk3	OR	743	0.47	0.47
4	comp1	OR	778	0.59	0.35
	comp2	OR	778	0.59	0.36
	comp3	OR	778	0.58	0.37
	ind1	OR	759	0.95	0.44
	ind2	OR	708	0.94	0.48
	ind3	OR	708	0.87	0.40
	sk1	OR	759	0.97	0.37
	sk2	OR	708	0.96	0.31
	sk3	OR	708	0.51	0.48
5	comp1	OR	758	0.59	0.25
	comp2	OR	758	0.59	0.26
	comp3	OR	758	0.58	0.33
	ind1	OR	738	0.95	0.43
	ind2	OR	698	0.94	0.43
	ind3	OR	681	0.87	0.47
	sk1	OR	738	0.97	0.22
	sk2	OR	698	0.97	0.32
	sk3	OR	681	0.53	0.55
6	comp1	OR	751	0.59	0.33
	comp2	OR	751	0.59	0.26
	comp3	OR	751	0.59	0.31
	ind1	OR	729	0.95	0.39
	ind2	OR	685	0.94	0.44
	ind3	OR	678	0.87	0.36
	sk1	OR	729	0.97	0.26
	sk2	OR	685	0.95	0.37
	sk3	OR	678	0.53	0.43
7	comp1	OR	745	0.59	0.33
	comp2	OR	745	0.59	0.32
	comp3	OR	745	0.58	0.35
	ind1	OR	720	0.95	0.38
	ind2	OR	666	0.94	0.49
	ind3	OR	674	0.87	0.44
	sk1	OR	720	0.96	0.34
	sk2	OR	666	0.95	0.34
	sk3	OR	674	0.53	0.51

continued

Grade	Item Number	Item Type	N	Difficulty	Discrimination
8	comp1	OR	662	0.59	0.26
	comp2	OR	662	0.60	0.23
	comp3	OR	662	0.59	0.29
	ind1	OR	634	0.96	0.39
	ind2	OR	600	0.95	0.43
	ind3	OR	604	0.89	0.33
	sk1	OR	634	0.97	0.30
	sk2	OR	600	0.97	0.29
	sk3	OR	604	0.55	0.52
10	comp1	OR	698	0.59	0.27
	comp2	OR	698	0.59	0.21
	comp3	OR	698	0.59	0.33
	ind1	OR	688	0.95	0.38
	ind2	OR	610	0.95	0.37
	ind3	OR	592	0.88	0.47
	sk1	OR	688	0.97	0.18
	sk2	OR	610	0.96	0.28
	sk3	OR	592	0.58	0.53

Table I-18. Item-Level Classical Test Theory Statistics—Alt/Mathematics

Grade	Item Number	Item Type	N	Difficulty	Discrimination
3	comp1	OR	729	0.59	0.42
	comp5	OR	729	0.59	0.49
	ind1	OR	729	0.94	0.72
	ind5	OR	729	0.95	0.69
	sk1	OR	729	0.97	0.47
	sk5	OR	729	0.98	0.55
4	comp1	OR	715	0.58	0.61
	comp3	OR	715	0.58	0.61
	ind1	OR	715	0.93	0.74
	ind3	OR	715	0.94	0.76
	sk1	OR	715	0.97	0.51
	sk3	OR	715	0.97	0.55
5	comp2	OR	717	0.59	0.52
	comp3	OR	717	0.59	0.51
	ind2	OR	717	0.94	0.74
	ind3	OR	717	0.95	0.72
	sk2	OR	717	0.97	0.48
	sk3	OR	717	0.97	0.50
6	comp2	OR	708	0.59	0.56
	comp5	OR	708	0.59	0.56
	ind2	OR	708	0.94	0.72
	ind5	OR	708	0.93	0.77
	sk2	OR	708	0.97	0.51
	sk5	OR	708	0.97	0.49
7	comp1	OR	691	0.58	0.58
	comp4	OR	691	0.59	0.58
	ind1	OR	691	0.94	0.69
	ind4	OR	691	0.94	0.69
	sk1	OR	691	0.97	0.63
	sk4	OR	691	0.96	0.60

continued

Grade	Item Number	Item Type	N	Difficulty	Discrimination
8	comp2	OR	601	0.59	0.54
	comp4	OR	601	0.60	0.48
	ind2	OR	601	0.94	0.70
	ind4	OR	601	0.96	0.69
	sk2	OR	601	0.96	0.59
	sk4	OR	601	0.97	0.62
10	comp1	OR	162	0.60	0.22
	comp2	OR	500	0.59	0.32
	comp3	OR	443	0.59	0.24
	comp4	OR	554	0.58	0.32
	comp5	OR	397	0.59	0.35
	ind1	OR	154	0.96	0.39
	ind2	OR	487	0.95	0.51
	ind3	OR	419	0.94	0.35
	ind4	OR	522	0.94	0.44
	ind5	OR	366	0.95	0.46
	sk1	OR	154	0.98	0.27
	sk2	OR	487	0.97	0.36
	sk3	OR	419	0.96	0.52
	sk4	OR	522	0.97	0.36
	sk5	OR	366	0.97	0.38

Table I-19. Item-Level Classical Test Theory Statistics—Alt/STE

Grade	Item Number	Item Type	N	Difficulty	Discrimination
5	comp1	OR	635	0.58	0.40
	comp2	OR	643	0.58	0.43
	comp3	OR	642	0.57	0.42
	comp4	OR	40	0.56	0.50
	ind1	OR	613	0.86	0.58
	ind2	OR	613	0.86	0.63
	ind3	OR	612	0.85	0.61
	ind4	OR	38	0.82	0.21
	sk1	OR	613	0.97	0.21
	sk2	OR	613	0.98	0.25
	sk3	OR	612	0.98	0.28
	sk4	OR	38	0.97	0.32
8	comp1	OR	542	0.59	0.35
	comp2	OR	553	0.59	0.32
	comp3	OR	524	0.59	0.31
	comp4	OR	76	0.56	0.49
	ind1	OR	532	0.85	0.63
	ind2	OR	545	0.85	0.61
	ind3	OR	502	0.85	0.67
	ind4	OR	73	0.85	0.49
	sk1	OR	532	0.96	0.26
	sk2	OR	545	0.97	0.26
	sk3	OR	502	0.98	0.27
	sk4	OR	73	0.97	0.50

Table I-20. Item-Level Classical Test Theory Statistics—Alt/Biology

Grade	Item Number	Type	N	Difficulty	Discrimination
HS	comp1	OR	44	0.59	0.10
	comp2	OR	44	0.59	0.10
	comp3	OR	44	0.59	0.10
	ind1	OR	40	0.76	0.81
	ind2	OR	44	0.76	0.73
	ind3	OR	42	0.79	0.78
	sk1	OR	40	0.98	0.22
	sk2	OR	44	0.98	0.35
	sk3	OR	42	0.96	0.03

Table I-21. Item-Level Classical Test Theory Statistics—Alt/Chemistry

Grade	Item Number	Type	N	Difficulty	Discrimination
HS	comp1	OR	12	0.60	--
	comp2	OR	12	0.60	--
	comp3	OR	12	0.60	--
	ind1	OR	12	0.94	0.67
	ind2	OR	12	0.98	0.52
	ind3	OR	12	0.96	0.77
	sk1	OR	12	0.94	0.50
	sk2	OR	12	0.96	0.58
	sk3	OR	12	0.98	0.00

Discrimination statistics cannot be reported for some Alt/Chemistry items because the sample size of students was too small in 2021.

Table I-22. Item-Level Classical Test Theory Statistics—Alt/Introductory Physics

Grade	Item Number	Type	N	Difficulty	Discrimination
HS	comp1	OR	2	--	--
	comp2	OR	2	--	--
	comp3	OR	2	--	--
	ind1	OR	2	--	--
	ind2	OR	2	--	--
	ind3	OR	2	--	--
	sk1	OR	2	--	--
	sk2	OR	2	--	--
	sk3	OR	2	--	--

Difficulty and discrimination statistics cannot be reported for Alt/Introductory Physics because the sample size of students was too small in 2021.

Table I-23. Item-Level Classical Test Theory Statistics—Alt/TEC

Grade	Item Number	Type	N	Difficulty	Discrimination
HS	comp1	OR	33	0.59	0.16
	comp2	OR	33	0.59	0.16
	comp3	OR	33	0.58	0.29
	ind1	OR	32	0.84	0.55
	ind2	OR	33	0.85	0.82
	ind3	OR	32	0.89	0.51
	sk1	OR	32	0.91	0.52
	sk2	OR	33	0.96	0.43
	sk3	OR	32	0.90	0.47

APPENDIX J
ITEM-LEVEL SCORE DISTRIBUTIONS

Table J-1. Item-Level Score Distributions for SR, CR, and ES Items—ELA

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
3	EL625959920	26,163	2	23	12	65			
	EL625961096	26,163	2	3	38	58			
	EL625962061	26,163	2	30	34	35			
	EL625963791	26,163	3	13	52	29	4		
	EL735720857	26,166	2	7	24	69			
	EL735722199	26,166	2	26	36	37			
	EL735726219	26,166	2	24	25	51			
	EL735736712#SCORE_TRAIT_Conv	26,166	3	25	63	8	2		
	EL735736712#SCORE_TRAIT_Ideadev	26,166	4	65	23	8	2	0	
	EL809950008	26,640	2	19	44	37			
4	EL810046581	26,640	3	18	39	36	6		
	EL810055968	26,640	2	17	50	32			
	EL810078292	26,640	2	50	14	36			
	EL812949238#SCORE_TRAIT_Conv	26,673	3	24	43	21	11		
	EL812949238#SCORE_TRAIT_Ideadev	26,673	4	37	25	25	9	2	
	EL812951483	26,673	2	8	36	56			
	EL812952378	26,673	2	13	48	38			
	EL736475762	26,631	2	31	16	53			
5	EL736478536	26,631	2	29	30	41			
	EL736478825#SCORE_TRAIT_Conv	26,631	3	20	45	27	6		
	EL736478825#SCORE_TRAIT_Ideadev	26,631	4	22	42	28	6	1	
	EL805940359	26,737	2	32	5	62			
	EL805955585	26,737	2	14	58	27			
	EL805960800	26,737	2	27	10	63			
	EL806033603#SCORE_TRAIT_Conv	26,737	3	18	47	26	8		
	EL806033603#SCORE_TRAIT_Ideadev	26,737	4	10	51	29	8	1	
	EL735440256#SCORE_TRAIT_Conv	26,425	3	17	30	30	22		
6	EL735440256#SCORE_TRAIT_Ideadev	26,425	5	18	30	29	16	5	1
	EL736178377	26,425	2	34	24	42			
	EL805862435	26,425	2	50	11	38			
	EL807016586#SCORE_TRAIT_Conv	26,502	3	17	33	29	20		
	EL807016586#SCORE_TRAIT_Ideadev	26,502	5	13	37	28	14	6	2
	EL807062301	26,502	2	48	7	45			
	EL808246461	26,502	2	11	57	32			
	EL807349832#SCORE_TRAIT_Conv	26,360	3	23	34	26	16		
7	EL807349832#SCORE_TRAIT_Ideadev	26,360	5	10	43	28	13	4	1
	EL807351804	26,360	2	31	38	31			
	EL807365314	26,360	2	36	7	57			
	EL807434187	26,369	2	45	9	46			
	EL807443849	26,369	2	47	8	45			
	EL807456720#SCORE_TRAIT_Conv	26,369	3	20	31	29	19		
	EL807456720#SCORE_TRAIT_Ideadev	26,369	5	17	34	30	13	5	1
	EL809713456	26,289	2	24	25	51			

continued

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
8	EL810222585	26,289	2	20	59	21			
	EL810357209	26,222	2	18	27	55			
	EL810463548#SCORE_TRAIT_Conv	26,289	3	17	26	33	23		
	EL810463548#SCORE_TRAIT_Ideadev	26,289	5	15	28	32	15	7	2
	EL810733917#SCORE_TRAIT_Conv	26,222	3	15	35	27	21		
	EL810733917#SCORE_TRAIT_Ideadev	26,222	5	10	41	26	13	6	2
	EL815005831	26,222	2	10	32	57			
	EL800250365	63,486	2	18	20	62			
10	EL800341748#SCORE_TRAIT_Conv	63,486	3	7	11	19	62		
	EL800341748#SCORE_TRAIT_Ideadev	63,486	5	5	11	18	31	30	3
	EL800562653	63,486	2	20	11	69			
	EL800625013	63,486	2	7	52	41			
	EL802979581	63,486	2	16	58	26			
	EL804336890	63,486	2	34	12	54			
	EL804336978	63,486	2	5	31	64			
	EL805452873#SCORE_TRAIT_Conv	63,486	3	5	14	25	55		
	EL805452873#SCORE_TRAIT_Ideadev	63,486	5	6	14	24	29	23	2
	EL807250794	63,486	2	15	20	66			

Table J-2. Item-Level Score Distributions for SR, SA, and CR Items—Mathematics

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
3	MA261859A	26,250	3	24	26	20	30		
	MA297399A	26,091	3	22	33	27	16		
	MA286750A	26,091	3	28	25	29	16		
	MA735851787	26,250	3	47	33	14	5		
4	MA713631637	26,721	2	31	35	34			
	MA714226701	26,493	2	27	30	43			
	MA716535935	26,493	4	34	22	30	11	2	
	MA800780932	26,721	4	15	16	19	26	25	
	MA801035466	26,721	4	18	29	24	18	10	
	MA287484	26,493	4	7	23	23	28	19	
5	MA624376704	26,469	4	34	30	18	12	4	
	MA624377498	26,773	4	23	20	21	27	8	
	MA624359515	26,469	4	16	20	14	19	30	
	MA704359410	26,469	2	35	38	26			
	MA704359650	26,773	4	32	9	20	17	21	
	MA802306160	26,773	2	16	55	29			
6	MA624254582	26,292	2	47	32	20			
	MA703249688	26,292	4	21	28	29	16	6	
	MA713830373	26,292	4	14	19	18	24	24	
	MA713831396	26,513	4	26	32	14	18	9	
	MA805186387	26,513	2	63	25	12			
	MA311694	26,513	4	15	17	26	15	27	
7	MA295745	26,166	4	39	47	5	2	4	
	MA703876323	26,430	2	67	20	13			
	MA703881868	26,166	2	19	52	29			
	MA295758	26,166	4	10	42	20	14	14	
	MA311144	26,430	4	22	26	27	18	5	
	MA804701799	26,430	4	50	7	13	19	8	
	MA311437	26,111	4	29	24	21	16	8	
8	MA704855478	26,263	4	17	54	13	9	6	
	MA713930945	26,111	4	11	15	27	34	13	
	MA301714	26,263	4	40	19	12	12	14	
	MA800675775	26,111	2	63	24	12			
	MA804152353	26,263	2	26	35	38			
	MA713284889	63,197	2	51	22	25			
10	MA713582515	63,197	2	17	35	48			
	MA713808063	63,197	2	10	45	45			
	MA311164	63,197	4	40	17	10	10	21	
	MA718054087	63,197	2	21	34	44			
	MA735579398	63,197	2	29	47	23			
	MA801462169	63,197	4	19	21	21	24	14	
	MA804378663	63,197	2	23	23	53			
	MA301486	63,197	4	15	19	32	18	14	
	MA306482	63,197	4	28	19	18	19	15	

Table J-3. Item-Level Score Distributions for SR and CR Items—STE

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
5	SC315804	26,952	3	43	35	16	4		
	SC630226702	26,952	2	47	34	18			
	SC310001	26,190	3	20	24	33	22		
	SC315791	26,286	3	11	42	44	2		
	SC710846043	26,856	2	22	33	45			
	SC736171343	26,856	2	10	27	63			
	SC804958319	26,190	2	50	18	31			
	SC814675449	26,952	2	16	30	54			
	SC815582307	26,856	3	22	29	33	16		
8	SC292029	25,607	3	40	41	11	6		
	SC631668894	26,470	2	41	43	16			
	SC631748218	26,431	2	46	21	32			
	SC719258218	26,431	3	44	36	15	4		
	SC719857887	26,470	3	29	26	32	12		
	SC804132105	26,470	2	24	35	41			
	SC804368074	26,431	2	28	45	26			
	SC809268358	25,646	3	24	63	9	2		
	SC810864808	25,646	2	43	38	17			

Table H-4. Item-Level Score Distributions—Alt/ELA

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
3	comp1	820	5	0	0	3.9	96.1	0	0
	comp2	820	5	0	0	5.24	94.76	0	0
	comp3	820	5	0	0	8.9	91.1	0	0
	gp1	820	2	0	24.63	75.37			
	gp2	820	2	0	41.59	58.41			
	gp3	820	2	0	0	100			
	ind1	820	4	2.68	0.49	2.8	11.71	82.32	
	ind2	820	4	9.63	0.61	1.59	12.8	75.37	
	ind3	820	4	9.39	3.54	9.02	22.56	55.49	
	se1	820	2	1.1	0.49	98.41			
	se2	820	2	0.85	0.37	98.78			
	se3	820	2	1.83	0.49	97.68			
	sk1	820	4	2.68	0.24	0.85	7.2	89.02	
	sk2	820	4	9.63	0	1.1	9.27	80	
	sk3	820	4	9.39	35.37	30.24	24.02	0.98	
4	comp1	778	5	0	0	4.88	95.12	0	0
	comp2	778	5	0	0	6.17	93.83	0	0
	comp3	778	5	0	0	10.03	89.97	0	0
	gp1	778	2	0	29.18	70.82			
	gp2	778	2	0	46.27	53.73			
	gp3	778	2	0	0.13	99.87			
	ind1	778	4	2.44	1.16	2.57	12.47	81.36	
	ind2	778	4	9	1.03	3.21	12.34	74.42	
	ind3	778	4	9	2.06	7.84	24.81	56.3	
	se1	778	2	1.29	0.26	98.46			
	se2	778	2	1.29	0.26	98.46			
	se3	778	2	1.16	0.26	98.59			
	sk1	778	4	2.44	0.13	0.9	9.25	87.28	
	sk2	778	4	9	0.26	1.29	10.67	78.79	
	sk3	778	4	9	30.59	28.02	31.49	0.9	
5	comp1	758	5	0	0	4.22	95.78	0	0
	comp2	758	5	0	0	5.15	94.85	0	0
	comp3	758	5	0	0	8.31	91.69	0	0
	gp1	758	2	0	24.54	75.46			
	gp2	758	2	0	45.78	54.22			
	gp3	758	2	0	0	100			
	ind1	758	4	2.64	1.58	2.64	10.95	82.19	
	ind2	758	4	7.92	0.66	2.51	13.72	75.2	
	ind3	758	4	10.16	2.24	8.18	24.67	54.75	
	se1	758	2	0.53	0.53	98.94			
	se2	758	2	0.66	0.53	98.81			
	se3	758	2	1.32	0.26	98.42			
	sk1	758	4	2.64	0	1.19	8.31	87.86	
	sk2	758	4	7.92	0	1.32	10.16	80.61	
	sk3	758	4	10.16	28.1	27.04	31.66	3.03	
6	comp1	751	5	0	0	3.86	96.14	0	0
	comp2	751	5	0	0	3.46	96.54	0	0
	comp3	751	5	0	0	6.66	93.34	0	0
	gp1	751	2	0	29.83	70.17			
	gp2	751	2	0	51.26	48.74			
	gp3	751	2	0	0.13	99.87			
	ind1	751	4	2.93	1.07	2.4	12.12	81.49	
	ind2	751	4	8.79	1.2	2.66	11.19	76.17	
	ind3	751	4	9.72	1.46	9.05	23.83	55.93	
	se1	751	2	0.67	0.93	98.4			
	se2	751	2	0.67	0.93	98.4			

continued

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
6	se3	751	2	1.6	1.6	96.8			
	sk1	751	4	2.93	0.13	0.93	10.52	85.49	
	sk2	751	4	8.79	0.13	1.73	12.65	76.7	
	sk3	751	4	9.72	27.7	26.9	33.82	1.86	
7	comp1	745	5	0	0	4.83	95.17	0	0
	comp2	745	5	0	0	4.56	95.44	0	0
	comp3	745	5	0	0	7.92	92.08	0	0
	gp1	745	2	0	33.42	66.58			
	gp2	745	2	0	47.25	52.75			
	gp3	745	2	0	0	100			
	ind1	745	4	3.36	1.07	1.61	13.02	80.94	
	ind2	745	4	10.6	0.81	2.28	14.23	72.08	
	ind3	745	4	9.53	2.82	7.38	23.09	57.18	
	se1	745	2	1.34	0.54	98.12			
	se2	745	2	1.34	0.67	97.99			
	se3	745	2	1.61	0.27	98.12			
	sk1	745	4	3.36	0.27	1.21	12.21	82.95	
	sk2	745	4	10.6	0.13	1.48	12.89	74.9	
	sk3	745	4	9.53	28.99	21.74	37.99	1.74	
8	comp1	662	5	0	0	2.72	97.28	0	0
	comp2	662	5	0	0	2.11	97.89	0	0
	comp3	662	5	0	0	5.29	94.71	0	0
	gp1	662	2	0	25.83	74.17			
	gp2	662	2	0	40.33	59.67			
	gp3	662	2	0	0	100			
	ind1	662	4	4.23	0.76	2.57	9.37	83.08	
	ind2	662	4	9.37	0.91	1.81	11.33	76.59	
	ind3	662	4	8.76	1.36	5.89	24.62	59.37	
	se1	662	2	1.36	1.51	97.13			
	se2	662	2	1.81	1.96	96.22			
	se3	662	2	1.36	1.81	96.83			
	sk1	662	4	4.23	0.3	1.06	9.82	84.59	
	sk2	662	4	9.37	0	1.06	9.97	79.61	
	sk3	662	4	8.76	23.26	30.06	35.5	2.42	
10	comp1	698	5	0	0	3.58	96.42	0	0
	comp2	698	5	0	0	3.72	96.28	0	0
	comp3	698	5	0	0	5.44	94.56	0	0
	gp1	698	2	0	30.8	69.2			
	gp2	698	2	0	50.72	49.28			
	gp3	698	2	0	0.14	99.86			
	ind1	698	4	1.43	1.29	2.72	10.89	83.67	
	ind2	698	4	12.61	0.43	1.72	11.46	73.78	
	ind3	698	4	15.19	2.87	6.16	20.77	55.01	
	se1	698	2	1.58	0.29	98.14			
	se2	698	2	1.29	0.43	98.28			
	se3	698	2	1.72	1.43	96.85			
	sk1	698	4	1.43	0	0.43	11.32	86.82	
	sk2	698	4	12.61	0	0.86	10.6	75.93	
	sk3	698	4	15.19	18.05	28.22	32.52	6.02	

Table H-5. Item-Level Score Distributions—Alt/Mathematics

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
3	comp1	729	5	0	0	5.76	94.24	0	0
	comp5	729	5	0	0	4.94	95.06	0	0
	gp1	729	2	0	29.36	70.64			
	gp5	729	2	0	28.81	71.19			
	ind1	729	4	0	1.23	3.16	13.44	82.17	
	ind5	729	4	0	0.69	2.88	12.07	84.36	
	se1	729	2	0.69	0.27	99.04			
	se5	729	2	0.55	0.55	98.9			
	sk1	729	4	0	0.27	0.55	8.23	90.95	
	sk5	729	4	0	0	0.55	8.09	91.36	
4	comp1	715	5	0	0	7.83	92.17	0	0
	comp3	715	5	0	0	7.97	92.03	0	0
	gp1	715	2	0	35.24	64.76			
	gp3	715	2	0	28.95	71.05			
	ind1	715	4	0	1.4	5.17	14.69	78.74	
	ind3	715	4	0	1.26	3.36	13.99	81.4	
	se1	715	2	0.84	0.28	98.88			
	se3	715	2	0.98	0.98	98.04			
	sk1	715	4	0	0.14	1.26	7.41	91.19	
	sk3	715	4	0	0	0.7	10.49	88.81	
5	comp2	717	5	0	0	7.11	92.89	0	0
	comp3	717	5	0	0	6.69	93.31	0	0
	gp2	717	2	0	27.62	72.38			
	gp3	717	2	0	25.94	74.06			
	ind2	717	4	0	1.67	2.79	13.39	82.15	
	ind3	717	4	0	1.12	2.23	13.67	82.98	
	se2	717	2	0.42	0.28	99.3			
	se3	717	2	0.42	0.28	99.3			
	sk2	717	4	0	0	1.67	8.79	89.54	
	sk3	717	4	0	0	0.84	9.21	89.96	
6	comp2	708	5	0	0	6.92	93.08	0	0
	comp5	708	5	0	0	7.2	92.8	0	0
	gp2	708	2	0	30.08	69.92			
	gp5	708	2	0	42.37	57.63			
	ind2	708	4	0	1.13	3.39	14.55	80.93	
	ind5	708	4	0	1.84	5.08	14.27	78.81	
	se2	708	2	1.13	0.71	98.16			
	se5	708	2	1.27	0.71	98.02			
	sk2	708	4	0	0	1.27	9.75	88.98	
	sk5	708	4	0	0.28	1.55	8.62	89.55	
7	comp1	691	5	0	0	8.39	91.61	0	0
	comp4	691	5	0	0	4.92	95.08	0	0
	gp1	691	2	0	35.6	64.4			
	gp4	691	2	0	33.57	66.43			
	ind1	691	4	0	1.16	2.75	15.2	80.9	
	ind4	691	4	0	1.45	2.6	13.02	82.92	
	se1	691	2	1.88	0.43	97.68			
	se4	691	2	1.88	0.58	97.54			
	sk1	691	4	0	0.29	1.59	9.26	88.86	
	sk4	691	4	0	0.29	1.3	11.14	87.26	

continued

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
8	comp2	601	5	0	0	6.49	93.51	0	0
	comp4	601	5	0	0	2.5	97.5	0	0
	gp2	601	2	0	32.95	67.05			
	gp4	601	2	0	29.45	70.55			
	ind2	601	4	0	1.33	2.66	14.48	81.53	
	ind4	601	4	0	0.33	2.5	10.65	86.52	
	se2	601	2	2	1.83	96.17			
	se4	601	2	2	1.66	96.34			
	sk2	601	4	0	0.17	1.83	10.48	87.52	
	sk4	601	4	0	0.33	1	8.99	89.68	
10	comp1	162	5	0	0	1.85	98.15	0	0
	comp2	500	5	0	0	4.6	95.4	0	0
	comp3	443	5	0	0	3.84	96.16	0	0
	comp4	554	5	0	0	7.58	92.42	0	0
	comp5	397	5	0	0	6.05	93.95	0	0
	gp1	162	2	0	35.19	64.81			
	gp2	500	2	0	25	75			
	gp3	443	2	0	32.05	67.95			
	gp4	554	2	0	24.91	75.09			
	gp5	397	2	0	34.26	65.74			
	ind1	162	4	4.94	0.62	0.62	12.35	81.48	
	ind2	500	4	2.6	1.4	3.4	9.2	83.4	
	ind3	443	4	5.42	0.9	3.39	12.87	77.43	
	ind4	554	4	5.78	0.72	3.07	13	77.44	
	ind5	397	4	7.81	1.26	3.27	9.32	78.34	
	se1	162	2	2.47	1.23	96.3			
	se2	500	2	1.6	0.4	98			
	se3	443	2	0.9	0.23	98.87			
	se4	554	2	1.81	0.54	97.65			
	se5	397	2	1.76	0.5	97.73			
	sk1	162	4	4.94	0.62	0.62	3.09	90.74	
	sk2	500	4	2.6	0	1.4	9.4	86.6	
	sk3	443	4	5.42	1.13	0.68	11.06	81.72	
	sk4	554	4	5.78	0.36	0.72	8.84	84.3	
	sk5	397	4	7.81	0.5	1.26	6.8	83.63	

Table H-6. Item-Level Score Distributions—Alt/STE

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
5	comp1	635	5	0	0	11.65	88.35	0	0
	comp2	643	5	0	0	10.58	89.42	0	0
	comp3	642	5	0	0	12.62	87.38	0	0
	comp4	40	5	0	0	20	80	0	0
	gp1	635	2	0	0	100			
	gp2	643	2	0	0	100			
	gp3	642	2	0	0	100			
	gp4	40	2	0	0	100			
	ind1	635	4	3.46	3.62	8.19	26.61	58.11	
	ind2	643	4	4.67	2.95	7.47	30.33	54.59	
	ind3	642	4	4.67	3.12	10.12	27.57	54.52	
	ind4	40	4	5	0	12.5	42.5	40	
	se1	635	2	2.05	0.31	97.64			
	se2	643	2	1.71	0.47	97.82			
	se3	642	2	1.87	0.47	97.66			
	se4	40	2	5	0	95			
	sk1	635	4	3.46	0	0.79	8.35	87.4	
	sk2	643	4	4.67	0	0.78	7.15	87.4	
	sk3	642	4	4.67	0	0.31	6.39	88.63	
	sk4	40	4	5	0	0	12.5	82.5	
8	comp1	542	5	0	0	7.38	92.62	0	0
	comp2	553	5	0	0	7.23	92.77	0	0
	comp3	524	5	0	0	6.3	93.7	0	0
	comp4	76	5	0	0	21.05	78.95	0	0
	gp1	542	2	0	0	100			
	gp2	553	2	0	0	100			
	gp3	524	2	0	0	100			
	gp4	76	2	0	0	100			
	ind1	542	4	1.85	3.51	8.3	30.63	55.72	
	ind2	553	4	1.45	3.62	9.4	28.21	57.32	
	ind3	524	4	4.2	3.63	11.07	25.95	55.15	
	ind4	76	4	3.95	1.32	14.47	23.68	56.58	
	se1	542	2	2.95	0.18	96.86			
	se2	553	2	1.81	0.36	97.83			
	se3	524	2	0.95	0.19	98.85			
	se4	76	2	10.53	2.63	86.84			
	sk1	542	4	1.85	0.55	1.11	11.99	84.5	
	sk2	553	4	1.45	0	0.54	9.76	88.25	
	sk3	524	4	4.2	0.19	0.38	7.44	87.79	
	sk4	76	4	3.95	0	1.32	10.53	84.21	

Table H-7. Item-Level Score Distributions—Alt/Biology

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
HS	comp1	44	5	0	0	6.82	93.18	0	0
	comp2	44	5	0	0	6.82	93.18	0	0
	comp3	44	5	0	0	6.82	93.18	0	0
	gp1	44	2	0	0	100			
	gp2	44	2	0	0	100			
	gp3	44	2	0	0	100			
	ind1	44	4	9.09	4.55	20.45	34.09	31.82	
	ind2	44	4	0	6.82	25	27.27	40.91	
	ind3	44	4	4.55	4.55	15.91	34.09	40.91	
	se1	44	2	0	2.27	97.73			
	se2	44	2	0	0	100			
	se3	44	2	4.55	0	95.45			
	sk1	44	4	9.09	0	0	9.09	81.82	
	sk2	44	4	0	0	0	9.09	90.91	
	sk3	44	4	4.55	0	0	13.64	81.82	

Table H-8. Item-Level Score Distributions—Alt/Chemistry

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
HS	comp1	12	5	0	0	0	100	0	0
	comp2	12	5	0	0	0	100	0	0
	comp3	12	5	0	0	0	100	0	0
	gp1	12	2	0	25	75			
	gp2	12	2	0	16.67	83.33			
	gp3	12	2	0	16.67	83.33			
	ind1	12	4	0	0	0	25	75	
	ind2	12	4	0	0	0	8.33	91.67	
	ind3	12	4	0	0	0	16.67	83.33	
	se1	12	2	0	0	100			
	se2	12	2	0	0	100			
	se3	12	2	0	0	100			
	sk1	12	4	0	0	0	25	75	
	sk2	12	4	0	0	0	16.67	83.33	
	sk3	12	4	0	0	0	8.33	91.67	

Table H-9. Item-Level Score Distributions—Alt/Introductory Physics

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
HS	comp1	2	5						
	comp2	2	5						
	comp3	2	5						
	gp1	2	2						
	gp2	2	2						
	gp3	2	2						
	ind1	2	4						
	ind2	2	4						
	ind3	2	4						
	se1	2	2						
	se2	2	2						
	se3	2	2						
	sk1	2	4						
	sk2	2	4						
	sk3	2	4						

Table H-10. Item-Level Score Distributions—Alt/ Technology/Engineering

Grade	Item Number	N	Total Possible Points	Percent of Students at Score Point					
				0	1	2	3	4	5
HS	comp1	33	5	0	0	3.03	96.97	0	0
	comp2	33	5	0	0	3.03	96.97	0	0
	comp3	33	5	0	0	9.09	90.91	0	0
	gp1	33	2	0	21.21	78.79			
	gp2	33	2	0	21.21	78.79			
	gp3	33	2	0	33.33	66.67			
	ind1	33	4	3.03	3.03	3.03	45.45	45.45	
	ind2	33	4	0	3.03	3.03	45.45	48.48	
	ind3	33	4	3.03	3.03	6.06	21.21	66.67	
	se1	33	2	0	3.03	96.97			
	se2	33	2	0	0	100			
	se3	33	2	0	0	100			
	sk1	33	4	3.03	3.03	3.03	18.18	72.73	
	sk2	33	4	0	0	3.03	9.09	87.88	
	sk3	33	4	3.03	0	18.18	3.03	75.76	

APPENDIX K
DIFFERENTIAL ITEM FUNCTIONING RESULTS

Table K-1. Number of Items Classified as "Low" or "High" DIF, Overall and by Group Favored—ELA

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Non-Remote Testers	Remote Testers		Non-Remote Testers	Remote Testers
3	Male	Female	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	28	2	1	1	0	0	0
	Not LEPFLEP	LEPFLEP	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	28	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	28	1	1	0	0	0	0
	White	African American	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	28	0	0	0	0	0	0
		Hispanic	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	28	2	1	1	0	0	0
	Students without Disabilities	Students with Disabilities	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	28	4	2	2	0	0	0
4	Male	Female	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	29	3	2	1	0	0	0
	Not LEPFLEP	LEPFLEP	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	29	1	0	1	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	29	0	0	0	0	0	0
	White	African American	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	29	2	1	1	0	0	0
		Hispanic	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	29	2	1	1	0	0	0
	Students without Disabilities	Students with Disabilities	CR	1	0	0	0	0	0	0
			ES	1	0	0	0	0	0	0
			SR	29	1	0	1	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Non-Remote Testers	Remote Testers		Non-Remote Testers	Remote Testers
5	Male	Female	ES	2	0	0	0	0	0	0
			SR	29	4	3	1	0	0	0
	Not LEPFLEP	LEPFLEP	ES	2	0	0	0	0	0	0
			SR	29	1	0	1	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	ES	2	0	0	0	0	0	0
			SR	29	1	1	0	0	0	0
	White	African American	ES	2	0	0	0	0	0	0
			SR	29	2	2	0	0	0	0
		Hispanic	ES	2	0	0	0	0	0	0
			SR	29	1	1	0	0	0	0
	Students without Disabilities	Students with Disabilities	ES	2	0	0	0	0	0	0
			SR	29	1	1	0	0	0	0
6	Male	Female	ES	2	0	0	0	0	0	0
			SR	30	4	3	1	0	0	0
	Not LEPFLEP	LEPFLEP	ES	2	0	0	0	0	0	0
			SR	30	2	2	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	ES	2	0	0	0	0	0	0
			SR	30	0	0	0	0	0	0
	White	African American	ES	2	0	0	0	0	0	0
			SR	20	2	2	0	0	0	0
		Hispanic	ES	2	0	0	0	0	0	0
			SR	30	0	0	0	0	0	0
	Students without Disabilities	Students with Disabilities	ES	2	0	0	0	0	0	0
			SR	30	0	0	0	0	0	0
7	Male	Female	ES	2	0	0	0	0	0	0
			SR	30	2	2	0	1	1	0
	Not LEPFLEP	LEPFLEP	ES	2	0	0	0	0	0	0
			SR	30	3	2	1	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	ES	2	0	0	0	0	0	0
			SR	30	0	0	0	0	0	0
	White	African American	ES	2	0	0	0	0	0	0
			SR	30	1	0	1	0	0	0
		Hispanic	ES	2	0	0	0	0	0	0
			SR	30	1	0	1	0	0	0
	Students without Disabilities	Students with Disabilities	ES	2	0	0	0	0	0	0
			SR	30	1	0	1	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low"			Number "High"		
	Reference	Focal			Total	Favoring		Total	Favoring	
						Non-Remote Testers	Remote Testers		Non-Remote Testers	Remote Testers
8	Male	Female	ES	2	0	0	0	0	0	0
			SR	30	4	2	2	0	0	0
	Not LEPFLEP	LEPFLEP	ES	2	0	0	0	0	0	0
			SR	30	2	1	1	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	ES	2	0	0	0	0	0	0
			SR	30	0	0	0	0	0	0
	White	African American	ES	2	0	0	0	0	0	0
			SR	30	1	0	1	0	0	0
		Hispanic	ES	2	0	0	0	0	0	0
			SR	30	1	0	1	0	0	0
	Students without Disabilities	Students with Disabilities	ES	2	0	0	0	0	0	0
			SR	30	0	0	0	0	0	0
10	Male	Female	ES	2	0	0	0	0	0	0
			SR	28	1	1	0	0	0	0
	Not LEPFLEP	LEPFLEP	ES	2	0	0	0	0	0	0
			SR	28	2	2	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	ES	2	0	0	0	0	0	0
			SR	28	0	0	0	0	0	0
	White	African American	ES	2	0	0	0	0	0	0
			SR	28	4	3	1	0	0	0
		Hispanic	ES	2	0	0	0	0	0	0
			SR	28	4	3	1	0	0	0
	Students without Disabilities	Students with Disabilities	ES	2	0	0	0	0	0	0
			SR	28	0	0	0	0	0	0

Table K-2. Number of Items Classified as "Low" or "High" DIF, Overall and by Group Favored—Mathematics

Grade	Group		Item Type	Number of Items	Number "Low" Favoring			Number "High" Favoring		
	Reference	Focal			Total	Non-Remote Testers	Remote Testers	Total	Non-Remote Testers	Remote Testers
3	Male	Female	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	33	2	2	0	0	0	0
	Not LEPFLEP	LEPFLEP	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	33	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	33	2	0	2	0	0	0
	White	African American	CR	4	0	0	0	0	0	0
			SA	10	1	1	0	0	0	0
			SR	33	5	1	4	0	0	0
		Hispanic	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	33	4	0	4	0	0	0
	Students without Disabilities	Students with Disabilities	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	33	2	1	1	0	0	0
4	Male	Female	CR	4	0	0	0	0	0	0
			SA	14	1	1	0	0	0	0
			SR	29	5	3	2	0	0	0
	Not LEPFLEP	LEPFLEP	CR	4	0	0	0	0	0	0
			SA	14	1	1	0	0	0	0
			SR	29	1	1	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	4	0	0	0	0	0	0
			SA	14	0	0	0	0	0	0
			SR	29	0	0	0	0	0	0
	White	African American	CR	4	0	0	0	0	0	0
			SA	14	0	0	0	0	0	0
			SR	29	0	0	0	0	0	0
	White	Hispanic	CR	4	0	0	0	0	0	0
			SA	14	0	0	0	0	0	0
			SR	29	0	0	0	0	0	0
	Students without Disabilities	Students with Disabilities	CR	4	0	0	0	0	0	0
			SA	14	0	0	0	0	0	0
			SR	29	0	0	0	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low" Favoring			Number "High" Favoring		
	Reference	Focal			Total	Non-Remote Testers	Remote Testers	Total	Non-Remote Testers	Remote Testers
5	Male	Female	CR	4	0	0	0	0	0	0
			SA	10	1	1	0	0	0	0
			SR	31	4	3	1	0	0	0
	Not LEPFLEP	LEPFLEP	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	31	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	31	0	0	0	0	0	0
	White	African American	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	31	1	1	0	0	0	0
		Hispanic	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	31	1	1	0	0	0	0
	Students without Disabilities	Students with Disabilities	CR	4	0	0	0	0	0	0
			SA	10	1	1	0	0	0	0
			SR	31	1	0	1	0	0	0
6	Male	Female	CR	4	0	0	0	0	0	0
			SA	10	1	1	0	0	0	0
			SR	31	4	4	0	0	0	0
	Not LEPFLEP	LEPFLEP	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	31	1	1	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	31	0	0	0	0	0	0
	White	African American	CR	4	0	0	0	0	0	0
			SA	10	1	1	0	0	0	0
			SR	31	2	1	1	0	0	0
		Hispanic	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	31	0	0	0	0	0	0
	Students without Disabilities	Students with Disabilities	CR	4	0	0	0	0	0	0
			SA	10	0	0	0	0	0	0
			SR	31	4	1	3	0	0	0
7	Male	Female	CR	4	1	0	1	0	0	0
			SA	15	1	1	0	0	0	0
			SR	30	2	1	1	1	1	0

continued

Grade	Group		Item Type	Number of Items	Number "Low" Favoring			Number "High" Favoring		
	Reference	Focal			Total	Non-Remote Testers	Remote Testers	Total	Non-Remote Testers	Remote Testers
7	Not LEPFLEP	LEPFLEP	CR	4	0	0	0	0	0	0
			SA	15	0	0	0	0	0	0
			SR	30	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	4	0	0	0	0	0	0
			SA	4	0	0	0	0	0	0
			SR	15	1	1	0	0	0	0
	White	African American	CR	15	1	1	0	0	0	0
			SA	30	3	2	1	0	0	0
			SR	30	1	0	1	0	0	0
		Hispanic	CR	4	0	0	0	0	0	0
			SA	15	1	1	0	0	0	0
			SR	30	2	2	0	0	0	0
	Students without Disabilities	Students with Disabilities	CR	4	0	0	0	0	0	0
			SA	15	2	2	0	0	0	0
			SR	30	3	1	2	0	0	0
8	Male	Female	CR	4	0	0	0	0	0	0
			SA	15	2	2	0	1	1	0
			SR	31	3	1	2	0	0	0
	Not LEPFLEP	LEPFLEP	CR	4	0	0	0	0	0	0
			SA	15	0	0	0	0	0	0
			SR	31	2	0	2	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	4	0	0	0	0	0	0
			SA	15	0	0	0	0	0	0
			SR	31	0	0	0	0	0	0
	White	African American	CR	4	0	0	0	0	0	0
			SA	15	1	1	0	0	0	0
			SR	31	2	0	2	0	0	0
		Hispanic	CR	4	0	0	0	0	0	0
			SA	15	0	0	0	0	0	0
			SR	31	1	0	1	0	0	0
	Students without Disabilities	Students with Disabilities	CR	4	0	0	0	0	0	0
			SA	15	1	1	0	0	0	0
			SR	31	3	0	3	0	0	0
10	Male	Female	CR	4	0	0	0	0	0	0
			SA	5	1	0	1	0	0	0
			SR	37	7	5	2	0	0	0
	Not LEPFLEP	LEPFLEP	CR	4	0	0	0	0	0	0
			SA	5	0	0	0	0	0	0
			SR	37	2	2	0	0	0	0

continued

Grade	Group		Item Type	Number of Items	Number "Low" Favoring			Number "High" Favoring		
	Reference	Focal			Total	Non-Remote Testers	Remote Testers	Total	Non-Remote Testers	Remote Testers
10	Not Economically Disadvantaged	Economically Disadvantaged	CR	4	0	0	0	0	0	0
			SA	5	0	0	0	0	0	0
			SR	37	0	0	0	0	0	0
	White	African American	CR	4	0	0	0	0	0	0
			SA	5	0	0	0	0	0	0
			SR	37	4	2	2	0	0	0
		Hispanic	CR	4	0	0	0	0	0	0
			SA	5	0	0	0	0	0	0
			SR	37	1	1	0	0	0	0
	Students without Disabilities	Students with Disabilities	CR	4	0	0	0	0	0	0
			SA	5	0	0	0	0	0	0
			SR	37	0	0	0	0	0	0

Table K-3. Number of Items Classified as "Low" or "High" DIF, Overall and by Group Favored—STE

Grade	Group		Item Type	Number of Items	Number "Low" Favoring			Number "High" Favoring		
	Reference	Focal			Total	Non-Remote Testers	Remote Testers	Total	Non-Remote Testers	Remote Testers
5	Male	Female	CR	6	1	0	1	0	0	0
			SR	35	9	6	3	1	1	0
	Not LEPFLEP	LEPFLEP	CR	6	0	0	0	0	0	0
			SR	35	0	0	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	6	0	0	0	0	0	0
			SR	35	0	0	0	0	0	0
	White	African American	CR	6	0	0	0	0	0	0
			SR	35	3	2	1	0	0	0
		Hispanic	CR	6	0	0	0	0	0	0
			SR	35	1	1	0	0	0	0
	Students without Disabilities	Students with Disabilities	CR	6	0	0	0	0	0	0
			SR	35	1	0	1	0	0	0
8	Male	Female	CR	6	1	0	1	0	0	0
			SR	35	6	3	3	2	2	0
	Not LEPFLEP	LEPFLEP	CR	6	0	0	0	0	0	0
			SR	35	1	1	0	0	0	0
	Not Economically Disadvantaged	Economically Disadvantaged	CR	6	0	0	0	0	0	0
			SR	35	0	0	0	0	0	0
	White	African American	CR	6	0	0	0	0	0	0
			SR	35	5	4	1	0	0	0
		Hispanic	CR	6	0	0	0	0	0	0
			SR	35	2	2	0	0	0	0
	Students without Disabilities	Students with Disabilities	CR	6	0	0	0	0	0	0
			SR	35	3	2	1	0	0	0

Table K-4. Number of Items Classified as "Low" or "High" DIF by Test Mode and Item Type—ELA

Grade	Item Type	Number of Items	Number "Low"			Number "High"		
			Total	Favoring		Total	Favoring	
				Non-Remote Testers	Remote Testers		Non-Remote Testers	Remote Testers
3	CR	1	0	0	0	0	0	0
	ES	1	0	0	0	0	0	0
	SR	28	0	0	0	0	0	0
4	CR	1	0	0	0	0	0	0
	ES	1	0	0	0	0	0	0
	SR	29	1	0	1	0	0	0
5	ES	2	0	0	0	0	0	0
	SR	29	0	0	0	0	0	0
6	ES	2	0	0	0	0	0	0
	SR	30	1	0	1	0	0	0
7	ES	2	0	0	0	0	0	0
	SR	30	1	0	1	0	0	0
8	ES	2	0	0	0	0	0	0
	SR	30	1	0	1	0	0	0
10	CR	1	0	0	0	0	0	0
	ES	1	0	0	0	0	0	0

Table K-5. Number of Items Classified as "Low" or "High" DIF by Test Mode and Item Type —Mathematics

Grade	Item Type	Number of Items	Number "Low"			Number "High"		
			Total	Favoring		Total	Favoring	
				Non-Remote Testers	Remote Testers		Non-Remote Testers	Remote Testers
3	CR	4	0	0	0	0	0	0
	SA	10	4	2	2	0	0	0
	SR	33	7	4	3	1	0	1
4	CR	4	0	0	0	0	0	0
	SA	14	2	1	1	2	0	2
	SR	29	1	1	0	2	0	2
5	CR	4	1	0	1	0	0	0
	SA	10	0	0	0	2	1	1
	SR	31	3	1	2	2	1	1
6	CR	4	0	0	0	0	0	0
	SA	10	0	0	0	3	0	3
	SR	31	0	0	0	1	0	1
7	CR	4	1	1	0	1	0	1
	SA	15	2	1	1	1	0	1
	SR	30	5	4	1	0	0	0
8	CR	4	0	0	0	0	0	0
	SA	15	5	4	1	1	0	1
	SR	31	5	3	2	2	0	2
10	CR	4	0	0	0	0	0	0
	SA	5	0	0	0	0	0	0
	SR	37	0	0	0	0	0	0

Table K-6. Number of Items Classified as "Low" or "High" DIF by Test Mode and Item Type—Science

Grade	Item Type	Number of Items	Number "Low"			Number "High"		
			Total	Favoring		Total	Favoring	
				Non-Remote Testers	Remote Testers		Non-Remote Testers	Remote Testers
5	CR	6	0	0	0	0	0	0
	SR	35	0	0	0	0	0	0
8	CR	6	0	0	0	0	0	0
	SR	35	0	0	0	0	0	0

APPENDIX L
2021 MCAS EQUATING REPORT

Massachusetts Comprehensive Assessment System

2020–2021: EQUATING REPORT

2020–2021 Massachusetts Comprehensive Assessment System Equating Report

The purpose of this document is to summarize the psychometric calibration and linking results obtained from Cognia for Next-Gen MCAS. Presented in this report are various program summary statistics and specific results related to the study.

The results of this report are organized as follows:

1. Aggregate Results
    1. Percentage of Students by Achievement Levels Categories
    2. Raw Scores Associated with Cutpoints
    3. Calibration Report
    4. Equating Item Summary Statistics
2. Grade Subject Results
    1. A/A, B/B, Test Characteristic Curve, Test Information Function, and Cumulative Scale Score Distribution Plots
    2. Lookup Tables
    3. Rescore Analysis
    4. Tabled B/B Analysis Results
    5. Final Item Parameters

The final results of this equating will be included as part of the 2020–2021 Next-Gen MCAS Technical Manual. If requested, Cognia will distribute and/or present this report at the next MCAS TAC.

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Section 1.1

Percentage of Students by Achievement Levels Categories

Table 1.1.1
Percentage of Students by Achievement Levels Categories
English Language Arts

Grade	Year	Session[1]	N	NM	PM	ME	EE	MEEE	Ave.ScaleScore
3	2021	1	31,316	11	38	43	9	51	498.4
	2021	2	31,385	7	42	41	11	52	500.7
	1819		66,911	6	37	47	10	57	504.1
	1718		68,293	6	42	43	9	52	502.2
4	2021	1	32,095	12	39	43	6	49	496.9
	2021	2	32,123	12	37	44	7	51	499.1
	1819		68,812	7	40	43	9	53	501.9
	1718		70,591	8	39	44	10	54	501.8
5	2021	1	32,412	12	37	42	8	51	497.4
	2021	2	32,192	11	46	37	7	44	496.0
	1819		71,023	7	40	46	7	53	501.3
	1718		71,009	6	39	48	6	55	501.9
6	2021	1	32,809	23	28	36	12	49	496.2
	2021	2	32,801	19	34	34	12	46	496.9
	1819		71,289	12	34	41	13	54	501.5
	1718		69,760	10	38	41	11	52	501.0
7	2021	1	33,423	21	36	36	7	43	494.2
	2021	2	33,305	17	39	38	5	44	494.1
	1819		70,148	12	39	41	9	49	499.2
	1718		69,502	14	40	39	8	46	497.0
8	2021	1	33,567	20	40	34	6	40	493.6
	2021	2	33,191	15	43	35	7	43	495.5
	1819		69,822	12	35	41	12	53	500.0
	1718		70,786	14	34	42	10	52	499.1
10	2021	1	63,485	8	27	46	19	65	507.3
	1819		69,902	7	31	48	14	62	506.2

[1]Note. In 2021 the sessions were randomly spiraled. The population in 2021 is likely to be different from the 2019 and 2018 populations due to the pandemic effect.

Table 1.1.2
Percentage of Students by Achievement Levels Categories
Mathematics

Grade	Year	Session	N	NM	PM	ME	EE	MEEE	Ave.ScaleScore
3	2021	1	31,459	26	41	27	6	33	488.5
	2021	2	31,241	24	41	29	5	34	487.7
	1819		66,997	11	39	41	9	50	499.4
	1718		68,412	11	39	41	10	50	499.9
4	2021	1	32,189	23	44	29	5	33	488.2
	2021	2	32,026	22	44	31	3	34	487.9
	1819		68,798	11	39	42	8	50	499.2
	1718		70,624	11	40	41	7	48	497.9
5	2021	1	32,411	19	49	28	4	32	489.3
	2021	2	32,116	18	46	31	4	36	491.0
	1819		71,022	9	42	43	6	49	498.5
	1718		71,040	9	45	42	5	46	497.5
6	2021	1	32,843	19	46	29	6	35	491.5
	2021	2	32,678	24	43	30	3	33	488.8
	1819		71,265	9	39	42	10	52	500.8
	1718		69,771	10	42	41	7	48	498.6
7	2021	1	33,404	17	48	28	7	35	492.5
	2021	2	33,232	17	47	30	5	35	491.6
	1819		70,128	12	40	38	11	48	498.3
	1718		69,494	12	41	39	8	47	497.5
8	2021	1	33,473	20	45	31	4	35	490.0
	2021	2	33,287	21	49	26	4	30	488.7
	1819		69,800	11	42	37	10	47	499.1
	1718		70,790	11	39	42	8	50	498.8
10	2021	1	63,198	11	36	41	11	53	500.6
	1819		69,478	8	33	46	13	59	505.2

Table 1.1.3
Percentage of Students by Achievement Levels Categories
Science

Grade	Year	Session	N	NM	PM	ME	EE	MEEE	Ave.SS
5	2021	1	31,849	19	35	38	8	46	495.3
	2021	2	31,876	16	45	34	5	40	493.3
	2021	Mini	666	14	36	43	7	50	498.0
	1819		70,996	11	40	41	9	50	499.0
8	2021	1	25,652	16	44	31	8	39	494.4
	2021	2	25,614	13	42	36	8	44	496.5
	2021	Mini	824	12	42	37	8	46	498.1
	1819		69,605	11	42	39	8	47	498.1

Section 1.2

Raw Scores Associated with Cutpoints

Table 1.2.1—Raw Scores Associated with Cutpoints

Subject	Grade	Cut Point	Session1	Session2	Mini Form
English Language Arts	3	NM-PM	5	6	
		PM-ME	11	14	
		ME-EE	16	20	
	4	NM-PM	6	7	
		PM-ME	12	15	
		ME-EE	18	22	
	5	NM-PM	7	8	
		PM-ME	13	17	
		ME-EE	18	23	
	6	NM-PM	8	9	
		PM-ME	12	17	
		ME-EE	17	24	
	7	NM-PM	7	10	
		PM-ME	13	18	
		ME-EE	19	25	
	8	NM-PM	7	11	
		PM-ME	14	20	
		ME-EE	19	26	
	10	NM-PM	19		
		PM-ME	35		
		ME-EE	45		
Mathematics	3	NM-PM	7	7	
		PM-ME	15	15	
		ME-EE	21	22	
	4	NM-PM	8	7	
		PM-ME	18	17	
		ME-EE	25	25	
	5	NM-PM	7	6	
		PM-ME	17	15	
		ME-EE	25	24	
	6	NM-PM	6	7	
		PM-ME	15	15	
		ME-EE	24	24	
	7	NM-PM	5	5	
		PM-ME	15	12	
		ME-EE	24	22	
	8	NM-PM	6	7	
		PM-ME	14	17	
		ME-EE	25	25	
	10	NM-PM	13		
		PM-ME	30		
		ME-EE	53		
Science	5	NM-PM	9	9	14
		PM-ME	16	17	26
		ME-EE	23	23	36
	8	NM-PM	9	7	13
		PM-ME	17	14	25
		ME-EE	22	21	35

Note. Session 1 and Session 2 do not have the same total score points for English Language Arts tests. Due to the total score point and session content differences, it is not recommended to compare the cut scores between sessions.

Section 1.3

Calibration Report

Calibration Report—Executive Summary

FlexMIRT 3.03 was used for the IRT calibration at Cognia. All command files were set up in a way following general settings. The calibration convergence criterion was set to 0.001.

A 3PLM was used for standard four-option multiple choice (MC) items, a 2PLM was used for dichotomously-scored short response items, multi-select items, and technology-enhanced items, and a Graded Response Model (GRM) was specified for the polytomously-scored multi-part items and open response items. The logistic version of the IRT models was used. The prior distribution for the guessing parameter was set to be beta(5,17), and logNormal(0, 0.25) was used as the prior for the item discrimination parameter. No prior was supplied for the item difficulty parameter. The calibration only included students taking the online test forms and did not include any remote test takers.

The calibration went smoothly and got converged in all subjects/grades. In particular, the largest change in parameter values (from one iteration to the next) was decreasing and tended to flatten out towards the end of the calibration process. The number of cycles to convergence in each grade/content for the initial calibrations are listed in the following table.

The IRT model fit was evaluated for each of the items. The resulting parameters demonstrated good model fit for the majority of the items.

Table 1.3.1
Number of Cycles to Convergence

Subject	Grade	Initial Cycles	Equating Cycles
English Language Arts	3	18	15
	4	25	18
	5	26	17
	6	29	15
	7	26	11
	8	29	11
	10	57	7
Mathematics	3	37	14
	4	28	12
	5	38	12
	6	42	11
	7	51	32
	8	51	10
	10	47	19
Science	5	24	18
	8	27	13

It has been the standard practice to use external post-equating for MCAS. However, considering the potential learning loss during the pandemic, the MCAS technical advisory committee(TAC) had suggested using pre-equating for this year's test to maintain the interpretability of the scale. Initial pre-equating fit analysis suggested the pre-equated parameters of items from the Legacy test had poor fit to the data. The pre-equated parameters for those items were obtained through a linear transformation with a set of items that were administered in both Legacy and NextGen MCAS, and thus did not represent the best estimates. The following table shows the number of items and score points from Legacy and NextGen MCAS.

Table 1.3.2—Score Points Distribution between On-scale and Off-scale items

Subject	Grade	Scale	Items	Points
English Language Arts	3	Next Gen	24	38
		Legacy	6	6
	4	Next Gen	25	38
		Legacy	6	6
	5	Next Gen	24	41
		Legacy	7	7
	6	Next Gen	24	42
		Legacy	8	8
	7	Next Gen	25	43
		Legacy	7	7
	8	Next Gen	24	42
		Legacy	8	8
	10	NextGen	32	51
		Legacy	0	0
Mathematics	3	Next Gen	37	45
		Legacy	3	3
	4	Next Gen	31	42
		Legacy	9	12
	5	Next Gen	30	44
		Legacy	10	10
	6	Next Gen	36	47
		Legacy	4	7
	7	Next Gen	28	42
		Legacy	12	12
	8	Next Gen	35	49
		Legacy	5	5
	10	NextGen	12	18
		Legacy	16	25
		Stand-alone	14	17
STE	5	Next Gen	26	36
		Legacy	15	18
	8	Next Gen	15	20
		Legacy	26	34

To reduce the systematic error in the pre-equated parameters for Legacy items, a post-equating was conducted by fixing the item parameters for all Next-Gen items, including both operational and matrix equating items. The fixed common item parameter (FCIP) method was used to estimate the parameters for the Legacy items.

As it remains unknown as for how the learning loss has impacted item statistics, the drift analysis for equating items was not conducted for deciding which items to be excluded from the anchor set. The methods of evaluating the suitability of the equating items were still conducted for exploratory purpose, including the a/a analysis, the b/b analysis and the rescore analysis. Results from these analyses are included in Section II of this report.

Items flagged by the b/b, or rescore analyses were compiled and placed in our item watch list, which includes the final actions taken on these items. The final watch list is presented in the following table:

Table 1.3.3

Final Items Watch List

Subject	Grade	ItemID	Reason	Action	Source
English Language Arts	3	IA03697	b/b Analysis	retained for equating	
	5	IA00503	b/b Analysis	retained for equating	
	5	IA03738	b/b Analysis	retained for equating	
	6	IA04006	b/b Analysis	retained for equating	
	10	IA03766	b/b Analysis	retained for equating	
Mathematics	4	IA02819	b/b Analysis	retained for equating	
	6	IA01136	b/b Analysis	retained for equating	
	7	IA00883	b/b Analysis	retained for equating	
	7	IA04771	b/b Analysis	retained for equating	
	8	IA01042	b/b Analysis	retained for equating	
	10	IA05144	b/b Analysis	retained for equating	
Science	5	IA05530	b/b Analysis	retained for equating	
	5	IA05768	b/b Analysis	retained for equating	
	8	IA05665	b/b Analysis	retained for equating	

Section 1.4

Equating Item Summary Statistics

Table 1.4.1

Equating Item Summary Statistics*

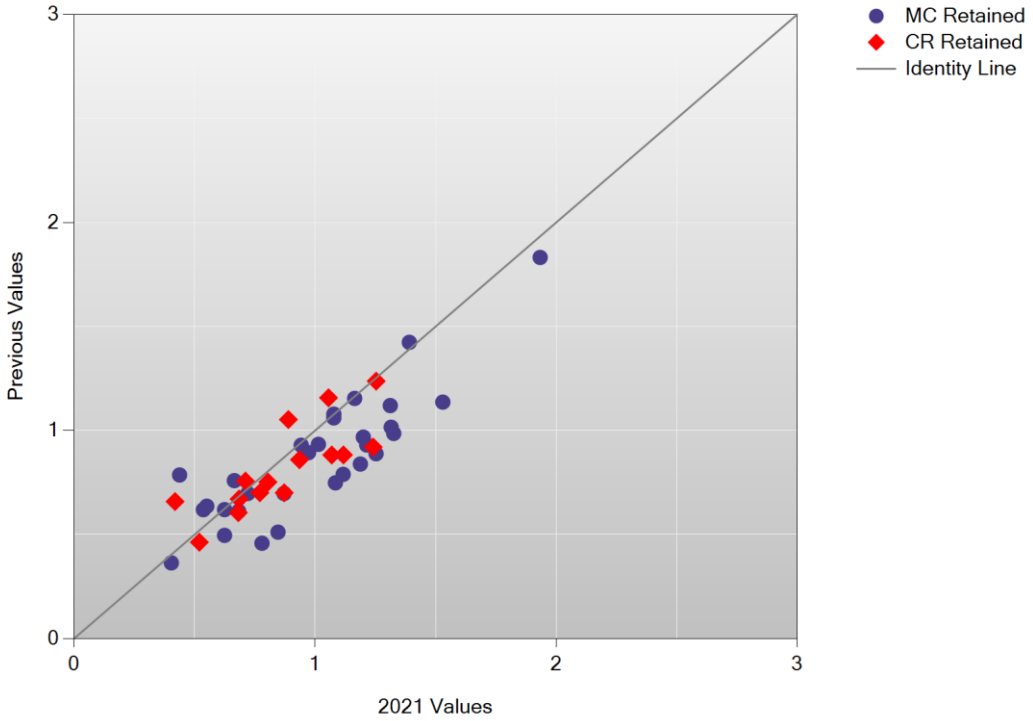
Subject	Grade	Year	P-Value		Point Biserial		a		b	
			Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
English Language Arts	3	2021	0.54	0.19	0.45	0.09	1.07	0.34	0.18	0.86
		Previous	0.60	0.17	0.45	0.09	0.92	0.32	-0.05	0.71
	4	2021	0.60	0.19	0.42	0.11	0.90	0.24	-0.15	0.89
		Previous	0.67	0.17	0.42	0.09	0.77	0.16	-0.48	0.87
	5	2021	0.64	0.18	0.39	0.11	0.96	0.25	-0.38	1.06
		Previous	0.67	0.15	0.41	0.10	0.82	0.23	-0.54	0.80
	6	2021	0.62	0.16	0.43	0.14	0.94	0.27	-0.26	0.76
		Previous	0.71	0.16	0.42	0.16	0.67	0.27	-0.82	0.92
	7	2021	0.64	0.17	0.47	0.13	0.98	0.27	-0.39	0.75
		Previous	0.72	0.15	0.44	0.14	0.79	0.24	-0.98	0.84
	8	2021	0.60	0.15	0.46	0.14	0.91	0.29	-0.20	0.64
		Previous	0.67	0.13	0.43	0.15	0.71	0.26	-0.54	0.77
	10	2021	0.72	0.10	0.46	0.09	0.92	0.26	-0.80	0.45
		Previous	0.74	0.09	0.42	0.08	0.76	0.18	-0.96	0.56
Mathematics	3	2021	0.63	0.11	0.43	0.11	1.00	0.28	-0.29	0.79
		Previous	0.72	0.12	0.41	0.08	0.88	0.21	-0.62	0.85
	4	2021	0.54	0.15	0.48	0.11	1.00	0.30	0.04	0.57
		Previous	0.63	0.15	0.47	0.11	0.99	0.26	-0.18	0.52
	5	2021	0.59	0.16	0.46	0.13	0.96	0.28	-0.13	0.75
		Previous	0.68	0.16	0.45	0.13	0.97	0.24	-0.41	0.75
	6	2021	0.54	0.15	0.43	0.17	1.03	0.30	0.26	1.16
		Previous	0.63	0.13	0.47	0.13	1.03	0.26	-0.12	0.91
	7	2021	0.55	0.21	0.50	0.12	1.14	0.32	-0.11	0.75
		Previous	0.61	0.19	0.50	0.13	1.03	0.27	-0.34	0.79
	8	2021	0.54	0.15	0.47	0.12	1.21	0.43	0.15	0.66
		Previous	0.61	0.15	0.49	0.10	1.08	0.33	-0.16	0.64
	10	2021	0.45	0.15	0.48	0.16	1.19	0.53	0.44	0.77
		Previous	0.51	0.16	0.48	0.14	1.16	0.39	0.17	0.79
Science	5	2021	0.67	0.16	0.39	0.10	0.79	0.24	-0.60	0.92
		Previous	0.71	0.15	0.38	0.09	0.74	0.20	-0.85	0.87
	8	2021	0.56	0.18	0.39	0.12	0.80	0.34	-0.12	1.04
		Previous	0.58	0.18	0.41	0.13	0.81	0.34	-0.31	1.07

*Equating items include matrix equating items only

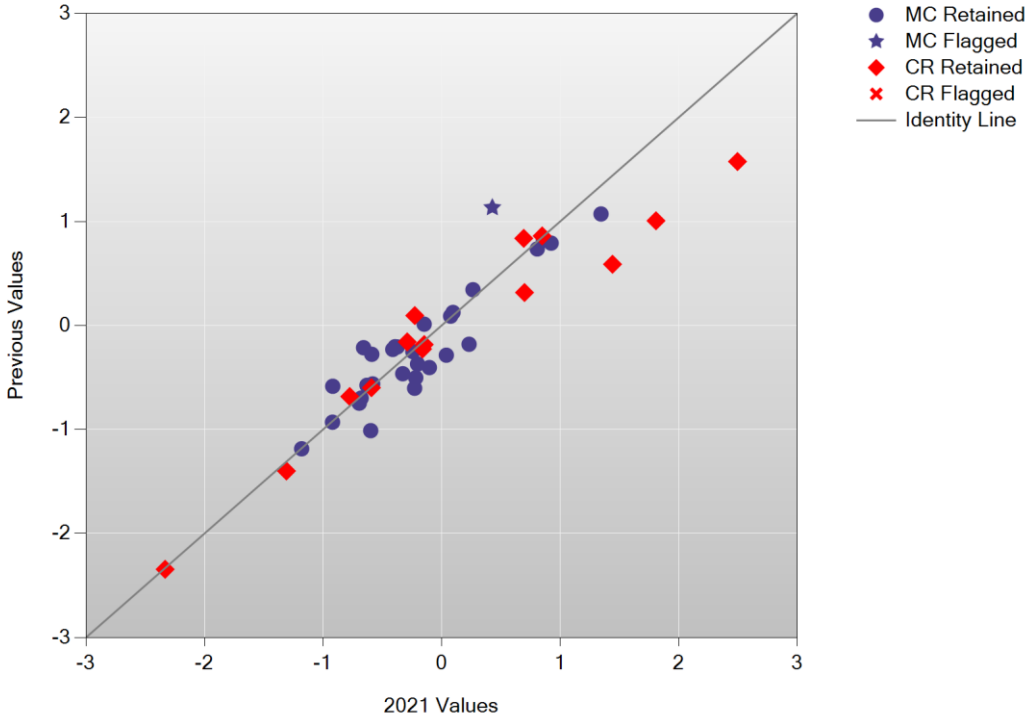
Section 2.1

A/A, B/B, Test Characteristic Curve, Test Information Function, and Cumulative Scale Score Distribution Plots

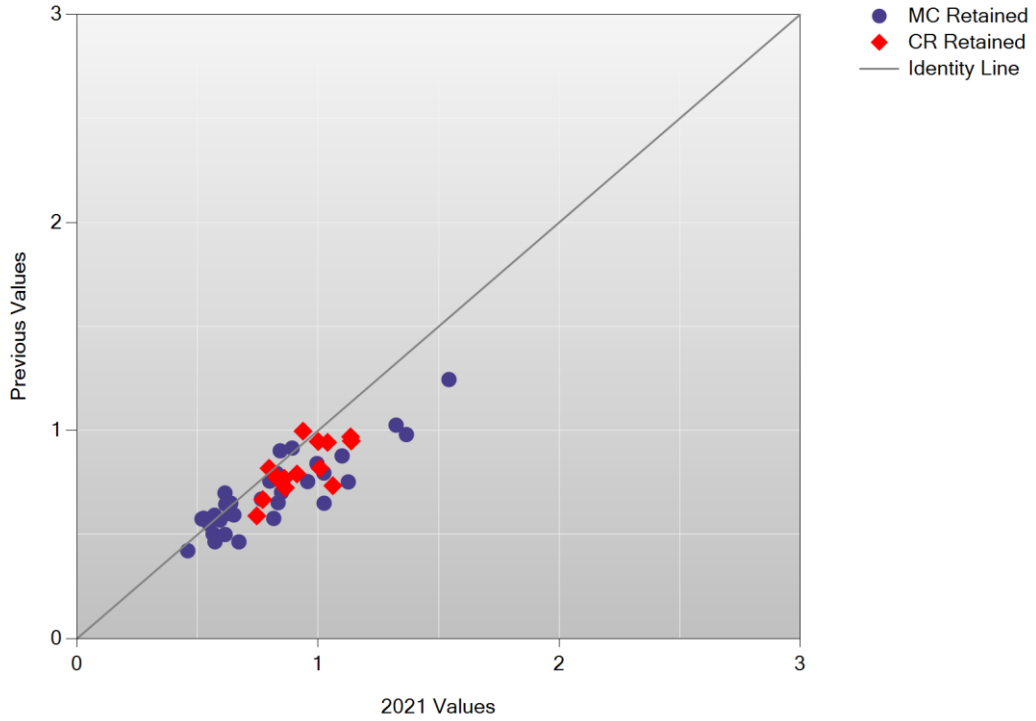
A/A Plot: English Language Arts Grade 3



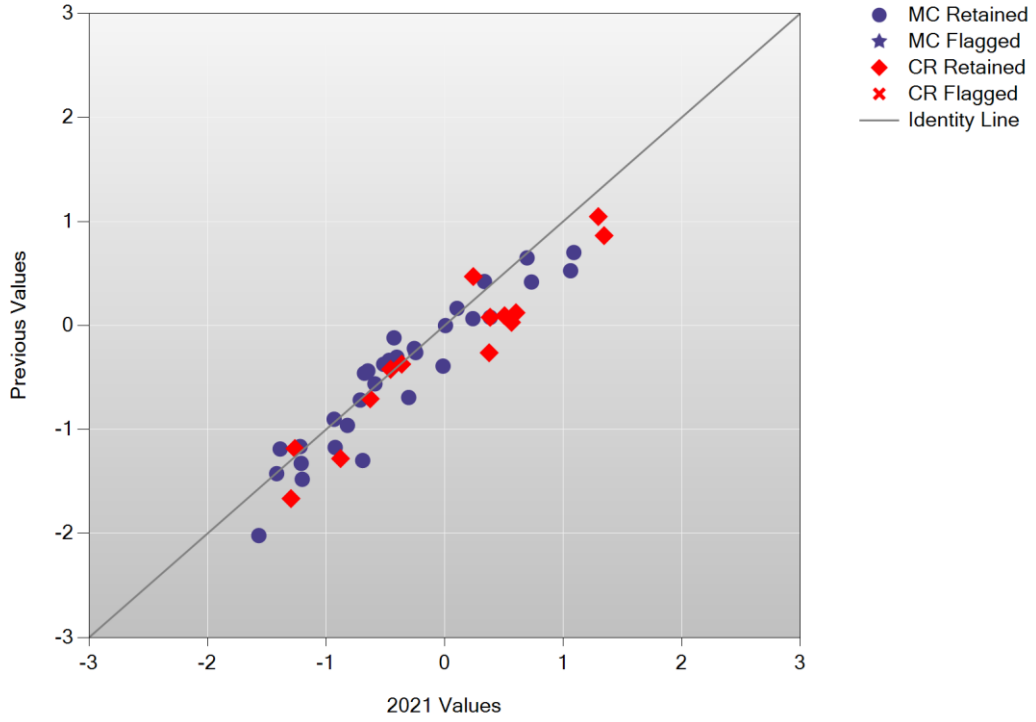
B/B Plot: English Language Arts Grade 3



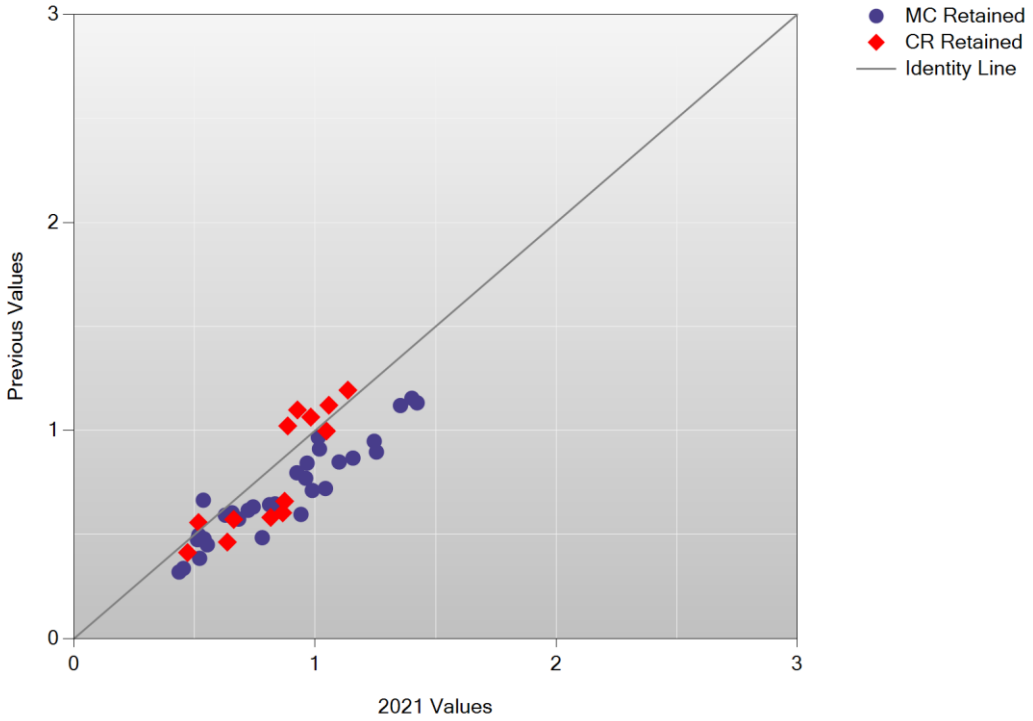
A/A Plot: English Language Arts Grade 4



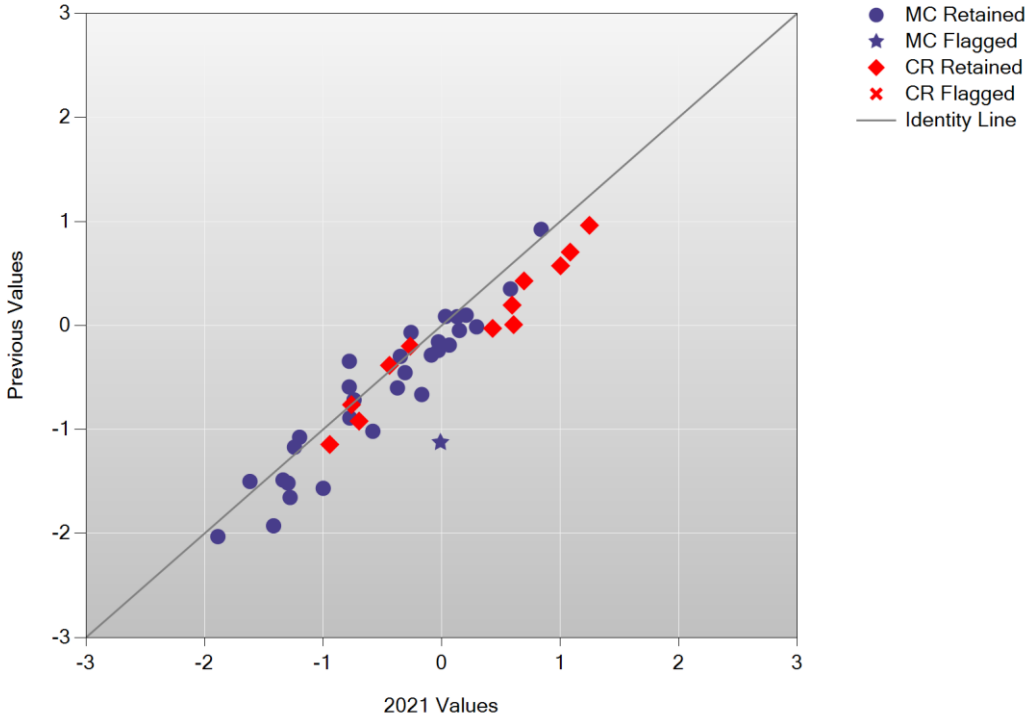
B/B Plot: English Language Arts Grade 4



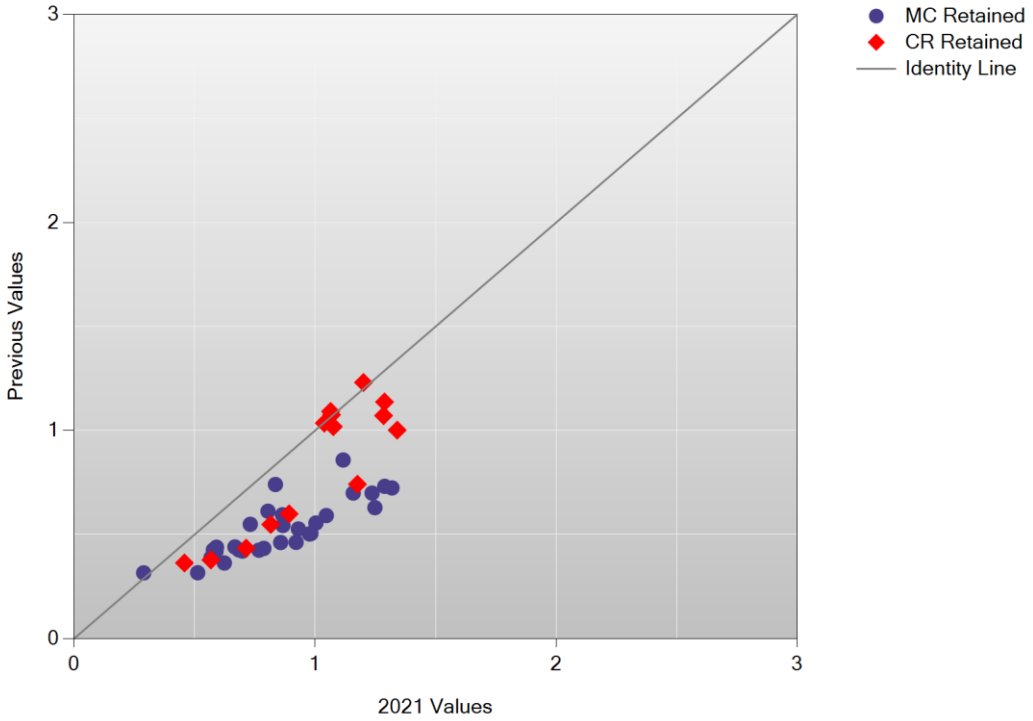
A/A Plot: English Language Arts Grade 5



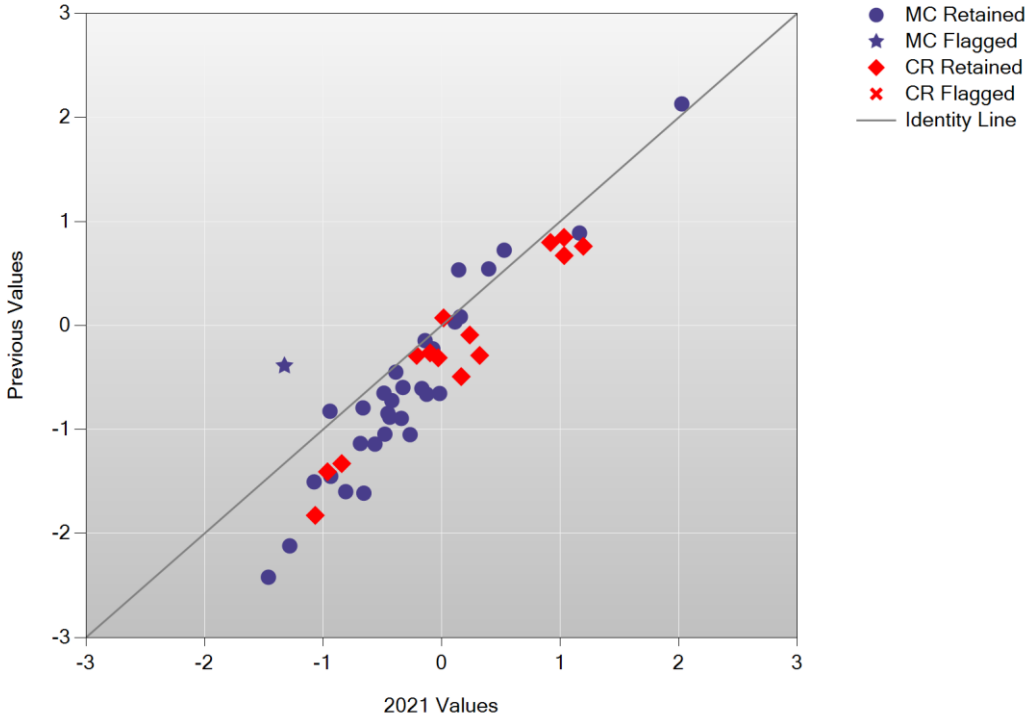
B/B Plot: English Language Arts Grade 5



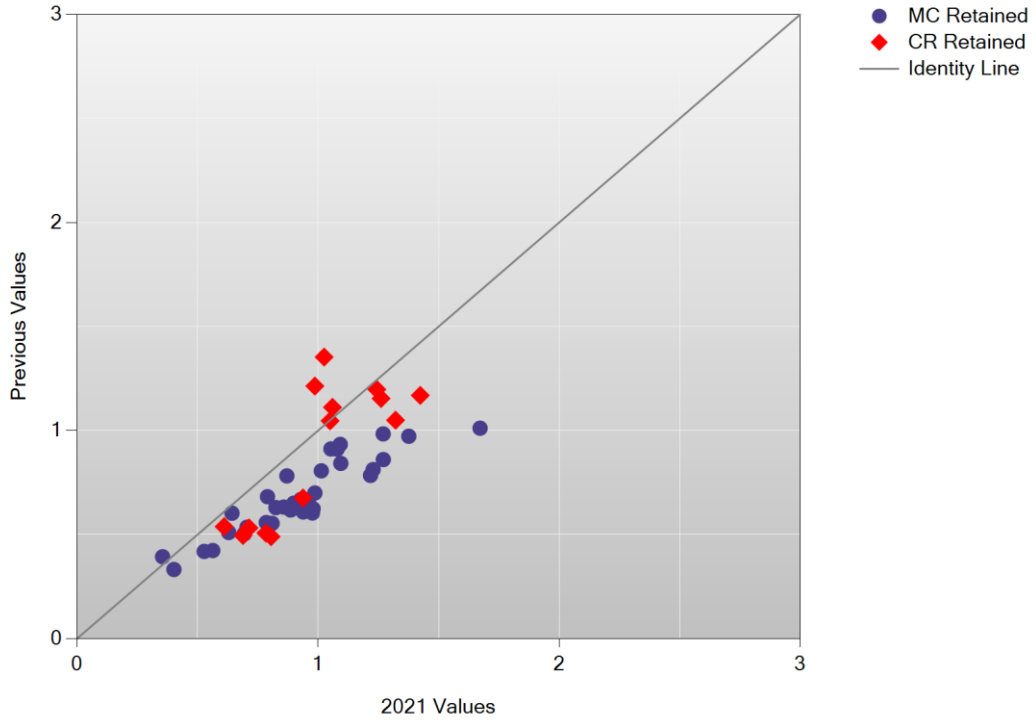
A/A Plot: English Language Arts Grade 6



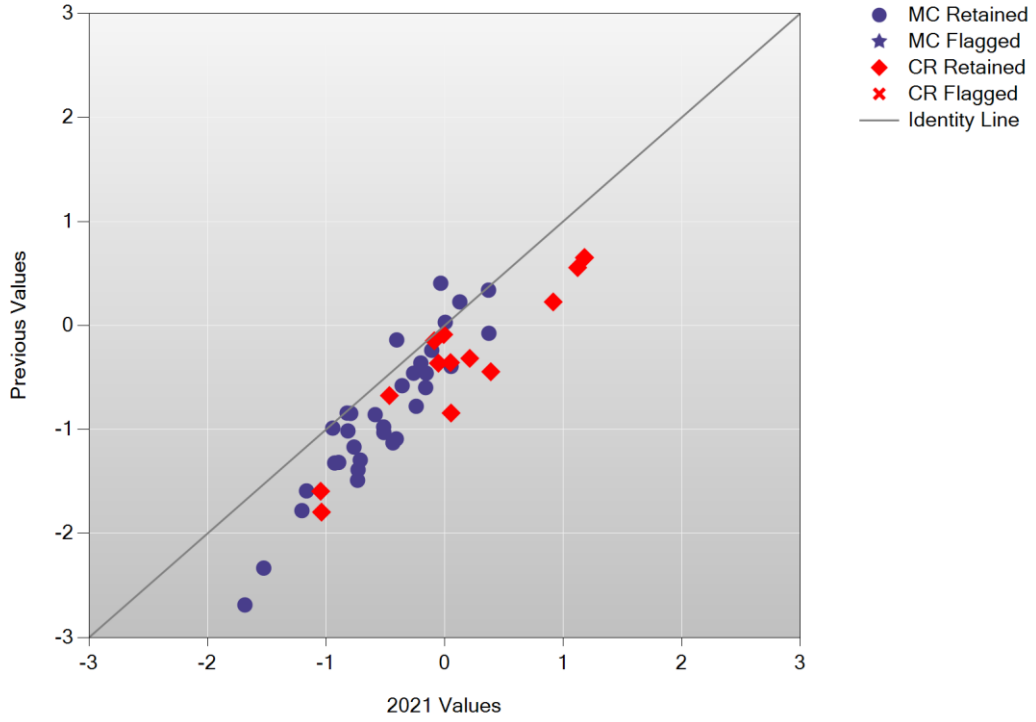
B/B Plot: English Language Arts Grade 6



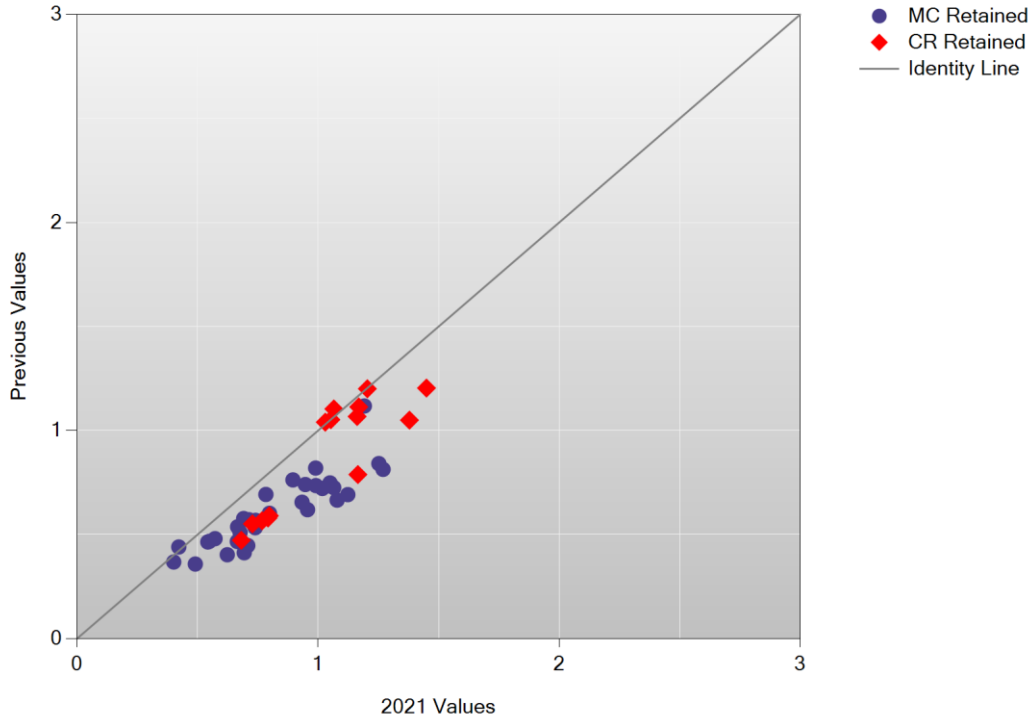
A/A Plot: English Language Arts Grade 7



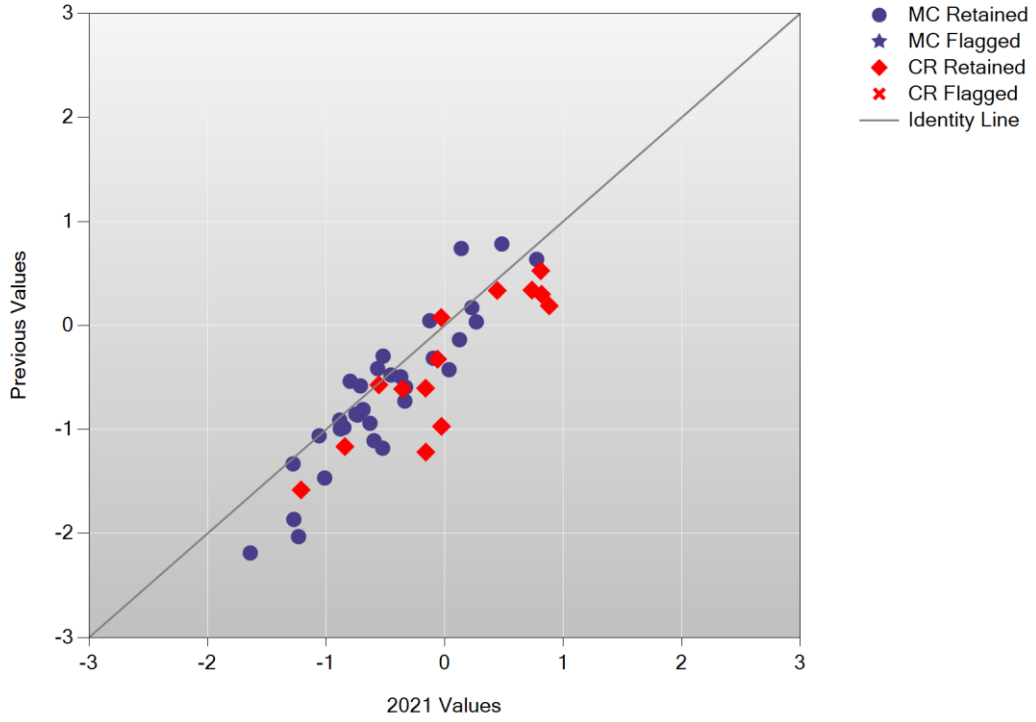
B/B Plot: English Language Arts Grade 7



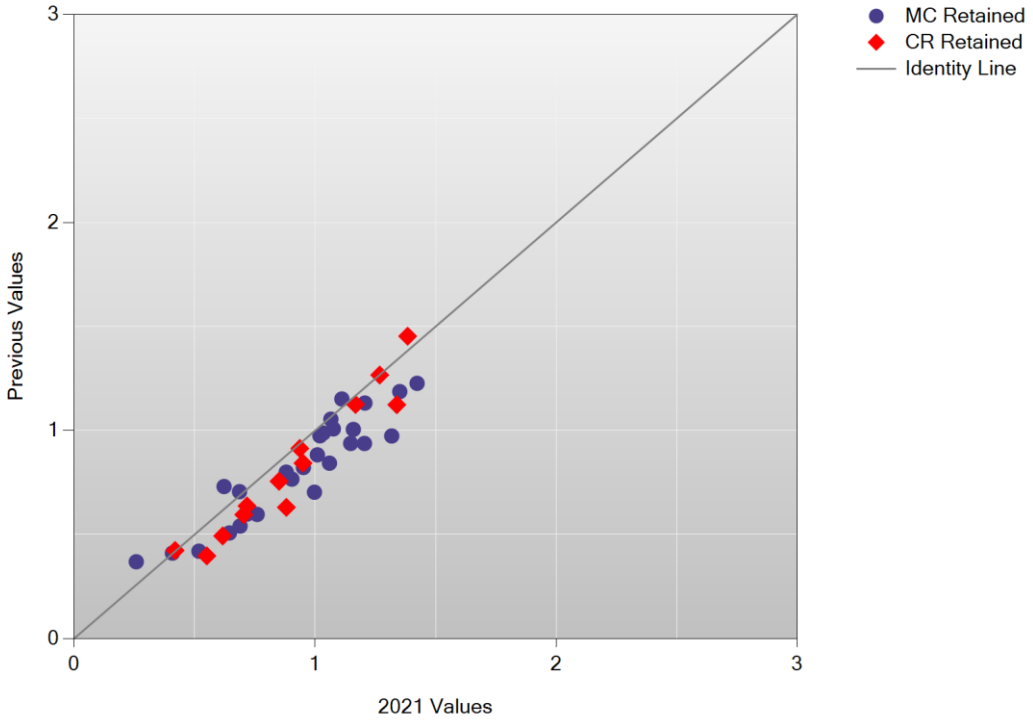
A/A Plot: English Language Arts Grade 8



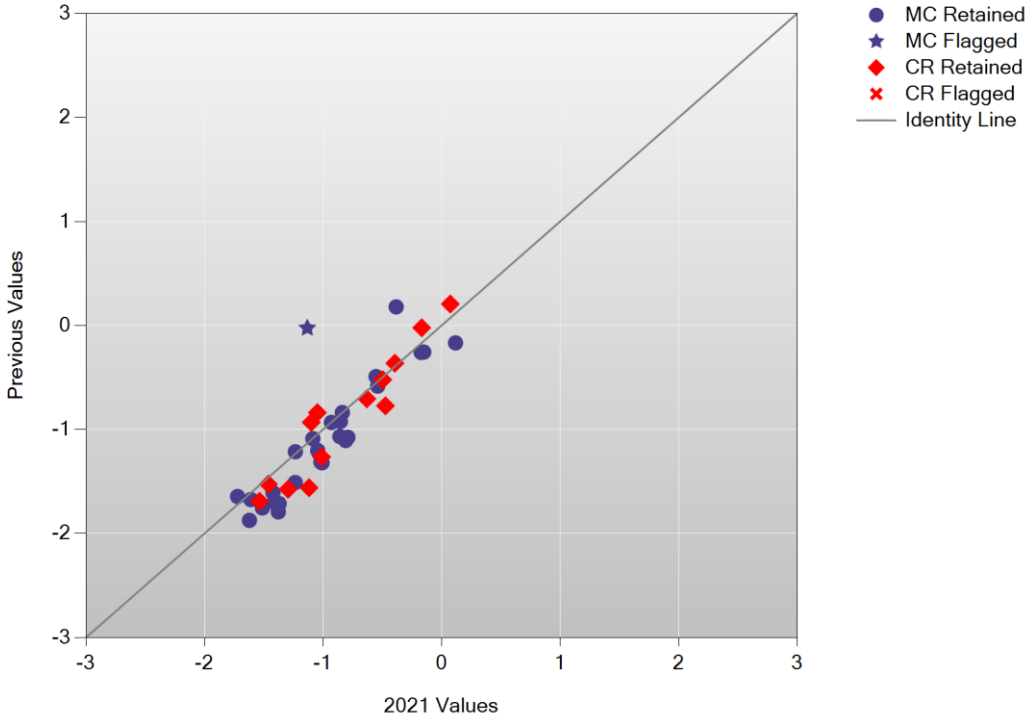
B/B Plot: English Language Arts Grade 8



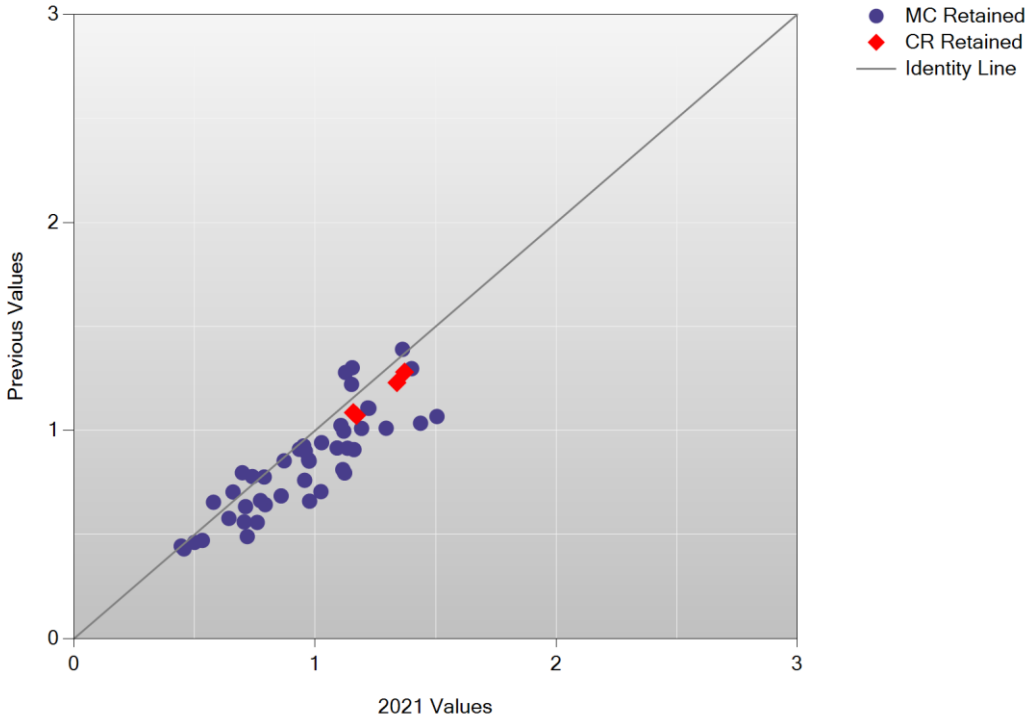
A/A Plot: English Language Arts Grade 10



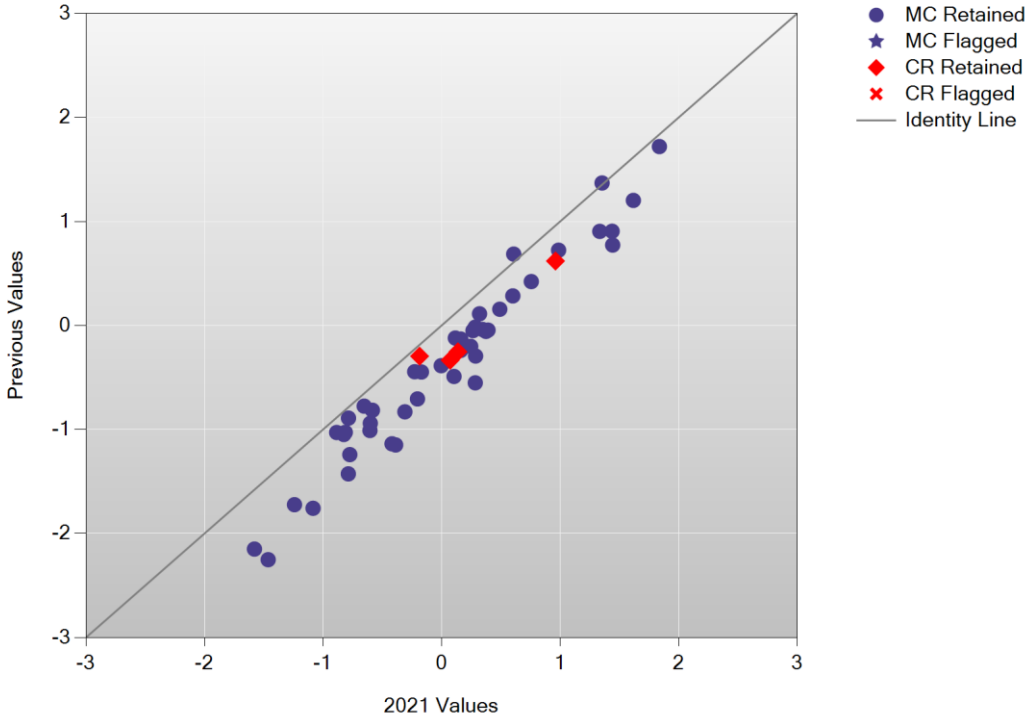
B/B Plot: English Language Arts Grade 10



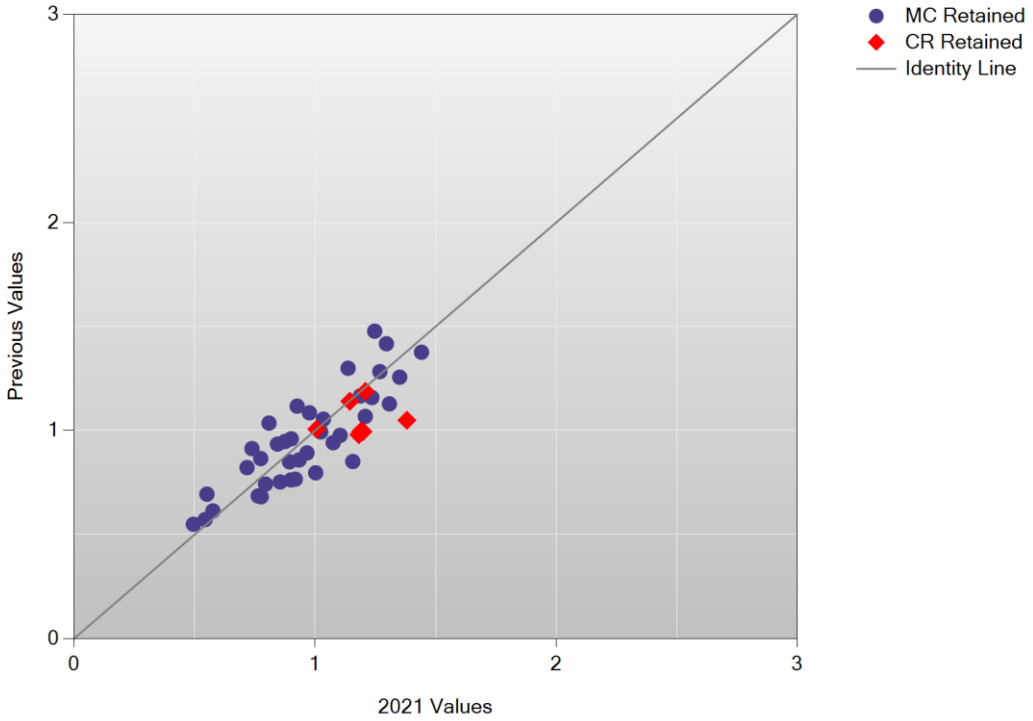
A/A Plot: Mathematics Grade 3



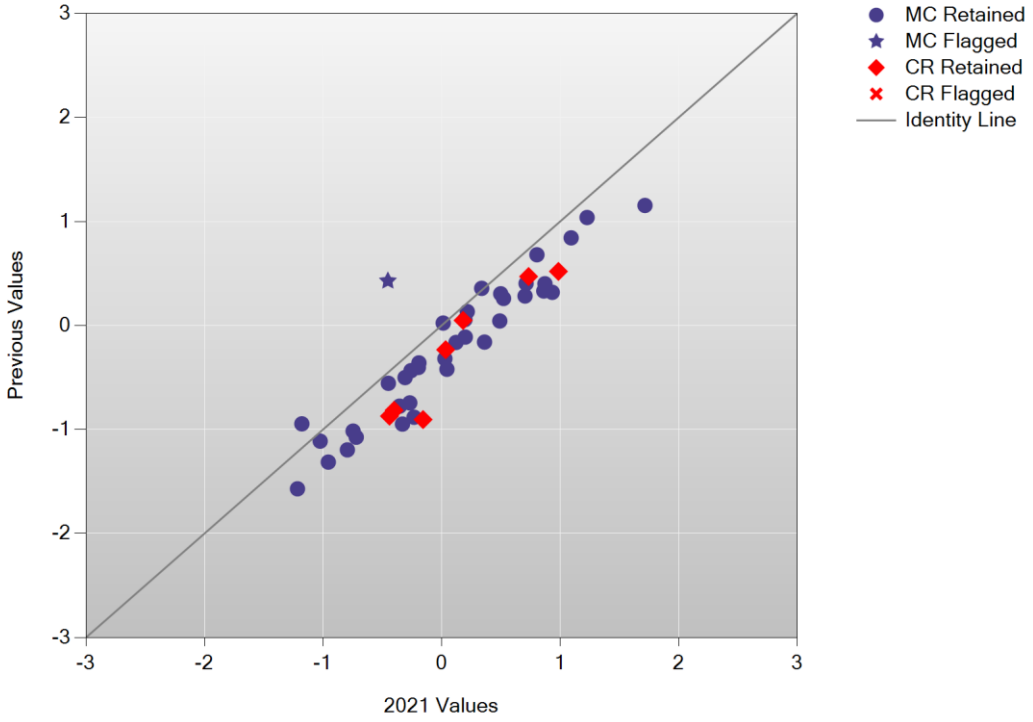
B/B Plot: Mathematics Grade 3



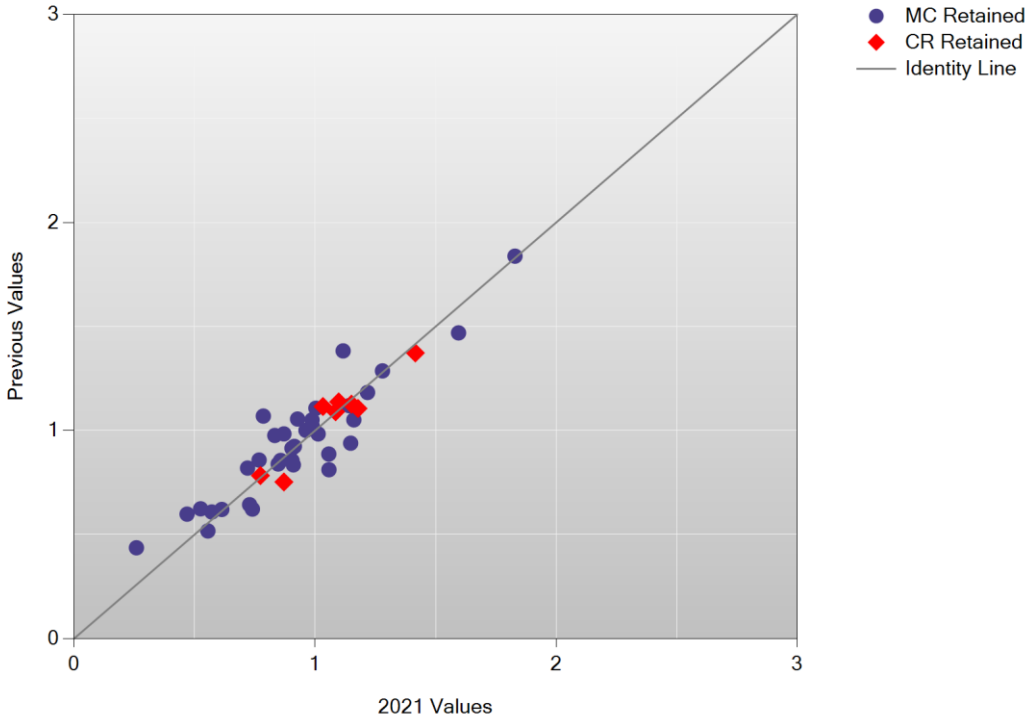
A/A Plot: Mathematics Grade 4



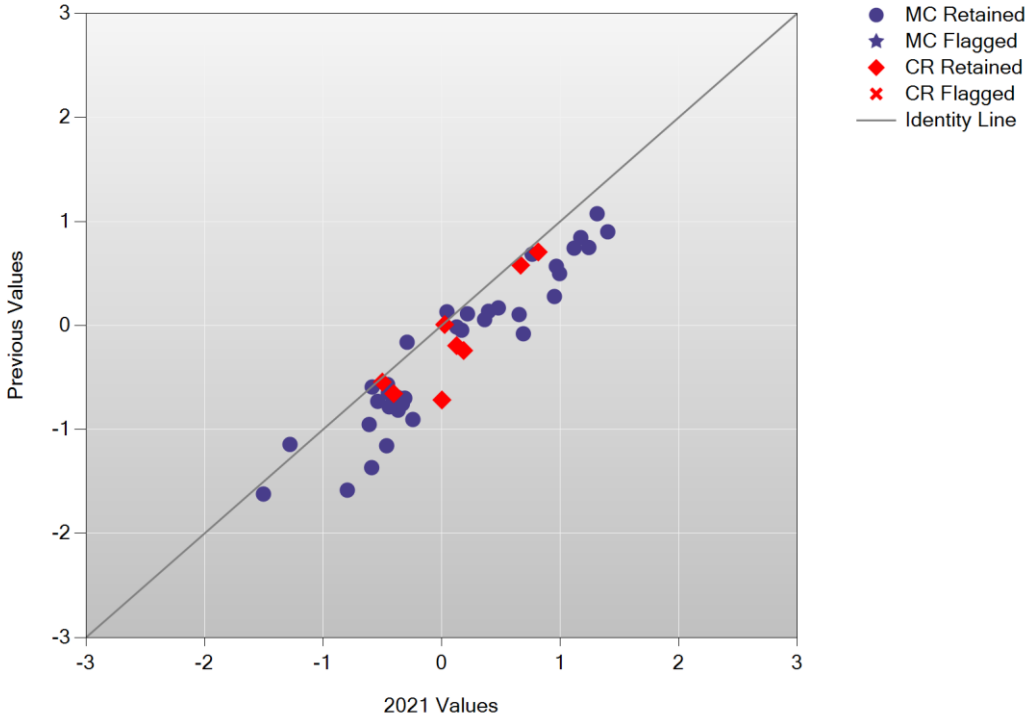
B/B Plot: Mathematics Grade 4



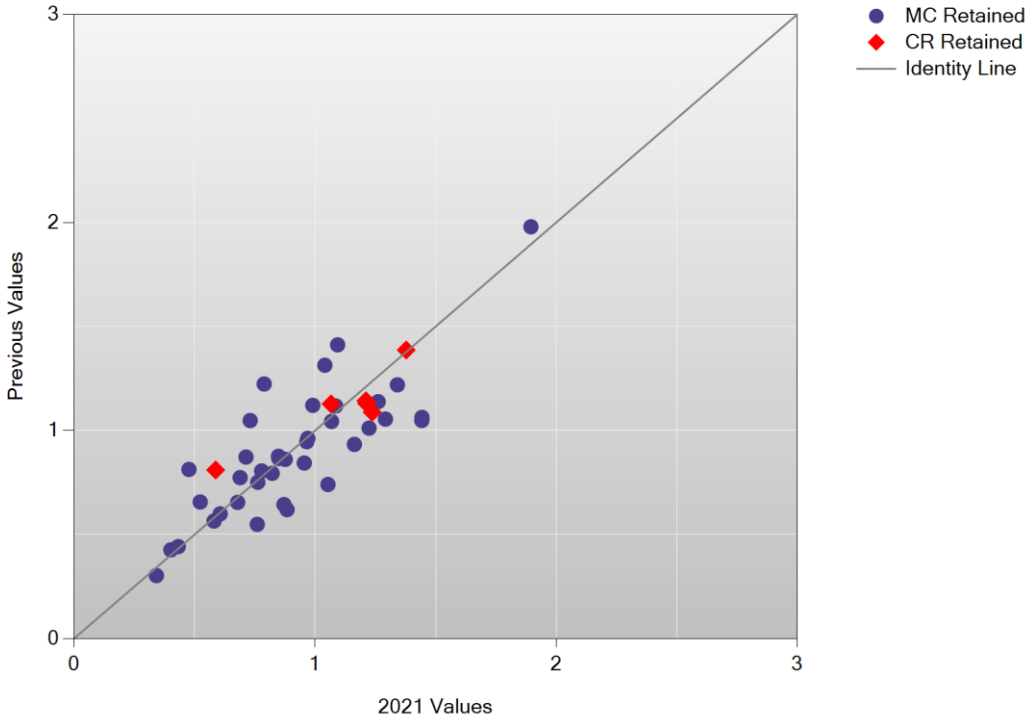
A/A Plot: Mathematics Grade 5



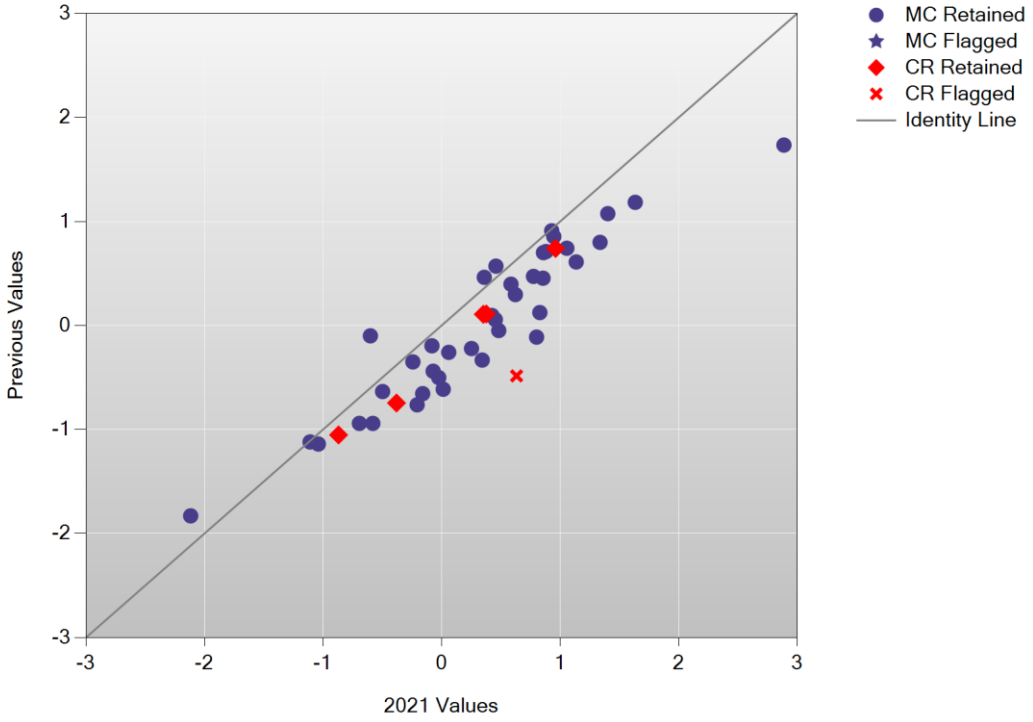
B/B Plot: Mathematics Grade 5



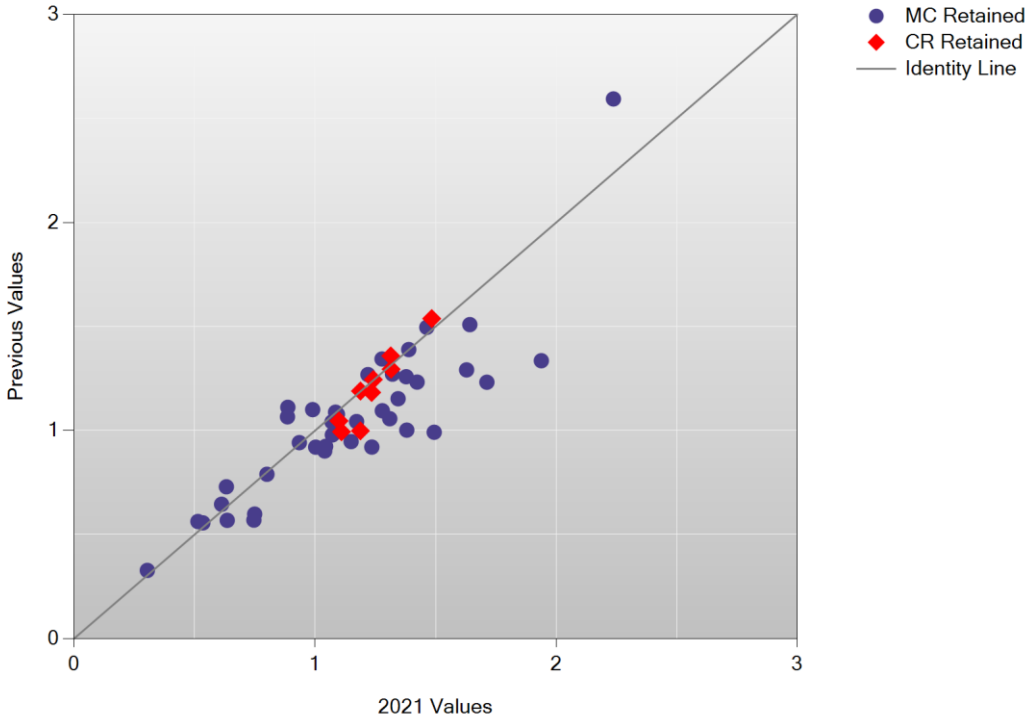
A/A Plot: Mathematics Grade 6



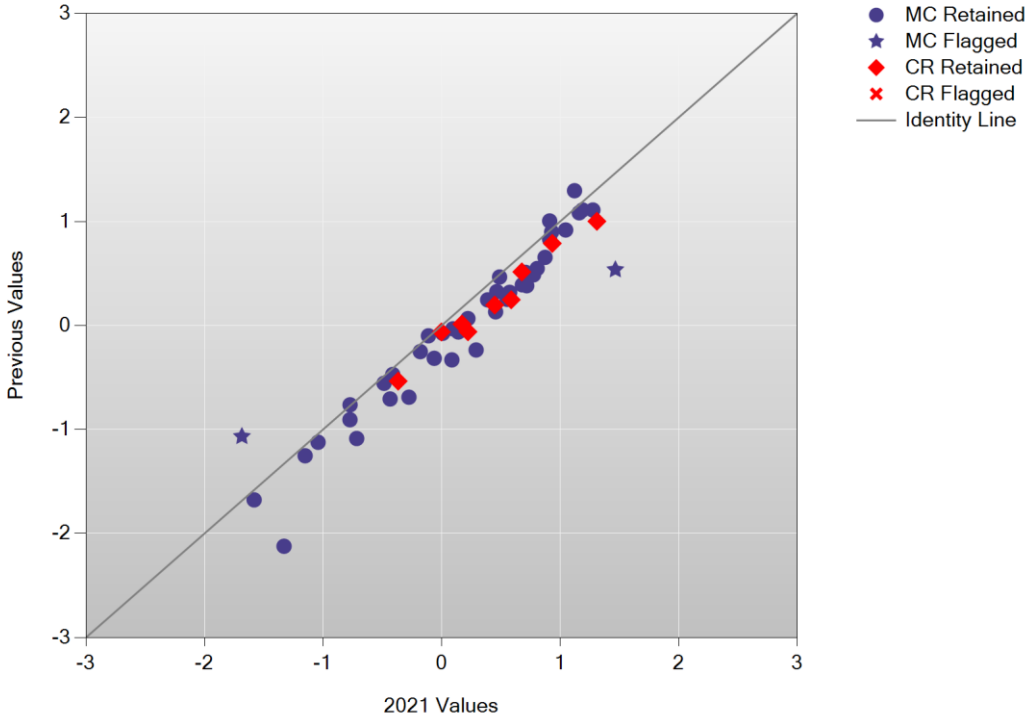
B/B Plot: Mathematics Grade 6



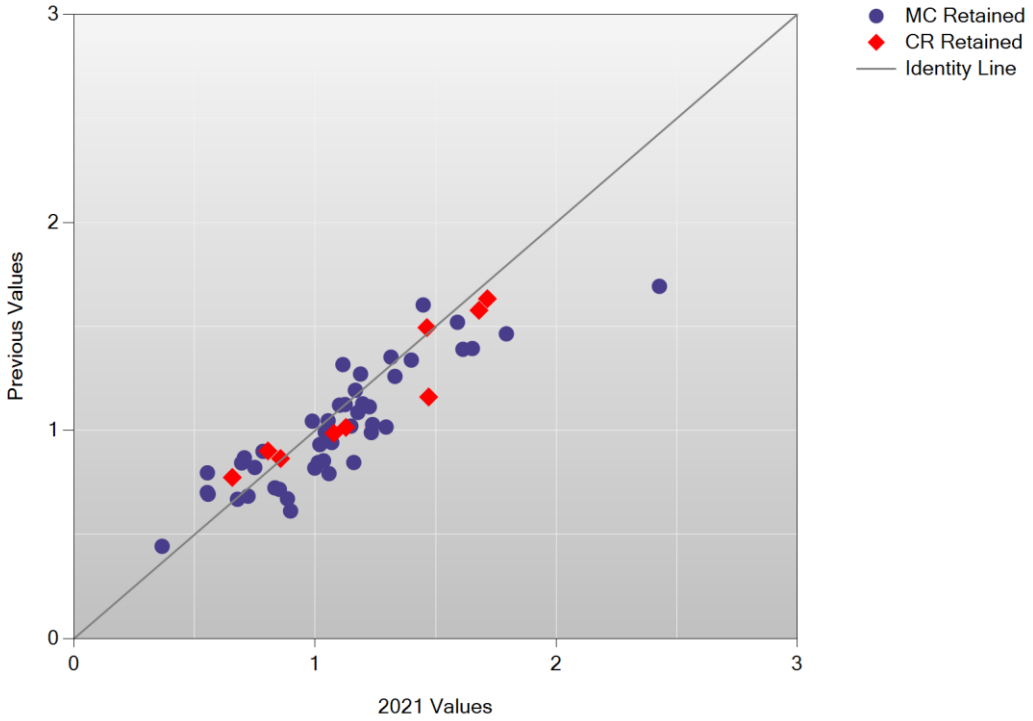
A/A Plot: Mathematics Grade 7



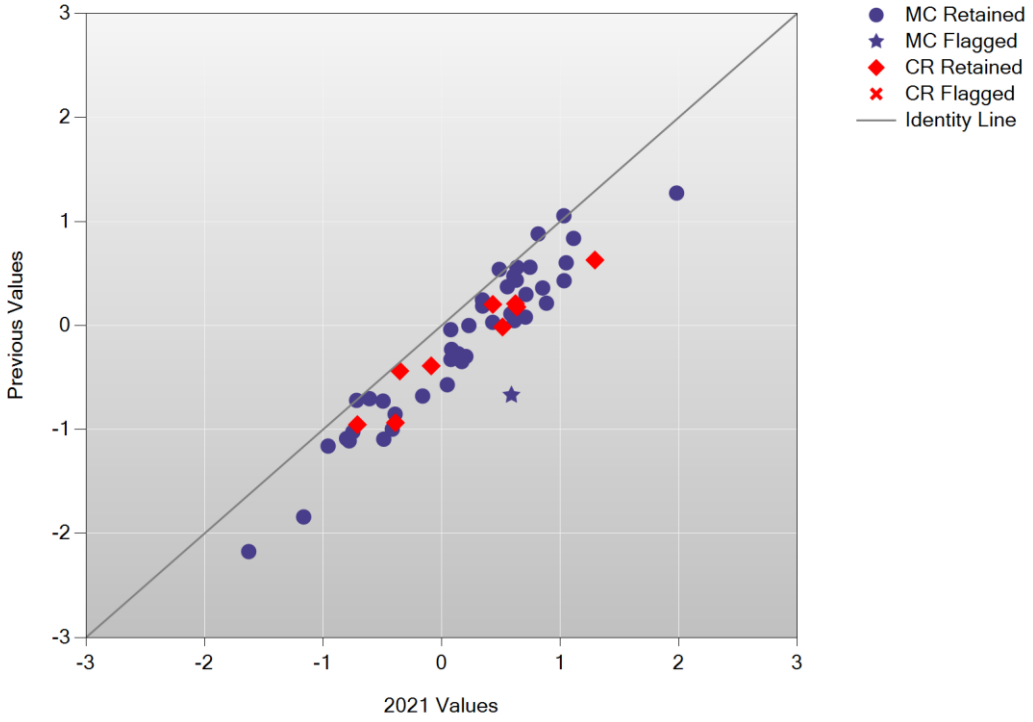
B/B Plot: Mathematics Grade 7



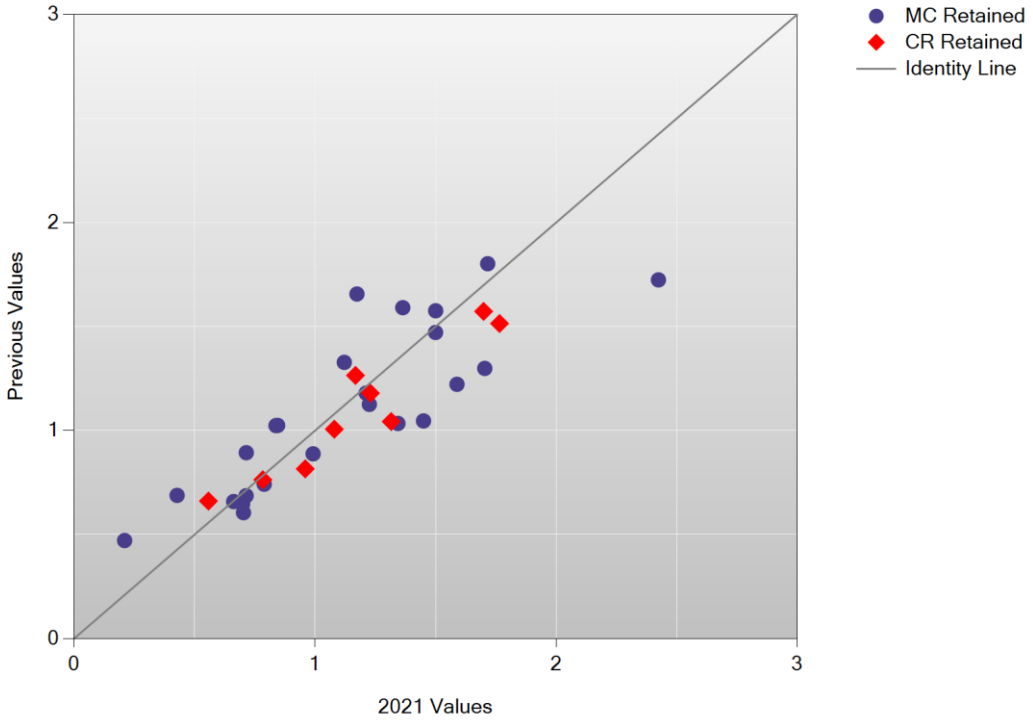
A/A Plot: Mathematics Grade 8



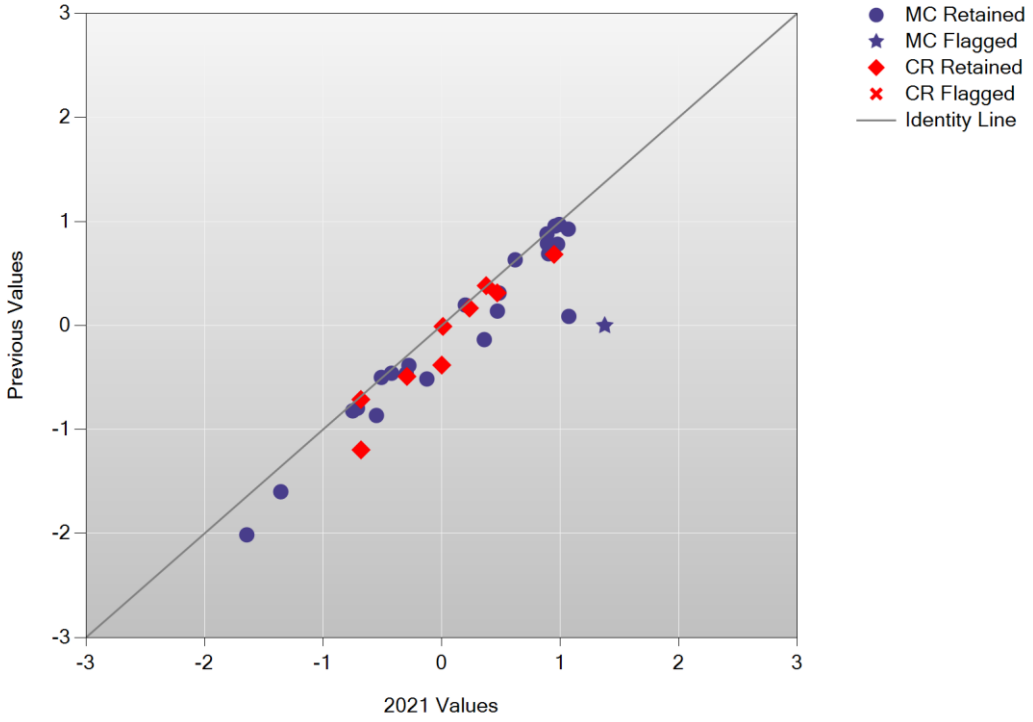
B/B Plot: Mathematics Grade 8



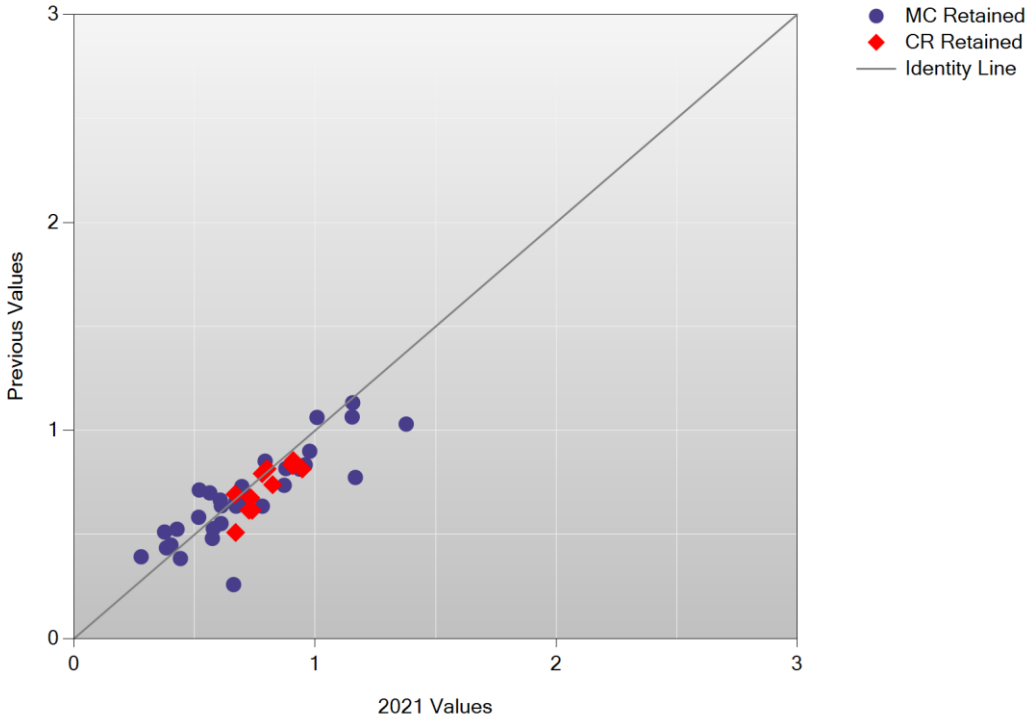
A/A Plot: Mathematics Grade 10



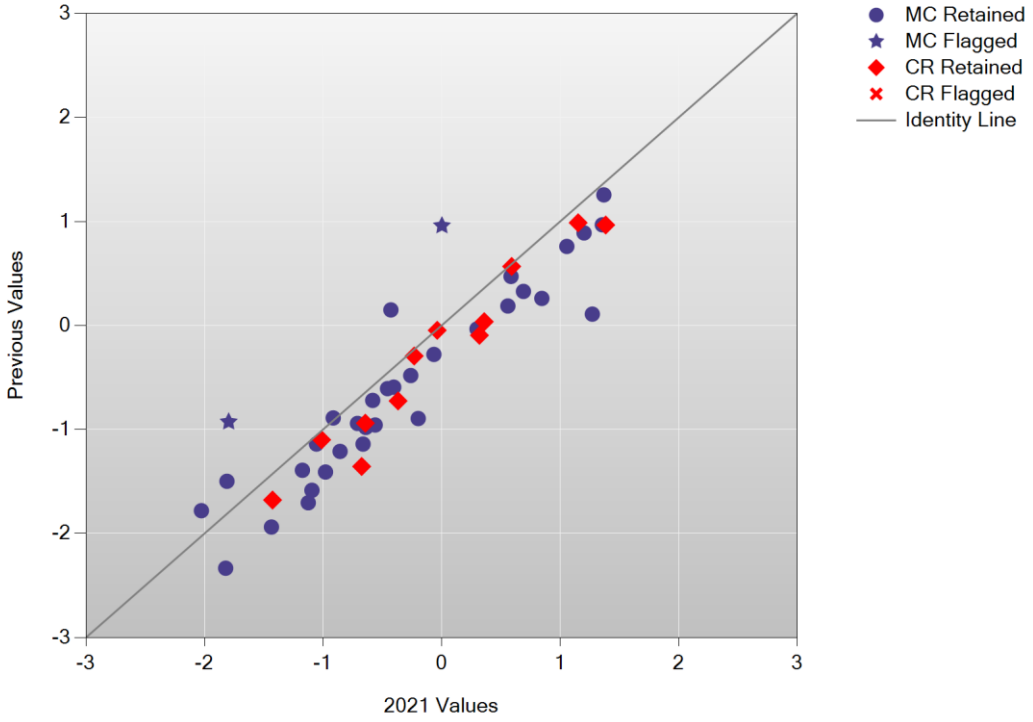
B/B Plot: Mathematics Grade 10



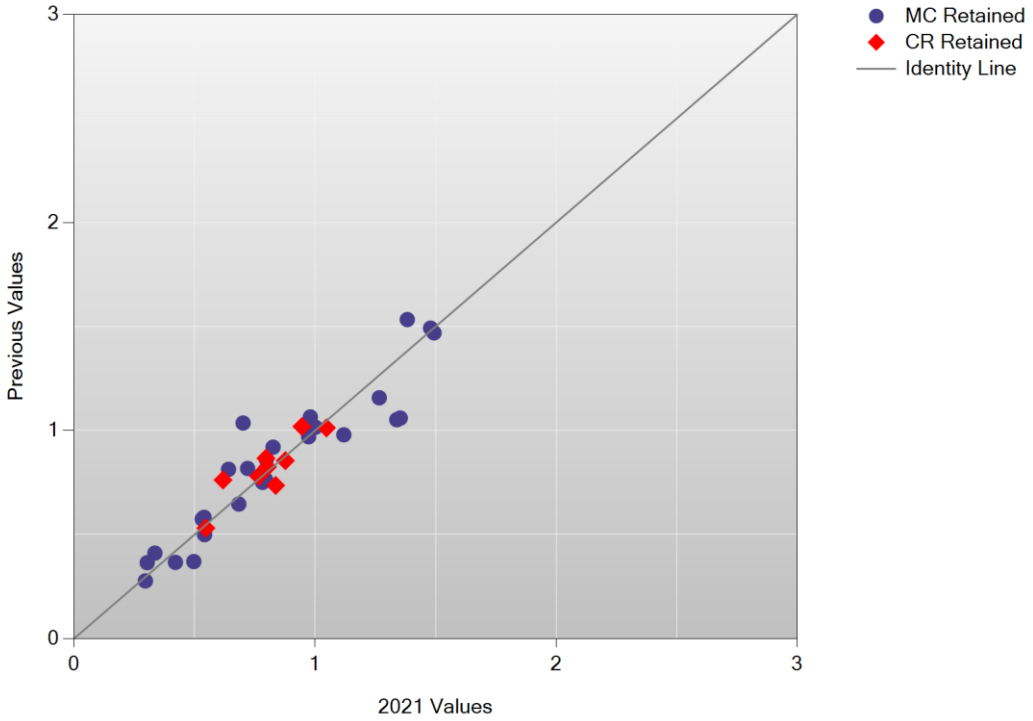
A/A Plot: Science Grade 5



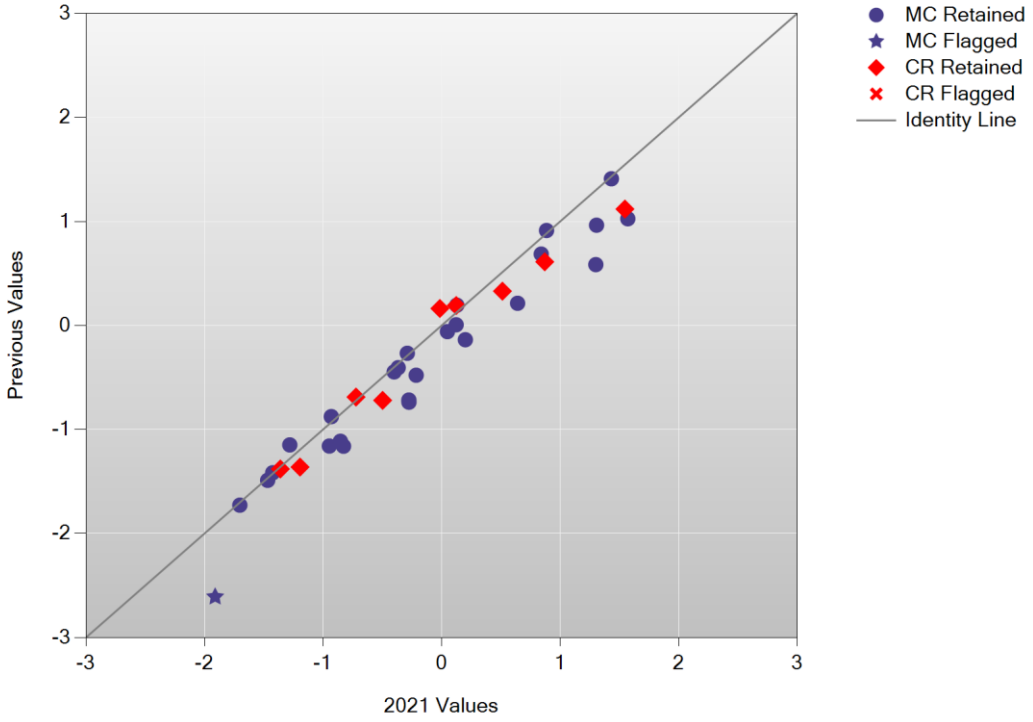
B/B Plot: Science Grade 5

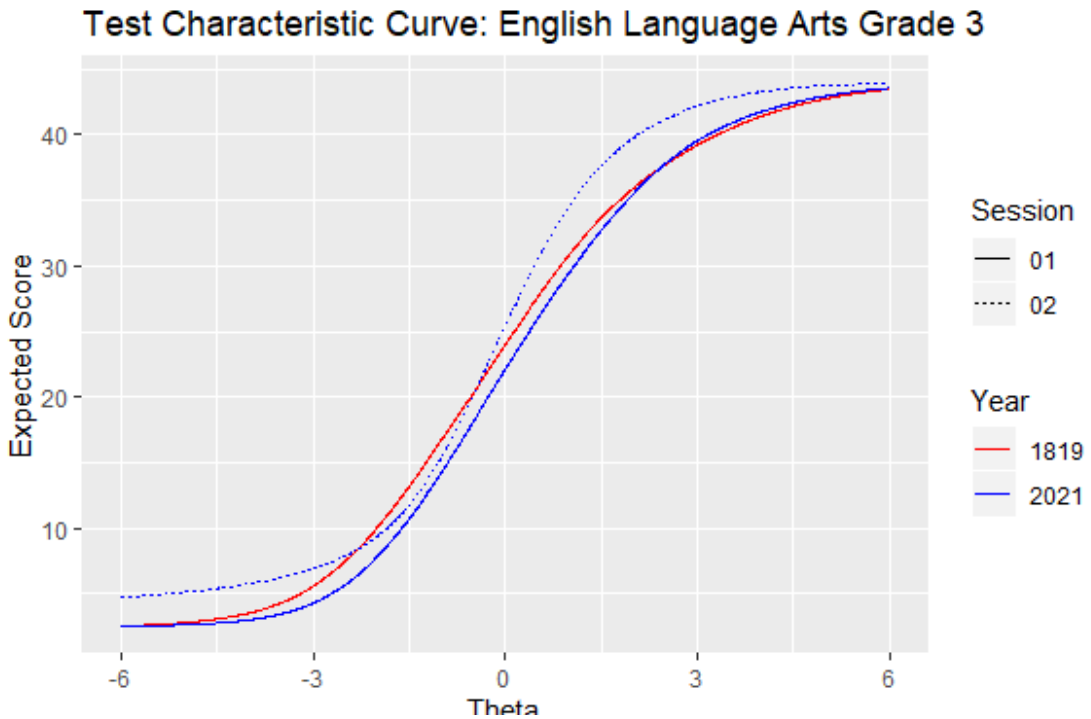


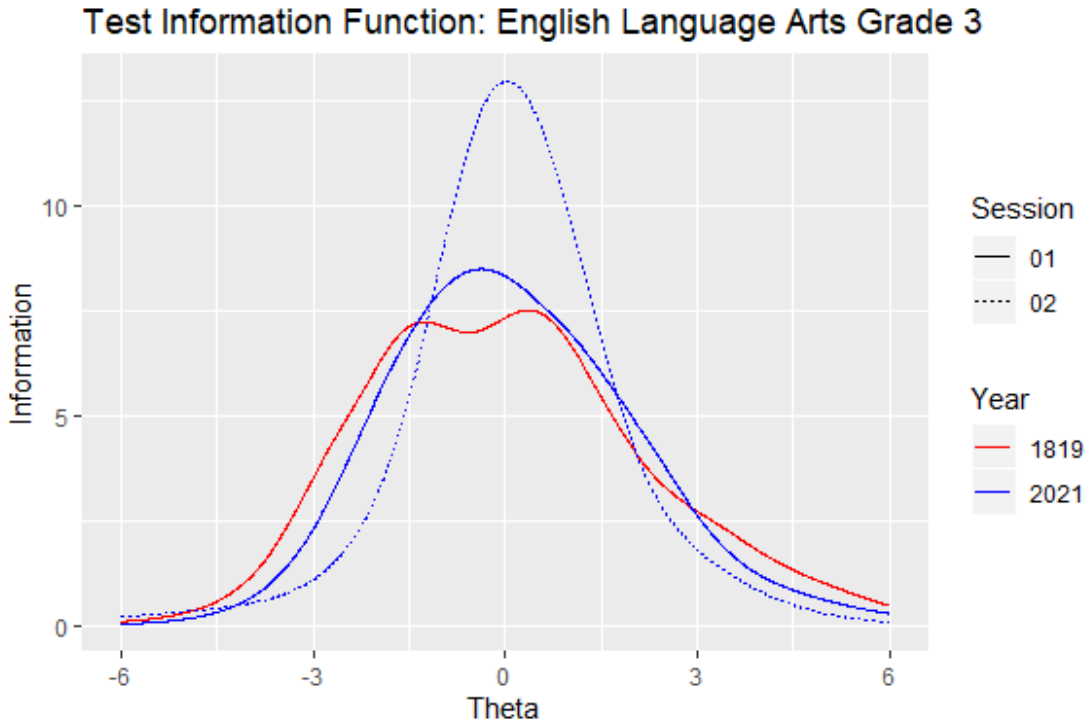
A/A Plot: Science Grade 8



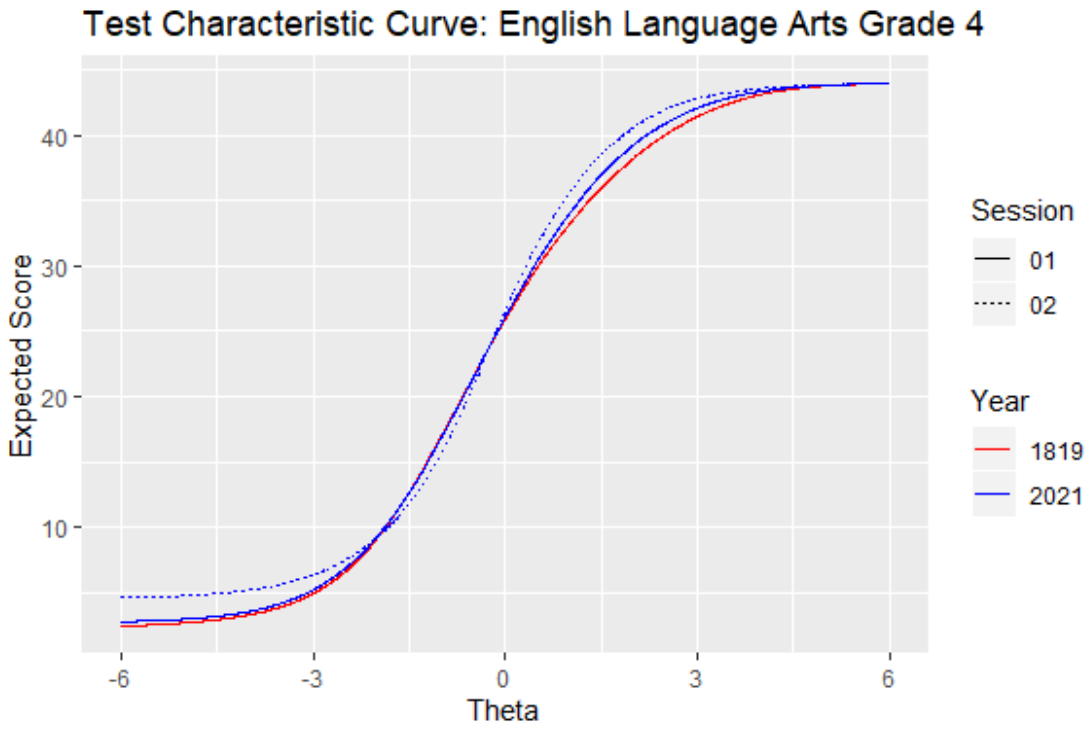
B/B Plot: Science Grade 8







Note. All TCC and TIF values in 2021 have been proportionalized to match the total score point in 1819.


Test Characteristic Curve: English Language Arts Grade 4
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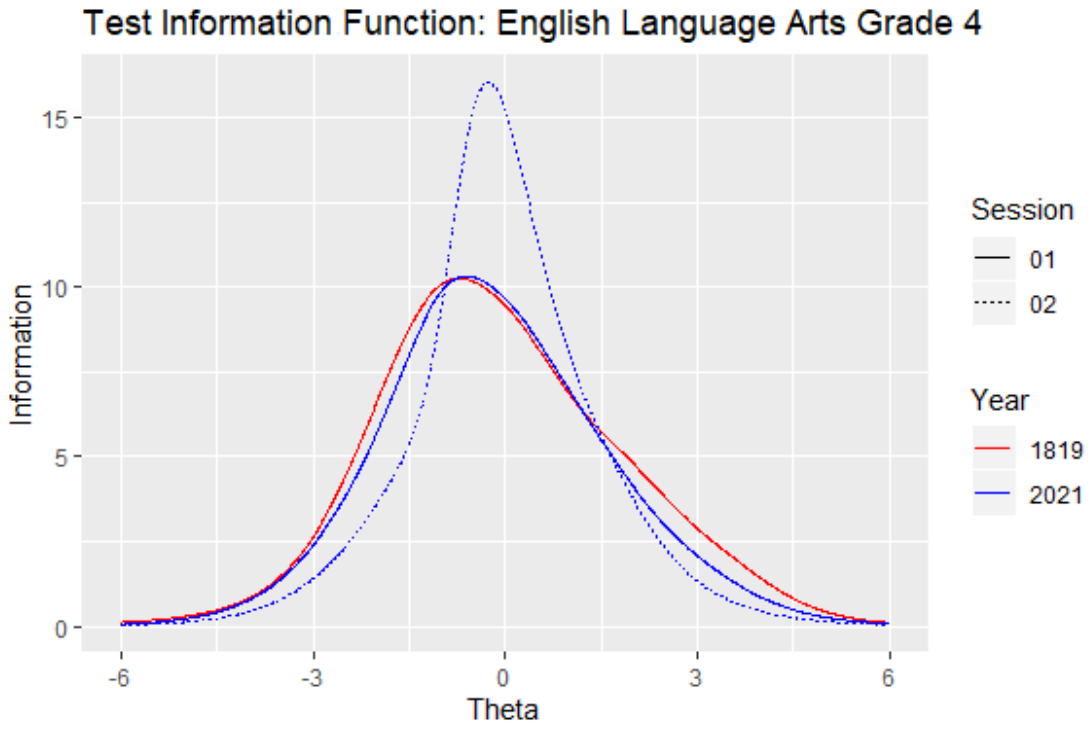
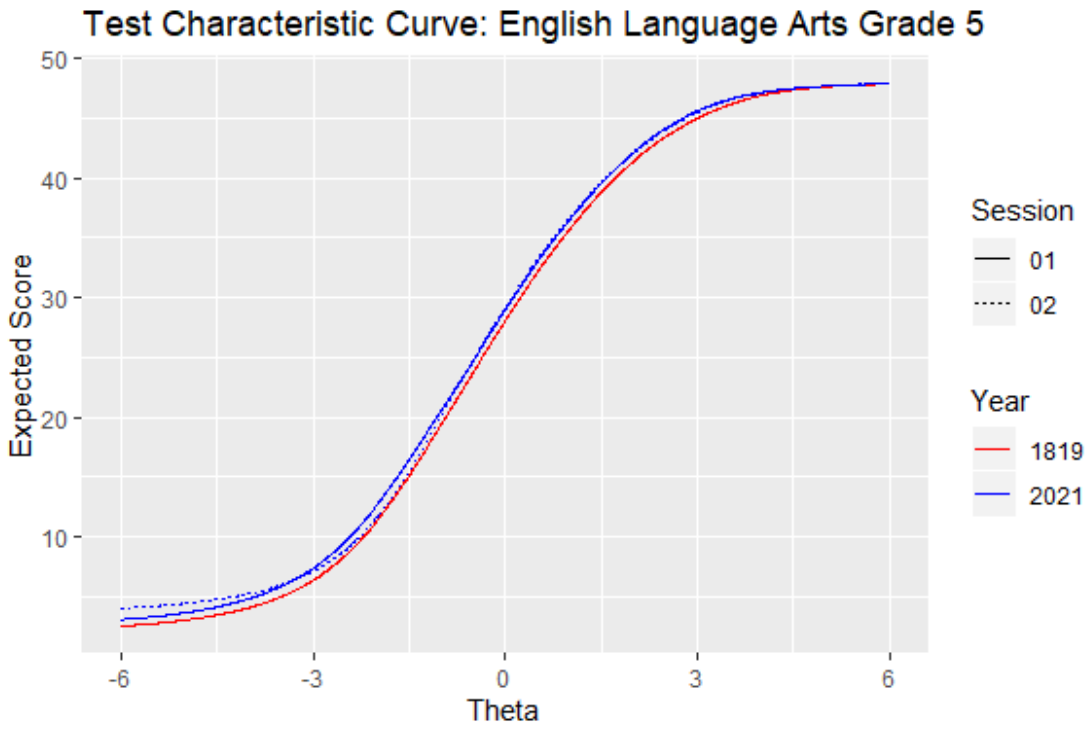
30
20
10
-6
-3
0
3
6
Theta
Session
01
02
Year
1819
2021


Test Information Function: English Language Arts Grade 4
Information
15
10
5
0
-6
-3
0
3
6
Theta
Session
01
02
Year
1819
2021


Test Characteristic Curve: English Language Arts Grade 5
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Year
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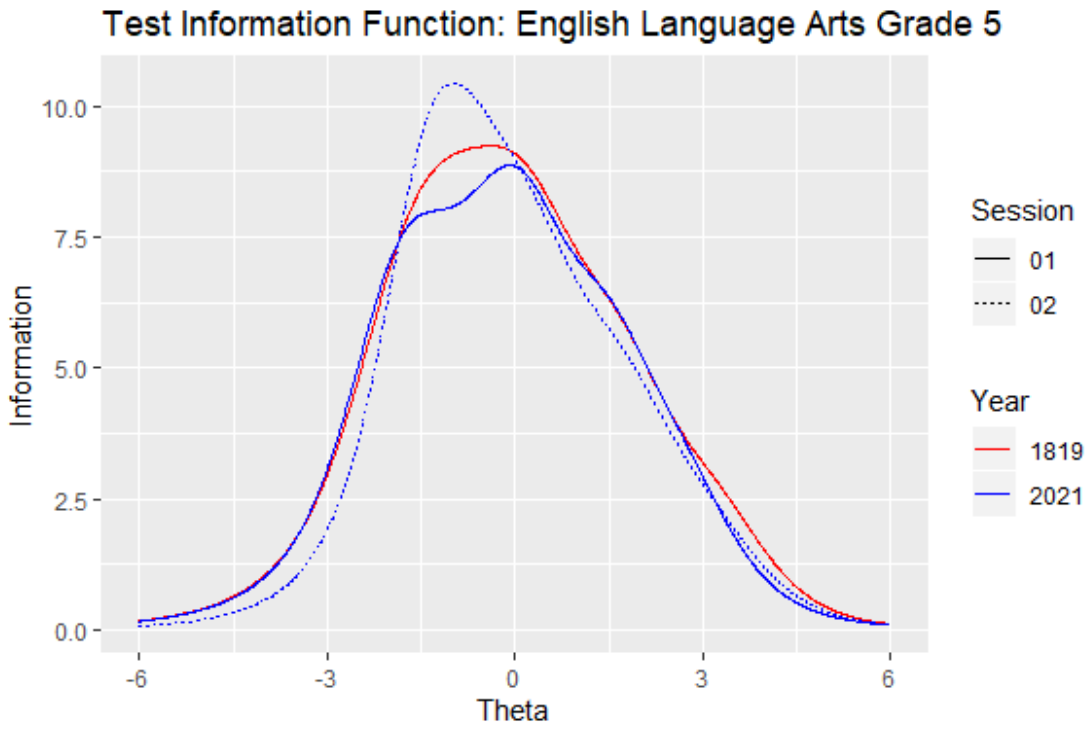
Test Information Function: English Language Arts Grade 5
Information
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Theta
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Year
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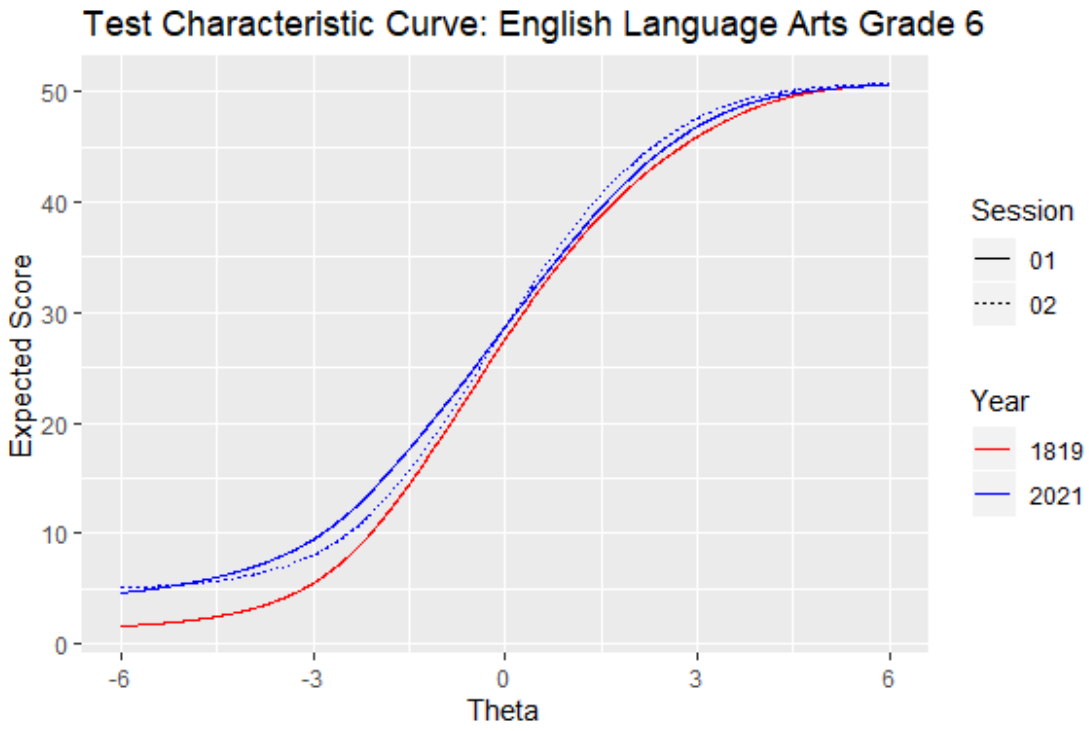
2021


Test Characteristic Curve: English Language Arts Grade 6
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Year
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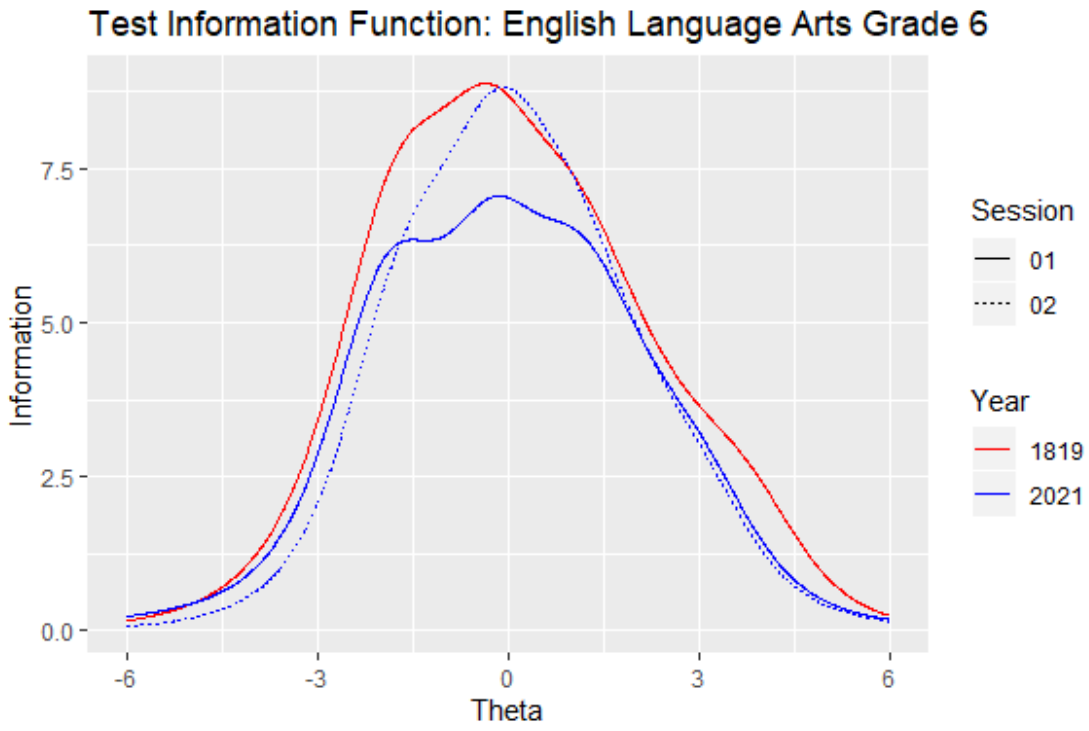
Test Information Function: English Language Arts Grade 6
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Theta
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Year
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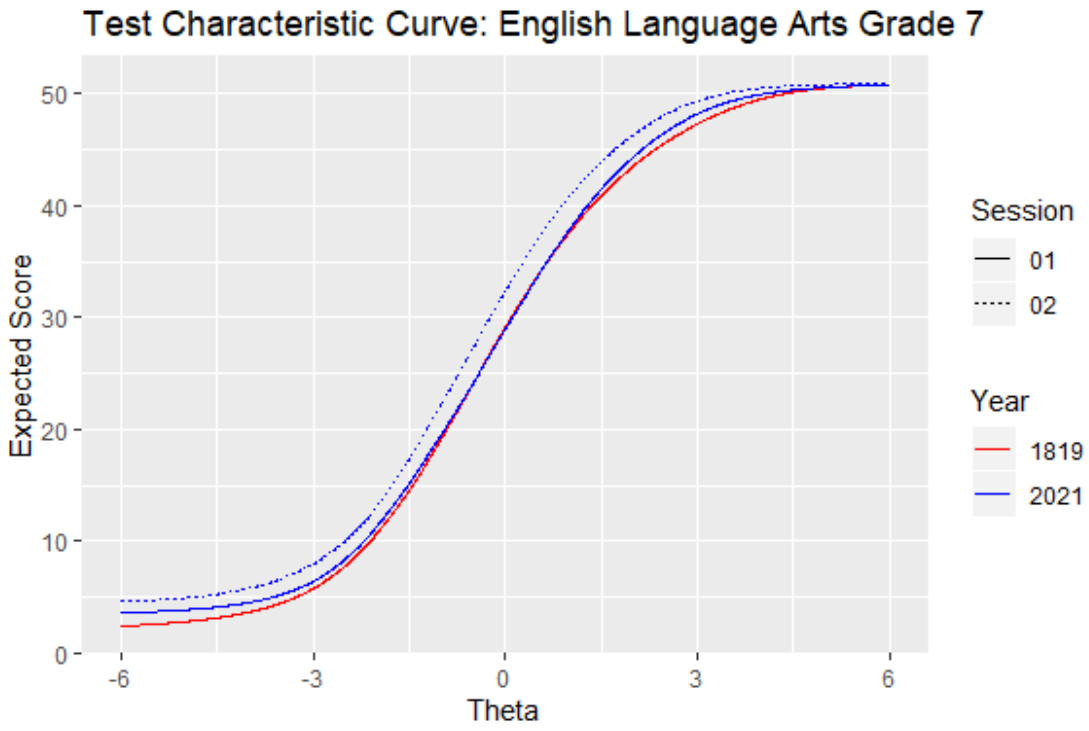
2021


Test Characteristic Curve: English Language Arts Grade 7
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Session
01
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Year
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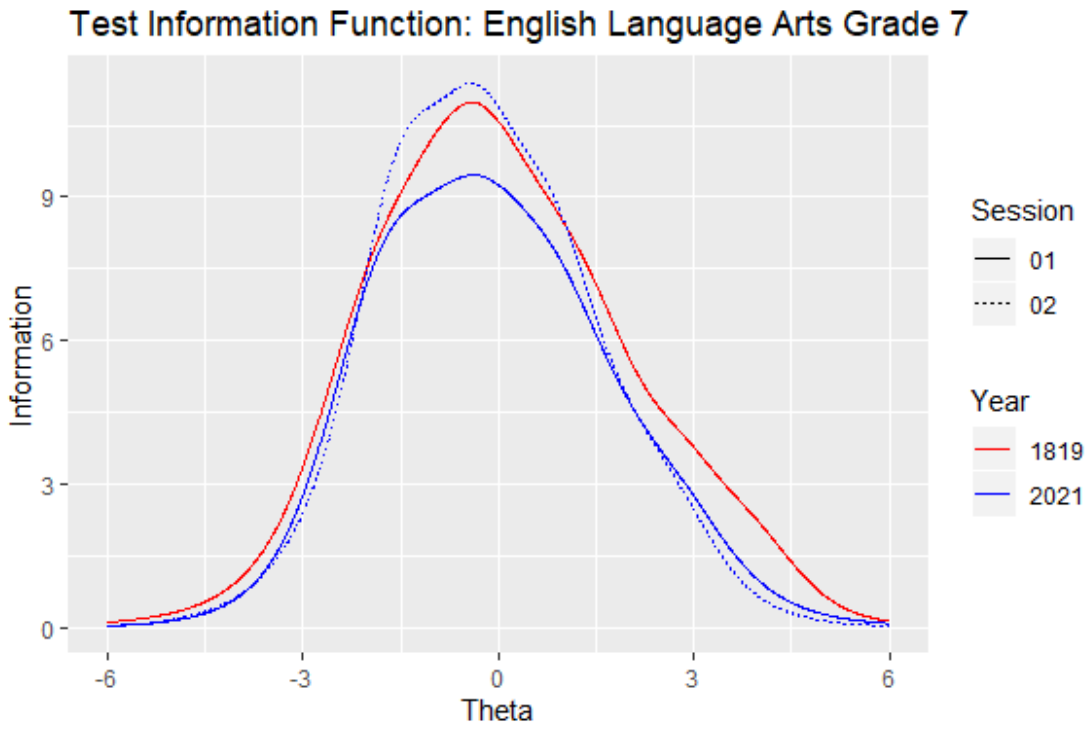
2021


Test Information Function: English Language Arts Grade 7
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Year
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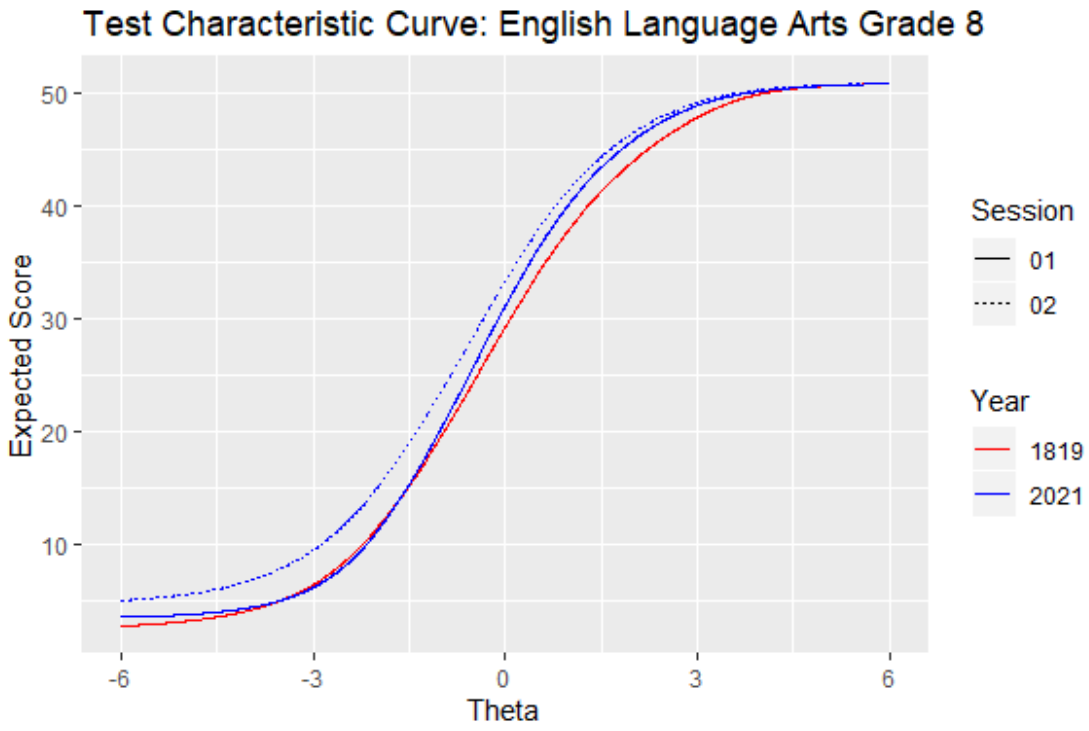
2021


Test Characteristic Curve: English Language Arts Grade 8
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Year
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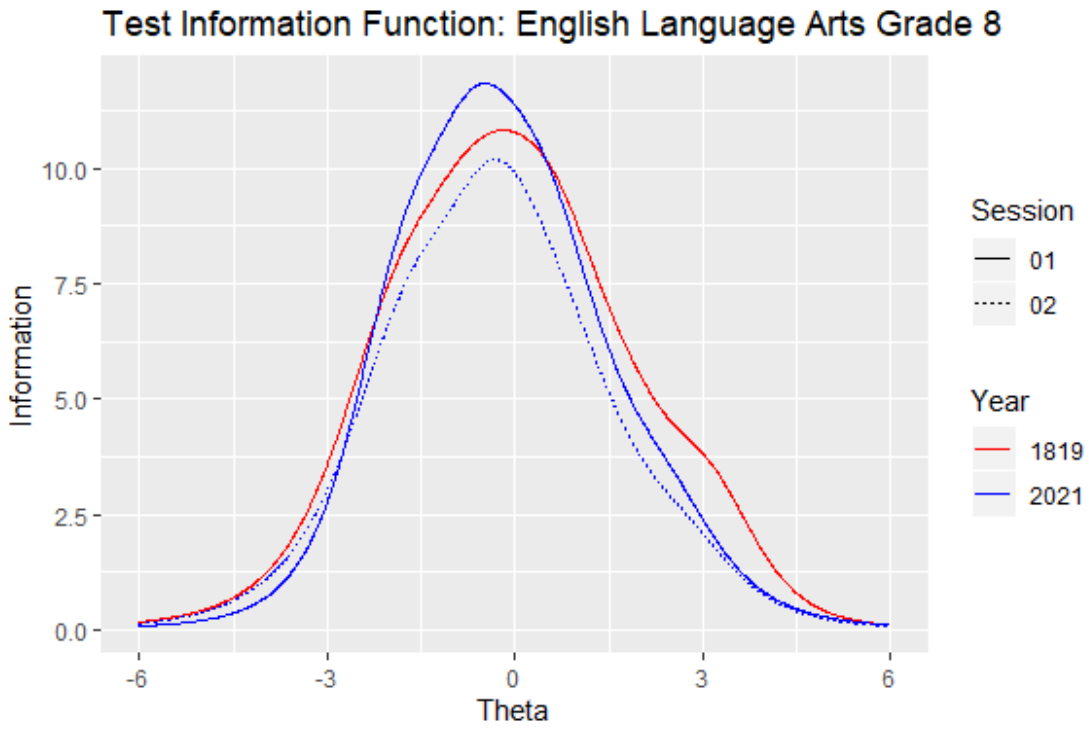
Test Information Function: English Language Arts Grade 8
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Year
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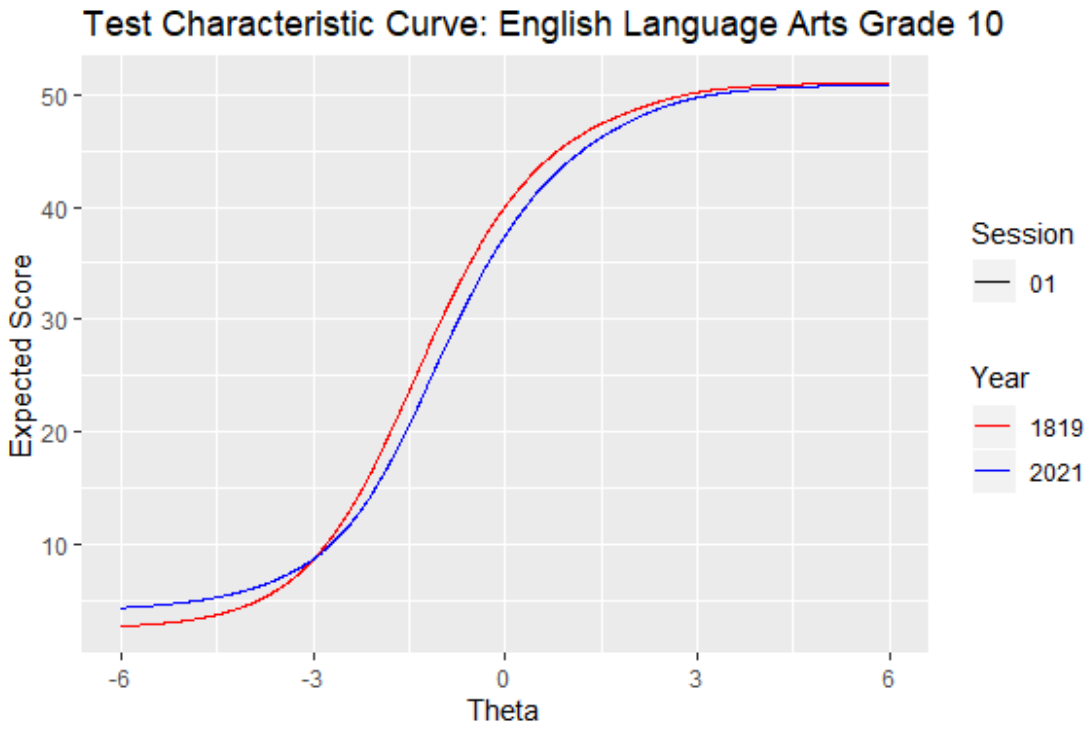
Test Characteristic Curve: English Language Arts Grade 10
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Year
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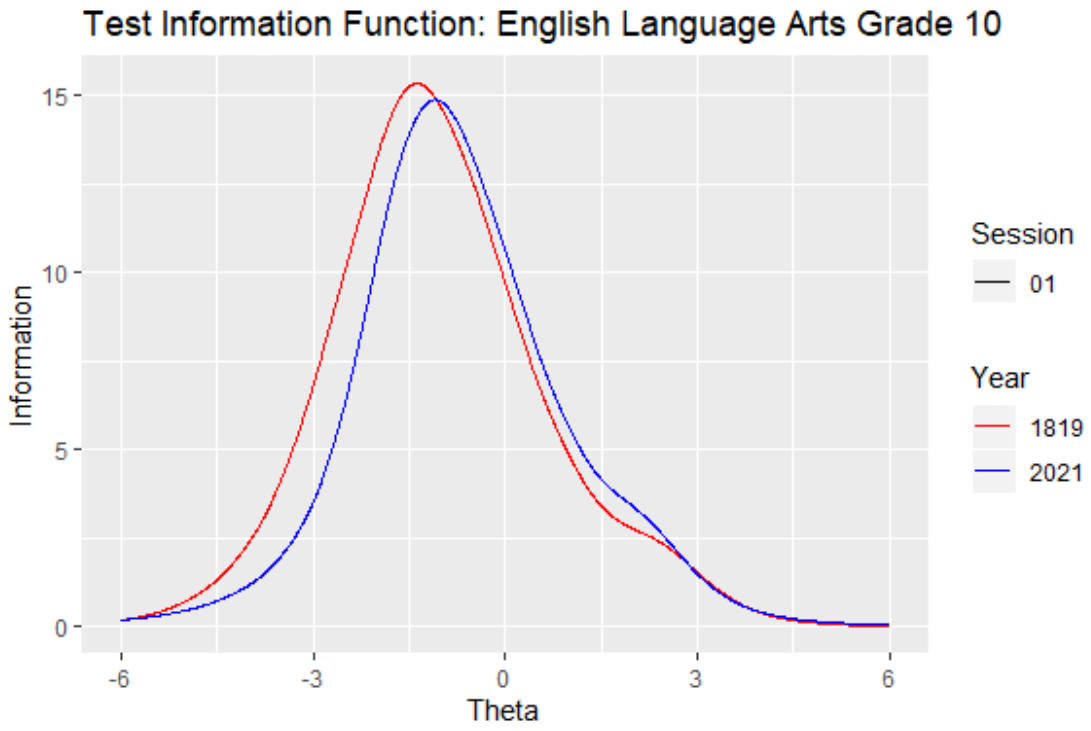
2021


Test Information Function: English Language Arts Grade 10
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Session
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Year
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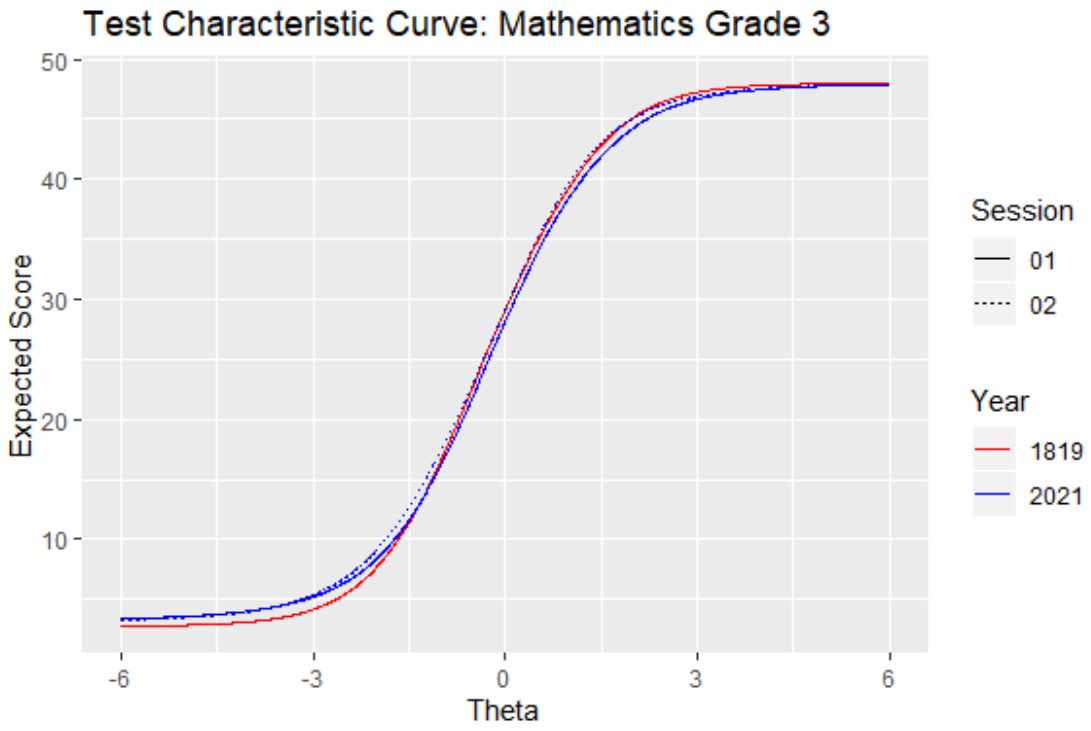
2021


Test Characteristic Curve: Mathematics Grade 3
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Year
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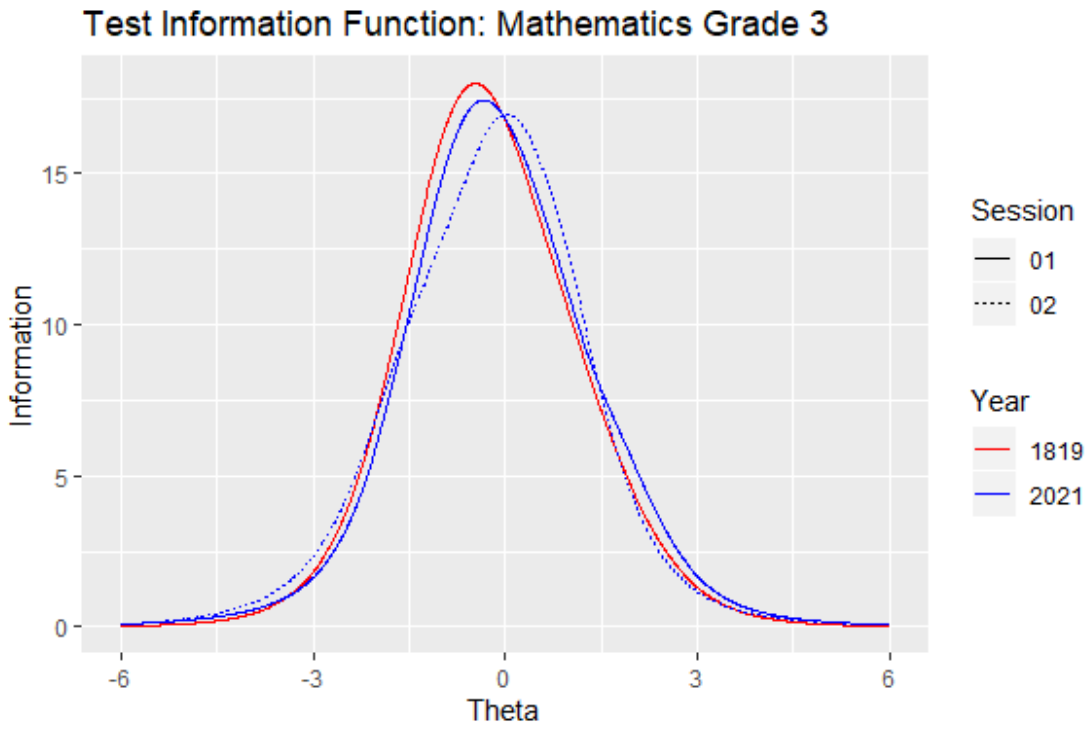
Test Information Function: Mathematics Grade 3
Information
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Year
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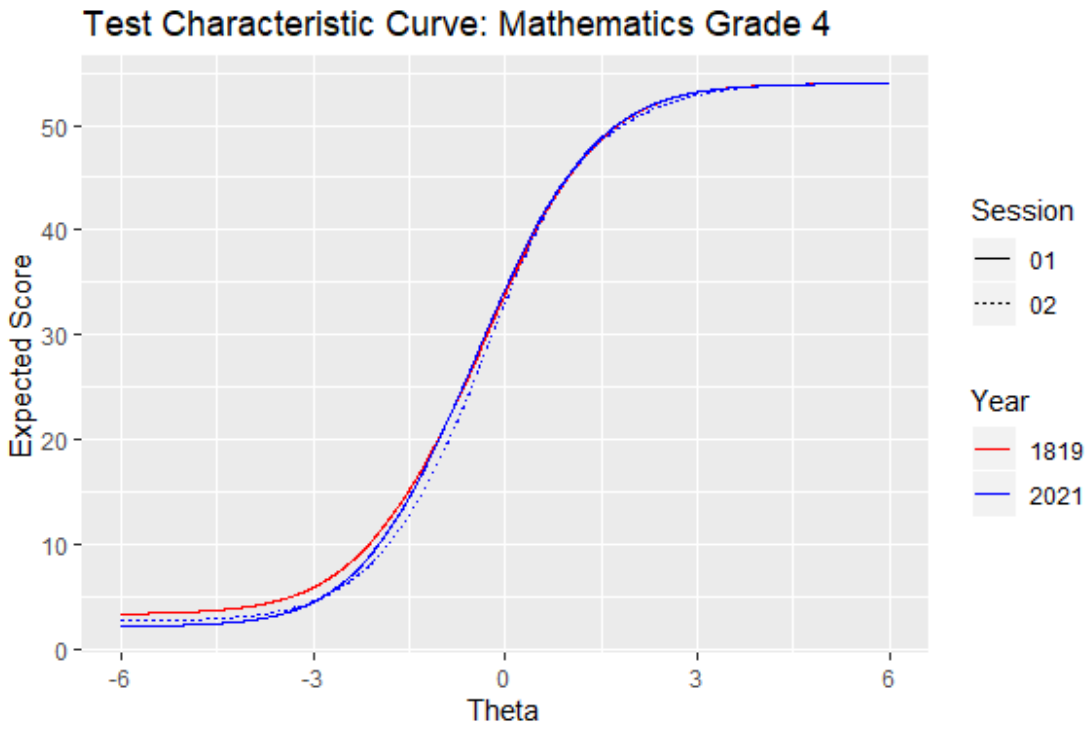
Test Characteristic Curve: Mathematics Grade 4
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Session
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02
Year
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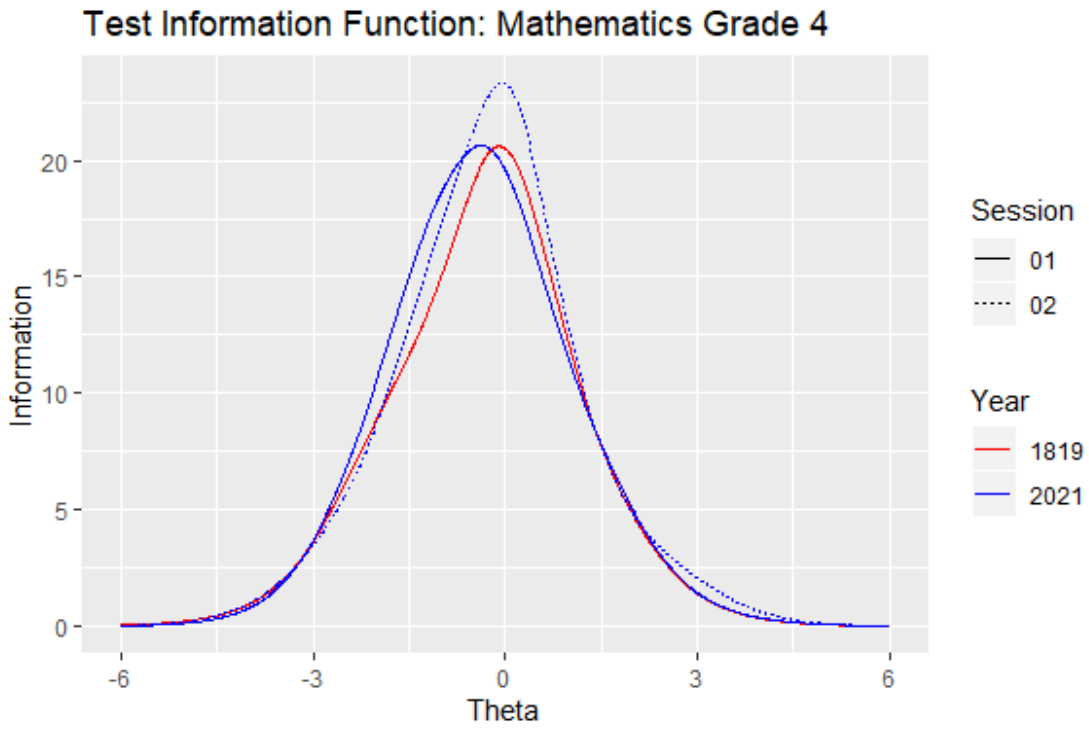
Test Information Function: Mathematics Grade 4
Information
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Year
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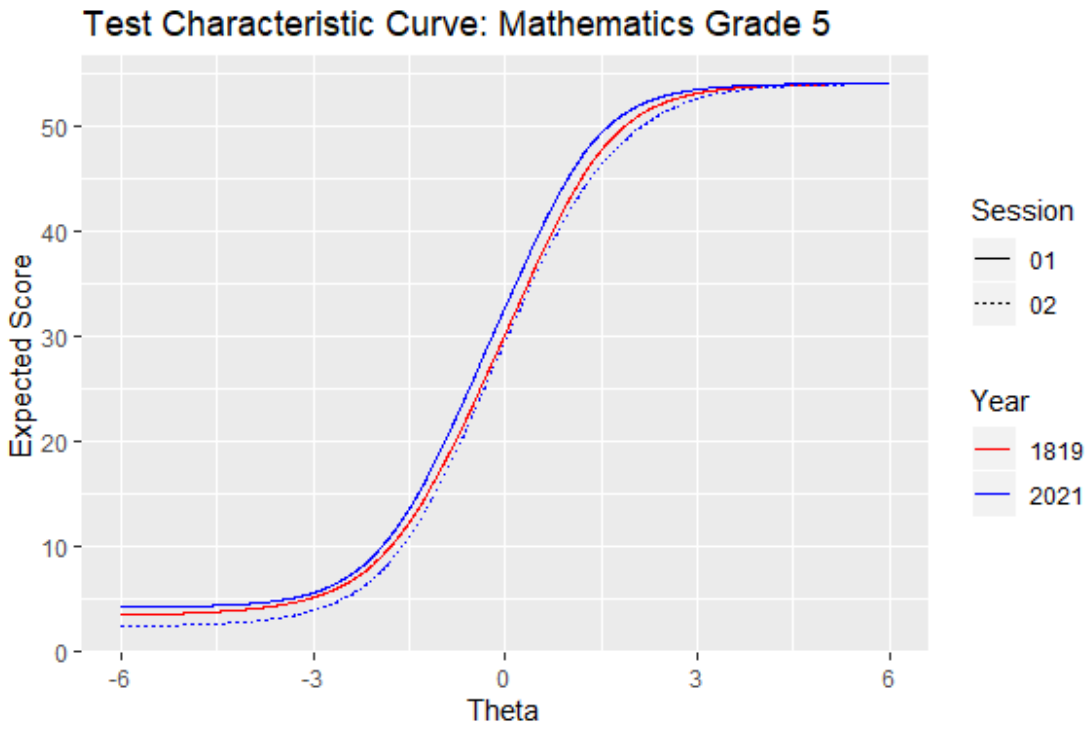
Test Characteristic Curve: Mathematics Grade 5
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Session
01
02
Year
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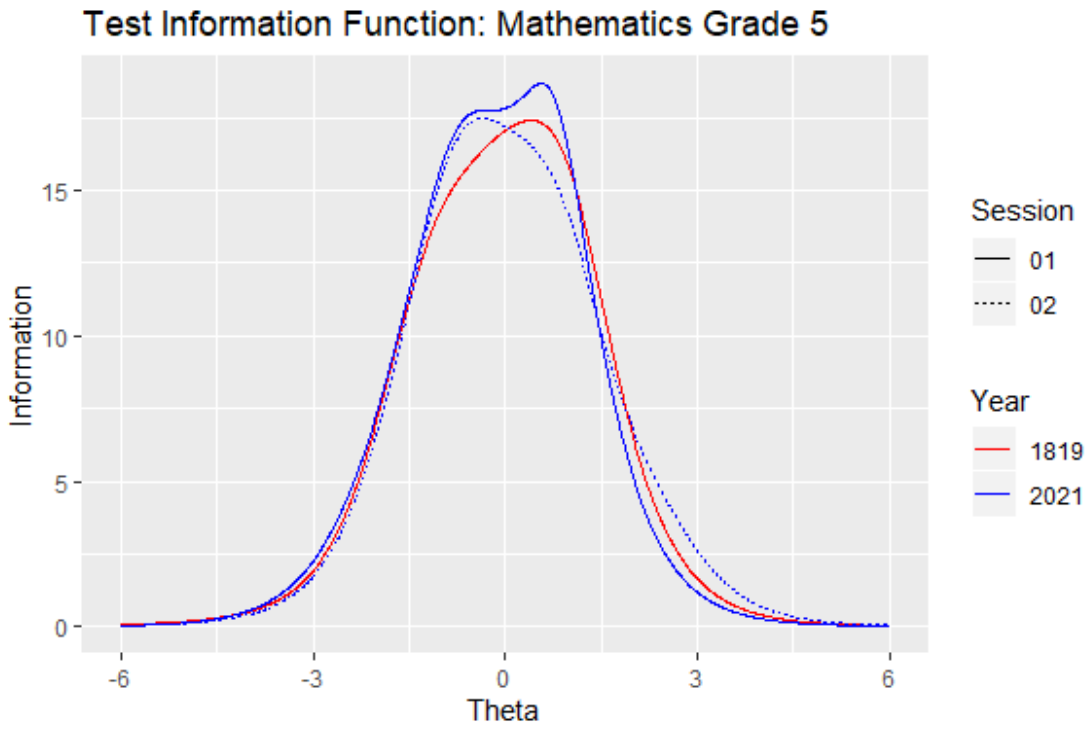
2021


Test Information Function: Mathematics Grade 5
Information
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Theta
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Year
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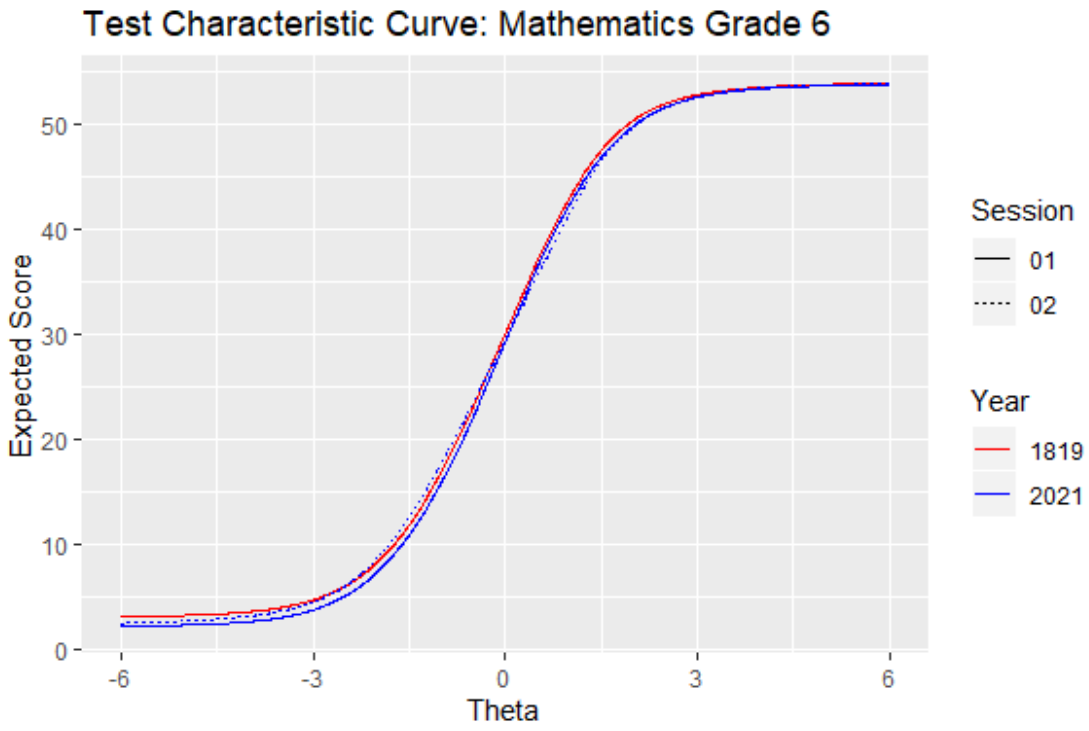
2021


Test Characteristic Curve: Mathematics Grade 6
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Year
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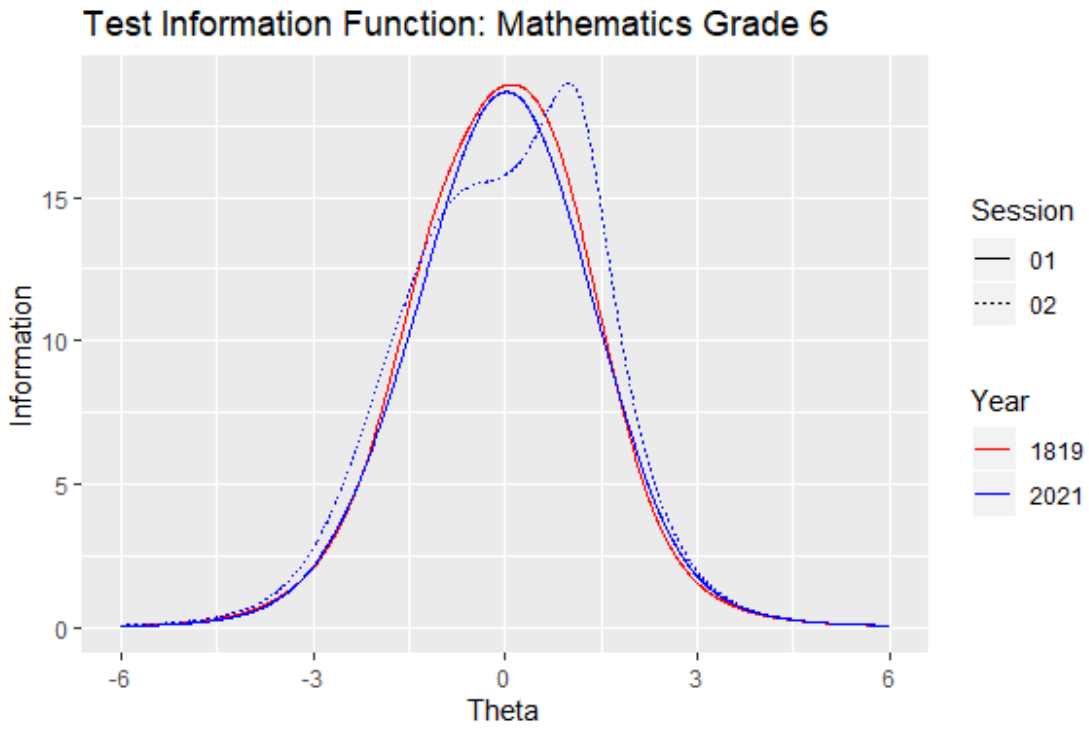
Test Information Function: Mathematics Grade 6
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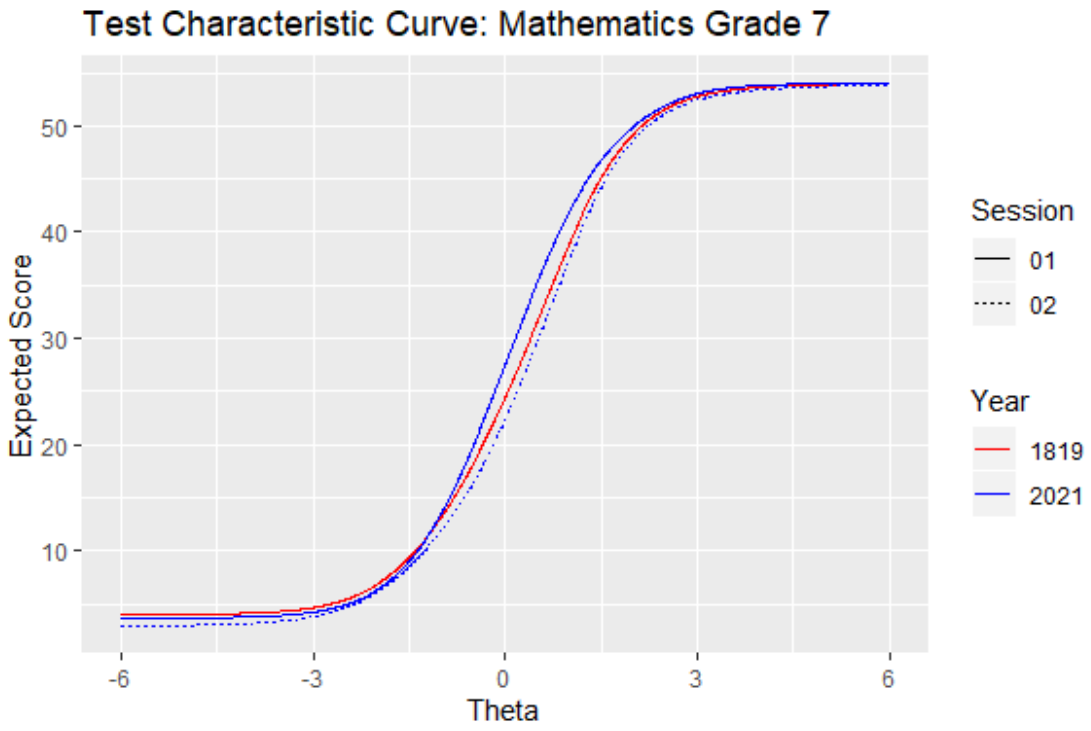
2021


Test Characteristic Curve: Mathematics Grade 7
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Year
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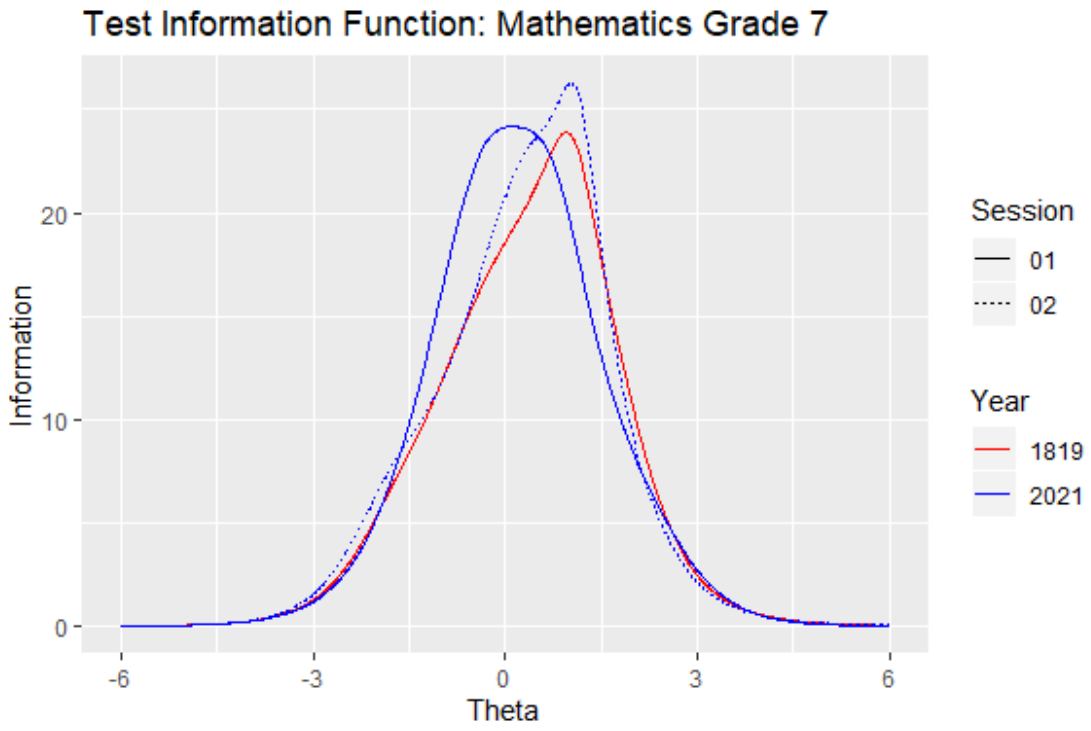
2021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Year
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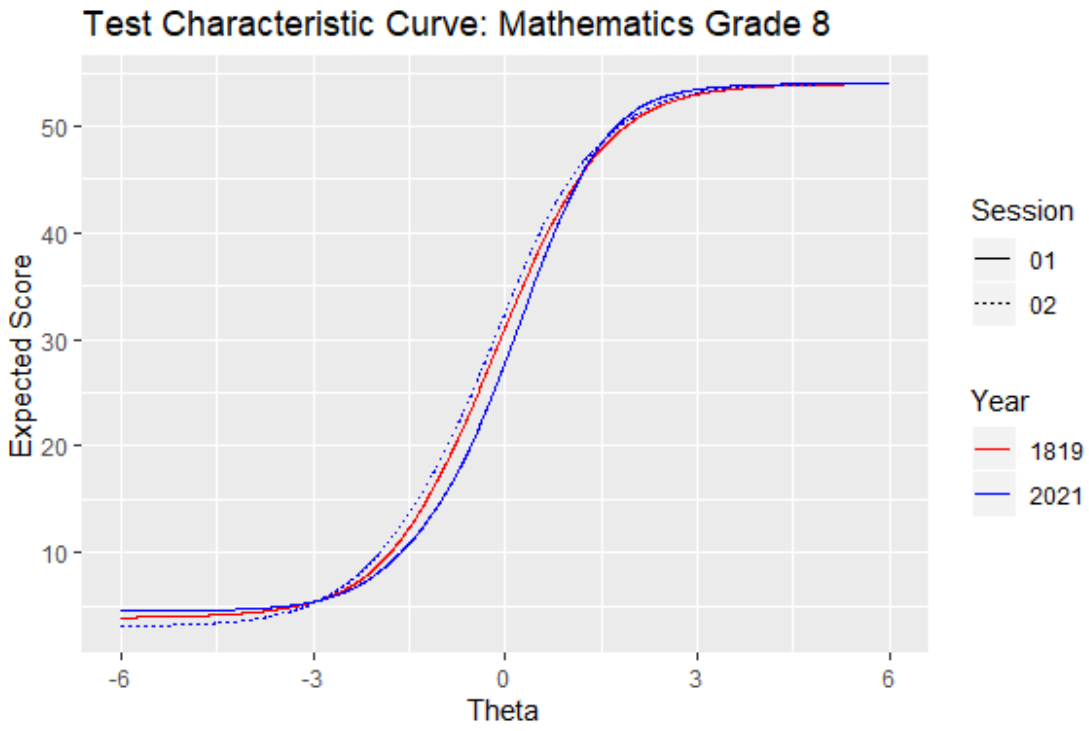
Test Characteristic Curve: Mathematics Grade 8
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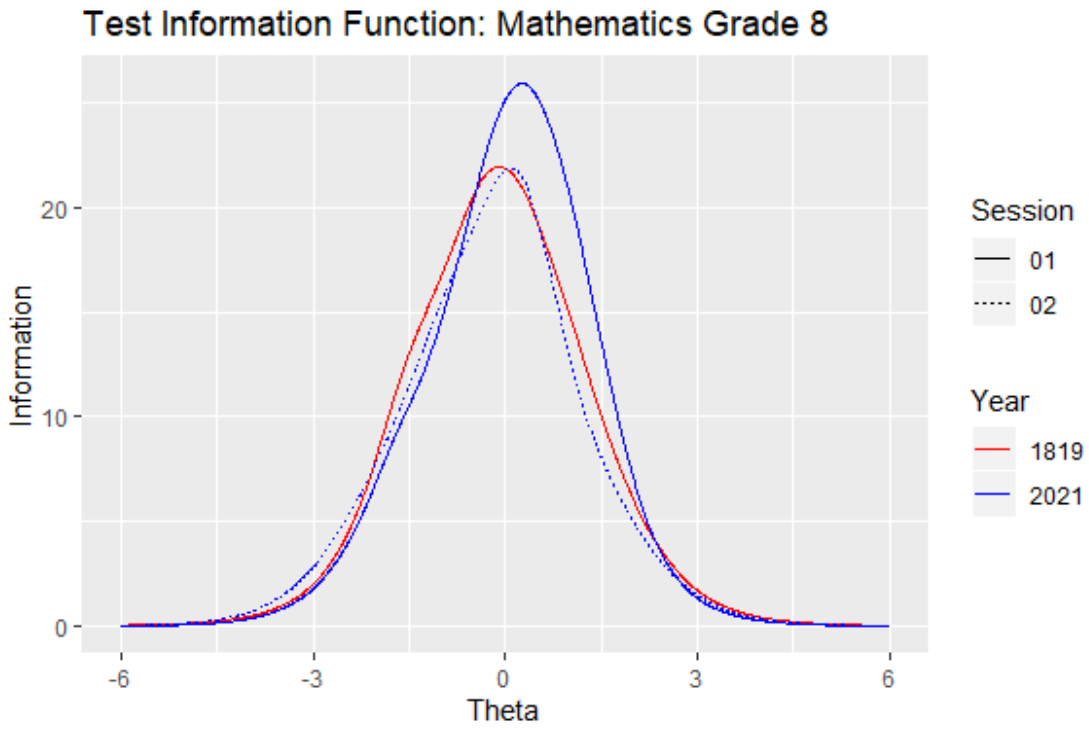
Year
1819
2021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Information
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Session
01
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Year
1819
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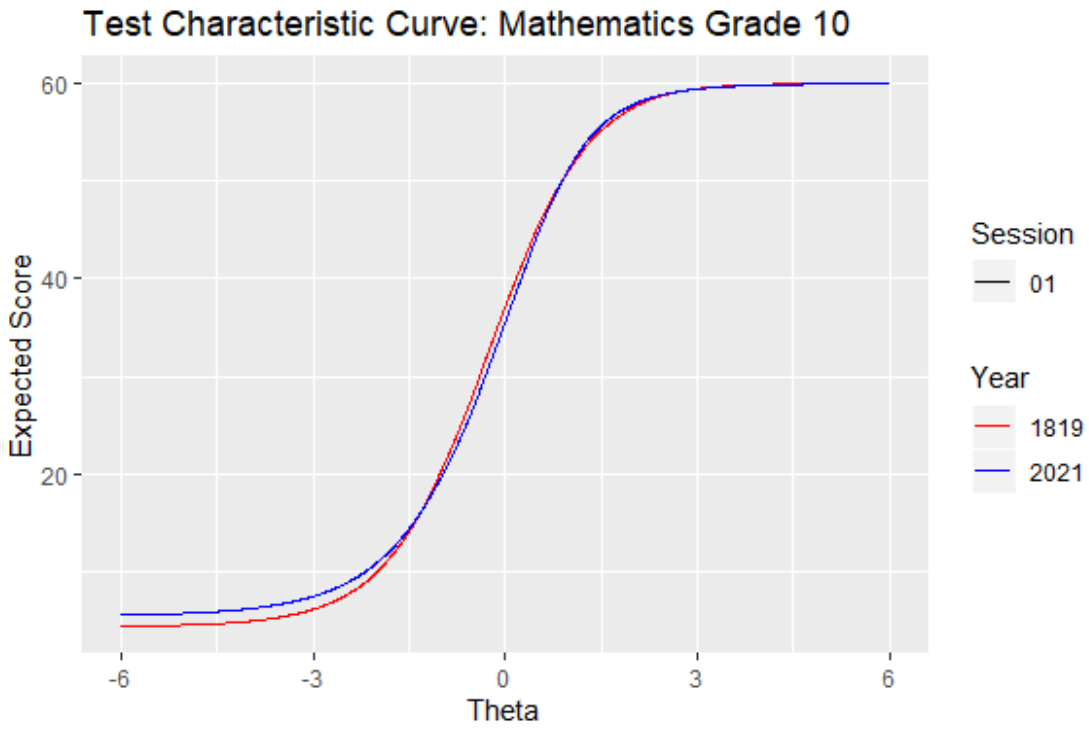
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Year
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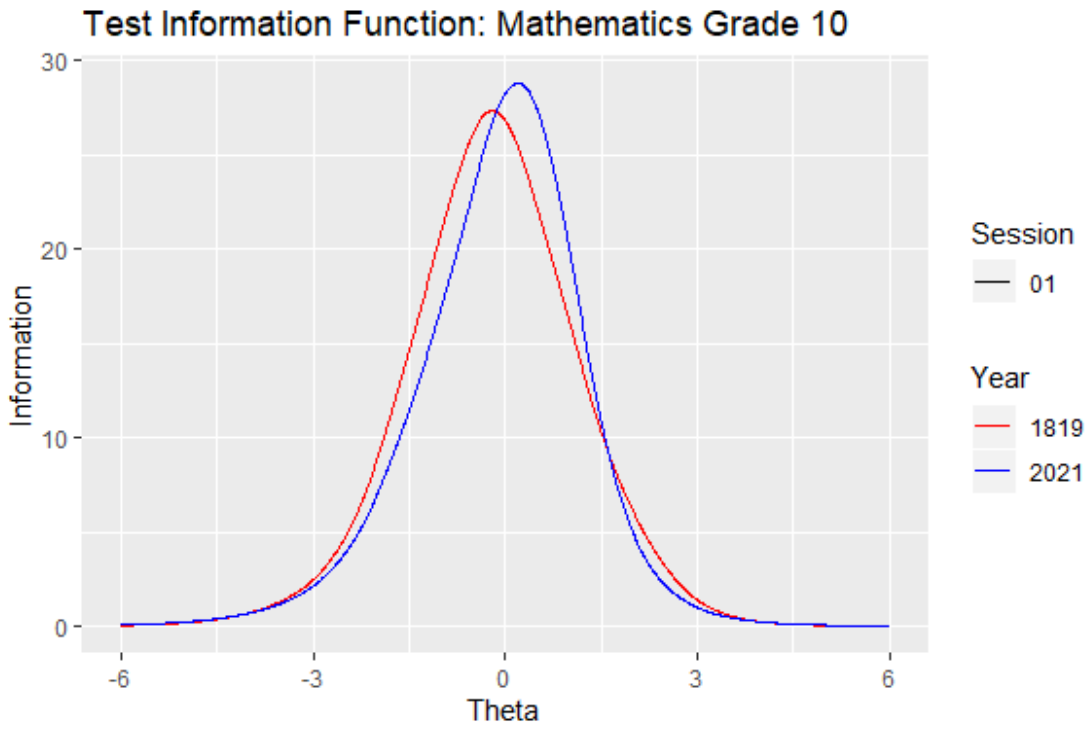
Test Information Function: Mathematics Grade 10
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Session
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Year
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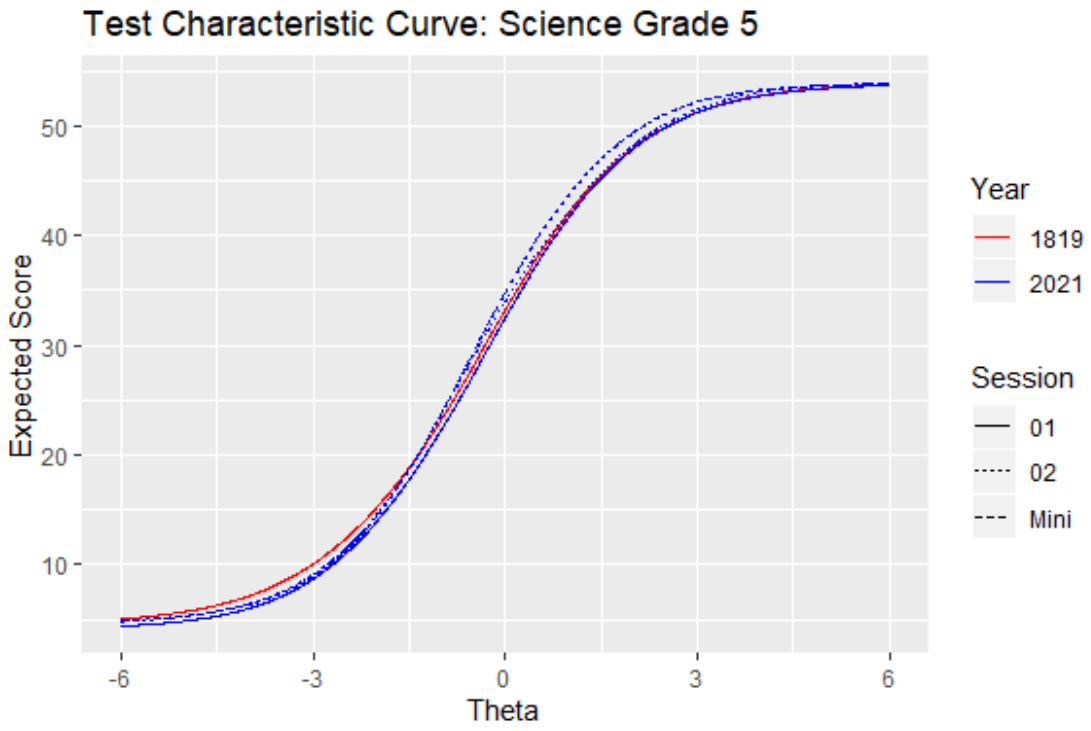
2021


Test Characteristic Curve: Science Grade 5
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Year
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2021
Session
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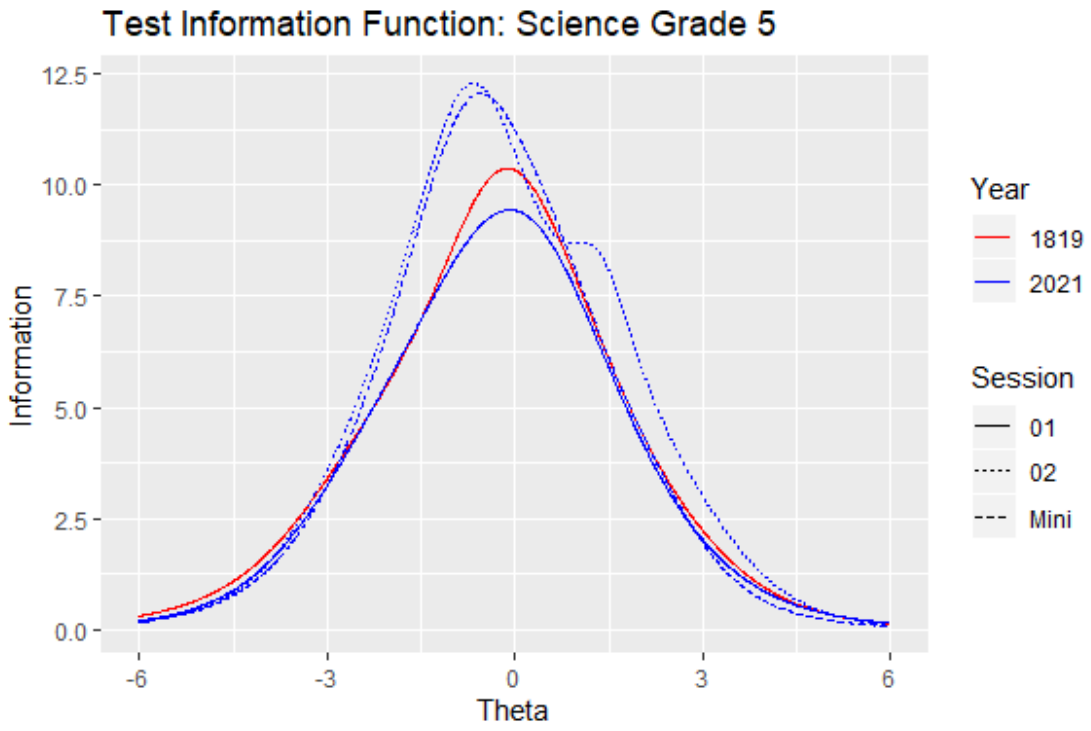
02
Mini


Test Information Function: Science Grade 5
Information
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Year
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Session
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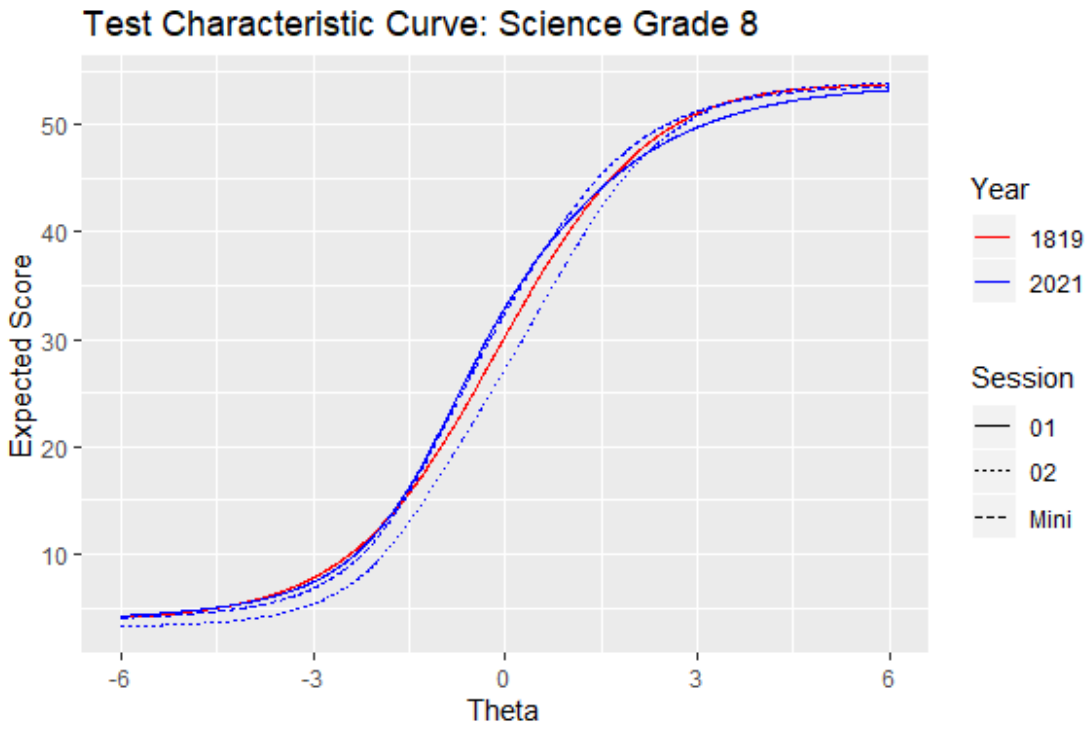
Mini


Test Characteristic Curve: Science Grade 8
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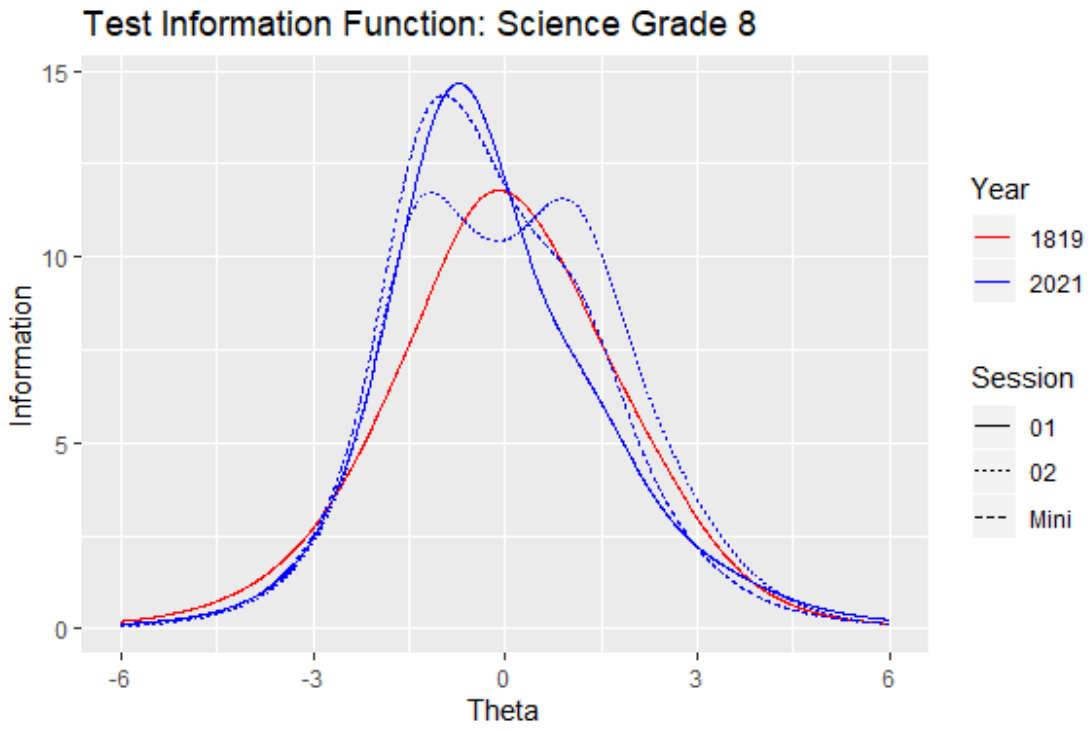
Test Information Function: Science Grade 8
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Year
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2021
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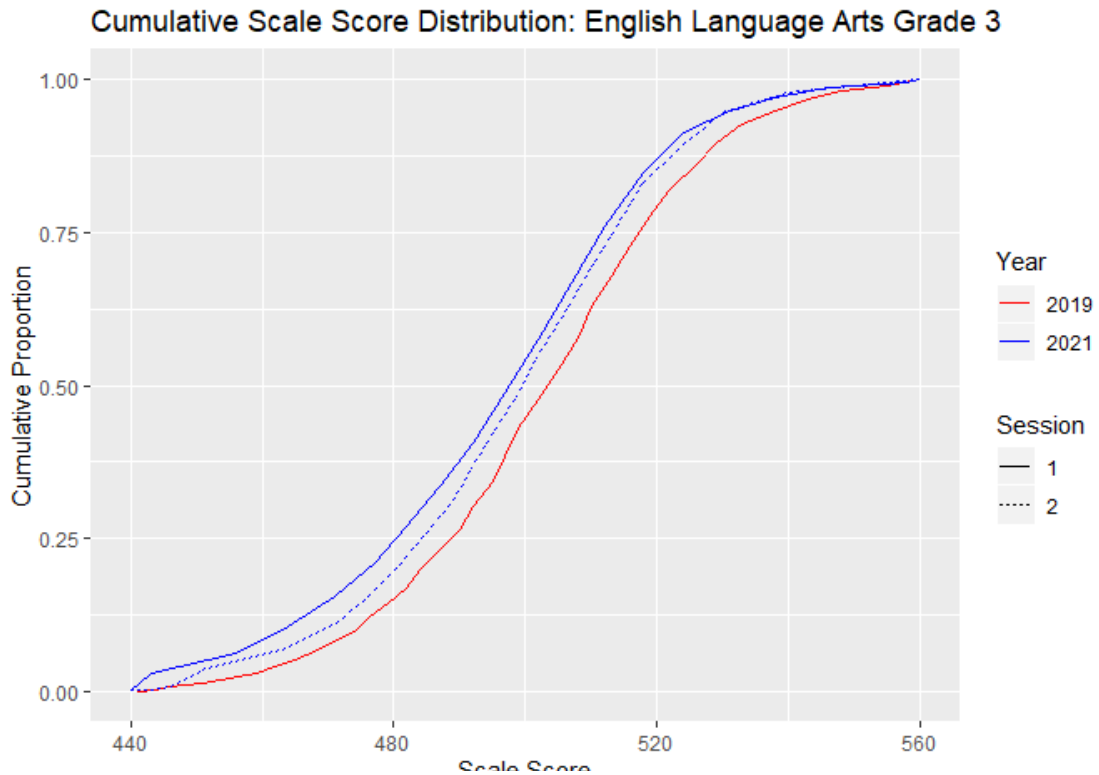
Mini


Cumulative Scale Score Distribution: English Language Arts Grade 3
Cumulative Proportion
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0.50
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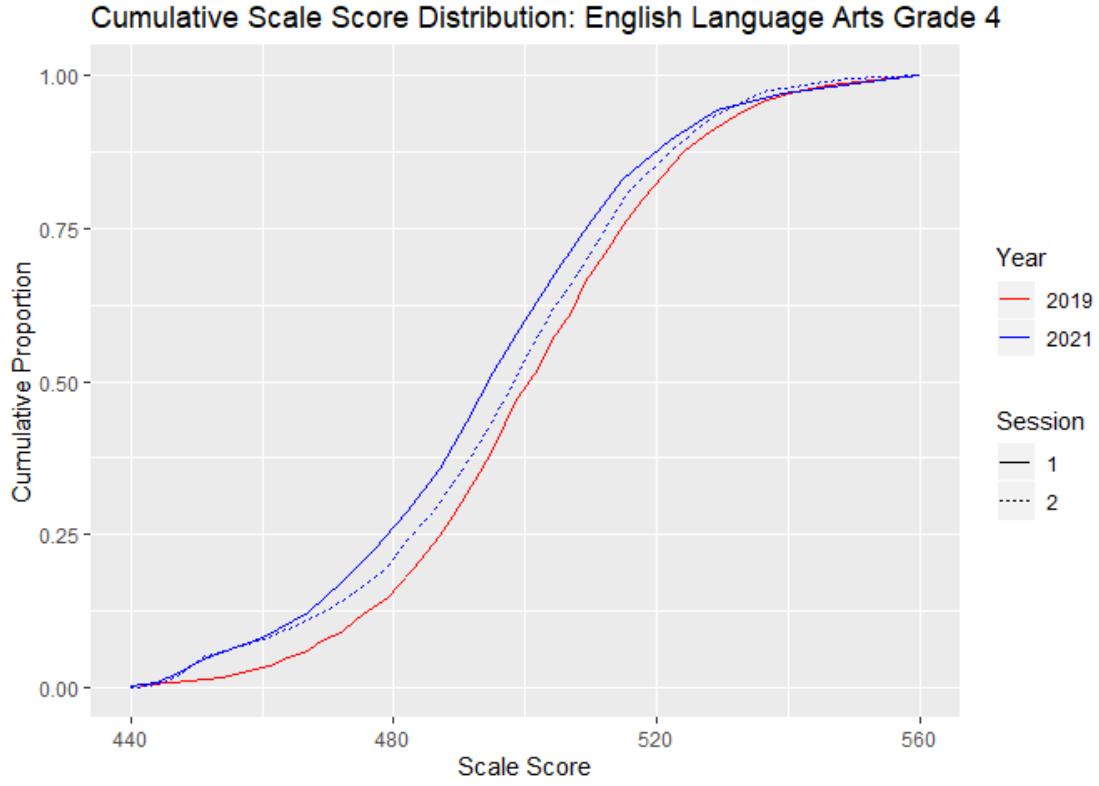
0.00
440
480
520
560
Year
2019
2021
Session
1
2


Cumulative Scale Score Distribution: English Language Arts Grade 4
Cumulative Proportion
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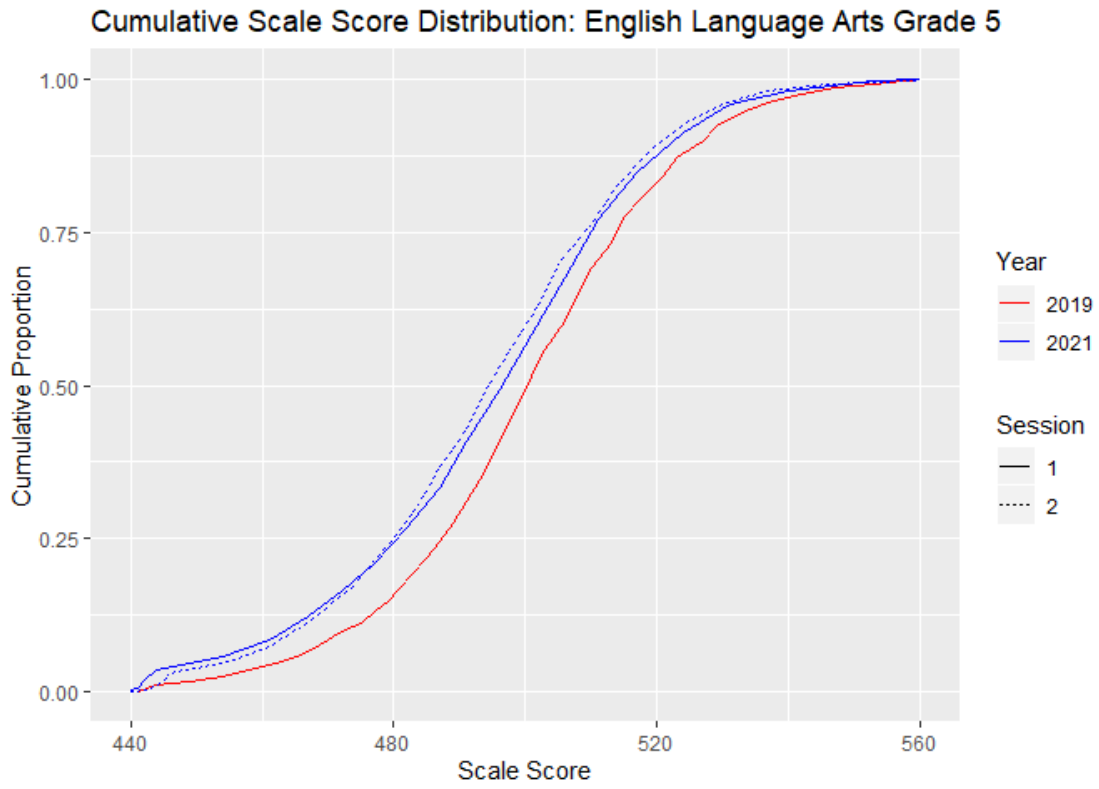
0.25
0.00
440
480
520
560
Scale Score
Year
2019
2021
Session
1
2


Cumulative Scale Score Distribution: English Language Arts Grade 5
Cumulative Proportion
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0.25
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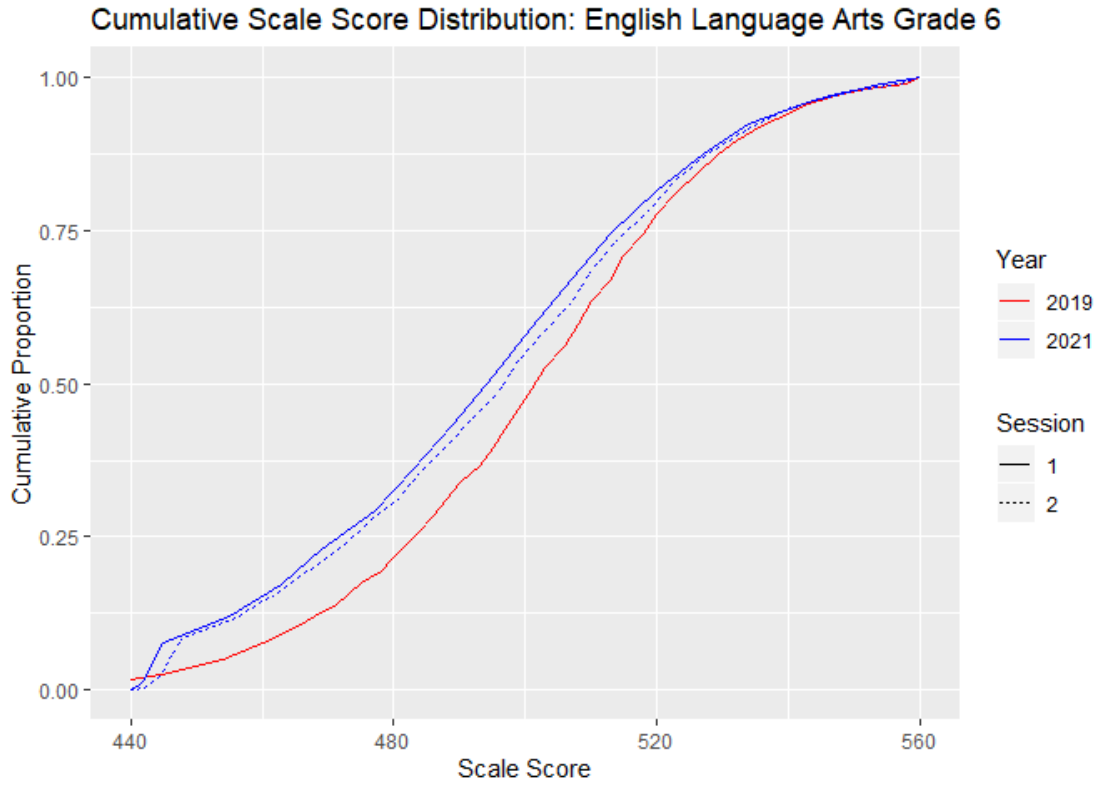
440
480
520
560
Scale Score
Year
2019
2021
Session
1
2


Cumulative Scale Score Distribution: English Language Arts Grade 6
Cumulative Proportion
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Scale Score
Year
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2021
Session
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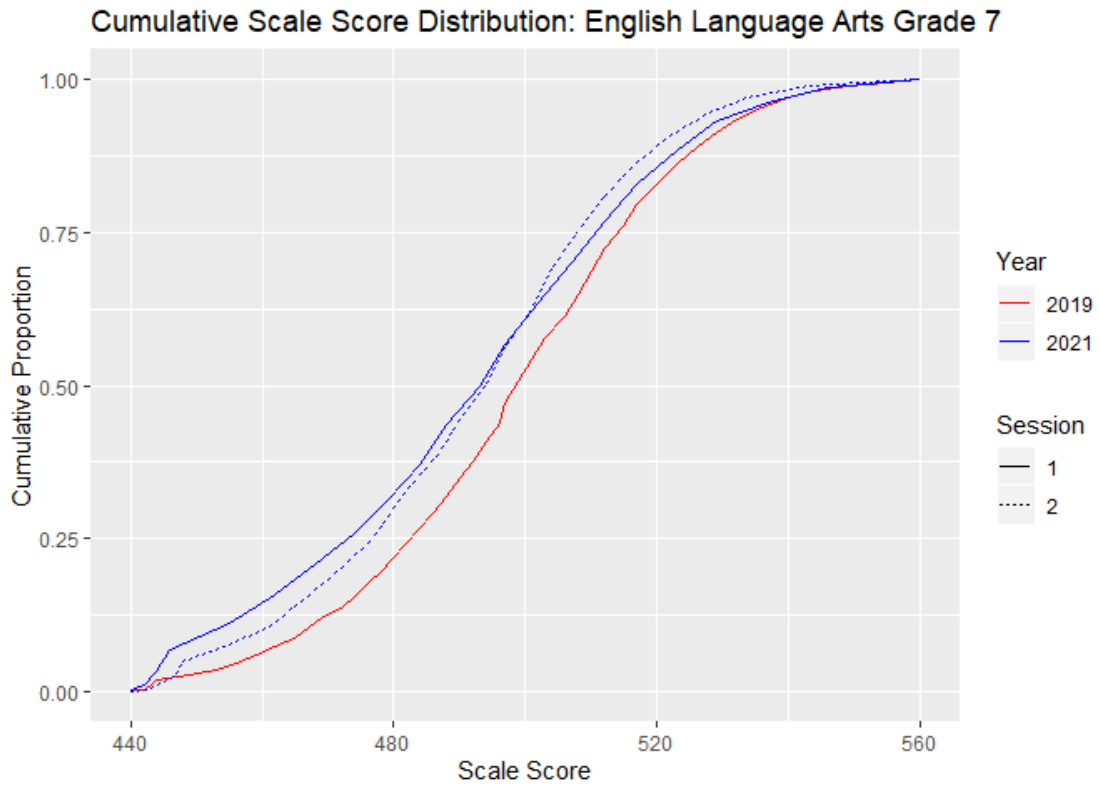
Cumulative Scale Score Distribution: English Language Arts Grade 7
Cumulative Proportion
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0.25
0.00
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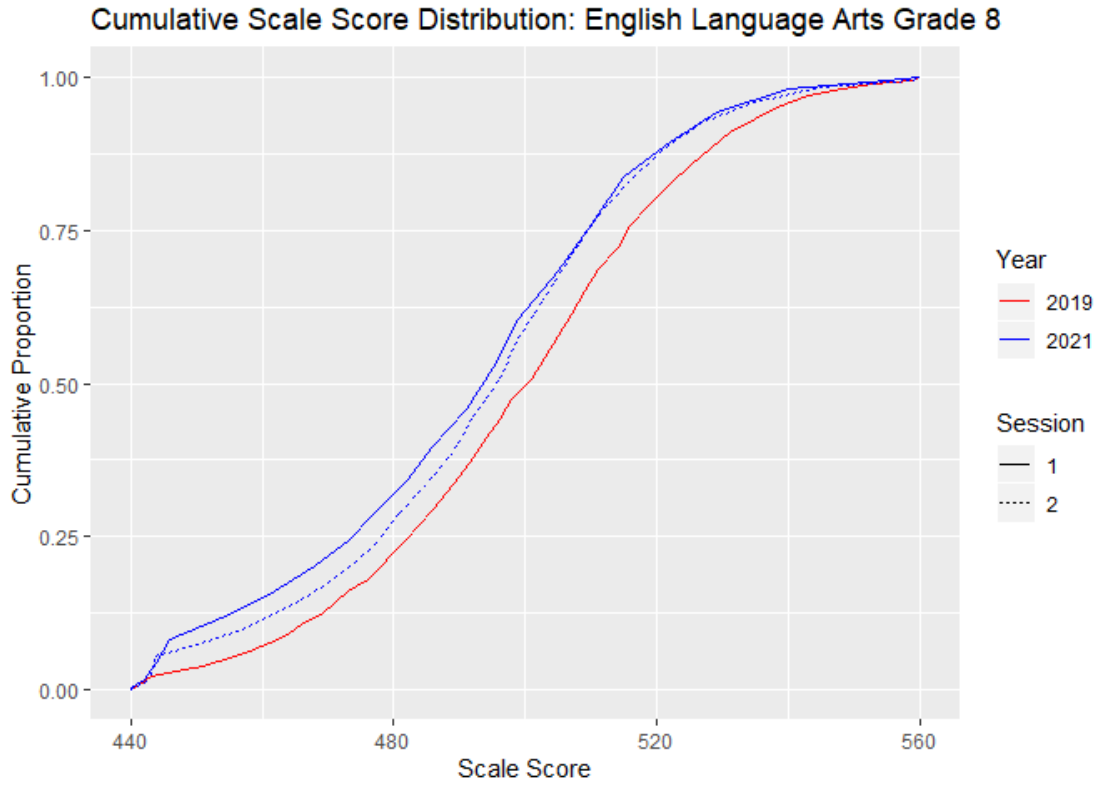
520
560
Scale Score
Year
2019
2021
Session
1
2


Cumulative Scale Score Distribution: English Language Arts Grade 8
Cumulative Proportion
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Scale Score
Year
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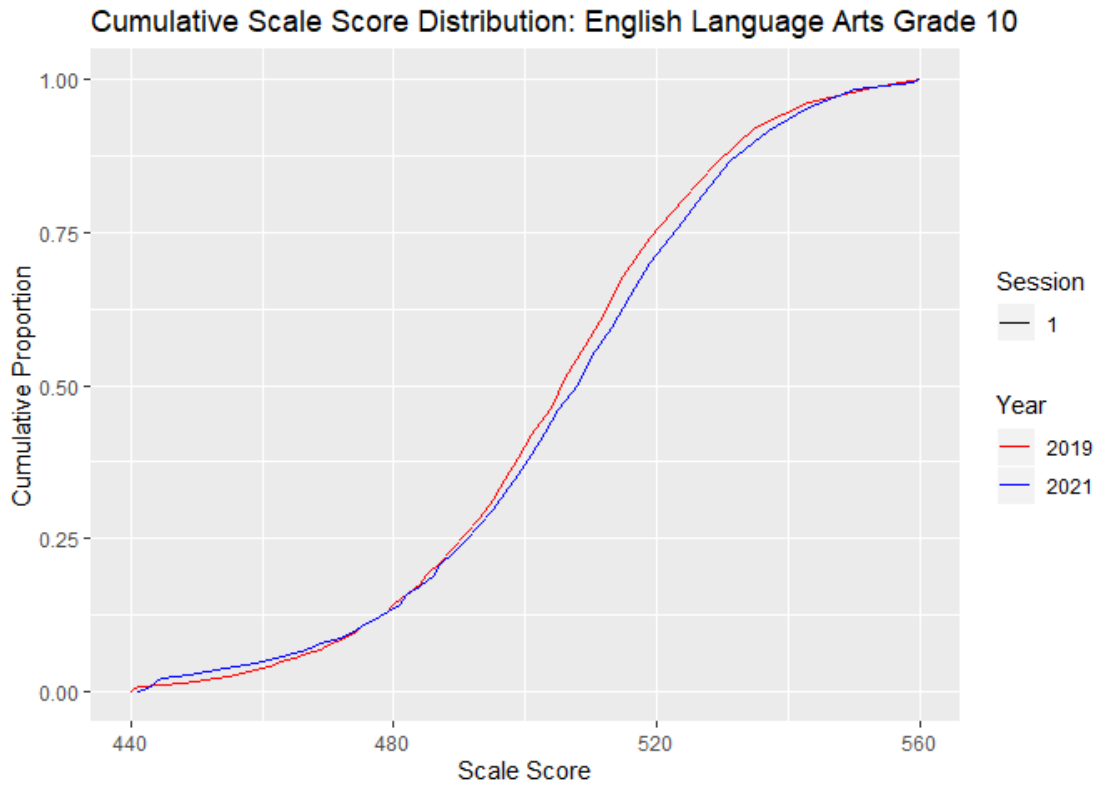
Cumulative Scale Score Distribution: English Language Arts Grade 10
Cumulative Proportion
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Scale Score
Session
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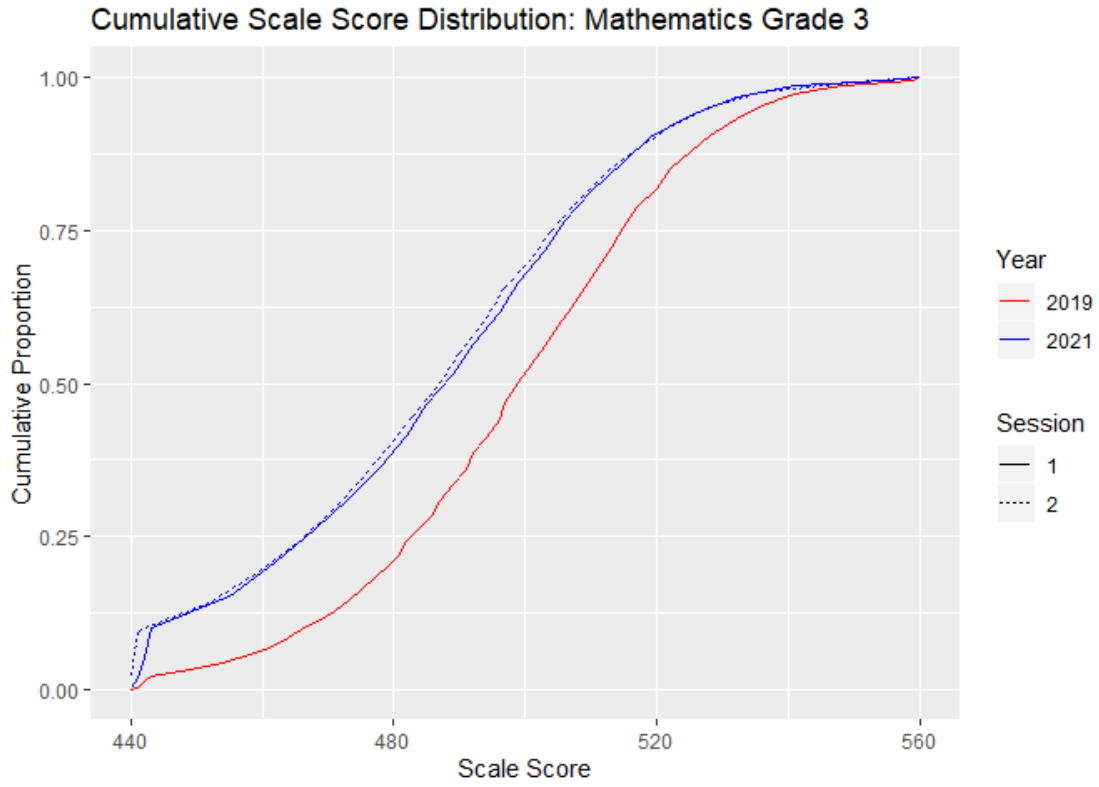
Year
2019
2021


Cumulative Scale Score Distribution: Mathematics Grade 3
Cumulative Proportion
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0.00
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480
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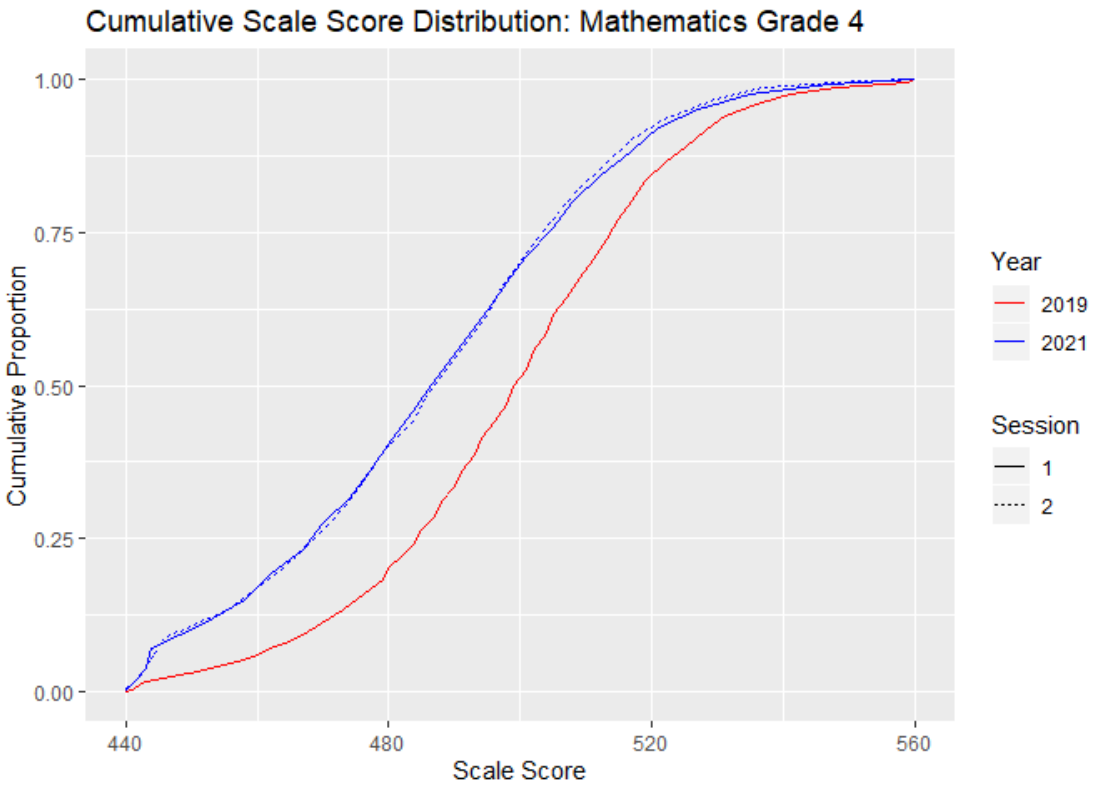
560
Scale Score
Year
2019
2021
Session
1
2


Cumulative Scale Score Distribution: Mathematics Grade 4
Cumulative Proportion
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0.25
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560
Scale Score
Year
2019
2021
Session
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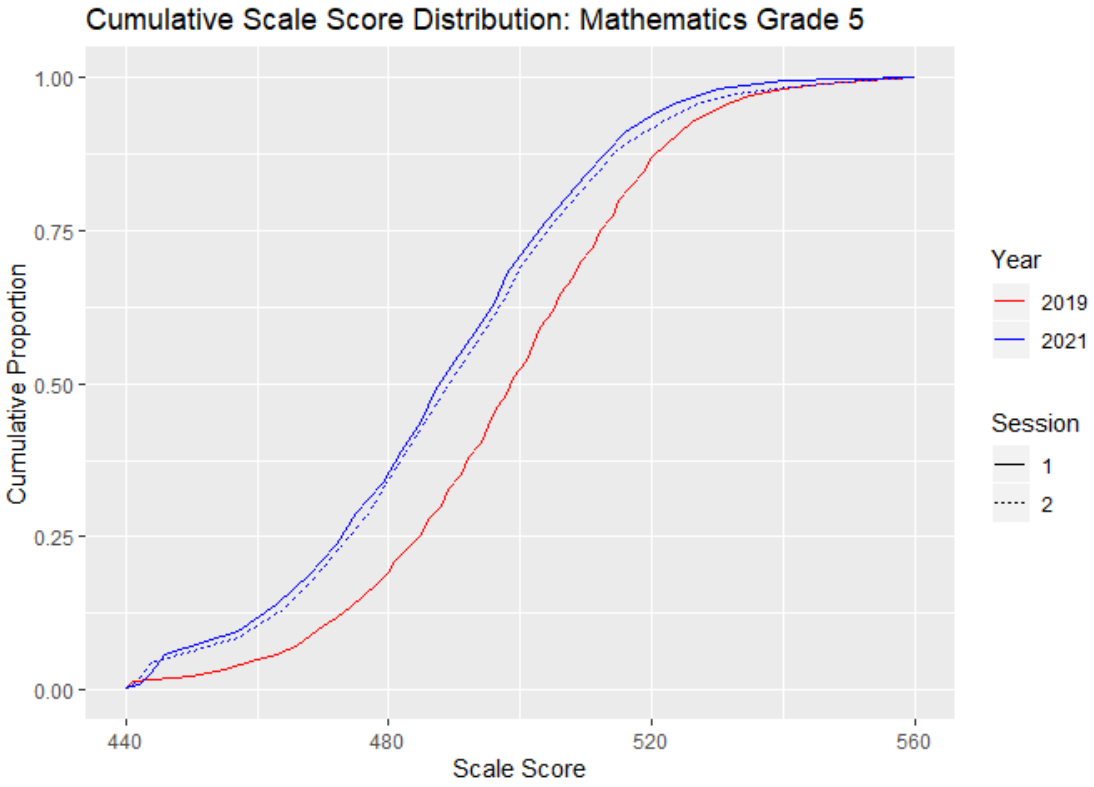
2


Cumulative Scale Score Distribution: Mathematics Grade 5
Cumulative Proportion
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0.25
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480
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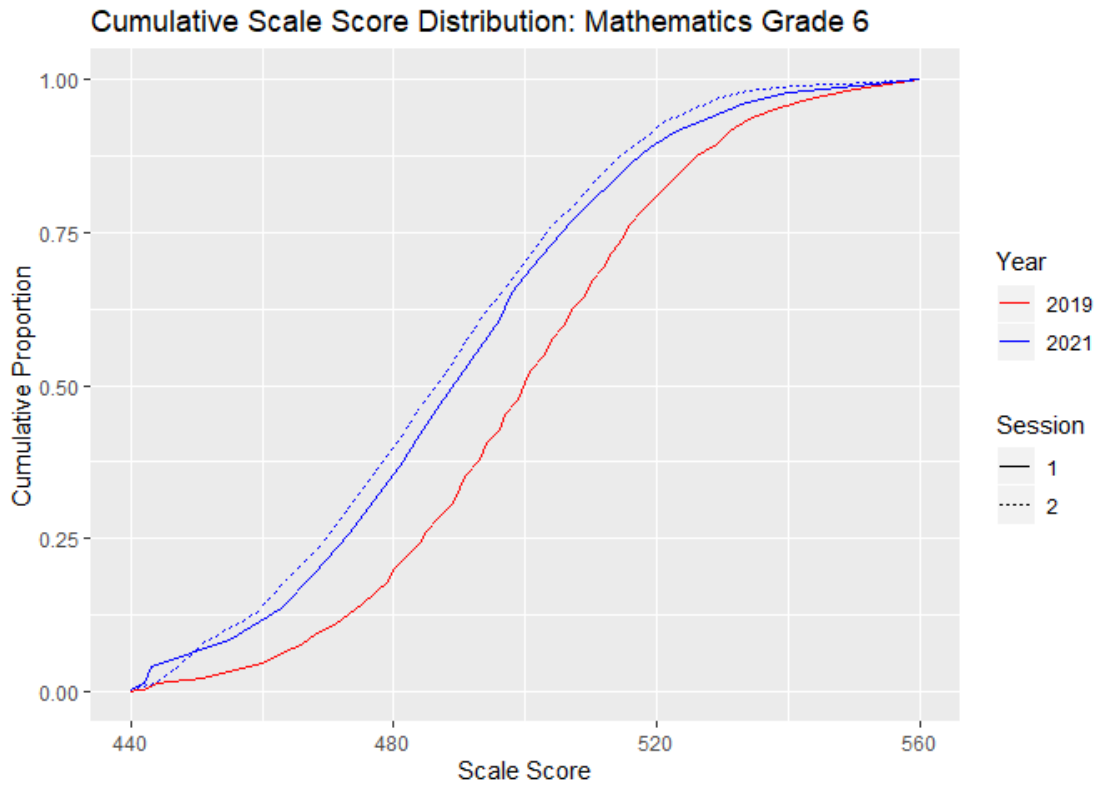
560
Scale Score
Year
2019
2021
Session
1
2


Cumulative Scale Score Distribution: Mathematics Grade 6
Cumulative Proportion
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Scale Score
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2021
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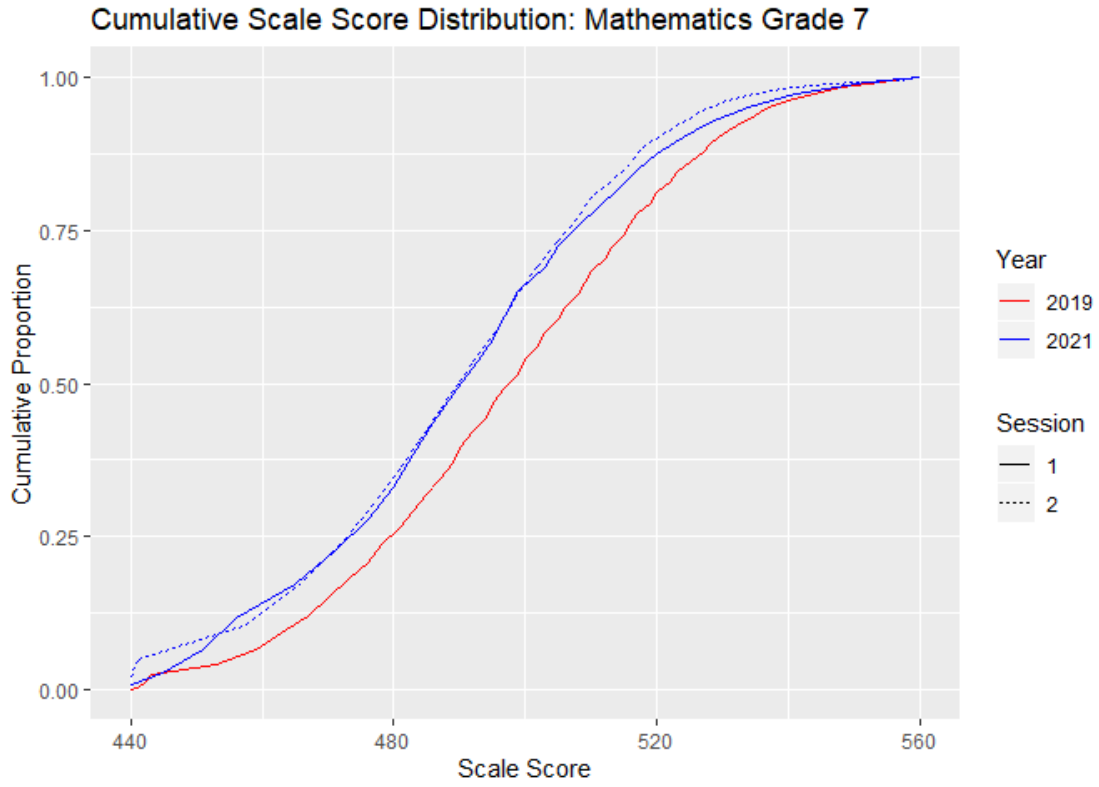
Cumulative Scale Score Distribution: Mathematics Grade 7
Cumulative Proportion
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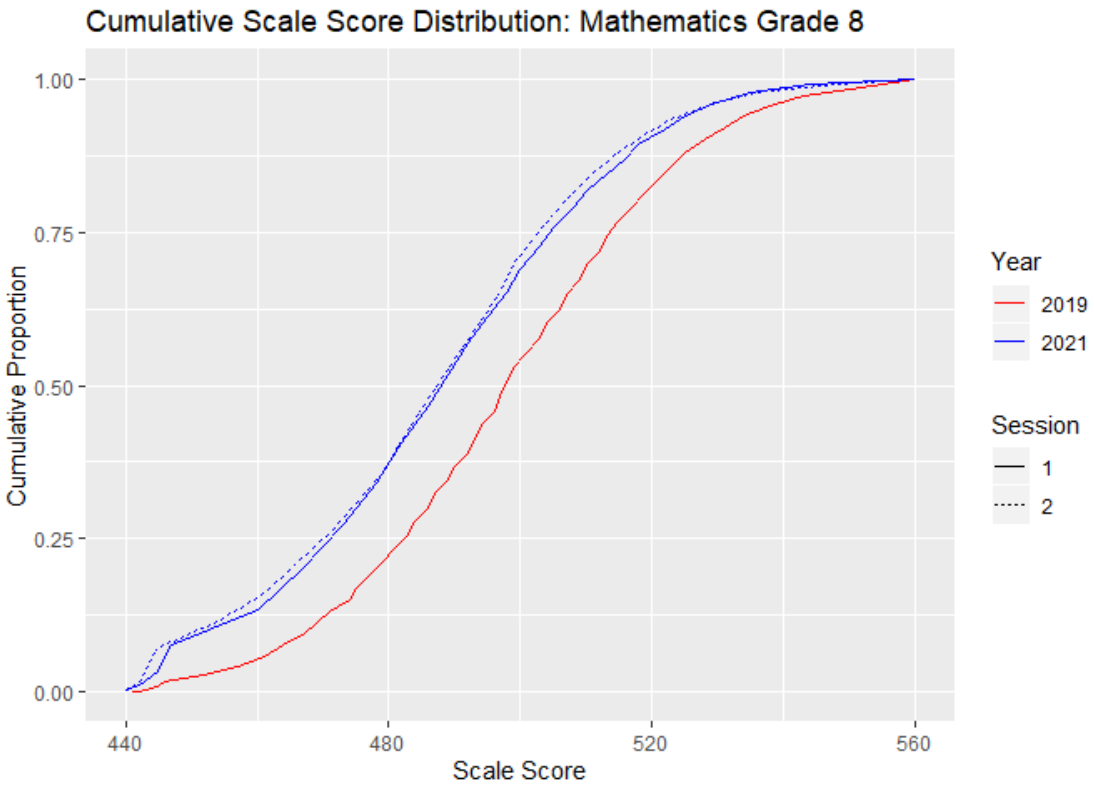
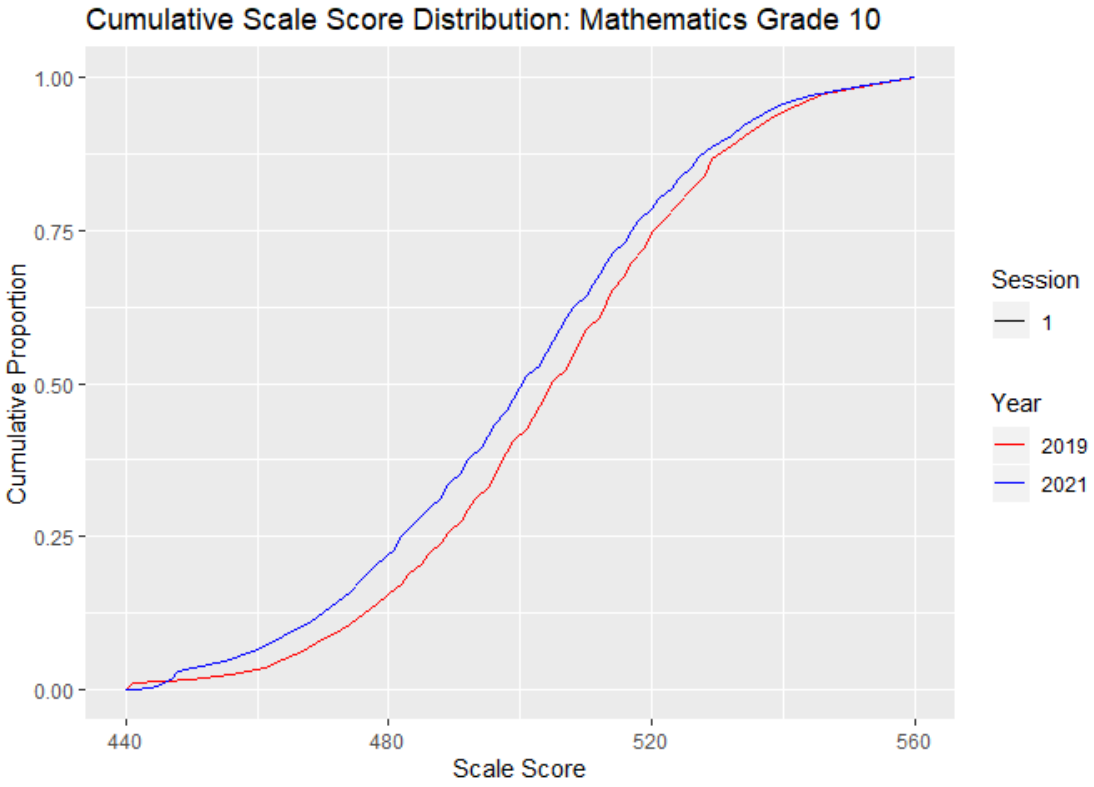
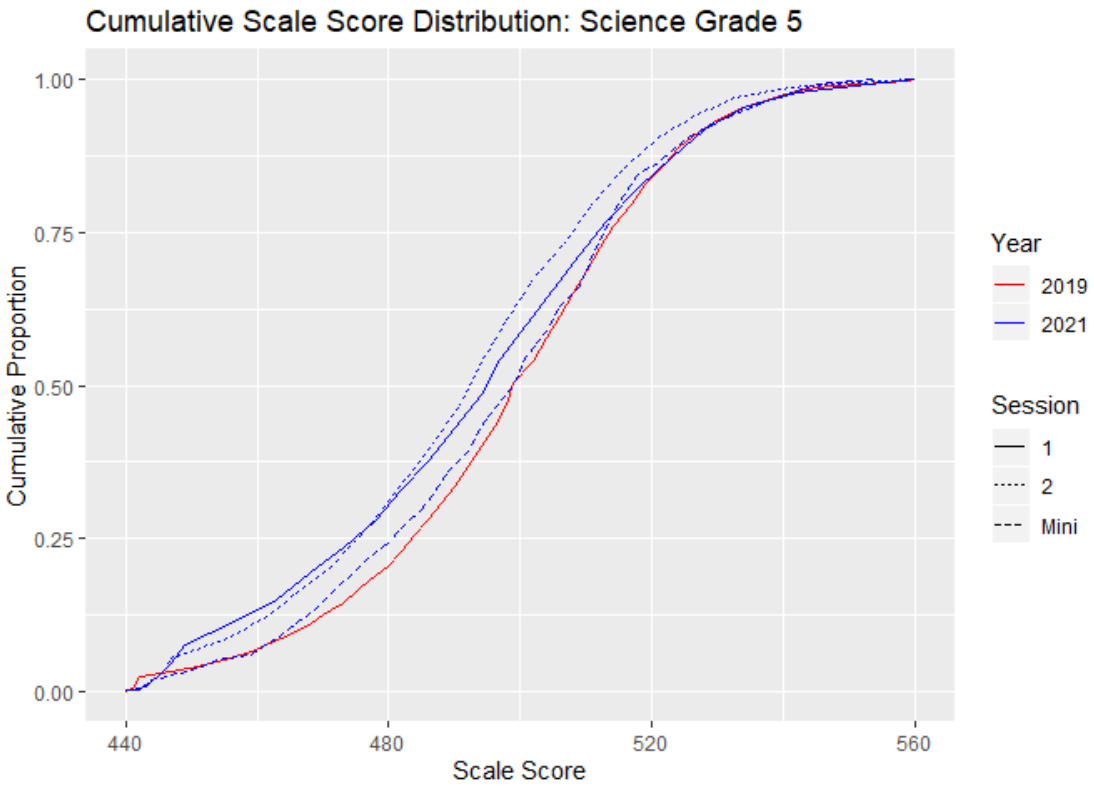
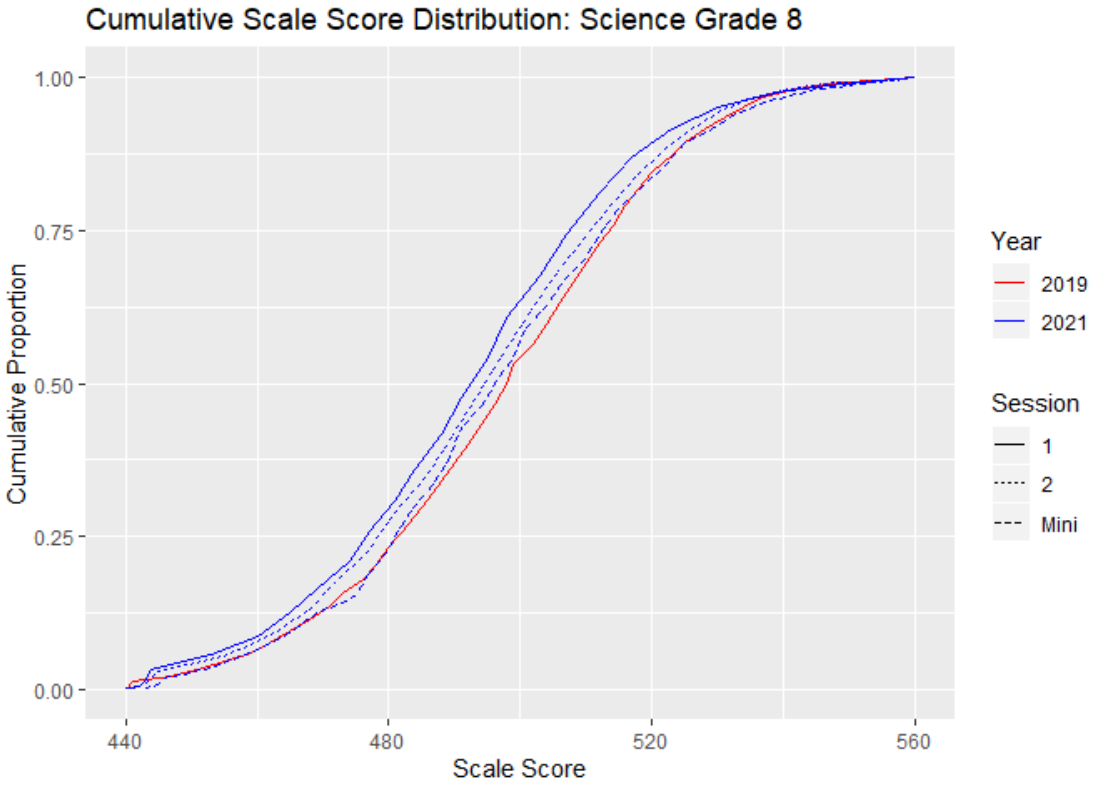
0.75
0.50
0.25
0.00
440
480
520
560
Scale Score
Year
2019
2021
Session
1
2


Cumulative Scale Score Distribution: Mathematics Grade 8
Cumulative Proportion
1.00
0.75
0.50
0.25
0.00
440
480
520
560
Scale Score
Year
2019
2021
Session
1
2


Cumulative Scale Score Distribution: Mathematics Grade 10
Cumulative Proportion
1.00
0.75
0.50
0.25
0.00
440
480
520
560
Scale Score
Session
1
Year
2019
2021


Cumulative Scale Score Distribution: Science Grade 5
Cumulative Proportion
1.00
0.75
0.50
0.25
0.00
440
480
520
560
Scale Score
Year
2019
2021
Session
1
2
Mini


Cumulative Scale Score Distribution: Science Grade 8
Cumulative Proportion
1.00
0.75
0.50
0.25
0.00
440
480
520
560
Scale Score
Year
2019
2021
Session
1
2
Mini

Section 2.2

Lookup Tables

Table 2.2.1—Raw Score to Scale Score Lookup Table: English Language Arts Grade 3

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-3.173	-3.173	440	440	10.000	10.000	1	1
1	-3.103	-3.026	441	443	10.000	10.000	1	1
2	-3.033	-2.878	443	446	10.000	10.000	1	1
3	-2.335	-2.730	456	448	10.000	10.000	1	1
4	-1.890	-2.582	464	451	10.000	10.000	1	1
5	-1.536	-1.945	471	463	10.000	10.000	2	1
6	-1.226	-1.543	477	471	9.919	10.000	2	2
7	-0.941	-1.245	482	476	9.600	9.824	2	2
8	-0.672	-1.002	487	481	9.422	8.830	2	2
9	-0.409	-0.789	492	485	9.357	8.187	2	2
10	-0.148	-0.595	497	489	9.393	7.763	2	2
11	0.117	-0.410	502	492	9.518	7.487	3	2
12	0.390	-0.231	507	495	9.714	7.322	3	2
13	0.674	-0.051	512	499	9.969	7.246	3	2
14	0.973	0.132	518	502	10.000	7.250	3	3
15	1.290	0.322	524	506	10.000	7.336	3	3
16	1.633	0.524	531	510	10.000	7.516	4	3
17	2.017	0.742	538	514	10.000	7.819	4	3
18	2.474	0.986	546	518	10.000	8.309	4	3
19	3.085	1.270	558	524	10.000	9.120	4	3
20	3.196	1.626	560	530	10.000	10.000	4	4
21	3.196	2.122	560	540	10.000	10.000	4	4
22		2.949		555		10.000		4
23		3.196		560		10.000		4

Table 2.2.2—Raw Score to Scale Score Lookup Table: English Language Arts Grade 4

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-3.153	-3.153	440	440	10.000	10.000	1	1
1	-2.959	-3.005	444	443	10.000	10.000	1	1
2	-2.765	-2.857	447	446	10.000	10.000	1	1
3	-2.571	-2.710	451	448	10.000	10.000	1	1
4	-2.091	-2.562	460	451	10.000	10.000	1	1
5	-1.731	-2.017	467	461	10.000	10.000	1	1
6	-1.431	-1.639	472	469	9.690	10.000	2	1
7	-1.165	-1.346	477	474	9.122	10.000	2	2
8	-0.917	-1.106	482	479	8.818	8.951	2	2
9	-0.680	-0.903	487	482	8.705	7.856	2	2
10	-0.445	-0.722	491	486	8.725	7.094	2	2
11	-0.209	-0.555	495	489	8.836	6.643	2	2
12	0.033	-0.396	500	492	9.026	6.424	3	2
13	0.286	-0.238	505	495	9.308	6.373	3	2
14	0.556	-0.079	510	498	9.714	6.455	3	2
15	0.852	0.087	515	501	10.000	6.659	3	3
16	1.188	0.263	522	504	10.000	6.986	3	3
17	1.585	0.454	529	508	10.000	7.438	3	3
18	2.097	0.665	539	512	10.000	8.018	4	3
19	2.870	0.902	554	516	10.000	8.726	4	3
20	3.215	1.176	560	522	10.000	9.598	4	3
21		1.505		528		10.000		3
22		1.934		536		10.000		4
23		2.620		549		10.000		4
24		3.215		560		10.000		4

Table 2.2.3—Raw Score to Scale Score Lookup Table: English Language Arts Grade 5

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-3.360	-3.360	440	440	10.000	10.000	1	1
1	-3.292	-3.272	441	442	10.000	10.000	1	1
2	-3.224	-3.183	442	443	10.000	10.000	1	1
3	-3.157	-3.095	444	445	10.000	10.000	1	1
4	-2.594	-3.007	454	446	10.000	10.000	1	1
5	-2.192	-2.502	461	455	10.000	10.000	1	1
6	-1.860	-2.153	467	461	9.724	9.971	1	1
7	-1.561	-1.879	472	466	9.521	8.664	2	1
8	-1.276	-1.646	477	470	9.449	8.003	2	2
9	-0.998	-1.436	482	474	9.403	7.588	2	2
10	-0.725	-1.240	487	477	9.283	7.379	2	2
11	-0.454	-1.049	491	481	9.110	7.303	2	2
12	-0.185	-0.861	496	484	8.986	7.314	2	2
13	0.087	-0.673	501	487	9.013	7.383	3	2
14	0.372	-0.482	506	491	9.245	7.491	3	2
15	0.677	-0.286	511	494	9.644	7.628	3	2
16	1.011	-0.084	517	498	10.000	7.792	3	2
17	1.380	0.126	524	502	10.000	7.988	3	3
18	1.799	0.346	531	505	10.000	8.231	4	3
19	2.313	0.580	540	510	10.000	8.536	4	3
20	3.056	0.832	553	514	10.000	8.901	4	3
21	3.430	1.107	560	519	10.000	9.298	4	3
22		1.410		524		9.709		3
23		1.749		530		10.000		4
24		2.145		537		10.000		4
25		2.642		546		10.000		4
26		3.373		559		10.000		4
27		3.430		560		10.000		4

Table 2.2.4—Raw Score to Scale Score Lookup Table: English Language Arts Grade 6

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-3.171	-3.171	440	440	10	10.000	1	1
1	-3.110	-3.088	441	442	10	10.000	1	1
2	-3.049	-3.004	442	443	10	10.000	1	1
3	-2.988	-2.921	443	445	10	10.000	1	1
4	-2.927	-2.838	445	446	10	10.000	1	1
5	-2.386	-2.754	455	448	10	10.000	1	1
6	-1.967	-2.326	463	456	10	10.000	1	1
7	-1.596	-2.000	469	462	10	10.000	1	1
8	-1.245	-1.724	477	467	10	10.000	2	1
9	-0.905	-1.478	483	472	10	9.668	2	2
10	-0.577	-1.250	489	476	10	9.392	2	2
11	-0.260	-1.034	495	481	10	9.169	2	2
12	0.055	-0.828	501	484	10	8.960	3	2
13	0.373	-0.629	507	488	10	8.767	3	2
14	0.700	-0.435	513	492	10	8.609	3	2
15	1.038	-0.244	520	496	10	8.510	3	2
16	1.396	-0.054	527	499	10	8.481	3	2
17	1.790	0.137	534	503	10	8.522	4	3
18	2.244	0.333	543	507	10	8.626	4	3
19	2.803	0.535	553	510	10	8.776	4	3
20	3.150	0.747	560	514	10	8.967	4	3
21	3.150	0.970	560	519	10	9.210	4	3
22		1.208		523		9.541		3
23		1.467		528		10.000		3
24		1.756		534		10.000		4
25		2.086		540		10.000		4
26		2.478		547		10.000		4
27		2.973		557		10.000		4
28		3.150		560		10.000		4
29		3.150		560		10.000		4

Table 2.2.5—Raw Score to Scale Score Lookup Table: English Language Arts Grade 7

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-3.131	-3.131	440	440	10.000	10.000	1	1
1	-3.034	-3.044	442	442	10.000	10.000	1	1
2	-2.938	-2.958	444	443	10.000	10.000	1	1
3	-2.842	-2.871	446	445	10.000	10.000	1	1
4	-2.335	-2.785	455	447	10.000	10.000	1	1
5	-1.968	-2.699	462	448	10.000	10.000	1	1
6	-1.658	-2.334	468	455	10.000	10.000	1	1
7	-1.376	-2.050	474	461	9.815	9.544	2	1
8	-1.109	-1.812	479	465	9.676	8.698	2	1
9	-0.853	-1.601	484	469	9.570	8.230	2	1
10	-0.605	-1.404	488	473	9.485	7.989	2	2
11	-0.361	-1.216	493	477	9.454	7.873	2	2
12	-0.120	-1.033	497	480	9.504	7.808	2	2
13	0.122	-0.853	502	483	9.633	7.751	3	2
14	0.370	-0.675	507	487	9.820	7.691	3	2
15	0.627	-0.498	512	490	10.000	7.649	3	2
16	0.900	-0.320	517	494	10.000	7.653	3	2
17	1.198	-0.139	523	497	10.000	7.722	3	2
18	1.535	0.048	529	501	10.000	7.852	3	3
19	1.935	0.243	537	504	10.000	8.016	4	3
20	2.439	0.447	546	508	10.000	8.185	4	3
21	3.153	0.665	560	512	10.000	8.374	4	3
22	3.153	0.899	560	517	10.000	8.663	4	3
23		1.159		522		9.177		3
24		1.458		528		10.000		3
25		1.815		534		10.000		4
26		2.262		543		10.000		4
27		2.897		555		10.000		4
28		3.153		560		10.000		4

Table 2.2.6—Raw Score to Scale Score Lookup Table: English Language Arts Grade 8

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-2.964	-2.964	440	440	10.000	10.000	1	1
1	-2.868	-2.926	442	441	10.000	10.000	1	1
2	-2.772	-2.889	444	441	10.000	10.000	1	1
3	-2.676	-2.851	446	442	10.000	10.000	1	1
4	-2.209	-2.813	455	443	10.000	10.000	1	1
5	-1.868	-2.776	462	444	10.000	10.000	1	1
6	-1.581	-2.738	468	444	9.986	10.000	1	1
7	-1.323	-2.403	473	451	9.628	10.000	2	1
8	-1.082	-2.125	477	457	9.358	10.000	2	1
9	-0.853	-1.881	482	462	9.153	9.895	2	1
10	-0.631	-1.660	486	466	9.033	9.472	2	1
11	-0.411	-1.453	491	470	9.014	9.189	2	2
12	-0.189	-1.256	495	474	9.086	8.974	2	2
13	0.040	-1.067	499	478	9.228	8.783	2	2
14	0.280	-0.882	505	481	9.441	8.604	3	2
15	0.537	-0.702	510	485	9.782	8.444	3	2
16	0.821	-0.525	515	489	10.000	8.326	3	2
17	1.149	-0.348	522	492	10.000	8.270	3	2
18	1.549	-0.169	529	496	10.000	8.291	3	2
19	2.068	0.014	540	499	10.000	8.398	4	2
20	2.836	0.204	555	503	10.000	8.589	4	3
21	3.066	0.404	560	507	10.000	8.863	4	3
22		0.619		511		9.226		3
23		0.853		516		9.708		3
24		1.116		521		10.000		3
25		1.423		527		10.000		3
26		1.799		535		10.000		4
27		2.295		545		10.000		4
28		3.039		559		10.000		4
29		3.066		560		10.000		4

Table 2.2.7—Raw Score to Scale Score Lookup Table: English Language Arts Grade 10

Raw Score	Theta	Scale Score	SE(Scale Score)	Performance level
0	-3.157	440	10.000	1
1	-3.131	441	10.000	1
2	-3.106	441	10.000	1
3	-3.081	442	10.000	1
4	-3.055	442	10.000	1
5	-3.030	443	10.000	1
6	-3.005	443	10.000	1
7	-2.979	444	10.000	1
8	-2.954	444	10.000	1
9	-2.929	445	10.000	1
10	-2.721	449	9.493	1
11	-2.546	453	8.570	1
12	-2.394	456	7.869	1
13	-2.260	459	7.327	1
14	-2.138	461	6.903	1
15	-2.026	464	6.568	1
16	-1.922	466	6.303	1
17	-1.824	468	6.092	1
18	-1.731	469	5.924	1
19	-1.642	472	5.790	2
20	-1.555	474	5.684	2
21	-1.470	475	5.601	2
22	-1.387	477	5.538	2
23	-1.305	479	5.492	2
24	-1.224	481	5.462	2
25	-1.144	482	5.447	2
26	-1.063	484	5.445	2
27	-0.981	486	5.458	2
28	-0.899	487	5.484	2
29	-0.816	489	5.524	2
30	-0.731	491	5.578	2
31	-0.644	493	5.644	2
32	-0.555	495	5.724	2
33	-0.463	497	5.816	2
34	-0.367	499	5.922	2
35	-0.268	501	6.044	3
36	-0.165	503	6.186	3
37	-0.056	505	6.353	3
38	0.060	508	6.551	3
39	0.183	510	6.787	3
40	0.314	513	7.068	3
41	0.457	516	7.401	3

continued

Raw Score	Theta	Scale Score	SE(Scale Score)	Performance level
42	0.613	519	7.793	3
43	0.785	523	8.255	3
44	0.978	527	8.805	3
45	1.196	531	9.449	4
46	1.447	537	10.000	4
47	1.739	543	10.000	4
48	2.086	550	10.000	4
49	2.528	559	10.000	4
50	2.559	560	10.000	4
51	2.559	560	10.000	4

Table 2.2.8—Raw Score to Scale Score Lookup Table: Mathematics Grade 3

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-2.782	-2.782	440	440	10.000	10.000	1	1
1	-2.735	-2.769	441	440	10.000	10.000	1	1
2	-2.689	-2.755	442	441	10.000	10.000	1	1
3	-2.642	-2.742	443	441	10.000	10.000	1	1
4	-2.087	-2.213	455	452	10.000	10.000	1	1
5	-1.729	-1.861	462	460	10.000	10.000	1	1
6	-1.454	-1.583	468	466	9.185	9.750	1	1
7	-1.225	-1.347	473	471	8.409	9.142	2	2
8	-1.023	-1.135	478	475	7.909	8.712	2	2
9	-0.838	-0.940	482	479	7.582	8.364	2	2
10	-0.666	-0.758	485	483	7.377	8.062	2	2
11	-0.500	-0.584	489	487	7.266	7.802	2	2
12	-0.338	-0.418	492	490	7.232	7.591	2	2
13	-0.177	-0.255	496	494	7.264	7.438	2	2
14	-0.015	-0.093	499	497	7.356	7.351	2	2
15	0.152	0.070	503	501	7.504	7.336	3	3
16	0.326	0.237	506	504	7.713	7.396	3	3
17	0.510	0.412	510	508	8.000	7.539	3	3
18	0.711	0.599	515	512	8.398	7.779	3	3
19	0.936	0.804	519	517	8.963	8.158	3	3
20	1.197	1.036	525	522	9.756	8.780	3	3
21	1.513	1.319	532	528	10.000	9.893	4	3
22	1.926	1.702	541	536	10.000	10.000	4	4
23	2.587	2.372	555	550	10.000	10.000	4	4
24	2.837	2.837	560	560	10.000	10.000	4	4

Table 2.2.9—Raw Score to Scale Score Lookup Table: Mathematics Grade 4

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-2.812	-2.812	440	440	10.000	10.000	1	1
1	-2.741	-2.719	441	442	10.000	10.000	1	1
2	-2.671	-2.626	443	444	10.000	10.000	1	1
3	-2.601	-2.534	444	446	10.000	10.000	1	1
4	-2.244	-2.118	452	455	10.000	10.000	1	1
5	-1.971	-1.819	458	461	8.969	9.272	1	1
6	-1.744	-1.580	462	466	8.236	8.468	1	1
7	-1.545	-1.376	467	470	7.727	7.915	1	2
8	-1.364	-1.196	470	474	7.365	7.507	2	2
9	-1.196	-1.031	474	477	7.102	7.190	2	2
10	-1.038	-0.878	477	480	6.906	6.933	2	2
11	-0.886	-0.733	480	484	6.758	6.719	2	2
12	-0.739	-0.595	483	486	6.646	6.538	2	2
13	-0.595	-0.461	486	489	6.567	6.386	2	2
14	-0.454	-0.330	489	492	6.525	6.264	2	2
15	-0.313	-0.200	492	495	6.523	6.177	2	2
16	-0.171	-0.069	495	497	6.569	6.137	2	2
17	-0.026	0.063	498	500	6.669	6.158	2	3
18	0.124	0.201	501	503	6.829	6.257	3	3
19	0.282	0.346	505	506	7.057	6.453	3	3
20	0.451	0.503	508	509	7.366	6.764	3	3
21	0.636	0.678	512	513	7.776	7.219	3	3
22	0.842	0.878	517	517	8.318	7.861	3	3
23	1.080	1.117	521	522	9.043	8.784	3	3
24	1.367	1.419	527	529	10.000	10.000	3	3
25	1.738	1.839	535	537	10.000	10.000	4	4
26	2.315	2.518	547	552	10.000	10.000	4	4
27	2.920	2.920	560	560	10.000	10.000	4	4

Table 2.2.10—Raw Score to Scale Score Lookup Table: Mathematics Grade 5

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-3.126	-3.126	440	440	10.000	10.000	1	1
1	-3.020	-3.030	442	442	10.000	10.000	1	1
2	-2.914	-2.933	444	444	10.000	10.000	1	1
3	-2.808	-2.256	446	457	10.000	10.000	1	1
4	-2.257	-1.876	457	464	10.000	9.747	1	1
5	-1.922	-1.600	463	469	9.539	8.472	1	1
6	-1.669	-1.375	468	473	8.496	7.700	1	2
7	-1.457	-1.182	472	477	7.797	7.200	2	2
8	-1.271	-1.007	475	480	7.298	6.872	2	2
9	-1.100	-0.845	479	483	6.939	6.661	2	2
10	-0.940	-0.691	482	486	6.691	6.533	2	2
11	-0.787	-0.542	485	489	6.532	6.465	2	2
12	-0.638	-0.396	487	492	6.441	6.440	2	2
13	-0.492	-0.251	490	495	6.400	6.444	2	2
14	-0.346	-0.106	493	498	6.389	6.467	2	2
15	-0.200	0.040	496	500	6.388	6.501	2	3
16	-0.054	0.188	498	503	6.383	6.544	2	3
17	0.093	0.340	501	506	6.360	6.596	3	3
18	0.242	0.496	504	509	6.316	6.666	3	3
19	0.393	0.659	507	512	6.262	6.772	3	3
20	0.547	0.832	510	515	6.229	6.942	3	3
21	0.709	1.018	513	519	6.272	7.217	3	3
22	0.883	1.227	516	523	6.460	7.654	3	3
23	1.078	1.468	520	527	6.884	8.337	3	3
24	1.312	1.764	524	533	7.689	9.389	3	4
25	1.621	2.155	530	541	9.225	10.000	4	4
26	2.122	2.758	540	552	10.000	10.000	4	4
27	3.176	3.176	560	560	10.000	10.000	4	4

Table 2.2.11—Raw Score to Scale Score Lookup Table: Mathematics Grade 6

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-3.028	-3.028	440	440	10.000	10.000	1	1
1	-2.946	-2.851	442	444	10.000	10.000	1	1
2	-2.865	-2.674	443	447	10.000	10.000	1	1
3	-2.261	-2.497	455	451	10.000	10.000	1	1
4	-1.889	-2.096	463	459	10.000	10.000	1	1
5	-1.606	-1.801	468	464	9.141	9.012	1	1
6	-1.373	-1.557	473	469	8.384	8.338	2	1
7	-1.169	-1.343	477	473	7.846	7.890	2	2
8	-0.987	-1.148	481	477	7.448	7.587	2	2
9	-0.819	-0.966	484	481	7.148	7.387	2	2
10	-0.662	-0.791	487	484	6.922	7.261	2	2
11	-0.513	-0.622	490	488	6.755	7.188	2	2
12	-0.369	-0.455	493	491	6.635	7.149	2	2
13	-0.229	-0.289	496	494	6.556	7.127	2	2
14	-0.090	-0.123	498	498	6.513	7.103	2	2
15	0.047	0.043	501	501	6.504	7.059	3	3
16	0.186	0.209	504	504	6.528	6.984	3	3
17	0.327	0.376	507	508	6.587	6.873	3	3
18	0.473	0.542	510	511	6.688	6.736	3	3
19	0.625	0.709	513	514	6.838	6.592	3	3
20	0.787	0.877	516	518	7.053	6.479	3	3
21	0.963	1.051	519	521	7.352	6.463	3	3
22	1.158	1.236	523	525	7.769	6.643	3	3
23	1.384	1.444	528	529	8.374	7.164	3	3
24	1.657	1.697	533	534	9.334	8.246	4	4
25	2.022	2.044	540	541	10.000	10.000	4	4
26	2.643	2.634	553	553	10.000	10.000	4	4
27	3.011	3.011	560	560	10.000	10.000	4	4

Table 2.2.12—Raw Score to Scale Score Lookup Table: Mathematics Grade 7

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-2.859	-2.859	440	440	10.000	10.000	1	1
1	-2.602	-2.847	445	440	10.000	10.000	1	1
2	-2.345	-2.835	451	441	10.000	10.000	1	1
3	-2.088	-2.027	456	457	10.000	10.000	1	1
4	-1.658	-1.592	465	466	10.000	9.985	1	1
5	-1.370	-1.258	471	473	8.729	9.176	2	2
6	-1.145	-0.980	476	479	7.810	8.532	2	2
7	-0.956	-0.742	480	484	7.189	7.944	2	2
8	-0.789	-0.535	483	488	6.754	7.440	2	2
9	-0.637	-0.350	486	492	6.451	7.035	2	2
10	-0.495	-0.182	489	496	6.244	6.720	2	2
11	-0.359	-0.026	492	499	6.110	6.479	2	2
12	-0.228	0.120	495	502	6.030	6.299	2	3
13	-0.100	0.259	497	505	5.989	6.171	2	3
14	0.028	0.393	499	508	5.972	6.084	2	3
15	0.156	0.525	503	510	5.971	6.021	3	3
16	0.285	0.654	505	513	5.980	5.955	3	3
17	0.416	0.782	508	516	6.001	5.867	3	3
18	0.551	0.910	511	518	6.047	5.771	3	3
19	0.692	1.040	514	521	6.143	5.730	3	3
20	0.841	1.176	517	524	6.324	5.835	3	3
21	1.004	1.321	520	527	6.626	6.169	3	3
22	1.188	1.484	524	530	7.093	6.796	3	4
23	1.403	1.675	528	534	7.777	7.758	3	4
24	1.667	1.911	534	539	8.754	9.155	4	4
25	2.012	2.233	541	546	10.000	10.000	4	4
26	2.528	2.788	552	557	10.000	10.000	4	4
27	2.922	2.922	560	560	10.000	10.000	4	4

Table 2.2.13—Raw Score to Scale Score Lookup Table: Mathematics Grade 8

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-2.983	-2.983	440	440	10.000	10.000	1	1
1	-2.869	-2.907	442	442	10.000	10.000	1	1
2	-2.754	-2.831	445	443	10.000	10.000	1	1
3	-2.640	-2.756	447	445	10.000	10.000	1	1
4	-2.012	-2.290	460	454	10.000	10.000	1	1
5	-1.634	-1.957	467	461	9.175	9.974	1	1
6	-1.341	-1.689	473	466	8.354	9.004	2	1
7	-1.097	-1.460	478	471	7.726	8.314	2	2
8	-0.887	-1.257	482	475	7.185	7.799	2	2
9	-0.704	-1.074	486	479	6.746	7.407	2	2
10	-0.541	-0.904	489	482	6.405	7.104	2	2
11	-0.391	-0.744	492	485	6.141	6.863	2	2
12	-0.252	-0.593	495	488	5.939	6.663	2	2
13	-0.120	-0.447	498	491	5.790	6.491	2	2
14	0.008	-0.306	500	494	5.687	6.341	3	2
15	0.132	-0.169	503	497	5.626	6.218	3	2
16	0.254	-0.032	505	499	5.605	6.134	3	2
17	0.377	0.104	508	502	5.623	6.104	3	3
18	0.501	0.244	510	505	5.678	6.149	3	3
19	0.630	0.390	513	508	5.775	6.291	3	3
20	0.765	0.545	516	511	5.919	6.557	3	3
21	0.908	0.716	518	515	6.123	6.982	3	3
22	1.065	0.910	522	519	6.414	7.606	3	3
23	1.243	1.138	525	523	6.849	8.480	3	3
24	1.455	1.419	529	529	7.557	9.681	3	3
25	1.733	1.788	535	536	8.894	10.000	4	4
26	2.182	2.361	544	548	10.000	10.000	4	4
27	2.966	2.966	560	560	10.000	10.000	4	4

Table 2.2.14—Raw Score to Scale Score Lookup Table: Mathematics Grade 10

Raw Score	Theta	Scale Score	SE(Scale Score)	Performance level
0	-3.124	440	10.000	1
1	-3.078	441	10.000	1
2	-3.031	442	10.000	1
3	-2.984	443	10.000	1
4	-2.937	444	10.000	1
5	-2.891	445	10.000	1
6	-2.844	446	10.000	1
7	-2.797	447	10.000	1
8	-2.750	448	10.000	1
9	-2.423	455	10.000	1
10	-2.178	460	8.953	1
11	-1.981	464	8.000	1
12	-1.816	468	7.326	1
13	-1.673	471	6.827	2
14	-1.546	474	6.441	2
15	-1.431	476	6.130	2
16	-1.325	478	5.871	2
17	-1.228	481	5.651	2
18	-1.136	482	5.461	2
19	-1.051	484	5.295	2
20	-0.969	486	5.148	2
21	-0.892	488	5.016	2
22	-0.819	489	4.897	2
23	-0.748	491	4.788	2
24	-0.680	492	4.688	2
25	-0.614	494	4.595	2
26	-0.550	495	4.509	2
27	-0.488	496	4.429	2
28	-0.428	498	4.357	2
29	-0.368	499	4.291	2
30	-0.310	500	4.232	3
31	-0.253	501	4.180	3
32	-0.197	503	4.135	3
33	-0.141	504	4.096	3
34	-0.086	505	4.063	3
35	-0.031	506	4.036	3
36	0.023	507	4.015	3
37	0.078	508	3.999	3
38	0.133	510	3.990	3
39	0.188	511	3.986	3
40	0.244	512	3.988	3
41	0.301	513	3.997	3

continued

Raw Score	Theta	Scale Score	SE(Scale Score)	Performance level
42	0.358	514	4.013	3
43	0.416	516	4.037	3
44	0.476	517	4.070	3
45	0.538	518	4.113	3
46	0.601	520	4.167	3
47	0.667	521	4.235	3
48	0.736	523	4.319	3
49	0.808	524	4.423	3
50	0.885	526	4.552	3
51	0.968	527	4.713	3
52	1.058	529	4.918	3
53	1.157	532	5.185	4
54	1.269	534	5.541	4
55	1.399	537	6.037	4
56	1.556	540	6.768	4
57	1.759	544	7.937	4
58	2.050	551	10.000	4
59	2.490	560	10.000	4
60	2.490	560	10.000	4

Table 2.2.15—Raw Score to Scale Score Lookup Table: Science Grade 5

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-3.130	-3.130	440	440	10.000	10.000	1	1
1	-3.043	-3.061	442	441	10.000	10.000	1	1
2	-2.955	-2.992	443	443	10.000	10.000	1	1
3	-2.868	-2.922	445	444	10.000	10.000	1	1
4	-2.780	-2.853	447	446	10.000	10.000	1	1
5	-2.693	-2.784	449	447	10.000	10.000	1	1
6	-2.312	-2.398	456	455	10.000	10.000	1	1
7	-1.996	-2.085	463	461	10.000	10.000	1	1
8	-1.720	-1.817	468	466	10.000	9.894	1	1
9	-1.472	-1.579	473	471	10.000	9.244	2	2
10	-1.243	-1.361	478	475	10.000	8.754	2	2
11	-1.028	-1.158	482	479	9.841	8.398	2	2
12	-0.824	-0.964	486	483	9.581	8.162	2	2
13	-0.627	-0.774	490	487	9.384	8.041	2	2
14	-0.433	-0.586	494	491	9.248	8.029	2	2
15	-0.242	-0.395	497	494	9.170	8.125	2	2
16	-0.050	-0.199	501	498	9.151	8.320	3	2
17	0.146	0.007	505	502	9.195	8.598	3	3
18	0.347	0.225	509	507	9.313	8.929	3	3
19	0.558	0.456	513	511	9.518	9.256	3	3
20	0.784	0.703	518	516	9.836	9.483	3	3
21	1.029	0.965	523	521	10.000	9.532	3	3
22	1.304	1.247	528	527	10.000	9.568	3	3
23	1.622	1.562	534	533	10.000	10.000	4	4
24	2.012	1.944	542	541	10.000	10.000	4	4
25	2.537	2.446	553	551	10.000	10.000	4	4
26	2.907	2.907	560	560	10.000	10.000	4	4
27	2.907	2.907	560	560	10.000	10.000	4	4

Table 2.2.16—Raw Score to Scale Score Lookup Table: Science Grade 8

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
0	-2.978	-2.978	440	440	10.000	10.000	1	1
1	-2.934	-2.899	441	442	10.000	10.000	1	1
2	-2.891	-2.821	442	443	10.000	10.000	1	1
3	-2.848	-2.743	443	445	10.000	10.000	1	1
4	-2.805	-2.233	444	455	10.000	10.000	1	1
5	-2.335	-1.889	453	462	10.000	9.932	1	1
6	-2.005	-1.615	460	468	10.000	8.907	1	1
7	-1.744	-1.376	465	472	9.405	8.471	1	2
8	-1.522	-1.154	469	477	8.634	8.372	1	2
9	-1.325	-0.941	474	481	8.123	8.451	2	2
10	-1.143	-0.731	477	486	7.791	8.599	2	2
11	-0.970	-0.525	481	490	7.592	8.745	2	2
12	-0.801	-0.321	484	494	7.502	8.847	2	2
13	-0.633	-0.120	488	498	7.507	8.885	2	2
14	-0.462	0.078	491	502	7.604	8.850	2	3
15	-0.285	0.273	495	506	7.794	8.754	2	3
16	-0.098	0.466	498	510	8.082	8.625	2	3
17	0.104	0.658	503	514	8.473	8.504	3	3
18	0.323	0.850	507	518	8.962	8.438	3	3
19	0.566	1.047	512	522	9.522	8.468	3	3
20	0.836	1.252	517	526	10.000	8.636	3	3
21	1.138	1.471	523	530	10.000	8.989	3	4
22	1.480	1.714	530	535	10.000	9.584	4	4
23	1.884	1.993	539	541	10.000	10.000	4	4
24	2.395	2.333	549	548	10.000	10.000	4	4
25	2.937	2.777	560	557	10.000	10.000	4	4
26	2.937	2.937	560	560	10.000	10.000	4	4
27	2.937	2.937	560	560	10.000	10.000	4	4

Table 2.2.17—Raw Score to Scale Score Lookup Table: Mini Science Form

Raw Score	Theta		Scale Score		SE(Scale Score)		Performance Level	
	Grade 5	Grade8	Grade 5	Grade8	Grade 5	Grade8	Grade 5	Grade8
0	-3.130	-2.978	440	440	10.000	10.000	1	1
1	-3.101	-2.925	441	441	10.000	10.000	1	1
2	-3.072	-2.872	441	442	10.000	10.000	1	1
3	-3.043	-2.819	442	443	10.000	10.000	1	1
4	-3.014	-2.766	442	444	10.000	10.000	1	1
5	-2.985	-2.713	443	445	10.000	10.000	1	1
6	-2.956	-2.660	443	446	10.000	10.000	1	1
7	-2.927	-2.366	444	452	10.000	9.992	1	1
8	-2.632	-2.138	450	457	10.000	8.734	1	1
9	-2.388	-1.948	455	461	9.965	7.873	1	1
10	-2.178	-1.783	459	464	9.242	7.274	1	1
11	-1.991	-1.636	463	467	8.676	6.857	1	1
12	-1.822	-1.500	466	469	8.221	6.570	1	1
13	-1.666	-1.372	469	473	7.849	6.377	1	2
14	-1.520	-1.250	472	475	7.542	6.254	2	2
15	-1.383	-1.131	475	477	7.289	6.183	2	2
16	-1.251	-1.016	477	480	7.081	6.151	2	2
17	-1.125	-0.901	480	482	6.913	6.150	2	2
18	-1.003	-0.788	482	484	6.782	6.175	2	2
19	-0.883	-0.674	485	487	6.684	6.221	2	2
20	-0.765	-0.559	487	489	6.617	6.285	2	2
21	-0.648	-0.443	489	491	6.580	6.366	2	2
22	-0.532	-0.325	492	494	6.570	6.460	2	2
23	-0.415	-0.204	494	496	6.586	6.566	2	2
24	-0.297	-0.081	496	499	6.625	6.679	2	2
25	-0.177	0.046	499	501	6.687	6.796	2	3
26	-0.054	0.176	501	504	6.768	6.912	3	3
27	0.072	0.310	504	507	6.868	7.022	3	3
28	0.202	0.448	506	510	6.987	7.124	3	3
29	0.337	0.591	509	512	7.125	7.221	3	3
30	0.478	0.740	512	515	7.286	7.319	3	3
31	0.627	0.894	515	519	7.478	7.435	3	3
32	0.785	1.057	518	522	7.712	7.592	3	3
33	0.954	1.230	521	525	8.003	7.822	3	3
34	1.139	1.417	525	529	8.370	8.169	3	3
35	1.343	1.626	529	533	8.837	8.694	3	4
36	1.574	1.867	534	538	9.439	9.494	4	4
37	1.844	2.158	539	544	10.000	10.000	4	4
38	2.172	2.534	545	552	10.000	10.000	4	4
39	2.607	2.937	554	560	10.000	10.000	4	4
40	2.907	2.937	560	560	10.000	10.000	4	4
41	2.907	2.937	560	560	10.000	10.000	4	4

Section 2.3

Rescore Analysis Results

Table 2.3.1—Rescore Analysis

Subject	Grade	UIN	LastYearMean	ThisYearMean	LastYearStDev	ThisYearStDev	EffectSize	AbsDiff
English Language Art	3	EL308855	1.457	1.477	0.827	0.797	0.024	0.020
	3	EL308857	1.290	1.485	0.830	0.839	0.235	0.195
	3	EL626052459	2.162	1.545	1.761	1.556	-0.350	0.616
	4	EL307728	1.641	1.591	0.759	0.767	-0.067	0.051
	4	EL307729	1.541	1.561	0.747	0.724	0.027	0.020
	4	EL624655949	2.832	2.863	1.859	2.012	0.016	0.030
	5	EL626356806	3.246	3.040	1.808	1.249	-0.114	0.206
	6	EL303519	3.645	3.619	2.142	1.129	-0.012	0.025
	6	EL626869132	3.714	3.847	2.100	1.780	0.063	0.133
	7	EL292181	3.837	3.893	2.039	1.401	0.028	0.056
	7	EL628749729	4.643	4.211	1.979	2.048	-0.218	0.432
	8	EL290818	4.548	4.274	1.891	2.002	-0.145	0.274
	8	EL623953378	4.472	4.221	2.008	0.925	-0.125	0.251
Mathematics	4	MA250543	1.653	1.709	1.324	2.042	0.042	0.055
	4	MA311581	2.381	2.335	1.153	2.253	-0.040	0.046
	5	MA311366	1.621	1.616	1.415	1.131	-0.004	0.005
	6	MA307339	3.155	3.155	0.925	1.786	0.000	0.000
	7	MA316886	2.221	2.196	1.124	2.177	-0.022	0.025
	8	MA297652	3.173	3.138	1.228	1.239	-0.029	0.036
	8	MA314812	2.668	2.714	1.481	1.465	0.031	0.045

Section 2.4

Tabled B/B Analysis Results

Table 2.4.1

b/b Analysis

English Language Arts Grade 3

Item Id	Old b	New b	Std Dist	Flag
IA00279	-0.92977	-0.92050	-0.78234	False
IA00280	-0.56172	-0.58150	-1.25408	False
IA00281	0.09026	0.07620	-0.63383	False
IA00282	-0.60316	-0.22780	0.74601	False
IA00283	-0.28528	0.03980	0.17490	False
IA00284	-0.46364	-0.32790	-0.60615	False
IA00285	-0.74705	-0.69470	-0.74616	False
IA00286	0.73610	0.80710	-0.42140	False
IA00287	0.31714	0.69943	-0.13528	False
IA00288	0.86123	0.84847	0.12730	False
IA00422	1.07233	1.34520	-1.10870	False
IA00423	-0.25057	-0.24270	-1.08424	False
IA00424	0.82170	0.85880	-0.16453	False
IA00425	-0.20617	-0.37420	-0.14943	False
IA00426	-0.27711	-0.58910	0.50883	False
IA00428	-0.37066	-0.20300	-0.53712	False
IA00432	-0.58426	-0.91850	0.31564	False
IA00433	-0.68279	-0.77485	-1.00867	False
IA00434	-2.34449	-2.33250	0.64014	False
IA00436	0.09548	-0.22600	0.92788	False
IA00438	0.83810	0.69330	0.77279	False
IA00443	-1.01130	-0.59810	1.34400	False
IA00444	-0.50278	-0.21830	0.18592	False
IA00445	-0.18325	-0.14670	-1.16242	False
IA00446	-0.18033	0.23180	0.51115	False
IA00450	-0.20396	-0.39280	-0.04186	False
IA00451	0.79202	0.92430	-0.67599	False
IA00452	-0.22588	-0.16055	-1.19940	False
IA00453	-0.40439	-0.10340	0.17154	False
IA00458A	1.00727	1.80937	1.30305	False
IA00458D	1.57680	2.49710	1.33442	False
IA00691	-0.57526	-0.62980	-1.09156	False
IA03674	-0.22980	-0.41190	-0.10172	False
IA03675	0.12560	0.09640	-0.52198	False
IA03685	-0.69840	-0.67850	-0.95890	False
IA03686	0.34410	0.26470	-0.05024	False
IA03689	-1.18550	-1.18090	-0.55134	False
IA03690	-0.21350	-0.65870	1.24663	False
IA03691	0.01260	-0.14710	0.02624	False
IA03692	-1.39910	-1.30925	0.09299	False
IA03693	-0.15755	-0.29020	-0.28015	False
IA03694	-0.59830	-0.59200	-1.12744	False
IA03696A	0.58883	1.44203	1.97848	False
IA03696D	2.32673	3.14558	0.07400	False
IA03697	1.13460	0.42790	3.91301	True

Table 2.4.2

b/b Analysis

English Language Arts Grade 4

Item Id	Old b	New b	Std Dist	Flag
IA00218	-1.47899	-1.20120	0.01224	False
IA00219	-1.32580	-1.20980	-1.32455	False
IA00220	0.41841	0.73300	-0.86077	False
IA00221	0.06591	0.23880	-1.71482	False
IA00222	-1.17271	-0.92330	-0.39246	False
IA00223	0.07812	0.38490	-0.71350	False
IA00224	-0.71688	-0.71180	-0.90193	False
IA00225	-0.26222	0.37623	2.04296	False
IA00226	0.03026	0.56487	1.06666	False
IA00289	-0.35621	-0.46150	0.16604	False
IA00407	0.52679	1.06320	0.77805	False
IA00408	-0.39052	-0.01300	0.11567	False
IA00411	-1.29795	-0.69120	2.43023	False
IA00412	-2.02010	-1.56740	1.68616	False
IA00414	0.70188	1.09030	-0.46601	False
IA00415	-0.69205	-0.30290	0.38874	False
IA00416	-1.27948	-0.87780	0.84288	False
IA00419	-1.66447	-1.29605	0.82178	False
IA00421A	0.12301	0.60267	0.58783	False
IA00421D	1.04752	1.29710	-1.70627	False
IA04158	-1.16400	-1.21910	-0.71178	False
IA04159	-0.42150	-0.45610	-0.41703	False
IA04161	-0.30460	-0.40300	0.14453	False
IA04163	0.07916	0.38440	-0.72597	False
IA04165	-0.33510	-0.46780	0.38957	False
IA04167	-0.37165	-0.36140	-0.73137	False
IA04168	-0.11850	-0.42700	1.87266	False
IA04170	0.47075	0.24205	1.61829	False
IA04171	-0.43670	-0.64750	0.92793	False
IA04172	0.16450	0.10460	0.13439	False
IA04174	0.65010	0.69600	-0.38294	False
IA04175	-0.56070	-0.58790	-0.55870	False
IA04176	-0.45900	-0.67620	0.96353	False
IA04391	-1.18750	-1.38720	0.38525	False
IA04392	-1.42470	-1.41690	-1.35402	False
IA04394	-0.26050	-0.24360	-0.71477	False
IA04395	-0.96070	-0.81980	-1.35558	False
IA04396	-0.37280	-0.51410	0.43270	False
IA04397	-0.00080	0.00760	-0.49124	False
IA04398	-0.22090	-0.25530	-0.29637	False
IA04402	0.42280	0.33650	0.49464	False
IA04403	-0.90140	-0.93210	-0.73934	False
IA04408A	0.09393	0.50640	0.08917	False
IA04408D	0.86440	1.34603	0.15133	False
IA04410	-1.18320	-1.26340	-0.53057	False
IA04411	-0.70505	-0.62730	-1.45325	False

Table 2.4.3
b/b Analysis
English Language Arts Grade 5

Item Id	Old b	New b	Std Dist	Flag
IA00209	-0.60004	-0.37240	-0.61860	False
IA00210	-0.18819	0.06500	-0.80420	False
IA00211	-0.04726	0.15000	-0.83272	False
IA00212	-0.45337	-0.30820	-0.90993	False
IA00213	0.08463	0.13190	-0.15108	False
IA00214	-0.23991	-0.02790	-0.93026	False
IA00215	-0.01254	0.29540	-0.71085	False
IA00216	-1.65386	-1.27800	0.69652	False
IA00495	-1.56540	-0.99890	1.38499	False
IA00497	-0.34409	-0.77810	1.44430	False
IA00500	-1.01730	-0.58040	0.49443	False
IA00502	-1.51485	-1.29620	-0.01846	False
IA00503	-2.36647	-3.71650	3.64275	True
IA00506	-0.29694	-0.34850	-0.02739	False
IA00508	0.42877	0.69565	-0.77590	False
IA00509A	0.00829	0.60787	0.42190	False
IA00509D	0.70574	1.08500	-0.92927	False
IA00638	-0.66376	-0.16750	0.48234	False
IA03728	-1.92640	-1.41780	1.40801	False
IA03731	-0.71540	-0.73860	-0.42964	False
IA03733	0.09960	0.20710	-0.37761	False
IA03734	-1.16970	-1.24180	-0.55288	False
IA03736	0.92440	0.84010	0.94984	False
IA03737	0.08690	0.03270	0.24965	False
IA03738	-1.12340	-0.00980	3.23008	True
IA03741	-0.91940	-0.69610	-0.41382	False
IA03743	-0.19840	-0.26405	0.09649	False
IA03744A	0.19626	0.59527	-0.49767	False
IA03744D	0.96352	1.24750	-0.47168	False
IA03859	-1.48580	-1.33800	-0.31734	False
IA03860	-1.14405	-0.94335	-0.34666	False
IA03861	-1.07430	-1.19810	-0.28323	False
IA03862	-0.59090	-0.77940	0.30709	False
IA03864	-2.03020	-1.88760	0.04038	False
IA03866	-1.49950	-1.61710	-0.60300	False
IA03867	-0.38320	-0.43990	-0.06709	False
IA03868	-0.28420	-0.08690	-0.95735	False
IA03872	-0.76150	-0.75995	-0.55903	False
IA03873	-0.06710	-0.25820	0.68119	False
IA03874	-0.15730	-0.02680	-0.64655	False
IA03876A	-0.02759	0.43043	-0.11001	False
IA03876D	0.57453	1.00355	-0.64238	False
IA04457	-0.88890	-0.77410	-0.86181	False
IA04458	0.35170	0.58150	-0.68358	False

Table 2.4.4
b/b Analysis
English Language Arts Grade 6

Item Id	Old b	New b	Std Dist	Flag
IA00173	-1.61264	-0.65580	1.06213	False
IA00174	-0.89312	-0.33970	-0.23904	False
IA00175	-0.65354	-0.01700	0.42021	False
IA00176	-1.59790	-0.80900	0.23324	False
IA00177	-2.42062	-1.46110	0.26069	False
IA00178	-1.14059	-0.56250	-0.36468	False
IA00179	-0.66142	-0.12580	-0.09478	False
IA00180	0.08389	0.15810	-0.43496	False
IA00181A	-0.28780	0.32123	0.65088	False
IA00181D	0.76188	1.19610	0.83126	False
IA00515	-2.11926	-1.28110	-0.04510	False
IA00517	-1.13436	-0.68490	-1.00466	False
IA00518	-1.04450	-0.47860	-0.32901	False
IA00520	0.88895	1.16370	0.15822	False
IA00522	-0.88194	-0.43750	-0.77529	False
IA00523	-0.72268	-0.42020	-0.76834	False
IA00528	-1.82572	-1.06575	-0.14188	False
IA00530	-1.32762	-0.84235	-1.01966	False
IA00531A	-0.49144	0.16563	0.68686	False
IA00531D	0.67275	1.03418	0.37566	False
IA03671A	-0.26313	-0.09693	-0.54712	False
IA03671D	0.84700	1.03288	-0.33059	False
IA03680	0.53460	0.14390	1.44626	False
IA03683	-0.22440	-0.07380	-0.50782	False
IA03699	-0.14550	-0.13950	0.13910	False
IA03700	-0.28760	-0.20995	-0.07757	False
IA03701	-0.84520	-0.45280	-0.99970	False
IA03702	0.03450	0.11280	-0.40569	False
IA03706	-0.44790	-0.38640	0.16525	False
IA03707	-0.60640	-0.16640	-0.51970	False
IA03708	0.54430	0.39740	0.21158	False
IA03858	-0.09130	0.23750	-0.55888	False
IA03973	-1.45040	-0.93550	-0.99462	False
IA03974	-0.59580	-0.32630	-0.73061	False
IA03975	-1.50370	-1.07550	-0.61227	False
IA03977	-0.82450	-0.94170	1.44289	False
IA03979	0.72430	0.52840	0.27623	False
IA03981	-0.65050	-0.48610	-0.14740	False
IA03982	-0.79250	-0.66310	0.17166	False
IA03984A	-0.31049	-0.02790	-1.01211	False
IA03984D	0.79891	0.91920	-0.70863	False
IA04006	-0.38680	-1.32590	5.13081	True
IA04007	0.07305	0.01695	0.23068	False
IA04141	-1.04960	-0.26580	0.76061	False
IA04142	-1.40700	-0.96280	-0.79019	False
IA04453	2.13110	2.02670	-0.49391	False

Table 2.4.5
b/b Analysis
English Language Arts Grade 7

Item Id	Old b	New b	Std Dist	Flag
IA00065	-1.29375	-0.71170	-0.70647	False
IA00066	-1.09050	-0.40780	0.14962	False
IA00067	-0.07467	0.37360	-0.43025	False
IA00068	-1.12877	-0.43570	0.18160	False
IA00069	-0.45904	-0.15500	-1.16040	False
IA00070	-0.13875	-0.40380	2.28470	False
IA00071A	-0.44445	0.38977	1.76129	False
IA00071D	0.65225	1.17912	0.77782	False
IA00081	-1.02931	-0.51280	-0.88715	False
IA00082	-0.39273	0.05430	-0.74043	False
IA00257	-1.78014	-1.20400	-1.20725	False
IA00258	-1.79449	-1.03880	-0.03798	False
IA00262	-0.77688	-0.23960	-0.51062	False
IA00265	-2.68728	-1.68470	0.74081	False
IA00269	-2.33283	-1.52620	-0.21356	False
IA00655	-1.16859	-0.76440	-1.14645	False
IA00657	-1.48855	-0.73440	0.24238	False
IA00658	-1.59407	-1.04560	-1.21287	False
IA00665A	-0.84178	0.05467	1.79399	False
IA00665D	0.22706	0.91654	1.44538	False
IA04038A	-0.31577	0.21210	-0.13477	False
IA04038D	0.65322	1.18100	0.78474	False
IA04040	-0.36235	-0.05235	-1.29148	False
IA04042	-0.85720	-0.58560	-0.56861	False
IA04043	-0.23860	-0.10890	-0.22115	False
IA04044	-0.97580	-0.51430	-1.19876	False
IA04045	-1.32190	-0.92720	-0.93835	False
IA04046	-0.84500	-0.79200	0.85997	False
IA04050	-0.45860	-0.26190	-0.45365	False
IA04052	-0.67375	-0.46585	-0.32314	False
IA04054	-0.84210	-0.82250	1.07726	False
IA04055	-1.01370	-0.81560	0.06422	False
IA04057	-0.98680	-0.94380	1.06050	False
IA04058	-0.36040	-0.20070	-0.30314	False
IA04060	-0.57870	-0.35820	-0.49641	False
IA04061	-0.14700	-0.08685	0.15008	False
IA04062	-1.38740	-0.73020	-0.30029	False
IA04064	0.34020	0.37050	-0.11589	False
IA04065	0.22710	0.12830	0.84203	False
IA04066	0.40630	-0.03260	2.91250	False
IA04067	-1.59060	-1.16500	-0.88678	False
IA04068	-1.31680	-0.89380	-1.12964	False
IA04069	-0.08690	-0.00730	-0.03513	False
IA04071	0.03090	0.00540	0.54543	False
IA04072	-0.59690	-0.15990	-1.00038	False
IA04079A	-0.35673	0.05027	-0.96999	False
IA04079D	0.55673	1.12300	0.94669	False

Table 2.4.6

b/b Analysis

English Language Arts Grade 8

Item Id	Old b	New b	Std Dist	Flag
IA00056	-2.03056	-1.23210	0.80790	False
IA00057	-1.86465	-1.27210	-0.20198	False
IA00058	-0.98095	-0.85010	-0.44120	False
IA00059	-0.49291	-0.36970	-0.75435	False
IA00060	-0.94041	-0.62970	-1.07701	False
IA00061	-0.42532	0.03760	0.13352	False
IA00062	0.03451	0.26750	-0.79439	False
IA00063	0.63593	0.77680	-0.86260	False
IA00064A	-0.97008	-0.02620	2.37798	False
IA00064D	0.18878	0.88348	1.85299	False
IA00368	-1.17975	-0.52300	0.64886	False
IA00371	-0.60996	-0.35400	-1.13719	False
IA00373	0.33642	0.44470	-1.25947	False
IA00374	-0.58072	-0.70960	0.69371	False
IA00376A	-1.21775	-0.15837	2.83197	False
IA00376D	0.34044	0.73718	0.32732	False
IA00378	-0.13654	0.12570	-0.75824	False
IA00379	0.74075	0.14050	2.32037	False
IA00383	-0.72677	-0.33540	-0.47868	False
IA00699	-0.99454	-0.87980	-0.34285	False
IA04153	-0.47610	-0.45220	-0.22129	False
IA04154	-0.57095	-0.55470	-0.11028	False
IA04155	-0.85350	-0.74870	-0.39089	False
IA04156	-0.90990	-0.88450	0.08611	False
IA04179	-0.86120	-0.73400	-0.50828	False
IA04184	0.07690	-0.02860	0.08684	False
IA04190	-0.29480	-0.51890	1.00850	False
IA04193	-0.59250	-0.32910	-1.08363	False
IA04195	-1.16430	-0.84150	-1.17353	False
IA04196	-0.53620	-0.79690	1.38510	False
IA04197	0.04580	-0.12500	0.46802	False
IA04198	-0.80820	-0.68820	-0.50731	False
IA04199	0.17240	0.22980	-0.87709	False
IA04200A	-0.60278	-0.16007	-0.10655	False
IA04200D	0.29988	0.81858	0.96745	False
IA04204	-1.33050	-1.27860	0.24663	False
IA04205	-0.41440	-0.56520	0.69305	False
IA04206	-1.06080	-1.05860	0.32329	False
IA04207	-1.46650	-1.01200	-0.67028	False
IA04208	0.78380	0.48300	0.64484	False
IA04227A	-0.32381	-0.05900	-0.88039	False
IA04227D	0.52657	0.81132	-0.15216	False
IA04387	-0.31460	-0.09520	-1.12302	False
IA04388	-1.10730	-0.59560	-0.09486	False
IA04417	-1.58075	-1.21020	-1.21436	False
IA04465	-2.18740	-1.63960	-0.68253	False

Table 2.4.7
b/b Analysis
English Language Arts Grade 10

Item Id	Old b	New b	Std Dist	Flag
IA03746	-1.06790	-0.85840	-0.18616	False
IA03749	-1.21430	-1.23380	-0.01856	False
IA03750	-1.69050	-1.53590	-0.45682	False
IA03751	-0.93230	-0.92980	-0.50457	False
IA03752	-1.51000	-1.23480	-0.35100	False
IA03757	-1.64460	-1.72160	0.86565	False
IA03758	-1.60810	-1.42270	-0.74407	False
IA03759	0.17870	-0.38330	1.46140	False
IA03763A	-0.93126	-1.09937	0.51086	False
IA03763D	-0.02185	-0.16788	-0.76520	False
IA03765	-1.08820	-1.08680	-0.30181	False
IA03766	-0.02420	-1.13330	4.97722	True
IA03769	-1.71300	-1.37040	-0.20480	False
IA03770	-1.20210	-1.04540	-0.66971	False
IA03773	-1.67360	-1.60930	0.06006	False
IA03775	-0.58270	-0.53940	-0.56601	False
IA03777	-0.25580	-0.15060	0.21429	False
IA03779	-1.26405	-1.01280	-0.18420	False
IA03781	-1.69870	-1.41240	-0.52233	False
IA03784	-1.07510	-0.79050	0.25234	False
IA03787	-1.32060	-1.00890	0.10489	False
IA03790	-1.55985	-1.11805	0.57913	False
IA03846	-0.36260	-0.39425	-0.73568	False
IA03849	-0.16700	0.11760	1.39519	False
IA03852	-0.52145	-0.49660	-0.59888	False
IA03853	-1.52575	-1.46125	-0.12720	False
IA03856A	-0.83792	-1.04783	0.64254	False
IA03856D	0.20686	0.07338	-0.62588	False
IA04029	-1.57485	-1.29490	-0.40430	False
IA04031	-1.31200	-1.01890	0.00486	False
IA04033	-1.87350	-1.62120	-0.80876	False
IA04036	-0.92350	-0.85390	-0.83817	False
IA04110	-0.77245	-0.47400	0.71577	False
IA04111	-1.75420	-1.51210	-0.85558	False
IA04132	-1.79230	-1.37790	0.12330	False
IA04260	-1.10620	-0.80910	0.28770	False
IA04297	-0.25870	-0.17300	0.09443	False
IA04412	-0.83710	-0.83750	-0.60709	False
IA04439	-0.49140	-0.55320	-0.67624	False
IA04440	-0.70495	-0.63090	-0.53660	False

Table 2.4.8
b/b Analysis
Mathematics Grade 3

Item Id	Old b	New b	Std Dist	Flag
IA00769	-2.14981	-1.57920	-0.79241	False
IA00799	0.28471	0.60100	-1.05190	False
IA00834	-0.89072	-0.78570	1.50883	False
IA00838	-1.13737	-0.41840	1.12525	False
IA00850	-0.82994	-0.30980	-0.38185	False
IA00852	-0.44454	-0.22700	0.25987	False
IA00886	-1.24169	-0.77450	-1.09846	False
IA00922	0.15643	0.49070	-1.12401	False
IA00924	0.90644	1.43880	0.83182	False
IA00925	-0.77521	-0.65320	1.28950	False
IA00930	-0.44719	-0.17030	-0.24691	False
IA00932	0.68670	0.60840	2.07194	False
IA01071	-1.04802	-0.82500	0.59835	False
IA02097	-0.12040	0.11600	-0.10873	False
IA02098	-0.29490	-0.18547	1.09049	False
IA02203	-1.02880	-0.88580	1.27163	False
IA02227	-0.33403	0.07183	-1.04417	False
IA02372	0.77350	1.44340	1.92527	False
IA02379	0.72417	0.98700	-0.87456	False
IA02511	-0.49010	0.10460	0.47398	False
IA02515	0.90510	1.33460	-0.05027	False
IA02909	-2.25205	-1.46310	1.01288	False
IA04480	0.42250	0.75670	-1.17496	False
IA04547	-1.75750	-1.08470	0.33364	False
IA04548	-0.25253	0.13823	-1.12148	False
IA04567	-0.04870	0.26490	-0.81592	False
IA04622	1.20310	1.61790	0.01411	False
IA04702	-0.03860	0.34650	-1.03337	False
IA04703	-1.14860	-0.38790	1.47559	False
IA04743	1.37080	1.35400	1.10814	False
IA04753	-1.42680	-0.78710	0.26127	False
IA04754	-1.00980	-0.60470	-0.98600	False
IA04760	-1.72290	-1.24150	-1.18425	False
IA04809	-0.55120	0.28400	2.49540	False
IA04813	-0.94020	-0.60160	-0.46073	False
IA04829	-0.81510	-0.58370	0.37779	False
IA04831	-1.02720	-0.81260	0.65719	False
IA04834	-0.05650	0.37460	-0.65071	False
IA04835	-0.20080	0.24550	-0.61264	False
IA04841	-0.38640	-0.00350	-1.19395	False
IA04844	-0.23920	0.16120	-1.03041	False
IA04852	-0.13070	0.16170	-0.58192	False
IA04853	-0.70610	-0.20380	-0.45559	False
IA04857	-0.01580	0.28400	-0.71870	False
IA04858	0.62033	0.96107	-0.99261	False
IA04860	-0.29360	0.28680	0.47697	False
IA04877	0.11250	0.31990	-0.00902	False
IA05016	1.72090	1.83770	-0.26006	False
IA05017	-0.04420	0.39140	-0.60430	False

Table 2.4.9
b/b Analysis
Mathematics Grade 4

Item Id	Old b	New b	Std Dist	Flag
IA00789	0.47116	0.73390	-0.77785	False
IA00841	-0.50085	-0.30820	-0.48436	False
IA00861	-0.94584	-1.17930	1.70941	False
IA00906	-0.55570	-0.44910	-0.03872	False
IA00913	0.33169	0.86210	0.26897	False
IA00958	0.28365	0.70390	-0.30320	False
IA00961	0.35737	0.33820	0.68706	False
IA01048	0.30497	0.49860	-0.42909	False
IA01049	-0.35950	-0.19110	-0.34702	False
IA01052	0.13356	0.21640	0.13712	False
IA01057	-0.23292	0.03440	-0.85455	False
IA02046	-0.74423	-0.26850	0.06381	False
IA02175	-0.94805	-0.33020	0.82189	False
IA02426	0.40190	0.87170	-0.05308	False
IA02582	-0.40320	-0.19580	-0.55413	False
IA02819	0.42930	-0.45330	5.20529	True
IA02820	-0.90500	-0.15595	1.50440	False
IA02825	0.26010	0.52260	-0.79241	False
IA02841	0.04340	0.49090	-0.14277	False
IA02899	-0.81585	-0.40025	-0.24510	False
IA02902	0.31890	0.93380	0.71152	False
IA02957	0.52022	0.98605	-0.08270	False
IA04488	-0.31910	0.02780	-0.64140	False
IA04618	-0.15940	0.36210	0.25920	False
IA04661	-0.88210	-0.23250	0.98289	False
IA04720	-1.07420	-0.72020	-0.54770	False
IA04750	-1.31340	-0.95600	-0.51201	False
IA04755	0.68040	0.80430	-0.03650	False
IA04889	-1.01540	-0.74690	-0.91936	False
IA04891	-0.16280	0.12170	-0.93909	False
IA04898	0.84270	1.09310	-0.68551	False
IA04923	-1.19610	-0.79500	-0.29239	False
IA04927	0.40430	0.71290	-0.89579	False
IA04928	1.15450	1.71610	0.37032	False
IA04937	-1.11220	-1.02460	0.01888	False
IA04942	0.02370	0.01310	0.61726	False
IA04951	-0.11120	0.20000	-0.84357	False
IA04959	-0.87127	-0.43990	-0.15853	False
IA04965	-0.42060	0.04500	-0.01339	False
IA04975	0.04895	0.18135	-0.12825	False
IA05040	1.03840	1.22740	-0.34993	False
IA05043	0.05700	0.19680	-0.16633	False
IA05044	-0.77550	-0.35480	-0.22147	False
IA05056	-1.57030	-1.21610	-0.50948	False
IA05066	-0.43410	-0.25810	-0.39233	False

Table 2.4.10
b/b Analysis
Mathematics Grade 5

Item Id	Old b	New b	Std Dist	Flag
IA00776	-0.64768	-0.44940	-0.54628	False
IA00803	-0.59114	-0.58580	0.75960	False
IA00806	0.10558	0.65420	0.21106	False
IA00826	-1.62060	-1.50310	-0.03927	False
IA00871	0.13186	0.04500	1.41139	False
IA00872	-0.16060	-0.29120	1.69527	False
IA00874	-0.81403	-0.36670	-0.43665	False
IA00885	-0.78241	-0.44200	-1.16034	False
IA00936	-0.90358	-0.24230	1.01250	False
IA00943	0.11250	0.21810	0.11024	False
IA00989	-1.58309	-0.79540	1.89370	False
IA01032	0.58016	0.66688	0.25648	False
IA01158	0.70715	0.81563	0.11452	False
IA01159	-0.24085	0.18623	-0.59636	False
IA02101	-0.95168	-0.61110	-1.15244	False
IA02306	0.74396	1.11810	-0.99329	False
IA02342	-0.72945	-0.53860	-0.49934	False
IA02396	-1.14380	-1.27910	1.68783	False
IA02545	-0.69890	-0.31070	-0.84077	False
IA02552	0.90100	1.40170	-0.14443	False
IA02680	-0.65517	-0.40415	-0.90292	False
IA02729	0.00920	0.02585	0.70712	False
IA02735	-0.71588	0.00312	1.39505	False
IA02736	-0.19382	0.12705	-1.31583	False
IA02919	-0.04520	0.16910	-0.63050	False
IA02927	-1.36660	-0.59010	1.80947	False
IA04604	-0.07920	0.68990	1.70814	False
IA04705	0.27900	0.95180	1.04319	False
IA04931	0.84570	1.17430	-1.30504	False
IA04933	-0.01410	0.12740	-0.13738	False
IA04938	0.56940	0.96810	-0.82039	False
IA04970	-0.56790	-0.45610	0.04122	False
IA05005	0.13670	0.39590	-0.92662	False
IA05015	1.07490	1.31220	-0.74125	False
IA05019	0.16950	0.47870	-1.26315	False
IA05020	0.05660	0.36270	-1.24670	False
IA05021	0.68560	0.76380	0.31822	False
IA05024	-0.54380	-0.49970	0.49960	False
IA05031	0.49940	0.99520	-0.16152	False
IA05062	-1.15620	-0.46370	1.23352	False
IA05063	-0.75360	-0.33150	-0.60953	False
IA05103	-0.69430	-0.36550	-1.24229	False
IA05179	0.74990	1.24210	-0.19583	False

Table 2.4.11
b/b Analysis
Mathematics Grade 6

Item Id	Old b	New b	Std Dist	Flag
IA00778	-1.11977	-1.10960	-0.51109	False
IA00818	0.85530	0.94660	0.64359	False
IA00827	-0.43982	-0.07120	-0.61345	False
IA00845	-0.11171	0.80120	1.77472	False
IA00846	-0.33236	0.34270	0.79171	False
IA00972	-1.05234	-0.86945	-1.03579	False
IA00992	1.73513	2.88830	1.49405	False
IA01058	0.47245	0.77540	-0.68539	False
IA01136	-0.48436	0.63265	3.05900	True
IA02692	-0.94150	-0.69390	-0.80820	False
IA02704	0.10787	0.35203	-0.68555	False
IA04605	0.70090	0.85940	0.19587	False
IA04656	-1.83050	-2.11730	0.37491	False
IA04722	0.29760	0.62240	-0.92872	False
IA04725	0.91070	0.92890	1.04234	False
IA04758	-0.65520	-0.15970	0.17217	False
IA04763	-0.74532	-0.38055	-0.39256	False
IA04764	0.11070	0.37728	-0.79230	False
IA04776	-0.04830	0.48210	-0.13418	False
IA04855	-0.19520	-0.08180	-0.28771	False
IA04875	0.09640	0.42470	-1.10353	False
IA04878	-0.61290	0.01360	0.77571	False
IA04879	-0.09920	-0.60080	2.77676	False
IA04882	0.05710	0.45340	-0.86863	False
IA04884	-0.94140	-0.58020	-0.25613	False
IA04885	-0.63510	-0.49790	-0.74840	False
IA04886	-0.22150	0.25240	-0.27296	False
IA04893	0.71170	0.88130	0.15039	False
IA04903	0.74320	1.05660	-0.52384	False
IA04904	0.45480	0.85570	-1.15818	False
IA04905	0.39700	0.58540	-0.18780	False
IA04908	0.46360	0.36000	1.28369	False
IA04909	-0.76250	-0.20640	0.55086	False
IA04911	-0.50070	-0.02440	-0.04233	False
IA04914	-1.14000	-1.03990	-0.96406	False
IA05124	1.18450	1.63380	-0.83827	False
IA05126	-0.25800	0.06000	-1.00208	False
IA05128	0.12430	0.82880	0.57665	False
IA05129	1.07540	1.40230	-0.32891	False
IA05135	-0.35000	-0.24200	-0.38287	False
IA05136	0.79960	1.33700	-0.76515	False
IA05137	0.74075	0.96170	-0.07641	False
IA05140	0.61100	1.13580	-0.67848	False
IA05142	0.57080	0.45840	1.41054	False

Table 2.4.12
b/b Analysis
Mathematics Grade 7

Item Id	Old b	New b	Std Dist	Flag
IA00796	0.13145	0.45580	-0.05909	False
IA00807	-0.23550	0.29130	1.18982	False
IA00831	-0.76278	-0.77240	0.21939	False
IA00842	1.00188	1.31015	-0.22851	False
IA00847	-0.33040	0.08650	0.53640	False
IA00883	-1.06622	-1.68510	3.86039	True
IA00909	-1.67685	-1.58190	-0.48618	False
IA00910	0.38259	0.71810	-0.01289	False
IA00945	-1.08666	-0.71650	0.31827	False
IA00948	-1.25261	-1.15150	-0.48783	False
IA00949	-0.31555	-0.06210	-0.44842	False
IA01004	1.08389	1.16100	-0.14836	False
IA01006	-2.12289	-1.32940	2.95223	False
IA01011	0.25144	0.55270	-0.20805	False
IA01016	0.06674	0.22190	-0.70295	False
IA01017	-0.90608	-0.77300	-0.65129	False
IA01018	0.32590	0.46550	-0.58768	False
IA01069	-0.05988	0.22218	-0.29763	False
IA01097	0.46659	0.48910	0.12867	False
IA01108	0.24764	0.58790	0.02696	False
IA02090	-1.12290	-1.04200	-0.35539	False
IA02401	-0.55580	-0.48570	-0.24306	False
IA02711	0.78935	0.93390	-0.57878	False
IA02715	-0.53515	-0.36605	-0.83708	False
IA02722	0.01352	0.17168	-0.72542	False
IA02871	-0.25110	-0.17980	-0.22484	False
IA02875	-0.68960	-0.27570	0.54834	False
IA02884	0.54810	0.80660	-0.49013	False
IA04486	-0.47100	-0.41240	-0.16678	False
IA04490	0.48720	0.77550	-0.30572	False
IA04513	0.91880	1.04670	-0.46778	False
IA04538	-0.70640	-0.43440	-0.30417	False
IA04539	-0.06220	0.14110	-0.77136	False
IA04575	-0.06187	-0.00157	-0.14282	False
IA04625	1.29620	1.12140	1.38527	False
IA04643	0.89990	0.92870	0.12699	False
IA04647	0.31880	0.57430	-0.48904	False
IA04649	-0.07470	0.00920	-0.28594	False
IA04688	1.11070	1.27650	-0.67983	False
IA04690	0.51120	0.70770	-0.86015	False
IA04694	0.19675	0.44818	-0.50338	False
IA04766	0.65510	0.87290	-0.74398	False
IA04767	1.00560	0.91180	0.87358	False
IA04770	0.24670	0.38850	-0.60753	False
IA04771	0.53750	1.46610	3.54320	True
IA05035	0.39090	0.68100	-0.28685	False
IA05086	1.11110	1.18920	-0.15205	False
IA05106	0.82770	0.91180	-0.21181	False
IA05107	-0.09910	-0.11120	0.28972	False
IA05119	-0.03150	0.09540	-0.54109	False
IA05121	0.51532	0.67710	-0.70534	False

Table 2.4.13
b/b Analysis
Mathematics Grade 8

Item Id	Old b	New b	Std Dist	Flag
IA00792	0.43628	0.63010	-0.18837	False
IA00849	-0.72688	-0.49390	-0.28107	False
IA00858	-1.10940	-0.77950	-0.91516	False
IA00864	-0.95344	-0.71038	-0.31677	False
IA00865	0.37275	0.55500	-0.09497	False
IA00903	-0.71994	-0.71720	1.37147	False
IA00905	0.08071	0.70700	0.48359	False
IA00979	0.55941	0.63620	0.63222	False
IA00985	0.21467	0.88460	0.81875	False
IA01033	-0.00034	0.23010	-0.38061	False
IA01035	0.53980	0.48630	1.57118	False
IA01037	0.18734	0.34640	0.10164	False
IA01042	-0.66870	0.58930	4.89926	True
IA01044	-0.70369	-0.60850	0.70483	False
IA01066	-0.38827	-0.08768	-0.82159	False
IA01125	0.17761	0.63530	-0.71164	False
IA02165	-1.08712	-0.80200	-0.59715	False
IA02480	-0.99686	-0.41620	-0.01883	False
IA02495	0.24613	0.34470	0.52657	False
IA02565	-0.01416	0.51440	-0.23372	False
IA02746	0.13270	0.62870	-0.44376	False
IA02747	0.60320	1.05130	-0.71152	False
IA02764	0.21000	0.62323	-1.02575	False
IA02893	-0.43725	-0.35223	0.73464	False
IA02935	0.43080	1.03380	0.37307	False
IA02942	-1.09310	-0.48800	0.14111	False
IA02947	-0.22980	0.08380	-0.94069	False
IA04594	1.05500	1.03160	1.27147	False
IA04607	-0.56970	0.04800	0.31646	False
IA04612	0.20320	0.43223	-0.40344	False
IA04633	1.27370	1.98280	1.27177	False
IA04665	0.29860	0.71190	-1.01085	False
IA04666	0.56040	0.74560	-0.14658	False
IA04671	-1.02230	-0.74880	-0.52420	False
IA04678	0.83780	1.11330	-0.84012	False
IA04712	-0.04010	0.07700	0.43989	False
IA04715	-0.34660	0.17030	-0.37136	False
IA04779	-0.32640	0.07880	-1.17035	False
IA04916	-0.29780	0.20450	-0.46831	False
IA04918	-1.84080	-1.16400	0.53487	False
IA04919	0.47550	0.60940	0.23564	False
IA04920	-2.17420	-1.62750	-0.45360	False
IA04941	0.62935	1.29370	0.84590	False
IA04946	0.36110	0.85270	-0.43834	False
IA04950	-0.85300	-0.39240	-0.85782	False
IA04969	0.11120	0.58450	-0.61029	False
IA05057	-1.15930	-0.95750	0.01298	False
IA05059	-0.67840	-0.16020	-0.41581	False
IA05070	0.88020	0.81480	1.60147	False
IA05073	-0.93480	-0.38900	-0.25914	False
IA05076	0.04710	0.61380	0.05015	False
IA05093	0.03050	0.43150	-1.14266	False
IA05095	-0.28730	0.13700	-1.02683	False
IA05098	-0.27140	0.13990	-1.11762	False

Table 2.4.14
b/b Analysis
Mathematics Grade 10

Item Id	Old b	New b	Std Dist	Flag
IA04800	-0.13540	0.36000	0.34845	False
IA04803	-0.86530	-0.54990	-0.46849	False
IA04805	-0.71130	-0.68090	-0.00928	False
IA04810	0.68370	0.94925	-0.72706	False
IA04815	-0.82070	-0.74990	-0.19768	False
IA04819	-0.38460	-0.27580	-0.36494	False
IA04822	-0.38065	0.00170	-0.16857	False
IA04824	0.31220	0.48430	-0.64411	False
IA04839	-0.45910	-0.42270	-0.03231	False
IA04842	0.78180	0.97860	-0.74939	False
IA04846	-1.59870	-1.35680	-0.79404	False
IA04847	0.78710	0.89250	-0.32763	False
IA04862	-0.46300	-0.29810	-0.62520	False
IA04867	0.63180	0.62080	0.20650	False
IA04871	0.19690	0.20010	0.13296	False
IA04913	0.97160	0.99180	0.06883	False
IA04977	-0.51440	-0.12430	-0.13035	False
IA04991	0.95670	0.95700	0.16037	False
IA04993	0.92740	1.06830	-0.48882	False
IA04996	-0.00890	0.01135	0.05051	False
IA04997	0.38330	0.37595	0.18508	False
IA05048	0.13870	0.47100	-0.40906	False
IA05078	-0.49920	-0.50820	0.17640	False
IA05085	-1.19595	-0.67945	0.46536	False
IA05096	-0.49005	-0.29215	-0.77794	False
IA05117	0.08760	1.07350	2.60720	False
IA05144	-0.00030	1.37640	4.41174	True
IA05145	0.68950	0.90250	-0.82583	False
IA05146	-0.79500	-0.70990	-0.26318	False
IA05147	-2.01320	-1.64370	-0.19772	False
IA05155	0.88120	0.88900	0.12437	False
IA05165	0.16730	0.23508	-0.16549	False
IA05170	0.31372	0.46990	-0.57064	False

Table 2.4.15
b/b Analysis
Science Grade 5

Item Id	Old b	New b	Std Dist	Flag
IA05192	0.96646	1.38467	-0.37812	False
IA05337	-0.29330	-0.23093	-0.30334	False
IA05406	0.03653	0.36007	-0.61982	False
IA05466	-1.78080	-2.02670	0.65414	False
IA05478	0.89030	1.20190	-0.75774	False
IA05479	0.76050	1.05670	-0.79943	False
IA05500	-1.14030	-0.66280	0.07081	False
IA05519	-1.35540	-0.67430	0.83570	False
IA05523	-0.59270	-0.40390	-0.79668	False
IA05526	-1.93810	-1.43570	0.24972	False
IA05530	-0.92610	-1.79640	3.02149	True
IA05538	0.18780	0.55900	-0.46307	False
IA05539	0.14980	-0.42810	2.07622	False
IA05545	0.32770	0.69040	-0.50949	False
IA05560	-0.98020	-0.63900	-0.44303	False
IA05561	-0.03350	0.29860	-0.58090	False
IA05562	-0.72520	-0.36700	-0.40937	False
IA05565	-0.72050	-0.58140	-0.62992	False
IA05566	-1.67815	-1.42600	-0.68994	False
IA05567	-0.95690	-0.56030	-0.24396	False
IA05573	-1.49810	-1.81110	0.92966	False
IA05628	-0.60710	-0.45640	-0.65959	False
IA05630	-0.89430	-0.19710	0.84328	False
IA05631	-0.48110	-0.26050	-0.90008	False
IA05634	0.98793	1.15243	-0.53335	False
IA05657	0.56765	0.59110	-0.06643	False
IA05660	-0.88900	-0.91420	-0.05052	False
IA05661	-0.94170	-0.70970	-0.84477	False
IA05662	-0.93950	-0.64315	-0.61079	False
IA05664	-1.40920	-0.97970	-0.07416	False
IA05677	0.10950	1.27180	2.42515	False
IA05678	-2.33390	-1.82200	0.32809	False
IA05681	0.96850	1.35600	-0.49012	False
IA05688	-1.70450	-1.12520	0.50378	False
IA05697	-0.09445	0.31950	-0.27623	False
IA05701	1.25620	1.36900	-0.31547	False
IA05702	0.47190	0.58580	-0.40626	False
IA05746	-1.14000	-1.05590	-0.47614	False
IA05755	-1.21050	-0.85670	-0.37169	False
IA05756	-1.09900	-1.01185	-0.48270	False
IA05763	-1.39220	-1.17430	-0.84625	False
IA05765	-1.58470	-1.09390	0.16839	False
IA05766	-0.27820	-0.06480	-0.85143	False
IA05768	0.96040	0.00260	3.54872	True
IA05770	0.26030	0.84590	0.30931	False
IA05773	-0.04620	-0.03667	-0.08369	False

Table 2.4.16
b/b Analysis
Science Grade 8

Item Id	Old b	New b	Std Dist	Flag
IA05243	1.02660	1.57120	0.93868	False
IA05245	0.21380	0.64110	0.29938	False
IA05491	-0.40550	-0.36660	-0.38684	False
IA05499	-1.72770	-1.70240	-0.71116	False
IA05522	-0.05890	0.04910	-0.80634	False
IA05524	-1.41600	-1.42520	-0.34442	False
IA05543	0.96450	1.30730	-0.59473	False
IA05550	0.68700	0.84030	-0.91306	False
IA05551	-0.13680	0.20030	-0.28127	False
IA05555	1.41100	1.43260	0.33575	False
IA05581	0.91380	0.88540	0.55935	False
IA05649	-1.15920	-0.94720	-0.91261	False
IA05652	-1.48890	-1.46760	-0.60288	False
IA05653	-0.26680	-0.28960	0.13316	False
IA05654	-0.73780	-0.27550	0.87759	False
IA05665	-2.60860	-1.91070	3.29839	True
IA05675	-0.87610	-0.93060	0.17950	False
IA05685	-1.16070	-0.82740	0.02171	False
IA05686	-0.72010	-0.49740	-0.97271	False
IA05687	-1.37975	-1.36020	-0.55399	False
IA05690	0.19550	0.12800	0.62729	False
IA05691	0.16385	-0.01445	1.47002	False
IA05693	-1.36135	-1.19410	-1.19153	False
IA05694	0.58560	1.30120	2.39822	False
IA05718	-1.11330	-0.85350	-0.55952	False
IA05720	-0.71690	-0.27620	0.70452	False
IA05727	0.00710	0.12280	-0.84421	False
IA05729	0.61243	0.87010	-1.13587	False
IA05732	1.11996	1.54713	0.00438	False
IA05737	0.33030	0.51345	-1.25860	False
IA05750	0.19206	0.12317	0.63690	False
IA05760	-0.47800	-0.21450	-0.73717	False
IA05761	-0.44600	-0.40010	-0.45387	False
IA05776	-1.14820	-1.28080	0.69247	False
IA05777	-0.68805	-0.72215	0.08347	False

Section 2.5

Final Item Parameters

Table 2.5.1
IRT Parameters for Dichotomous Items
English Language Arts Grade 3

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA00422	1.15432	0.00000	1.07230	0.00000	0.16060	0.00000
IA00423	0.92910	0.00000	-0.25060	0.00000	0.29970	0.00000
IA00424	0.63592	0.00000	0.82170	0.00000	0.17540	0.00000
IA00425	0.61917	0.00000	-0.20620	0.00000	0.12360	0.00000
IA00426	1.07866	0.00000	-0.27710	0.00000	0.17570	0.00000
IA00428	1.01564	0.00000	-0.37070	0.00000	0.13380	0.00000
IA00432	0.51111	0.00000	-0.58430	0.00000	0.30860	0.00000
IA00691	0.69718	0.00000	-0.57530	0.00000	0.07840	0.00000
IA03674	0.96814	0.00000	-0.22980	0.00000	0.20090	0.00000
IA03675	0.61158	0.00000	0.12560	0.00000	0.10130	0.00000
IA03685	0.88824	0.00000	-0.69840	0.00000	0.13380	0.00000
IA03686	0.83862	0.00000	0.34410	0.00000	0.14000	0.00000
IA03689	1.06061	0.00000	-1.18550	0.00000	0.14870	0.00000
IA03690	0.61964	0.00000	-0.21350	0.00000	0.12580	0.00000
IA03691	0.49583	0.00000	0.01260	0.00000	0.10550	0.00000
IA03697	0.78601	0.00000	1.13460	0.00000	0.21820	0.00000
IA06351	1.10800	0.04156	0.29900	0.02580	0.20570	0.01140
IA06352	1.19148	0.04192	0.27700	0.02260	0.19040	0.01020
IA06353	1.06808	0.03810	0.74850	0.01820	0.12850	0.00750
IA06354	0.76384	0.02381	0.00400	0.03800	0.02720	0.01700
IA06355	0.76772	0.02857	-0.68910	0.07510	0.12430	0.03530
IA06356	1.07472	0.03186	-0.43580	0.03490	0.09410	0.01920

Table 2.5.2
IRT Parameters for Polytomous Items
English Language Arts Grade 3

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA00433	1.23739	0.00000	-0.68275	0.00000	0.16025	0.00000	-0.16025	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA00434	0.46290	0.00000	-2.34450	0.00000	1.92710	0.00000	-1.92710	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA00436	0.65826	0.00000	0.09545	0.00000	0.78615	0.00000	-0.78615	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA00438	0.75655	0.00000	0.83813	0.00000	2.39983	0.00000	-0.29987	0.00000	-2.09997	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03692	0.92022	0.00000	-1.39910	0.00000	0.84870	0.00000	-0.84870	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03693	0.67019	0.00000	-0.15755	0.00000	0.84125	0.00000	-0.84125	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03694	0.70024	0.00000	-0.59830	0.00000	0.57480	0.00000	-0.57480	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03696A	1.05250	0.00000	0.58887	0.00000	2.42167	0.00000	-0.78153	0.00000	-1.64013	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03696D	0.60494	0.00000	2.32673	0.00000	1.79433	0.00000	0.61423	0.00000	-0.59458	0.00000	-1.81398	0.00000	0.00000	0.00000	n/a	n/a

Table 2.5.3
IRT Parameters for Dichotomous Items
English Language Arts Grade 4

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA04158	0.56955	0.00000	-1.16400	0.00000	0.05230	0.00000
IA04161	0.42175	0.00000	-0.30460	0.00000	0.07170	0.00000
IA04165	0.49976	0.00000	-0.33510	0.00000	0.05300	0.00000
IA04168	0.69935	0.00000	-0.11850	0.00000	0.22090	0.00000
IA04171	0.59253	0.00000	-0.43670	0.00000	0.07620	0.00000
IA04172	0.57731	0.00000	0.16450	0.00000	0.13050	0.00000
IA04174	0.75262	0.00000	0.65010	0.00000	0.10910	0.00000
IA04175	0.75450	0.00000	-0.56070	0.00000	0.16710	0.00000
IA04176	0.57460	0.00000	-0.45900	0.00000	0.08820	0.00000
IA04391	0.79347	0.00000	-1.18750	0.00000	0.12610	0.00000
IA04392	0.46473	0.00000	-1.42470	0.00000	0.06600	0.00000
IA04394	0.79547	0.00000	-0.26050	0.00000	0.10620	0.00000
IA04395	1.24491	0.00000	-0.96070	0.00000	0.13420	0.00000
IA04396	0.54909	0.00000	-0.37280	0.00000	0.07950	0.00000
IA04397	0.84086	0.00000	-0.00080	0.00000	0.23450	0.00000
IA04398	0.65297	0.00000	-0.22090	0.00000	0.08180	0.00000
IA04402	0.50265	0.00000	0.42280	0.00000	0.23830	0.00000
IA04403	0.70306	0.00000	-0.90140	0.00000	0.16070	0.00000
IA06363	1.40112	0.04691	-0.10680	0.02300	0.26640	0.01080
IA06364	1.39371	0.04979	-0.18120	0.02680	0.33450	0.01180
IA06365	1.99765	0.07866	-0.67040	0.02530	0.32270	0.01470
IA06366	1.05050	0.03868	0.22170	0.02690	0.23320	0.01120
IA06367	1.57084	0.04780	-0.29530	0.02100	0.22890	0.01090
IA06368	1.42928	0.03745	-0.47240	0.02130	0.11810	0.01200

Table 2.5.4
IRT Parameters for Polytomous Items
English Language Arts Grade 4

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA04159	0.66755	0.00000	-0.42150	0.00000	0.98810	0.00000	-0.98810	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04163	0.99683	0.00000	0.07917	0.00000	1.27437	0.00000	0.01167	0.00000	-1.28603	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04167	0.76943	0.00000	-0.37165	0.00000	1.20965	0.00000	-1.20965	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04170	0.58948	0.00000	0.47075	0.00000	0.30135	0.00000	-0.30135	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04408A	0.94656	0.00000	0.09393	0.00000	1.47183	0.00000	-0.13437	0.00000	-1.33747	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04408D	0.81846	0.00000	0.86440	0.00000	1.76310	0.00000	0.71020	0.00000	-0.56630	0.00000	-1.90700	0.00000	0.00000	0.00000	n/a	n/a
IA04410	0.77055	0.00000	-1.18320	0.00000	1.04110	0.00000	-1.04110	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04411	0.79077	0.00000	-0.70505	0.00000	1.16315	0.00000	-1.16315	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a

Table 2.5.5
IRT Parameters for Dichotomous Items
English Language Arts Grade 5

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA03728	0.31946	0.00000	-1.92640	0.00000	0.16830	0.00000
IA03731	1.13298	0.00000	-0.71540	0.00000	0.22820	0.00000
IA03733	0.49700	0.00000	0.09960	0.00000	0.10500	0.00000
IA03734	0.59277	0.00000	-1.16970	0.00000	0.13720	0.00000
IA03736	0.71176	0.00000	0.92440	0.00000	0.15590	0.00000
IA03737	0.57396	0.00000	0.08690	0.00000	0.07840	0.00000
IA03738	0.33668	0.00000	-1.12340	0.00000	0.14930	0.00000
IA03859	0.86737	0.00000	-1.48580	0.00000	0.07170	0.00000
IA03861	0.64327	0.00000	-1.07430	0.00000	0.10700	0.00000
IA03862	0.64709	0.00000	-0.59090	0.00000	0.17510	0.00000
IA03864	0.38548	0.00000	-2.03020	0.00000	0.14610	0.00000
IA03866	0.45056	0.00000	-1.49950	0.00000	0.13910	0.00000
IA03868	0.94821	0.00000	-0.28420	0.00000	0.18550	0.00000
IA03873	0.60417	0.00000	-0.06710	0.00000	0.13020	0.00000
IA03874	0.59641	0.00000	-0.15730	0.00000	0.17700	0.00000
IA04457	0.47895	0.00000	-0.88890	0.00000	0.11160	0.00000
IA04458	0.63245	0.00000	0.35170	0.00000	0.12660	0.00000
IA06344	0.34827	0.01481	-1.26810	0.17590	0.05560	0.04690
IA06345	0.76408	0.02404	-1.28010	0.07110	0.07730	0.03550
IA06346	0.71046	0.02305	-0.94550	0.06560	0.06320	0.02950
IA06347	0.84421	0.02510	-0.75150	0.04340	0.05670	0.02070
IA06348	1.32528	0.04527	-1.50800	0.04980	0.15700	0.03430
IA06349	0.58377	0.03075	0.43410	0.05980	0.20470	0.01880
IA06350	0.91376	0.03233	-1.35440	0.07180	0.17290	0.03740

Table 2.5.6
IRT Parameters for Polytomous Items
English Language Arts Grade 5

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03741	0.55750	0.00000	-0.91940	0.00000	0.42910	0.00000	-0.42910	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03743	0.65973	0.00000	-0.19840	0.00000	0.76790	0.00000	-0.76790	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03744A	1.02205	0.00000	0.19627	0.00000	1.60067	0.00000	-0.09233	0.00000	-1.50833	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03744D	0.99730	0.00000	0.96353	0.00000	2.32313	0.00000	0.69993	0.00000	-0.93778	0.00000	-2.08528	0.00000	0.00000	0.00000	n/a	n/a
IA03860	0.41287	0.00000	-1.14405	0.00000	0.17435	0.00000	-0.17435	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03867	0.46337	0.00000	-0.38320	0.00000	2.08050	0.00000	-2.08050	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03872	0.60400	0.00000	-0.76150	0.00000	0.29660	0.00000	-0.29660	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03876A	1.09877	0.00000	-0.02757	0.00000	1.69643	0.00000	-0.12827	0.00000	-1.56817	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03876D	1.06443	0.00000	0.57453	0.00000	2.56513	0.00000	0.41253	0.00000	-0.90178	0.00000	-2.07588	0.00000	0.00000	0.00000	n/a	n/a

Table 2.5.7
IRT Parameters for Dichotomous Items
English Language Arts Grade 6

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA03680	0.46149	0.00000	0.53460	0.00000	0.09490	0.00000
IA03683	0.59101	0.00000	-0.22440	0.00000	0.10380	0.00000
IA03699	0.72387	0.00000	-0.14550	0.00000	0.36940	0.00000
IA03701	0.69900	0.00000	-0.84520	0.00000	0.20030	0.00000
IA03702	0.55509	0.00000	0.03450	0.00000	0.12760	0.00000
IA03706	0.62898	0.00000	-0.44790	0.00000	0.11290	0.00000
IA03707	0.50441	0.00000	-0.60640	0.00000	0.14800	0.00000
IA03708	0.43322	0.00000	0.54430	0.00000	0.20570	0.00000
IA03973	0.52646	0.00000	-1.45040	0.00000	0.09980	0.00000
IA03974	0.36296	0.00000	-0.59580	0.00000	0.10640	0.00000
IA03975	0.38842	0.00000	-1.50370	0.00000	0.07600	0.00000
IA03977	0.42716	0.00000	-0.82450	0.00000	0.23650	0.00000
IA03979	0.46226	0.00000	0.72430	0.00000	0.17280	0.00000
IA03981	0.41834	0.00000	-0.65050	0.00000	0.09160	0.00000
IA03982	0.54903	0.00000	-0.79250	0.00000	0.23910	0.00000
IA04006	0.31558	0.00000	-0.38680	0.00000	0.20610	0.00000
IA04141	0.54339	0.00000	-1.04960	0.00000	0.22960	0.00000
IA04453	0.42575	0.00000	2.13110	0.00000	0.26910	0.00000
IA06450	0.51717	0.01811	0.02990	0.05850	0.06970	0.01740
IA06451	1.00024	0.03310	-0.01210	0.02930	0.25360	0.00970
IA06452	0.55344	0.02099	-0.66990	0.08730	0.17950	0.02590
IA06453	0.60018	0.01570	-0.87440	0.05570	0.02200	0.02030
IA06454	0.36626	0.01217	-1.48360	0.14100	0.04170	0.03860
IA06455	0.47978	0.01382	-1.27230	0.09240	0.03510	0.03070
IA06456	0.69042	0.02910	0.79190	0.03640	0.25090	0.00990
IA06457	0.90976	0.02945	-1.32390	0.05840	0.20900	0.02500

Table 2.5.8
IRT Parameters for Polytomous Items
English Language Arts Grade 6

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03671A	1.01822	0.00000	-0.26310	0.00000	1.54380	0.00000	-0.11350	0.00000	-1.43030	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03671D	1.09142	0.00000	0.84700	0.00000	2.56740	0.00000	1.01660	0.00000	-0.23830	0.00000	-1.23070	0.00000	-2.11500	0.00000	0.00000	0.00000
IA03700	0.54809	0.00000	-0.28760	0.00000	0.65870	0.00000	-0.65870	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03858	0.37772	0.00000	-0.09130	0.00000	0.43240	0.00000	-0.43240	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03984A	1.07513	0.00000	-0.31050	0.00000	1.58880	0.00000	-0.10600	0.00000	-1.48280	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03984D	1.03557	0.00000	0.79892	0.00000	2.69782	0.00000	0.98892	0.00000	-0.26568	0.00000	-1.26638	0.00000	-2.15468	0.00000	0.00000	0.00000
IA04007	0.43427	0.00000	0.07305	0.00000	0.19875	0.00000	-0.19875	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04142	0.36302	0.00000	-1.40700	0.00000	2.61250	0.00000	-2.61250	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a

Table 2.5.9
IRT Parameters for Dichotomous Items
English Language Arts Grade 7

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA04042	0.63180	0.00000	-0.85720	0.00000	0.16340	0.00000
IA04043	0.62393	0.00000	-0.23860	0.00000	0.17140	0.00000
IA04044	0.55726	0.00000	-0.97580	0.00000	0.12140	0.00000
IA04045	1.01105	0.00000	-1.32190	0.00000	0.15850	0.00000
IA04046	0.78166	0.00000	-0.84500	0.00000	0.20220	0.00000
IA04050	0.69947	0.00000	-0.45860	0.00000	0.19090	0.00000
IA04054	0.50952	0.00000	-0.84210	0.00000	0.18210	0.00000
IA04055	0.66543	0.00000	-1.01370	0.00000	0.17320	0.00000
IA04057	0.62928	0.00000	-0.98680	0.00000	0.14720	0.00000
IA04058	0.55362	0.00000	-0.36040	0.00000	0.15170	0.00000
IA04060	0.84198	0.00000	-0.57870	0.00000	0.26650	0.00000
IA04062	0.78407	0.00000	-1.38740	0.00000	0.09060	0.00000
IA04064	0.65038	0.00000	0.34020	0.00000	0.15060	0.00000
IA04065	0.42287	0.00000	0.22710	0.00000	0.06210	0.00000
IA04066	0.60829	0.00000	0.40630	0.00000	0.19230	0.00000
IA04067	0.86026	0.00000	-1.59060	0.00000	0.08820	0.00000
IA04068	0.97237	0.00000	-1.31680	0.00000	0.20490	0.00000
IA04071	0.41858	0.00000	0.03090	0.00000	0.18230	0.00000
IA04072	0.33163	0.00000	-0.59690	0.00000	0.06800	0.00000
IA06496	0.74962	0.02469	-0.29710	0.03910	0.09110	0.01560
IA06497	0.53333	0.01911	-1.49120	0.11590	0.07840	0.04400
IA06498	0.68942	0.03639	0.60550	0.04170	0.28170	0.01280
IA06499	0.68889	0.01687	-2.28710	0.07930	0.04650	0.04320
IA06500	0.56831	0.02440	-0.87490	0.10080	0.14830	0.03450
IA06501	0.67019	0.02869	0.27130	0.04160	0.17060	0.01430
IA06502	0.52216	0.02063	-1.03570	0.10710	0.08630	0.03720

Table 2.5.10
IRT Parameters for Polytomous Items
English Language Arts Grade 7

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA04038A	1.35309	0.00000	-0.31577	0.00000	1.23333	0.00000	-0.06147	0.00000	-1.17187	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04038D	1.21370	0.00000	0.65324	0.00000	2.27984	0.00000	0.95534	0.00000	-0.15066	0.00000	-1.16276	0.00000	-1.92176	0.00000	0.00000	0.00000
IA04040	0.53768	0.00000	-0.36235	0.00000	1.00715	0.00000	-1.00715	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04052	0.48936	0.00000	-0.67375	0.00000	0.16905	0.00000	-0.16905	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04061	0.49512	0.00000	-0.14700	0.00000	0.26580	0.00000	-0.26580	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04069	0.53163	0.00000	-0.08690	0.00000	0.19600	0.00000	-0.19600	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04079A	1.11152	0.00000	-0.35673	0.00000	1.41817	0.00000	-0.21913	0.00000	-1.19903	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04079D	1.04621	0.00000	0.55672	0.00000	2.67102	0.00000	0.87042	0.00000	-0.24068	0.00000	-1.18408	0.00000	-2.11668	0.00000	0.00000	0.00000

Table 2.5.11
IRT Parameters for Dichotomous Items
English Language Arts Grade 8

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA04153	0.57660	0.00000	-0.47610	0.00000	0.19010	0.00000
IA04155	0.66520	0.00000	-0.85350	0.00000	0.12780	0.00000
IA04156	0.61922	0.00000	-0.90990	0.00000	0.06750	0.00000
IA04179	0.74027	0.00000	-0.86120	0.00000	0.15530	0.00000
IA04190	0.36772	0.00000	-0.29480	0.00000	0.17790	0.00000
IA04193	0.69248	0.00000	-0.59250	0.00000	0.21560	0.00000
IA04196	0.47995	0.00000	-0.53620	0.00000	0.20200	0.00000
IA04197	0.53674	0.00000	0.04580	0.00000	0.20330	0.00000
IA04198	0.65497	0.00000	-0.80820	0.00000	0.08000	0.00000
IA04199	0.57090	0.00000	0.17240	0.00000	0.16000	0.00000
IA04204	0.56808	0.00000	-1.33050	0.00000	0.11140	0.00000
IA04205	0.72563	0.00000	-0.41440	0.00000	0.19620	0.00000
IA04206	0.35791	0.00000	-1.06080	0.00000	0.08880	0.00000
IA04207	0.46684	0.00000	-1.46650	0.00000	0.15750	0.00000
IA04208	0.44680	0.00000	0.78380	0.00000	0.14600	0.00000
IA04387	0.76243	0.00000	-0.31460	0.00000	0.17680	0.00000
IA04388	0.84098	0.00000	-1.10730	0.00000	0.22120	0.00000
IA04465	0.74785	0.00000	-2.18740	0.00000	0.08020	0.00000
IA06427	0.47008	0.01540	-1.17260	0.09410	0.03160	0.03130
IA06428	0.84068	0.02316	-0.53660	0.03400	0.09710	0.01370
IA06429	1.15315	0.03668	-0.31790	0.02620	0.22460	0.01100
IA06430	0.70782	0.02299	-1.51270	0.08180	0.12970	0.03510
IA06431	0.54697	0.02463	0.02340	0.06850	0.19320	0.02000
IA06432	0.74397	0.02845	-0.26980	0.04930	0.23860	0.01670
IA06464	0.70535	0.02698	-0.96390	0.07510	0.22720	0.02670
IA06465	0.60982	0.02105	-0.87160	0.07270	0.10670	0.02620

Table 2.5.12
IRT Parameters for Polytomous Items
English Language Arts Grade 8

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA04154	0.78818	0.00000	-0.57095	0.00000	0.56425	0.00000	-0.56425	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04184	0.47237	0.00000	0.07690	0.00000	2.05960	0.00000	-2.05960	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04195	0.57937	0.00000	-1.16430	0.00000	0.83850	0.00000	-0.83850	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04200A	1.20071	0.00000	-0.60280	0.00000	1.21030	0.00000	-0.09880	0.00000	-1.11150	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04200D	1.06720	0.00000	0.29990	0.00000	2.18850	0.00000	0.97140	0.00000	-0.11330	0.00000	-1.00270	0.00000	-2.04390	0.00000	0.00000	0.00000
IA04227A	1.10364	0.00000	-0.32383	0.00000	1.29237	0.00000	-0.17783	0.00000	-1.11453	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04227D	1.05203	0.00000	0.52656	0.00000	2.32646	0.00000	0.85316	0.00000	-0.17324	0.00000	-0.91954	0.00000	-2.08684	0.00000	0.00000	0.00000
IA04417	0.56584	0.00000	-1.58075	0.00000	1.17315	0.00000	-1.17315	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a

Table 2.5.13
IRT Parameters for Dichotomous Items
English Language Arts Grade 10

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA03746	1.00511	0.00000	-1.06790	0.00000	0.13910	0.00000
IA03749	0.98789	0.00000	-1.21430	0.00000	0.21700	0.00000
IA03751	0.97449	0.00000	-0.93230	0.00000	0.25800	0.00000
IA03752	1.13186	0.00000	-1.51000	0.00000	0.29530	0.00000
IA03757	0.54033	0.00000	-1.64460	0.00000	0.12000	0.00000
IA03758	0.59647	0.00000	-1.60810	0.00000	0.17950	0.00000
IA03759	0.41046	0.00000	0.17870	0.00000	0.10500	0.00000
IA03765	1.05432	0.00000	-1.08820	0.00000	0.12670	0.00000
IA03766	0.36890	0.00000	-0.02420	0.00000	0.25480	0.00000
IA03769	0.59765	0.00000	-1.71300	0.00000	0.15180	0.00000
IA03770	1.00782	0.00000	-1.20210	0.00000	0.12600	0.00000
IA03773	1.18707	0.00000	-1.67360	0.00000	0.15110	0.00000
IA03775	0.50741	0.00000	-0.58270	0.00000	0.32250	0.00000
IA03777	0.93768	0.00000	-0.25580	0.00000	0.30940	0.00000
IA03781	0.79976	0.00000	-1.69870	0.00000	0.15180	0.00000
IA03784	1.22675	0.00000	-1.07510	0.00000	0.16060	0.00000
IA03787	1.15150	0.00000	-1.32060	0.00000	0.25000	0.00000
IA03849	0.70600	0.00000	-0.16700	0.00000	0.23860	0.00000
IA04031	0.70329	0.00000	-1.31200	0.00000	0.19520	0.00000
IA04033	0.88283	0.00000	-1.87350	0.00000	0.10910	0.00000
IA04036	0.76626	0.00000	-0.92350	0.00000	0.09990	0.00000

Table 2.5.14
IRT Parameters for Polytomous Items
English Language Arts Grade 10

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03750	0.42322	0.00000	-1.69050	0.00000	0.65080	0.00000	-0.65080	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03763A	1.45350	0.00000	-0.93127	0.00000	0.70323	0.00000	0.03153	0.00000	-0.73477	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03763D	1.26667	0.00000	-0.02184	0.00000	1.72966	0.00000	0.99766	0.00000	0.11216	0.00000	-0.82474	0.00000	-2.01474	0.00000	0.00000	0.00000
IA03779	0.91364	0.00000	-1.26405	0.00000	0.27885	0.00000	-0.27885	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03790	0.59530	0.00000	-1.55985	0.00000	1.86345	0.00000	-1.86345	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03846	0.39712	0.00000	-0.36260	0.00000	2.33960	0.00000	-2.33960	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03852	0.49300	0.00000	-0.52145	0.00000	0.37375	0.00000	-0.37375	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03853	0.84280	0.00000	-1.52575	0.00000	1.07015	0.00000	-1.07015	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03856A	1.12387	0.00000	-0.83790	0.00000	1.01590	0.00000	0.02740	0.00000	-1.04330	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03856D	1.12516	0.00000	0.20686	0.00000	2.04876	0.00000	1.00776	0.00000	-0.07924	0.00000	-0.90714	0.00000	-2.07014	0.00000	0.00000	0.00000
IA04029	0.63710	0.00000	-1.57485	0.00000	0.61355	0.00000	-0.61355	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a

Table 2.5.15
IRT Parameters for Dichotomous Items
Mathematics Grade 3

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA00886	1.10841	0.00000	-1.24170	0.00000	0.06770	0.00000
IA00922	1.39018	0.00000	0.15640	0.00000	0.12250	0.00000
IA02081	0.91335	0.03163	-1.46060	0.06500	0.16940	0.03240
IA02097	0.90088	0.00000	-0.12040	0.00000	0.23790	0.00000
IA02203	1.10664	0.00000	-1.02880	0.00000	0.09330	0.00000
IA02230	0.96073	0.03022	-0.85050	0.03870	0.13850	0.01790
IA02372	0.94150	0.00000	0.77350	0.00000	0.34900	0.00000
IA02379	1.29730	0.00000	0.72420	0.00000	0.18380	0.00000
IA02511	1.00994	0.00000	-0.49010	0.00000	0.12460	0.00000
IA02515	0.85414	0.00000	0.90510	0.00000	0.24490	0.00000
IA04622	0.76055	0.00000	1.20310	0.00000	0.25070	0.00000
IA04702	1.02416	0.00000	-0.03860	0.00000	0.28290	0.00000
IA04703	0.64333	0.00000	-1.14860	0.00000	0.18370	0.00000
IA04829	0.90952	0.00000	-0.81510	0.00000	0.19160	0.00000
IA04857	1.30188	0.00000	-0.01580	0.00000	0.14500	0.00000
IA07545	0.47584	0.02975	-0.95170	0.17720	0.33120	0.04200
IA07601	0.64239	0.02369	0.08570	0.03790	0.09430	0.01340
IA02909	0.55802	0.00000	-2.25210	0.00000	0.00000	0.00000
IA04480	0.48995	0.00000	0.42250	0.00000	0.00000	0.00000
IA04547	0.66002	0.00000	-1.75750	0.00000	0.00000	0.00000
IA04567	0.91464	0.00000	-0.04870	0.00000	0.00000	0.00000
IA04743	0.46190	0.00000	1.37080	0.00000	0.00000	0.00000
IA04753	0.56049	0.00000	-1.42680	0.00000	0.00000	0.00000
IA04754	0.63386	0.00000	-1.00980	0.00000	0.00000	0.00000
IA04809	0.57743	0.00000	-0.55120	0.00000	0.00000	0.00000
IA04831	0.44421	0.00000	-1.02720	0.00000	0.00000	0.00000
IA04834	0.92575	0.00000	-0.05650	0.00000	0.00000	0.00000
IA04835	0.43069	0.00000	-0.20080	0.00000	0.00000	0.00000
IA04841	1.01088	0.00000	-0.38640	0.00000	0.00000	0.00000
IA04852	0.91587	0.00000	-0.13070	0.00000	0.00000	0.00000
IA04853	0.70611	0.00000	-0.70610	0.00000	0.00000	0.00000
IA04860	0.90823	0.00000	-0.29360	0.00000	0.00000	0.00000
IA04877	0.85944	0.00000	0.11250	0.00000	0.00000	0.00000
IA05016	0.47155	0.00000	1.72090	0.00000	0.00000	0.00000
IA05017	0.79677	0.00000	-0.04420	0.00000	0.00000	0.00000
IA07645	1.19912	0.01946	-0.34220	0.00920	0.00000	0.00000

Table 2.5.16
IRT Parameters for Polytomous Items
Mathematics Grade 3

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA02098	1.07202	0.00000	-0.29490	0.00000	1.02580	0.00000	-0.23310	0.00000	-0.79270	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA02227	1.22992	0.00000	-0.33403	0.00000	1.28547	0.00000	-0.06203	0.00000	-1.22343	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04548	1.08618	0.00000	-0.25253	0.00000	1.10637	0.00000	0.13167	0.00000	-1.23803	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA04858	1.28095	0.00000	0.62033	0.00000	1.26173	0.00000	-0.09257	0.00000	-1.16917	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a

Table 2.5.17
IRT Parameters for Dichotomous Items
Mathematics Grade 4

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA01052	1.41705	0.00000	0.13360	0.00000	0.43050	0.00000
IA02426	0.85068	0.00000	0.40190	0.00000	0.09430	0.00000
IA02438	0.93710	0.03175	-2.48420	0.10670	0.21020	0.07010
IA05043	1.05432	0.00000	0.05700	0.00000	0.33930	0.00000
IA07522	1.72887	0.05015	0.06630	0.01160	0.11860	0.00530
IA07529	0.77396	0.02193	-1.31330	0.05800	0.06770	0.02850
IA07569	0.84480	0.03762	-1.10990	0.08240	0.44460	0.02640
IA07594	1.38436	0.03251	-0.62890	0.01710	0.08510	0.00900
IA07617	0.93792	0.03004	0.03110	0.02390	0.13080	0.01000
IA07659	1.06502	0.03651	-0.26310	0.02850	0.24430	0.01190
IA07660	0.68501	0.02857	-0.87460	0.08140	0.25990	0.02830
IA00913	0.84938	0.00000	0.33170	0.00000	0.00000	0.00000
IA02046	0.75250	0.00000	-0.74420	0.00000	0.00000	0.00000
IA02582	0.93445	0.00000	-0.40320	0.00000	0.00000	0.00000
IA02825	1.08513	0.00000	0.26010	0.00000	0.00000	0.00000
IA04488	1.29941	0.00000	-0.31910	0.00000	0.00000	0.00000
IA04618	0.76573	0.00000	-0.15940	0.00000	0.00000	0.00000
IA04720	0.82158	0.00000	-1.07420	0.00000	0.00000	0.00000
IA04750	0.74233	0.00000	-1.31340	0.00000	0.00000	0.00000
IA04755	0.94697	0.00000	0.68040	0.00000	0.00000	0.00000
IA04889	0.97672	0.00000	-1.01540	0.00000	0.00000	0.00000
IA04891	1.16608	0.00000	-0.16280	0.00000	0.00000	0.00000
IA04898	0.68513	0.00000	0.84270	0.00000	0.00000	0.00000
IA04923	1.37643	0.00000	-1.19610	0.00000	0.00000	0.00000
IA04927	0.86496	0.00000	0.40430	0.00000	0.00000	0.00000
IA04928	0.57184	0.00000	1.15450	0.00000	0.00000	0.00000
IA04937	0.91287	0.00000	-1.11220	0.00000	0.00000	0.00000
IA04942	0.68160	0.00000	0.02370	0.00000	0.00000	0.00000
IA04951	1.15826	0.00000	-0.11120	0.00000	0.00000	0.00000
IA05040	0.79647	0.00000	1.03840	0.00000	0.00000	0.00000
IA05044	0.94121	0.00000	-0.77550	0.00000	0.00000	0.00000
IA05056	0.89224	0.00000	-1.57030	0.00000	0.00000	0.00000
IA05066	0.99318	0.00000	-0.43410	0.00000	0.00000	0.00000
IA07571	0.75597	0.01270	-0.29330	0.01230	0.00000	0.00000

Table 2.5.18
IRT Parameters for Polytomous Items
Mathematics Grade 4

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA02820	0.97972	0.00000	-0.90500	0.00000	0.82470	0.00000	-0.82470	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA02899	1.18754	0.00000	-0.81585	0.00000	0.56855	0.00000	-0.56855	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA02957	1.00635	0.00000	0.52023	0.00000	1.78243	0.00000	0.79393	0.00000	-0.51998	0.00000	-2.05638	0.00000	0.00000	0.00000	n/a	n/a
IA04959	0.99541	0.00000	-0.87128	0.00000	1.32793	0.00000	0.52793	0.00000	-0.32948	0.00000	-1.52638	0.00000	0.00000	0.00000	n/a	n/a
IA04975	1.14051	0.00000	0.04895	0.00000	1.56585	0.00000	0.42585	0.00000	-0.46105	0.00000	-1.53065	0.00000	0.00000	0.00000	n/a	n/a
IA07543	1.01246	0.01211	-0.87275	0.00821	1.84895	0.02650	0.38315	0.01529	-0.53785	0.01263	-1.69425	0.01589	0.00000	0.00000	n/a	n/a

Table 2.5.19
IRT Parameters for Dichotomous Items
Mathematics Grade 5

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA00871	1.05509	0.00000	0.13190	0.00000	0.27950	0.00000
IA00874	1.46937	0.00000	-0.81400	0.00000	0.11820	0.00000
IA02101	0.85497	0.00000	-0.95170	0.00000	0.15550	0.00000
IA02306	1.83821	0.00000	0.74400	0.00000	0.16660	0.00000
IA02342	1.02128	0.00000	-0.72950	0.00000	0.13020	0.00000
IA02545	1.05068	0.00000	-0.69890	0.00000	0.14530	0.00000
IA04604	0.81146	0.00000	-0.07920	0.00000	0.30660	0.00000
IA04931	1.38266	0.00000	0.84570	0.00000	0.21680	0.00000
IA05062	0.51705	0.00000	-1.15620	0.00000	0.16010	0.00000
IA05063	0.60835	0.00000	-0.75360	0.00000	0.18430	0.00000
IA07516	0.86120	0.02728	-0.75270	0.04820	0.11830	0.02340
IA07523	0.73733	0.03069	0.40240	0.03100	0.11020	0.01240
IA07525	0.89218	0.05203	0.71720	0.03230	0.35100	0.00980
IA07537	1.20123	0.03786	-1.05720	0.03740	0.16530	0.02200
IA07540	1.18677	0.03169	-0.99490	0.03140	0.06760	0.02000
IA07575	0.97819	0.05485	1.38130	0.03080	0.20480	0.00600
IA07576	0.73092	0.02834	0.55470	0.02760	0.06720	0.01100
IA07603	1.15708	0.06032	0.68080	0.02370	0.33910	0.00740
IA02396	0.85597	0.00000	-1.14380	0.00000	0.00000	0.00000
IA02919	0.88677	0.00000	-0.04520	0.00000	0.00000	0.00000
IA02927	0.64315	0.00000	-1.36660	0.00000	0.00000	0.00000
IA04705	0.43616	0.00000	0.27900	0.00000	0.00000	0.00000
IA04933	0.83904	0.00000	-0.01410	0.00000	0.00000	0.00000
IA04938	0.62205	0.00000	0.56940	0.00000	0.00000	0.00000
IA05005	0.91440	0.00000	0.13670	0.00000	0.00000	0.00000
IA05015	0.81928	0.00000	1.07490	0.00000	0.00000	0.00000
IA05019	0.98336	0.00000	0.16950	0.00000	0.00000	0.00000
IA05020	1.00053	0.00000	0.05660	0.00000	0.00000	0.00000
IA05021	1.05132	0.00000	0.68560	0.00000	0.00000	0.00000
IA05031	0.92352	0.00000	0.49940	0.00000	0.00000	0.00000
IA05103	1.06937	0.00000	-0.69430	0.00000	0.00000	0.00000
IA05179	0.62046	0.00000	0.74990	0.00000	0.00000	0.00000
IA07517	0.76432	0.01346	-0.32440	0.01200	0.00000	0.00000
IA07582	0.84103	0.01699	-1.81640	0.02320	0.00000	0.00000

Table 2.5.20
IRT Parameters for Polytomous Items
Mathematics Grade 5

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA01158	1.09006	0.00000	0.70715	0.00000	1.54125	0.00000	0.45705	0.00000	-0.37285	0.00000	-1.62545	0.00000	0.00000	0.00000	n/a	n/a
IA01159	1.13762	0.00000	-0.24085	0.00000	1.24365	0.00000	0.42965	0.00000	-0.27755	0.00000	-1.39575	0.00000	0.00000	0.00000	n/a	n/a
IA02680	1.12681	0.00000	-0.65518	0.00000	1.04863	0.00000	0.24553	0.00000	-0.26258	0.00000	-1.03158	0.00000	0.00000	0.00000	n/a	n/a
IA02729	1.10588	0.00000	0.00920	0.00000	0.69290	0.00000	-0.69290	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA02735	1.11540	0.00000	-0.71588	0.00000	0.90343	0.00000	0.54393	0.00000	-0.30538	0.00000	-1.14198	0.00000	0.00000	0.00000	n/a	n/a
IA05024	0.78313	0.00000	-0.54380	0.00000	1.13220	0.00000	-1.13220	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a

Table 2.5.21
IRT Parameters for Dichotomous Items
Mathematics Grade 6

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA00846	0.86537	0.00000	-0.33240	0.00000	0.05680	0.00000
IA02151	1.19953	0.02781	-0.61410	0.01940	0.04040	0.01030
IA04605	1.01117	0.00000	0.70090	0.00000	0.18470	0.00000
IA04656	0.79412	0.00000	-1.83050	0.00000	0.16130	0.00000
IA04722	1.06302	0.00000	0.29760	0.00000	0.13190	0.00000
IA04725	1.04356	0.00000	0.91070	0.00000	0.15040	0.00000
IA04878	0.84356	0.00000	-0.61290	0.00000	0.12630	0.00000
IA04879	1.04797	0.00000	-0.09920	0.00000	0.33290	0.00000
IA04904	0.56479	0.00000	0.45480	0.00000	0.09310	0.00000
IA04905	0.74045	0.00000	0.39700	0.00000	0.34250	0.00000
IA05124	1.97937	0.00000	1.18450	0.00000	0.04990	0.00000
IA05129	1.12093	0.00000	1.07540	0.00000	0.13590	0.00000
IA07531	0.81135	0.02716	-0.75180	0.04890	0.10420	0.02260
IA07618	0.30653	0.01758	-2.57470	0.38540	0.20910	0.08590
IA02284	0.89794	0.01440	-0.68500	0.01170	0.00000	0.00000
IA02692	0.65432	0.00000	-0.94150	0.00000	0.00000	0.00000
IA04758	1.13845	0.00000	-0.65520	0.00000	0.00000	0.00000
IA04776	0.65614	0.00000	-0.04830	0.00000	0.00000	0.00000
IA04855	0.64362	0.00000	-0.19520	0.00000	0.00000	0.00000
IA04875	0.87596	0.00000	0.09640	0.00000	0.00000	0.00000
IA04882	0.87231	0.00000	0.05710	0.00000	0.00000	0.00000
IA04885	0.94609	0.00000	-0.63510	0.00000	0.00000	0.00000
IA04886	0.86108	0.00000	-0.22150	0.00000	0.00000	0.00000
IA04893	1.21934	0.00000	0.71170	0.00000	0.00000	0.00000
IA04903	1.11781	0.00000	0.74320	0.00000	0.00000	0.00000
IA04908	0.59912	0.00000	0.46360	0.00000	0.00000	0.00000
IA04909	0.77325	0.00000	-0.76250	0.00000	0.00000	0.00000
IA04911	0.75109	0.00000	-0.50070	0.00000	0.00000	0.00000
IA04914	1.31382	0.00000	-1.14000	0.00000	0.00000	0.00000
IA05128	0.44162	0.00000	0.12430	0.00000	0.00000	0.00000
IA05136	0.30247	0.00000	0.79960	0.00000	0.00000	0.00000
IA05140	0.42604	0.00000	0.61100	0.00000	0.00000	0.00000
IA05142	0.54850	0.00000	0.57080	0.00000	0.00000	0.00000
IA07664	1.25585	0.02340	0.68400	0.01210	0.00000	0.00000

Table 2.5.22
IRT Parameters for Polytomous Items
Mathematics Grade 6

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA01136	0.81011	0.00000	-0.48435	0.00000	0.75235	0.00000	-0.75235	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA02704	1.14256	0.00000	0.10788	0.00000	1.88588	0.00000	0.64888	0.00000	-0.76553	0.00000	-1.76923	0.00000	0.00000	0.00000	n/a	n/a
IA04763	1.12928	0.00000	-0.74533	0.00000	1.26598	0.00000	0.44378	0.00000	-0.29413	0.00000	-1.41563	0.00000	0.00000	0.00000	n/a	n/a
IA04764	1.08801	0.00000	0.11070	0.00000	1.47720	0.00000	0.27120	0.00000	-0.34640	0.00000	-1.40200	0.00000	0.00000	0.00000	n/a	n/a
IA05137	1.12769	0.00000	0.74075	0.00000	0.72835	0.00000	-0.72835	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA07663	1.00265	0.01217	-0.67445	0.00661	1.28645	0.01927	0.44345	0.01388	-0.56365	0.01141	-1.16625	0.01344	0.00000	0.00000	n/a	n/a

Table 2.5.23
IRT Parameters for Dichotomous Items
Mathematics Grade 7

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA00807	1.23216	0.00000	-0.23550	0.00000	0.10390	0.00000
IA00883	0.55579	0.00000	-1.06620	0.00000	0.14530	0.00000
IA02090	1.27102	0.00000	-1.12290	0.00000	0.13530	0.00000
IA02401	1.50911	0.00000	-0.55580	0.00000	0.10870	0.00000
IA04490	1.11152	0.00000	0.48720	0.00000	0.07280	0.00000
IA04513	0.94668	0.00000	0.91880	0.00000	0.44660	0.00000
IA04539	1.25850	0.00000	-0.06220	0.00000	0.23720	0.00000
IA04625	0.32734	0.00000	1.29620	0.00000	0.10430	0.00000
IA04643	1.04292	0.00000	0.89990	0.00000	0.28090	0.00000
IA04647	0.99148	0.00000	0.31880	0.00000	0.36430	0.00000
IA04688	2.59424	0.00000	1.11070	0.00000	0.15900	0.00000
IA05086	1.23269	0.00000	1.11110	0.00000	0.27470	0.00000
IA07532	1.20394	0.03810	-0.18720	0.02550	0.21620	0.01210
IA07549	0.99994	0.02804	-0.23450	0.02700	0.14570	0.01210
IA07596	0.62369	0.01952	0.41390	0.03140	0.00680	0.01210
IA07613	1.32646	0.04415	0.37920	0.01800	0.23840	0.00690
IA07614	1.81382	0.06590	0.70590	0.01370	0.22610	0.00460
IA02871	1.34380	0.00000	-0.25110	0.00000	0.00000	0.00000
IA02875	0.97878	0.00000	-0.68960	0.00000	0.00000	0.00000
IA02884	1.49588	0.00000	0.54810	0.00000	0.00000	0.00000
IA04649	1.09494	0.00000	-0.07470	0.00000	0.00000	0.00000
IA04690	1.08801	0.00000	0.51120	0.00000	0.00000	0.00000
IA04766	1.07219	0.00000	0.65510	0.00000	0.00000	0.00000
IA04767	1.05673	0.00000	1.00560	0.00000	0.00000	0.00000
IA04770	0.56249	0.00000	0.24670	0.00000	0.00000	0.00000
IA04771	0.64521	0.00000	0.53750	0.00000	0.00000	0.00000
IA05035	0.72939	0.00000	0.39090	0.00000	0.00000	0.00000
IA05106	0.94156	0.00000	0.82770	0.00000	0.00000	0.00000
IA05107	0.91452	0.00000	-0.09910	0.00000	0.00000	0.00000
IA05119	0.91999	0.00000	-0.03150	0.00000	0.00000	0.00000
IA07518	1.04633	0.01670	-0.83000	0.01110	0.00000	0.00000
IA07521	0.79636	0.01423	-1.45530	0.01970	0.00000	0.00000
IA07550	0.80453	0.01429	-0.85150	0.01380	0.00000	0.00000
IA07570	1.25320	0.02122	0.67930	0.01060	0.00000	0.00000

Table 2.5.24
IRT Parameters for Polytomous Items
Mathematics Grade 7

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA00842	1.24480	0.00000	1.00188	0.00000	1.66928	0.00000	-0.19863	0.00000	-0.62903	0.00000	-0.84163	0.00000	0.00000	0.00000	n/a	n/a
IA02711	1.18307	0.00000	0.78935	0.00000	0.46695	0.00000	-0.46695	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA02715	1.29465	0.00000	-0.53515	0.00000	0.82895	0.00000	-0.82895	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04575	1.35873	0.00000	-0.06188	0.00000	1.79763	0.00000	0.12663	0.00000	-0.64838	0.00000	-1.27588	0.00000	0.00000	0.00000	n/a	n/a
IA04694	1.18983	0.00000	0.19675	0.00000	1.69555	0.00000	0.70245	0.00000	-0.43815	0.00000	-1.95985	0.00000	0.00000	0.00000	n/a	n/a
IA05121	0.99835	0.00000	0.51533	0.00000	0.97253	0.00000	0.60923	0.00000	-0.00807	0.00000	-1.57368	0.00000	0.00000	0.00000	n/a	n/a

Table 2.5.25
IRT Parameters for Dichotomous Items
Mathematics Grade 8

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA00792	1.35262	0.00000	0.43630	0.00000	0.57250	0.00000
IA02161	1.03639	0.03245	-0.52150	0.03320	0.21240	0.01520
IA02165	0.66931	0.00000	-1.08710	0.00000	0.04720	0.00000
IA02480	1.01658	0.00000	-0.99690	0.00000	0.30970	0.00000
IA04594	0.84397	0.00000	1.05500	0.00000	0.24240	0.00000
IA04607	0.68419	0.00000	-0.56970	0.00000	0.17740	0.00000
IA04633	0.84621	0.00000	1.27370	0.00000	0.28800	0.00000
IA04671	1.11411	0.00000	-1.02230	0.00000	0.15190	0.00000
IA04712	1.27149	0.00000	-0.04010	0.00000	0.25940	0.00000
IA04715	1.39048	0.00000	-0.34660	0.00000	0.36570	0.00000
IA04918	0.89965	0.00000	-1.84080	0.00000	0.19300	0.00000
IA04920	0.69365	0.00000	-2.17420	0.00000	0.15060	0.00000
IA05098	0.72416	0.00000	-0.27140	0.00000	0.09530	0.00000
IA07520	1.58225	0.05285	0.16780	0.01510	0.23890	0.00610
IA07544	1.35156	0.04956	0.18580	0.01940	0.30470	0.00720
IA07620	0.76661	0.03422	0.49860	0.03110	0.18960	0.01100
IA01035	1.12199	0.00000	0.53980	0.00000	0.00000	0.00000
IA02746	1.12816	0.00000	0.13270	0.00000	0.00000	0.00000
IA02747	0.79647	0.00000	0.60320	0.00000	0.00000	0.00000
IA02935	0.99106	0.00000	0.43080	0.00000	0.00000	0.00000
IA02942	0.79283	0.00000	-1.09310	0.00000	0.00000	0.00000
IA02947	0.99001	0.00000	-0.22980	0.00000	0.00000	0.00000
IA04666	1.33857	0.00000	0.56040	0.00000	0.00000	0.00000
IA04779	0.44321	0.00000	-0.32640	0.00000	0.00000	0.00000
IA04916	1.04497	0.00000	-0.29780	0.00000	0.00000	0.00000
IA04919	0.71711	0.00000	0.47550	0.00000	0.00000	0.00000
IA04946	1.52052	0.00000	0.36110	0.00000	0.00000	0.00000
IA04950	1.26002	0.00000	-0.85300	0.00000	0.00000	0.00000
IA04969	1.12481	0.00000	0.11120	0.00000	0.00000	0.00000
IA05076	0.82222	0.00000	0.04710	0.00000	0.00000	0.00000
IA05093	0.94209	0.00000	0.03050	0.00000	0.00000	0.00000
IA05095	1.19347	0.00000	-0.28730	0.00000	0.00000	0.00000
IA07519	0.97549	0.02034	-1.86180	0.02070	0.00000	0.00000
IA07568	0.81576	0.01329	-0.54550	0.01150	0.00000	0.00000

Table 2.5.26
IRT Parameters for Polytomous Items
Mathematics Grade 8

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA02565	0.98630	0.00000	-0.01418	0.00000	1.46713	0.00000	0.42263	0.00000	-0.43088	0.00000	-1.45888	0.00000	0.00000	0.00000	n/a	n/a
IA02764	1.49477	0.00000	0.21000	0.00000	1.82400	0.00000	0.03090	0.00000	-0.60600	0.00000	-1.24890	0.00000	0.00000	0.00000	n/a	n/a
IA02893	1.01476	0.00000	-0.43725	0.00000	1.71155	0.00000	0.67945	0.00000	-0.45035	0.00000	-1.94065	0.00000	0.00000	0.00000	n/a	n/a
IA04612	1.63357	0.00000	0.20320	0.00000	0.81530	0.00000	0.27200	0.00000	-0.23580	0.00000	-0.85150	0.00000	0.00000	0.00000	n/a	n/a
IA04941	0.77419	0.00000	0.62935	0.00000	0.63965	0.00000	-0.63965	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA05073	0.90182	0.00000	-0.93480	0.00000	0.79040	0.00000	-0.79040	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a

Table 2.5.27
IRT Parameters for Dichotomous Items
Mathematics Grade 10

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA02305	1.92898	0.03039	-0.23750	0.00820	0.22710	0.00430
IA02406	0.76367	0.01511	-0.52390	0.03140	0.15990	0.01280
IA02602	1.18442	0.02093	0.06310	0.01380	0.28060	0.00540
IA02603	0.75132	0.01399	-0.64140	0.03290	0.14690	0.01360
IA02629	0.72751	0.01928	0.08980	0.03210	0.31500	0.00990
IA02641	1.00611	0.02587	0.64450	0.01650	0.35800	0.00500
IA02647	0.62616	0.01099	-1.90720	0.06550	0.03780	0.03420
IA04624	0.92969	0.03839	1.85390	0.02600	0.27980	0.00340
IA04674	0.89506	0.01958	0.25790	0.01950	0.28900	0.00660
IA04736	1.54362	0.03286	0.54200	0.01050	0.34760	0.00360
IA04867	1.80176	0.00000	0.63180	0.00000	0.14390	0.00000
IA05078	0.74180	0.00000	-0.49920	0.00000	0.12350	0.00000
IA07528	1.49053	0.02657	0.20380	0.00950	0.23270	0.00400
IA07530	1.48942	0.03016	0.22300	0.01130	0.34920	0.00430
IA07538	1.63739	0.02352	-0.17120	0.00790	0.11850	0.00400
IA07542	0.60576	0.01399	-0.56630	0.04860	0.13610	0.01760
IA07548	1.69024	0.03945	0.15430	0.01300	0.51390	0.00410
IA07556	1.01199	0.01911	-0.19550	0.01800	0.22050	0.00760
IA07623	0.84586	0.02322	0.28880	0.02690	0.43930	0.00720
IA07648	1.14098	0.02428	0.58810	0.01260	0.27110	0.00430
IA07651	1.75585	0.02834	0.11970	0.00830	0.23870	0.00370
IA07670	1.09001	0.01881	-0.66940	0.01990	0.18320	0.01000
IA02776	0.36825	0.00558	-0.33470	0.01390	0.00000	0.00000
IA02798	1.50911	0.01352	0.60800	0.00560	0.00000	0.00000
IA02831	1.07313	0.00888	-0.28500	0.00590	0.00000	0.00000
IA02870	0.50894	0.00623	-0.29120	0.01020	0.00000	0.00000
IA04803	0.88765	0.00000	-0.86530	0.00000	0.00000	0.00000
IA04815	0.68624	0.00000	-0.82070	0.00000	0.00000	0.00000
IA04839	1.17989	0.00000	-0.45910	0.00000	0.00000	0.00000
IA04862	1.03392	0.00000	-0.46300	0.00000	0.00000	0.00000
IA04977	1.02357	0.00000	-0.51440	0.00000	0.00000	0.00000
IA05146	0.64821	0.00000	-0.79500	0.00000	0.00000	0.00000

Table 2.5.28
IRT Parameters for Polytomous Items
Mathematics Grade 10

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA02767	1.56590	0.01141	0.22820	0.00363	0.38610	0.00578	-0.38610	0.00676	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA02808	0.88836	0.00711	-0.96355	0.00629	0.78285	0.01241	-0.78285	0.00911	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA02853	0.59647	0.00564	-1.42660	0.01247	1.43380	0.02643	-1.43380	0.01532	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04696	1.57302	0.01035	0.16665	0.00254	0.70135	0.00526	0.14585	0.00552	-0.21965	0.00579	-0.62755	0.00615	0.00000	0.00000	n/a	n/a
IA04805	0.76308	0.00000	-0.71130	0.00000	0.73650	0.00000	-0.73650	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04822	1.04303	0.00000	-0.38065	0.00000	0.79455	0.00000	-0.79455	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA04996	1.17925	0.00000	-0.00890	0.00000	1.27550	0.00000	0.39840	0.00000	-0.33400	0.00000	-1.33990	0.00000	0.00000	0.00000	n/a	n/a
IA05085	0.81552	0.00000	-1.19595	0.00000	0.63345	0.00000	-0.63345	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA07581	1.55473	0.00941	-0.22540	0.00298	1.34020	0.00761	0.56040	0.00608	-0.55460	0.00565	-1.34600	0.00715	0.00000	0.00000	n/a	n/a
IA07604	1.70182	0.01046	0.01373	0.00253	0.96733	0.00578	0.32593	0.00516	-0.26418	0.00516	-1.02908	0.00642	0.00000	0.00000	n/a	n/a

Table 2.5.29
IRT Parameters for Dichotomous Items
Science Grade 5

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA03073	0.39048	0.01317	-1.63240	0.12070	0.03090	0.03690
IA03100	1.23574	0.04209	-0.65490	0.02940	0.18500	0.01500
IA03166	0.42857	0.04533	1.42890	0.08590	0.28180	0.02330
IA03171	0.65168	0.03233	-0.51990	0.09020	0.28600	0.02820
IA03179	0.70429	0.01846	-1.57880	0.06340	0.02770	0.03180
IA05478	0.85244	0.00000	0.89030	0.00000	0.29900	0.00000
IA05479	0.83474	0.00000	0.76050	0.00000	0.13770	0.00000
IA05500	0.48119	0.00000	-1.14030	0.00000	0.22020	0.00000
IA05538	0.81705	0.00000	0.18780	0.00000	0.23900	0.00000
IA05539	0.58277	0.00000	0.14980	0.00000	0.22240	0.00000
IA05565	0.73039	0.00000	-0.72050	0.00000	0.14120	0.00000
IA05573	0.63774	0.00000	-1.49810	0.00000	0.12450	0.00000
IA05677	0.71376	0.00000	0.10950	0.00000	0.29170	0.00000
IA05701	0.51176	0.00000	1.25620	0.00000	0.08570	0.00000
IA05746	1.06508	0.00000	-1.14000	0.00000	0.12770	0.00000
IA05755	0.90000	0.00000	-1.21050	0.00000	0.17460	0.00000
IA05763	0.63616	0.00000	-1.39220	0.00000	0.16370	0.00000
IA05768	0.43568	0.00000	0.96040	0.00000	0.20760	0.00000
IA08354	1.64544	0.12992	1.28300	0.02630	0.27690	0.00470
IA08355	0.33751	0.01852	-1.05620	0.21400	0.08120	0.05330
IA08440	0.95938	0.04491	0.52530	0.02840	0.27090	0.00990
IA08480	0.91152	0.03880	-0.12420	0.04260	0.30720	0.01500
IA03095	0.61817	0.01317	-1.49550	0.02410	0.00000	0.00000
IA03099	0.86731	0.01658	-1.27420	0.01610	0.00000	0.00000
IA03101	0.45832	0.01082	-1.12280	0.02460	0.00000	0.00000
IA03302	0.81434	0.01452	-0.36200	0.01230	0.00000	0.00000
IA05561	0.44915	0.00000	-0.03350	0.00000	0.00000	0.00000
IA05567	0.55267	0.00000	-0.95690	0.00000	0.00000	0.00000
IA05660	0.65714	0.00000	-0.88900	0.00000	0.00000	0.00000
IA05765	0.25902	0.00000	-1.58470	0.00000	0.00000	0.00000
IA05766	0.73657	0.00000	-0.27820	0.00000	0.00000	0.00000
IA05770	0.39271	0.00000	0.26030	0.00000	0.00000	0.00000

Table 2.5.30
IRT Parameters for Polytomous Items
Science Grade 5

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03103	1.04062	0.01511	0.79227	0.01117	1.35527	0.01519	-0.01583	0.01799	-1.33943	0.03070	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03180	0.73886	0.01252	0.38370	0.01321	0.82870	0.01888	-0.82870	0.02626	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA05337	0.67566	0.00000	-0.29330	0.00000	1.68980	0.00000	0.08210	0.00000	-1.77190	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA05406	0.85532	0.00000	0.03653	0.00000	2.68713	0.00000	0.24763	0.00000	-2.93477	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA05519	0.61675	0.00000	-1.35540	0.00000	0.95170	0.00000	-0.95170	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA05566	0.73951	0.00000	-1.67815	0.00000	0.87735	0.00000	-0.87735	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA05697	0.61640	0.00000	-0.09445	0.00000	0.66735	0.00000	-0.66735	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA05756	0.81564	0.00000	-1.09900	0.00000	0.78550	0.00000	-0.78550	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA05773	0.69347	0.00000	-0.04620	0.00000	1.54660	0.00000	0.03680	0.00000	-1.58340	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a

Table 2.5.31
IRT Parameters for Dichotomous Items
Science Grade 8

Item ID	Parameters and Measures of Standard Error					
	a	SE(a)	b	SE(b)	c	SE(c)
IA03090	1.08119	0.04744	0.94250	0.02160	0.19800	0.00720
IA03247	0.62757	0.03604	0.66620	0.05220	0.20630	0.01790
IA03298	1.16861	0.04650	-0.74510	0.04580	0.35090	0.02060
IA03325	0.81311	0.03815	0.29270	0.04400	0.29640	0.01520
IA03341	0.98319	0.03422	-0.95950	0.05380	0.18910	0.02800
IA03363	0.82205	0.02011	-1.36490	0.05120	0.02500	0.02960
IA03364	1.14192	0.05220	1.15480	0.02110	0.14590	0.00580
IA05543	1.05979	0.00000	0.96450	0.00000	0.10260	0.00000
IA05652	1.53333	0.00000	-1.48890	0.00000	0.11660	0.00000
IA05654	0.97919	0.00000	-0.73780	0.00000	0.17990	0.00000
IA05694	0.41046	0.00000	0.58560	0.00000	0.05600	0.00000
IA05760	1.01570	0.00000	-0.47800	0.00000	0.22890	0.00000
IA05776	0.91964	0.00000	-1.14820	0.00000	0.07410	0.00000
IA08264	0.52622	0.02504	-1.17540	0.14900	0.13190	0.05390
IA08294	0.58789	0.03298	0.67630	0.05510	0.18150	0.01860
IA08329	0.29894	0.01440	-2.33010	0.27290	0.09970	0.06540
IA08349	0.70994	0.02222	-1.11940	0.06700	0.03980	0.03310
IA08359	0.59918	0.04803	0.55180	0.07860	0.38200	0.02090
IA08362	0.84192	0.03222	0.23630	0.03290	0.14290	0.01380
IA08366	1.14033	0.03680	-1.33330	0.05160	0.09940	0.03510
IA08392	0.83474	0.02869	-0.34660	0.04090	0.11170	0.01830
IA08393	0.45926	0.01493	-1.20400	0.09670	0.02730	0.03400
IA03022	0.26508	0.00941	1.02230	0.05180	0.00000	0.00000
IA03148	0.77349	0.01693	-1.70660	0.02760	0.00000	0.00000
IA03189	0.83222	0.01840	-1.81110	0.02840	0.00000	0.00000
IA03266	0.40541	0.01076	1.09010	0.03640	0.00000	0.00000
IA03365	0.40658	0.01064	0.14820	0.02110	0.00000	0.00000
IA05491	0.36443	0.00000	-0.40550	0.00000	0.00000	0.00000
IA05524	0.81346	0.00000	-1.41600	0.00000	0.00000	0.00000
IA05653	0.64621	0.00000	-0.26680	0.00000	0.00000	0.00000
IA05685	1.15726	0.00000	-1.16070	0.00000	0.00000	0.00000
IA05761	0.75056	0.00000	-0.44600	0.00000	0.00000	0.00000

Table 2.5.32
IRT Parameters for Polytomous Items
Science Grade 8

Item ID	Parameters and Measures of Standard Error															
	a	SE(a)	b	SE(b)	d0	SE(d0)	d1	SE(d1)	d2	SE(d2)	d3	SE(d3)	d4	SE(d4)	d5	SE(d5)
IA03032	0.83880	0.01287	1.03497	0.01337	1.55037	0.01831	-0.25783	0.02373	-1.29253	0.03533	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03210	0.29565	0.00864	1.00465	0.04992	2.06575	0.06172	-2.06575	0.10555	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03215	0.65708	0.01152	0.12020	0.01090	0.46710	0.01727	-0.46710	0.02036	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA03336	0.84968	0.01311	1.15303	0.01432	1.52063	0.01849	-0.04287	0.02316	-1.47777	0.03977	0.00000	0.00000	n/a	n/a	n/a	n/a
IA03342	1.02957	0.01423	0.09547	0.00834	1.15367	0.01536	0.15777	0.01279	-1.31143	0.02084	0.00000	0.00000	n/a	n/a	n/a	n/a
IA05686	0.82457	0.00000	-0.72010	0.00000	0.75130	0.00000	-0.75130	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA05691	0.86643	0.00000	0.16385	0.00000	0.99635	0.00000	-0.99635	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a
IA05732	0.76196	0.00000	1.11997	0.00000	2.59307	0.00000	-0.59243	0.00000	-2.00063	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a
IA05737	1.01246	0.00000	0.33030	0.00000	0.75990	0.00000	-0.75990	0.00000	0.00000	0.00000	n/a	n/a	n/a	n/a	n/a	n/a

APPENDIX M
CLASSICAL RELIABILITY AND SEM

Table M-1. Subgroup Reliabilities—ELA

Grade	Session	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
				Maximum	Mean			
3	1	All Students	31,316	21	10.26	4.12	0.80	1.84
	1	Economically Disadvantaged	12,716	21	8.35	3.89	0.77	1.87
	1	African American	2,904	21	8.51	3.96	0.78	1.87
	1	Asian	2,463	21	11.90	3.86	0.78	1.82
	1	Hispanic	7,074	21	8.12	3.94	0.78	1.86
	1	Native American	61	21	9.80	3.69	0.77	1.78
	1	White	17,337	21	11.13	3.82	0.77	1.82
	1	Pacific Islander/Hawaiian	12	21	10.08	4.72	0.84	1.88
	1	Multi-race	1,456	21	11.03	4.10	0.80	1.82
	1	Male	15,924	21	9.94	4.09	0.80	1.82
	1	Female	15,387	21	10.59	4.13	0.80	1.86
	1	Limited English Proficient	4,418	21	6.79	3.46	0.71	1.86
	1	Former LEP	1,986	21	10.91	3.68	0.75	1.84
	1	LEPFLEP	6,404	21	8.07	4.01	0.78	1.86
	1	Special Education	5,996	21	7.47	3.79	0.76	1.87
	1	Plan504	1,266	21	10.51	3.84	0.78	1.81
	1	Title 1	16,875	21	9.00	4.03	0.79	1.87
	1	In Person CBT	25,381	21	10.30	4.09	0.80	1.83
	1	Remote CBT	5,142	23	9.99	4.22	0.81	1.85
	2	All Students	31,385	23	13.30	4.93	0.82	2.08
	2	Economically Disadvantaged	12,726	23	10.98	4.66	0.79	2.15
	2	African American	2,824	23	11.24	4.82	0.80	2.14
	2	Asian	2,380	23	15.23	4.59	0.81	1.99
	2	Hispanic	7,347	23	10.65	4.66	0.79	2.15
	2	Native American	49	23	10.92	4.82	0.80	2.13
	2	White	17,310	23	14.43	4.54	0.80	2.04
	2	Pacific Islander/Hawaiian	23	23	13.65	4.53	0.78	2.10
	2	Multi-race	1,447	23	14.13	4.92	0.83	2.04
	2	Male	15,994	23	12.83	4.91	0.82	2.09
	2	Female	15,384	23	13.79	4.91	0.82	2.07
	2	Limited English Proficient	4,584	23	9.15	4.00	0.71	2.16
	2	Former LEP	2,054	23	14.13	4.50	0.79	2.07
	2	LEPFLEP	6,638	23	10.69	4.75	0.80	2.14
	2	Special Education	5,909	23	10.09	4.41	0.76	2.15
	2	Plan504	1,283	23	13.27	4.68	0.80	2.08
	2	Title 1	16,996	23	11.79	4.83	0.81	2.13
	2	In Person CBT	25,522	23	13.35	4.89	0.82	2.08
	2	Remote CBT	5,219	23	12.86	5.12	0.84	2.07

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
4	1	All Students	32,095	20	11.06	4.31	0.80	1.90
	1	Economically Disadvantaged	12,906	20	9.02	4.07	0.79	1.88
	1	African American	2,914	20	9.31	4.09	0.80	1.85
	1	Asian	2,348	20	12.89	4.09	0.78	1.93
	1	Hispanic	7,339	20	8.88	4.13	0.79	1.87
	1	Native American	69	20	9.38	4.19	0.79	1.90
	1	White	17,917	20	11.95	3.99	0.78	1.89
	1	Pacific Islander/Hawaiian	33	20	11.30	4.84	0.84	1.95
	1	Multi-race	1,469	20	11.66	4.31	0.80	1.91
	1	Male	16,334	20	10.55	4.18	0.80	1.86
	1	Female	15,756	20	11.58	4.37	0.81	1.92
	1	Limited English Proficient	3,893	20	6.96	3.50	0.73	1.81
	1	Former LEP	2,397	20	11.68	3.67	0.72	1.95
	1	LEPFLEP	6,290	20	8.76	4.24	0.80	1.90
	1	Special Education	6,386	20	8.07	3.87	0.78	1.83
	1	Plan504	1,567	20	10.86	4.05	0.79	1.86
	1	Title 1	16,950	20	9.71	4.20	0.80	1.89
	1	In Person CBT	25,842	20	11.16	4.26	0.80	1.90
	1	Remote CBT	5,417	20	10.47	4.45	0.82	1.89
	2	All Students	32,123	24	14.02	5.49	0.85	2.13
	2	Economically Disadvantaged	12,883	24	11.48	5.25	0.83	2.18
	2	African American	2,950	24	11.93	5.32	0.83	2.17
	2	Asian	2,401	24	16.04	5.26	0.85	2.04
	2	Hispanic	7,383	24	11.19	5.31	0.83	2.17
	2	Native American	73	24	12.66	5.30	0.83	2.17
	2	White	17,869	24	15.20	5.04	0.82	2.11
	2	Pacific Islander/Hawaiian	30	24	13.87	5.54	0.84	2.21
	2	Multi-race	1,411	24	14.82	5.51	0.85	2.11
	2	Male	16,444	24	13.43	5.50	0.85	2.15
	2	Female	15,675	24	14.63	5.40	0.85	2.11
	2	Limited English Proficient	3,900	24	8.53	4.21	0.74	2.16
	2	Former LEP	2,381	24	14.89	4.56	0.78	2.14
	2	LEPFLEP	6,281	24	10.94	5.33	0.83	2.17
	2	Special Education	6,306	24	9.94	5.03	0.81	2.18
	2	Plan504	1,686	24	13.95	5.07	0.82	2.16
	2	Title 1	16,970	24	12.36	5.40	0.84	2.17
	2	In Person CBT	26,009	24	14.10	5.45	0.85	2.14
	2	Remote CBT	5,478	24	13.53	5.66	0.86	2.13

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
5	1	All Students	32,412	21	12.06	4.26	0.79	1.97
	1	Economically Disadvantaged	12,828	21	10.15	4.20	0.77	2.02
	1	African American	2,866	21	10.41	4.19	0.77	2.00
	1	Asian	2,379	21	13.67	4.14	0.79	1.92
	1	Hispanic	7,335	21	9.94	4.31	0.78	2.02
	1	Native American	67	21	11.57	3.95	0.77	1.91
	1	White	18,347	21	12.92	3.87	0.75	1.93
	1	Pacific Islander/Hawaiian	21	21	14.00	4.90	0.84	1.96
	1	Multi-race	1,392	21	12.70	4.16	0.78	1.94
	1	Male	16,500	21	11.57	4.28	0.79	1.97
	1	Female	15,904	21	12.57	4.18	0.78	1.96
	1	Limited English Proficient	2,708	21	6.96	3.62	0.70	1.97
	1	Former LEP	3,547	21	11.99	3.73	0.71	2.01
	1	LEPFLEP	6,255	21	9.81	4.45	0.79	2.02
	1	Special Education	6,458	21	8.80	4.06	0.76	2.00
	1	Plan504	1,986	21	12.09	3.86	0.75	1.95
	1	Title 1	15,141	21	10.68	4.29	0.78	2.01
	1	In Person CBT	26,101	21	12.20	4.22	0.78	1.96
	1	Remote CBT	5,670	21	11.35	4.35	0.79	1.98
	2	All Students	32,192	27	15.10	5.39	0.82	2.26
	2	Economically Disadvantaged	12,633	27	12.38	5.17	0.81	2.28
	2	African American	2,996	27	12.64	5.15	0.80	2.28
	2	Asian	2,327	27	17.67	5.01	0.81	2.18
	2	Hispanic	7,146	27	12.12	5.28	0.81	2.28
	2	Native American	63	27	13.68	5.69	0.84	2.25
	2	White	18,230	27	16.30	4.86	0.79	2.23
	2	Pacific Islander/Hawaiian	27	27	13.96	5.72	0.85	2.19
	2	Multi-race	1,399	27	15.79	5.34	0.82	2.26
	2	Male	16,553	27	14.74	5.35	0.82	2.25
	2	Female	15,631	27	15.48	5.41	0.83	2.26
	2	Limited English Proficient	2,639	27	8.58	4.09	0.71	2.21
	2	Former LEP	3,623	27	14.66	4.79	0.77	2.30
	2	Special Education	6,294	27	11.04	4.85	0.78	2.26
	2	LEPFLEP	6,262	27	12.10	5.42	0.82	2.29
	2	Plan504	1,973	27	15.18	4.81	0.78	2.25
	2	Title 1	14,997	27	13.21	5.35	0.82	2.28
	2	In Person CBT	26,230	27	15.28	5.32	0.82	2.26
	2	Remote CBT	5,557	27	14.11	5.59	0.84	2.27

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
6	1	All Students	32,809	21	11.17	4.40	0.77	2.11
	1	Economically Disadvantaged	12,877	21	9.24	4.16	0.75	2.07
	1	African American	3,101	21	9.36	4.13	0.75	2.08
	1	Asian	2,384	21	13.15	4.15	0.74	2.12
	1	Hispanic	7,189	21	9.09	4.24	0.76	2.08
	1	Native American	81	21	10.17	4.28	0.76	2.11
	1	White	18,540	21	11.99	4.13	0.75	2.09
	1	Pacific Islander/Hawaiian	30	21	12.27	4.29	0.78	2.00
	1	Multi-race	1,477	21	11.53	4.53	0.78	2.12
	1	Male	16,905	21	10.42	4.34	0.77	2.09
	1	Female	15,890	21	11.96	4.32	0.76	2.11
	1	Limited English Proficient	2,108	21	5.92	3.01	0.61	1.87
	1	Former LEP	3,792	21	10.50	3.84	0.70	2.12
	1	LEPFLEP	5,900	21	8.86	4.19	0.75	2.09
	1	Special Education	6,311	21	7.69	3.72	0.72	1.98
	1	Plan504	2,161	21	10.97	4.00	0.73	2.08
	1	Title 1	13,654	21	9.81	4.34	0.76	2.11
	1	In Person CBT	26,162	21	11.35	4.37	0.77	2.11
	1	Remote CBT	6,302	21	10.43	4.43	0.78	2.10
	2	All Students	32,801	29	15.34	6.65	0.86	2.48
	2	Economically Disadvantaged	12,959	29	12.15	6.14	0.84	2.47
	2	African American	3,141	29	12.42	6.16	0.84	2.47
	2	Asian	2,432	29	19.00	6.17	0.85	2.37
	2	Hispanic	7,332	29	12.00	6.23	0.84	2.47
	2	Native American	82	29	14.74	6.12	0.84	2.47
	2	White	18,438	29	16.64	6.24	0.84	2.46
	2	Pacific Islander/Hawaiian	36	29	15.03	7.35	0.89	2.47
	2	Multi-race	1,336	29	15.93	6.56	0.86	2.49
	2	Male	16,882	29	14.71	6.61	0.86	2.46
	2	Female	15,907	29	16.01	6.62	0.86	2.48
	2	Limited English Proficient	2,124	29	7.29	4.13	0.70	2.26
	2	Former LEP	3,927	29	14.24	5.91	0.82	2.50
	2	LEPFLEP	6,051	29	11.80	6.30	0.85	2.47
	2	Special Education	6,534	29	10.26	5.60	0.82	2.39
	2	Plan504	2,131	29	15.37	6.17	0.84	2.48
	2	Title 1	13,883	29	13.00	6.43	0.85	2.49
	2	In Person CBT	26,204	29	15.61	6.57	0.86	2.48
	2	Remote CBT	6,372	29	14.17	6.82	0.87	2.46

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
7	1	All Students	33,423	22	11.27	4.99	0.81	2.20
	1	Economically Disadvantaged	12,852	22	9.02	4.70	0.79	2.16
	1	African American	3,172	22	9.28	4.75	0.79	2.17
	1	Asian	2,490	22	13.84	4.62	0.79	2.14
	1	Hispanic	7,181	22	8.92	4.80	0.80	2.16
	1	Native American	75	22	9.76	5.01	0.82	2.14
	1	White	19,108	22	12.13	4.69	0.78	2.19
	1	Pacific Islander/Hawaiian	34	22	10.76	5.69	0.84	2.25
	1	Multi-race	1,356	22	11.59	5.12	0.82	2.19
	1	Male	17,110	22	10.29	4.85	0.80	2.19
	1	Female	16,287	22	12.30	4.92	0.80	2.18
	1	Limited English Proficient	2,281	22	5.35	3.25	0.65	1.92
	1	Former LEP	3,334	22	10.27	4.32	0.74	2.21
	1	LEPFLEP	5,615	22	8.27	4.61	0.78	2.14
	1	Special Education	6,450	22	7.28	4.11	0.75	2.05
	1	Plan504	2,326	22	11.01	4.61	0.78	2.19
	1	Title 1	13,385	22	9.67	4.86	0.80	2.18
	1	In Person CBT	25,992	22	11.42	4.98	0.80	2.20
	1	Remote CBT	7,047	22	10.65	4.98	0.81	2.17
	2	All Students	33,305	28	15.85	5.90	0.84	2.33
	2	Economically Disadvantaged	12,889	28	13.04	5.68	0.83	2.33
	2	African American	3,084	28	13.28	5.72	0.83	2.34
	2	Asian	2,446	28	18.98	5.39	0.83	2.25
	2	Hispanic	7,353	28	12.81	5.76	0.84	2.34
	2	Native American	72	28	14.86	5.96	0.85	2.33
	2	White	19,028	28	17.00	5.41	0.82	2.30
	2	Pacific Islander/Hawaiian	26	28	15.96	4.77	0.74	2.44
	2	Multi-race	1,288	28	16.59	5.78	0.84	2.30
	2	Male	17,108	28	15.16	5.86	0.84	2.32
	2	Female	16,175	28	16.58	5.84	0.84	2.31
	2	Limited English Proficient	2,280	28	8.44	4.02	0.69	2.23
	2	Former LEP	3,340	28	14.64	5.20	0.79	2.38
	2	LEPFLEP	5,620	28	12.12	5.65	0.83	2.36
	2	Special Education	6,242	28	10.99	5.16	0.80	2.29
	2	Plan504	2,310	28	15.76	5.44	0.82	2.30
	2	Title 1	13,375	28	13.76	5.82	0.84	2.33
	2	In Person CBT	26,118	28	16.06	5.86	0.84	2.33
	2	Remote CBT	6,939	28	14.99	5.95	0.85	2.31

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
8	1	All Students	33,567	21	11.42	4.95	0.84	2.00
	1	Economically Disadvantaged	12,670	21	9.06	4.77	0.83	1.98
	1	African American	3,129	21	9.34	4.77	0.83	1.98
	1	Asian	2,440	21	14.04	4.44	0.82	1.89
	1	Hispanic	7,254	21	8.97	4.88	0.83	2.00
	1	Native American	88	21	9.77	4.99	0.85	1.94
	1	White	19,315	21	12.32	4.59	0.82	1.97
	1	Pacific Islander/Hawaiian	34	21	10.56	5.42	0.89	1.82
	1	Multi-race	1,296	21	11.95	4.90	0.83	2.01
	1	Male	17,136	21	10.61	4.95	0.84	1.99
	1	Female	16,404	21	12.26	4.82	0.83	1.97
	1	Limited English Proficient	2,209	21	5.01	3.20	0.69	1.78
	1	Former LEP	2,284	21	10.24	4.23	0.77	2.01
	1	LEPFLEP	4,493	21	7.67	4.58	0.82	1.97
	1	Special Education	6,239	21	7.37	4.32	0.81	1.90
	1	Plan504	2,524	21	11.19	4.53	0.81	1.98
	1	Title 1	12,748	21	9.73	4.91	0.83	2.01
	1	In Person CBT	25,883	21	11.64	4.93	0.84	2.00
	1	Remote CBT	7,270	21	10.63	4.98	0.84	2.00
	2	All Students	33,191	29	17.56	6.00	0.85	2.35
	2	Economically Disadvantaged	12,416	29	14.70	5.98	0.84	2.37
	2	African American	3,129	29	15.25	5.86	0.84	2.37
	2	Asian	2,405	29	21.00	5.33	0.83	2.23
	2	Hispanic	7,126	29	14.58	6.13	0.85	2.38
	2	Native American	60	29	16.77	4.76	0.77	2.28
	2	White	19,187	29	18.59	5.45	0.82	2.30
	2	Pacific Islander/Hawaiian	30	29	15.87	5.37	0.78	2.54
	2	Multi-race	1,248	29	18.01	6.19	0.85	2.36
	2	Male	17,045	29	16.57	5.96	0.85	2.34
	2	Female	16,113	29	18.61	5.85	0.84	2.32
	2	Title 1	12,389	29	15.51	6.09	0.85	2.38
	2	LEPFLEP	4,499	29	13.17	6.02	0.84	2.40
	2	Limited English Proficient	2,240	29	9.79	4.71	0.76	2.32
	2	Former LEP	2,259	29	16.52	5.25	0.79	2.38
	2	Special Education	6,158	29	12.46	5.46	0.81	2.35
	2	Plan504	2,413	29	17.29	5.47	0.82	2.31
	2	In Person CBT	25,901	29	17.78	5.95	0.84	2.34
	2	Remote CBT	6,964	29	16.73	6.13	0.86	2.33

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
	--	All Students	63,485	51	35.79	9.97	0.91	3.07
	--	Economically Disadvantaged	21,141	51	30.23	10.93	0.91	3.31
	--	African American	5,591	51	30.73	10.30	0.90	3.27
	--	Asian	4,345	51	39.79	8.34	0.89	2.71
	--	Hispanic	12,091	51	29.37	11.51	0.92	3.33
	--	Native American	151	51	31.70	10.24	0.90	3.26
	--	White	39,036	51	38.01	8.31	0.88	2.92
	--	Pacific Islander/Hawaiian	52	51	35.94	10.93	0.92	3.08
	--	Multi-race	2,219	51	37.02	9.23	0.89	3.00
10	--	Male	32,262	51	34.55	10.39	0.91	3.13
	--	Female	31,132	51	37.08	9.36	0.90	2.95
	--	Limited English Proficient	3,830	51	16.72	8.84	0.87	3.21
	--	Former LEP	2,641	51	31.91	8.22	0.84	3.25
	--	LEPFLEP	6,471	51	22.92	11.38	0.91	3.40
	--	Special Education	10,617	51	27.26	10.10	0.89	3.33
	--	Plan504	5,017	51	36.59	8.31	0.87	3.02
	--	Title 1	19,615	51	31.56	10.62	0.91	3.25
	--	In Person CBT	61,510	51	35.79	9.96	0.91	3.07
	--	Remote CBT	0	--	--	--	--	--

**Dashes in the Session column indicate a single session.*

Table M-2. Subgroup Reliabilities—Mathematics

Grade	Session	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
				Maximum	Mean			
3	1	All Students	31,459	24	11.34	5.87	0.87	2.14
	1	Economically Disadvantaged	12,791	24	8.32	5.07	0.83	2.07
	1	African American	2,892	24	8.19	5.16	0.84	2.05
	1	Asian	2,381	24	14.89	5.66	0.86	2.09
	1	Hispanic	7,324	24	7.97	4.99	0.83	2.04
	1	Native American	62	24	10.66	5.69	0.86	2.13
	1	White	17,341	24	12.72	5.48	0.85	2.14
	1	Pacific Islander/Hawaiian	15	24	11.13	5.53	0.85	2.14
	1	Multi-race	1,440	24	12.30	5.91	0.87	2.14
	1	Male	15,972	24	11.60	5.98	0.87	2.14
	1	Female	15,480	24	11.07	5.75	0.86	2.14
	1	Limited English Proficient	4,573	24	7.04	4.59	0.81	1.99
	1	Former LEP	2,077	24	12.37	5.62	0.86	2.14
	1	LEPFLEP	6,650	24	8.71	5.52	0.86	2.07
	1	Special Education	6,038	24	7.76	5.13	0.84	2.05
	1	Plan504	1,285	24	11.46	5.60	0.85	2.15
	1	Title 1	17,045	24	9.31	5.40	0.85	2.10
	1	In Person CBT	25,437	24	11.42	5.86	0.87	2.14
	1	Remote CBT	5,206	24	10.76	5.92	0.87	2.13
	2	All Students	31,241	24	11.64	5.99	0.87	2.19
	2	Economically Disadvantaged	12,641	24	8.61	5.22	0.83	2.13
	2	African American	2,829	24	8.66	5.35	0.84	2.14
	2	Asian	2,466	24	15.52	5.77	0.87	2.09
	2	Hispanic	7,109	24	8.36	5.21	0.83	2.12
	2	Native American	47	24	9.06	5.98	0.87	2.12
	2	White	17,288	24	12.86	5.59	0.85	2.19
	2	Pacific Islander/Hawaiian	20	24	13.10	5.71	0.86	2.13
	2	Multi-race	1,471	24	12.41	6.16	0.87	2.19
	2	Male	15,973	24	11.74	6.05	0.87	2.17
	2	Female	15,264	24	11.53	5.92	0.86	2.20
	2	Limited English Proficient	4,434	24	7.53	4.92	0.82	2.07
	2	Former LEP	1,966	24	12.71	5.91	0.86	2.19
	2	LEPFLEP	6,400	24	9.12	5.76	0.86	2.14
	2	Special Education	5,885	24	8.02	5.30	0.84	2.10
	2	Plan504	1,266	24	11.42	5.72	0.85	2.19
	2	Title 1	16,820	24	9.60	5.56	0.85	2.16
	2	In Person CBT	25,495	24	11.65	5.96	0.87	2.19
	2	Remote CBT	5,141	24	11.23	6.12	0.87	2.17

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
4	1	All Students	32,189	27	13.65	6.82	0.88	2.37
	1	Economically Disadvantaged	12,936	27	10.01	5.94	0.85	2.31
	1	African American	2,860	27	9.88	5.89	0.85	2.31
	1	Asian	2,380	27	17.99	6.55	0.88	2.25
	1	Hispanic	7,383	27	9.67	5.92	0.85	2.29
	1	Native American	64	27	11.23	5.91	0.85	2.33
	1	White	18,000	27	15.26	6.29	0.86	2.34
	1	Pacific Islander/Hawaiian	28	27	13.39	7.85	0.90	2.49
	1	Multi-race	1,468	27	14.33	6.99	0.89	2.36
	1	Male	16,462	27	13.84	6.90	0.88	2.36
	1	Female	15,722	27	13.44	6.74	0.88	2.38
	1	Limited English Proficient	3,883	27	7.69	5.12	0.82	2.16
	1	Former LEP	2,395	27	14.41	6.26	0.86	2.35
	1	LEPFLEP	6,278	27	10.25	6.47	0.87	2.32
	1	Special Education	6,410	27	9.04	5.89	0.85	2.26
	1	Plan504	1,651	27	13.54	6.44	0.87	2.36
	1	Title 1	16,885	27	11.22	6.36	0.86	2.35
	1	In Person CBT	25,865	27	13.86	6.80	0.88	2.36
	1	Remote CBT	5,462	27	12.42	6.89	0.88	2.40
	2	All Students	32,026	27	12.96	6.83	0.89	2.29
	2	Economically Disadvantaged	12,858	27	9.23	5.86	0.85	2.25
	2	African American	2,993	27	8.98	5.77	0.85	2.23
	2	Asian	2,374	27	17.60	6.53	0.89	2.18
	2	Hispanic	7,369	27	8.82	5.74	0.85	2.23
	2	Native American	78	27	10.46	5.86	0.85	2.26
	2	White	17,763	27	14.68	6.28	0.87	2.28
	2	Pacific Islander/Hawaiian	34	27	11.74	8.17	0.93	2.14
	2	Multi-race	1,408	27	13.80	6.94	0.89	2.27
	2	Male	16,339	27	13.39	6.94	0.89	2.28
	2	Female	15,683	27	12.52	6.69	0.88	2.30
	2	Limited English Proficient	3,940	27	7.07	5.01	0.82	2.11
	2	Former LEP	2,384	27	13.45	6.41	0.87	2.30
	2	LEPFLEP	6,324	27	9.47	6.38	0.88	2.23
	2	Special Education	6,279	27	8.49	5.87	0.86	2.20
	2	Plan504	1,597	27	13.04	6.50	0.87	2.31
	2	Title 1	17,025	27	10.44	6.26	0.87	2.28
	2	In Person CBT	25,892	27	13.10	6.78	0.89	2.29
	2	Remote CBT	5,529	27	12.04	7.04	0.89	2.31

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
5	1	All Students	32,411	27	13.06	6.47	0.84	2.56
	1	Economically Disadvantaged	12,748	27	9.72	5.47	0.79	2.49
	1	African American	2,929	27	9.74	5.49	0.80	2.48
	1	Asian	2,320	27	17.63	6.46	0.86	2.42
	1	Hispanic	7,297	27	9.44	5.45	0.80	2.46
	1	Native American	69	27	11.49	6.29	0.83	2.57
	1	White	18,365	27	14.43	6.07	0.83	2.54
	1	Pacific Islander/Hawaiian	29	27	13.97	7.71	0.90	2.47
	1	Multi-race	1,395	27	13.52	6.65	0.85	2.54
	1	Male	16,588	27	13.21	6.62	0.85	2.54
	1	Female	15,815	27	12.90	6.29	0.83	2.57
	1	LEPFLEP	6,263	27	9.99	6.08	0.83	2.49
	1	Limited English Proficient	2,715	27	6.74	4.35	0.74	2.23
	1	Former LEP	3,548	27	12.48	6.04	0.82	2.56
	1	Special Education	6,380	27	8.58	5.38	0.80	2.42
	1	Plan504	2,018	27	13.09	6.08	0.82	2.56
	1	Title 1	15,032	27	10.56	5.83	0.81	2.51
	1	In Person CBT	26,131	27	13.28	6.46	0.84	2.55
	1	Remote CBT	5,631	27	12.21	6.44	0.84	2.55
	2	All Students	32,116	27	12.05	6.40	0.85	2.51
	2	Economically Disadvantaged	12,669	27	8.66	5.17	0.78	2.40
	2	African American	2,929	27	8.61	5.23	0.79	2.39
	2	Asian	2,384	27	16.88	6.57	0.87	2.38
	2	Hispanic	7,170	27	8.41	5.18	0.79	2.40
	2	Native American	61	27	10.46	5.87	0.82	2.51
	2	White	18,156	27	13.34	6.02	0.83	2.49
	2	Pacific Islander/Hawaiian	19	27	15.11	7.26	0.88	2.55
	2	Multi-race	1,395	27	13.10	6.64	0.86	2.53
	2	Male	16,412	27	12.10	6.60	0.86	2.51
	2	Female	15,696	27	12.01	6.18	0.84	2.50
	2	Limited English Proficient	2,659	27	6.12	4.29	0.74	2.18
	2	Former LEP	3,602	27	11.45	5.90	0.82	2.49
	2	LEPFLEP	6,261	27	9.18	5.90	0.83	2.44
	2	Special Education	6,315	27	7.65	5.12	0.79	2.33
	2	Plan504	1,928	27	11.62	5.89	0.82	2.49
	2	Title 1	15,061	27	9.53	5.62	0.81	2.45
	2	In Person CBT	26,077	27	12.22	6.39	0.85	2.50
	2	Remote CBT	5,645	27	11.10	6.36	0.85	2.50

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
6	1	All Students	32,843	27	12.01	6.64	0.86	2.48
	1	Economically Disadvantaged	12,943	27	8.70	5.41	0.81	2.34
	1	African American	3,198	27	8.53	5.30	0.81	2.34
	1	Asian	2,407	27	17.59	6.81	0.88	2.38
	1	Hispanic	7,219	27	8.54	5.30	0.81	2.33
	1	Native American	85	27	11.13	6.29	0.85	2.46
	1	White	18,455	27	13.19	6.33	0.85	2.48
	1	Pacific Islander/Hawaiian	36	27	12.31	6.80	0.87	2.45
	1	Multi-race	1,434	27	12.65	7.11	0.88	2.49
	1	Male	16,867	27	11.78	6.69	0.87	2.46
	1	Female	15,956	27	12.25	6.58	0.86	2.49
	1	Limited English Proficient	2,108	27	5.82	4.06	0.75	2.05
	1	Former LEP	3,832	27	10.80	6.09	0.84	2.42
	1	LEPFLEP	5,940	27	9.03	5.95	0.84	2.36
	1	Special Education	6,523	27	7.24	4.82	0.78	2.23
	1	Plan504	2,148	27	11.66	6.15	0.84	2.46
	1	Title 1	13,784	27	9.55	5.83	0.83	2.40
	1	In Person CBT	26,153	27	12.19	6.66	0.86	2.47
	1	Remote CBT	6,322	27	11.25	6.53	0.86	2.45
	2	All Students	32,678	27	11.70	6.13	0.84	2.44
	2	Economically Disadvantaged	12,877	27	8.57	5.05	0.78	2.34
	2	African American	3,057	27	8.62	5.05	0.78	2.34
	2	Asian	2,410	27	16.83	6.43	0.87	2.33
	2	Hispanic	7,286	27	8.30	5.05	0.79	2.33
	2	Native American	75	27	11.00	5.49	0.81	2.41
	2	White	18,429	27	12.85	5.73	0.82	2.43
	2	Pacific Islander/Hawaiian	31	27	13.26	6.41	0.86	2.42
	2	Multi-race	1,386	27	12.11	6.23	0.85	2.45
	2	Male	16,879	27	11.68	6.19	0.84	2.44
	2	Female	15,790	27	11.72	6.06	0.84	2.45
	2	Limited English Proficient	2,124	27	5.40	3.75	0.71	2.02
	2	Former LEP	3,887	27	10.69	5.70	0.82	2.40
	2	LEPFLEP	6,011	27	8.82	5.69	0.83	2.36
	2	Special Education	6,282	27	7.34	4.72	0.78	2.23
	2	Plan504	2,137	27	11.46	5.57	0.81	2.41
	2	Title 1	13,765	27	9.32	5.42	0.81	2.39
	2	In Person CBT	26,082	27	11.92	6.07	0.84	2.44
	2	Remote CBT	6,383	27	10.75	6.28	0.85	2.45

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
7	1	All Students	33,404	27	11.86	7.01	0.88	2.41
	1	Economically Disadvantaged	12,848	27	8.48	5.76	0.84	2.30
	1	African American	3,143	27	8.58	5.86	0.85	2.30
	1	Asian	2,484	27	18.08	7.02	0.89	2.30
	1	Hispanic	7,225	27	8.32	5.76	0.84	2.29
	1	Native American	75	27	9.25	6.52	0.87	2.31
	1	White	19,133	27	12.92	6.69	0.87	2.42
	1	Pacific Islander/Hawaiian	31	27	12.32	7.15	0.88	2.49
	1	Multi-race	1,304	27	12.17	7.30	0.89	2.42
	1	Male	17,159	27	12.06	7.14	0.89	2.40
	1	Female	16,215	27	11.64	6.87	0.88	2.42
	1	Limited English Proficient	2,303	27	5.37	4.40	0.79	2.01
	1	Former LEP	3,327	27	10.62	6.30	0.85	2.41
	1	LEPFLEP	5,630	27	8.47	6.16	0.86	2.29
	1	Special Education	6,449	27	6.55	5.12	0.83	2.12
	1	Plan504	2,292	27	11.14	6.30	0.86	2.38
	1	Title 1	13,330	27	9.42	6.25	0.86	2.35
	1	In Person CBT	26,056	27	11.84	7.04	0.89	2.38
	1	Remote CBT	6,966	27	11.91	6.92	0.87	2.46
	2	All Students	33,232	27	10.16	5.94	0.86	2.21
	2	Economically Disadvantaged	12,848	27	7.35	4.60	0.81	2.02
	2	African American	3,134	27	7.26	4.36	0.79	2.00
	2	Asian	2,465	27	15.51	6.71	0.88	2.35
	2	Hispanic	7,301	27	7.17	4.58	0.81	2.01
	2	Native American	69	27	8.67	5.28	0.84	2.13
	2	White	18,900	27	11.07	5.71	0.84	2.25
	2	Pacific Islander/Hawaiian	30	27	9.77	5.35	0.84	2.17
	2	Multi-race	1,327	27	10.58	6.27	0.87	2.25
	2	Male	17,062	27	10.24	6.05	0.87	2.21
	2	Female	16,151	27	10.07	5.82	0.86	2.21
	2	Limited English Proficient	2,252	27	4.74	3.16	0.69	1.76
	2	Former LEP	3,341	27	8.82	5.17	0.83	2.12
	2	LEPFLEP	5,593	27	7.18	4.90	0.83	2.02
	2	Special Education	6,206	27	5.97	4.00	0.78	1.88
	2	Plan504	2,330	27	9.76	5.41	0.84	2.19
	2	Title 1	13,398	27	8.01	4.95	0.82	2.07
	2	In Person CBT	25,911	27	10.28	5.93	0.86	2.22
	2	Remote CBT	7,061	27	9.59	5.91	0.86	2.19

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
8	1	All Students	33,473	27	11.53	6.56	0.87	2.40
	1	Economically Disadvantaged	12,570	27	8.45	5.29	0.83	2.21
	1	African American	3,136	27	8.58	5.39	0.83	2.23
	1	Asian	2,422	27	17.94	6.97	0.88	2.43
	1	Hispanic	7,235	27	8.39	5.21	0.82	2.20
	1	Native American	86	27	8.42	5.00	0.82	2.15
	1	White	19,266	27	12.36	6.26	0.85	2.41
	1	Pacific Islander/Hawaiian	34	27	9.38	5.57	0.82	2.36
	1	Multi-race	1,283	27	12.10	7.10	0.88	2.43
	1	Male	17,150	27	11.37	6.62	0.87	2.37
	1	Female	16,293	27	11.69	6.49	0.86	2.43
	1	Limited English Proficient	2,271	27	5.98	3.93	0.75	1.96
	1	Former LEP	2,291	27	10.25	5.98	0.85	2.35
	1	LEPFLEP	4,562	27	8.12	5.50	0.84	2.20
	1	Special Education	6,252	27	6.85	4.43	0.79	2.05
	1	Plan504	2,449	27	10.67	5.82	0.84	2.32
	1	Title 1	12,602	27	9.44	5.83	0.85	2.29
	1	In Person CBT	25,854	27	11.52	6.51	0.87	2.39
	1	Remote CBT	7,200	27	11.52	6.75	0.87	2.42
	2	All Students	33,287	27	12.74	6.56	0.87	2.36
	2	Economically Disadvantaged	12,559	27	9.49	5.63	0.83	2.30
	2	African American	3,161	27	9.43	5.64	0.83	2.30
	2	Asian	2,438	27	18.16	6.58	0.89	2.22
	2	Hispanic	7,149	27	9.46	5.72	0.84	2.31
	2	Native American	63	27	11.27	6.54	0.88	2.30
	2	White	19,186	27	13.79	6.14	0.85	2.36
	2	Pacific Islander/Hawaiian	30	27	11.07	5.25	0.82	2.25
	2	Multi-race	1,253	27	13.22	6.88	0.88	2.36
	2	Male	17,067	27	12.55	6.60	0.87	2.35
	2	Female	16,191	27	12.93	6.50	0.87	2.37
	2	Limited English Proficient	2,201	27	6.15	4.15	0.76	2.04
	2	Former LEP	2,254	27	11.46	5.96	0.85	2.35
	2	LEPFLEP	4,455	27	8.84	5.79	0.85	2.26
	2	Special Education	6,120	27	7.47	4.83	0.80	2.17
	2	Plan504	2,468	27	12.10	5.81	0.84	2.36
	2	Title 1	12,567	27	10.33	6.02	0.85	2.34
	2	In Person CBT	25,781	27	13.00	6.50	0.87	2.36
	2	Remote CBT	7,171	27	11.75	6.70	0.87	2.38

continued

Grade	Session	Subgroup	Number of Students	Raw Score		Alpha	SEM
				Maximum	Mean	Standard Deviation		
	--	All Students	63,198	60	31.72	15.01	0.94	3.75
	--	Economically Disadvantaged	20,960	60	23.17	12.68	0.92	3.61
	--	African American	5,571	60	23.10	12.20	0.91	3.61
	--	Asian	4,343	60	43.66	14.49	0.95	3.36
	--	Hispanic	11,966	60	22.53	12.70	0.92	3.58
	--	Native American	148	60	25.28	13.09	0.92	3.64
	--	White	38,918	60	34.36	14.03	0.93	3.73
	--	Pacific Islander/Hawaiian	52	60	32.79	14.53	0.94	3.68
	--	Multi-race	2,200	60	33.61	15.79	0.94	3.74
10	--	Male	32,127	60	31.35	15.32	0.94	3.74
	--	Female	30,982	60	32.11	14.68	0.93	3.75
	--	Limited English Proficient	3,808	60	13.70	7.34	0.82	3.08
	--	Former LEP	2,624	60	25.31	12.90	0.92	3.67
	--	LEPFLEP	6,432	60	18.43	11.50	0.91	3.41
	--	Special Education	10,540	60	19.06	10.60	0.89	3.45
	--	Plan504	4,987	60	31.35	13.59	0.92	3.75
	--	Title 1	19,457	60	25.04	13.18	0.92	3.66
	--	In Person CBT	61,202	60	31.69	15.02	0.94	3.74
	--	Remote CBT	0	--	--	--	--	--

**Dashes in the Session column indicate a single session.*

Table M-3. Subgroup Reliabilities—STE

Grade	Session	Subgroup	Number of Students	Raw Score		Alpha	SEM
				Maximum	Mean	Standard Deviation		
	1	All Students	31,849	27	14.43	5.85	0.82	2.47
	1	Economically Disadvantaged	12,545	27	11.51	5.40	0.79	2.48
	1	African American	2,880	27	11.24	5.33	0.79	2.47
	1	Asian	2,318	27	16.98	5.63	0.82	2.39
	1	Hispanic	7,170	27	11.20	5.39	0.79	2.47
	1	Native American	59	27	13.20	5.89	0.82	2.52
5	1	White	18,047	27	15.84	5.38	0.79	2.44
	1	Pacific Islander/Hawaiian	19	27	16.58	5.46	0.79	2.51
	1	Multi-race	1,352	27	15.22	5.91	0.83	2.44
	1	Male	16,444	27	14.66	5.95	0.83	2.45
	1	Female	15,398	27	14.18	5.74	0.81	2.47
	1	Limited English Proficient	2,639	27	8.00	4.13	0.69	2.31
	1	Former LEP	3,507	27	13.59	5.23	0.77	2.50

continued

Grade	Session	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
				Maximum	Mean			
	1	LEPFLEP	6,146	27	11.19	5.53	0.80	2.46
	1	Special Education	6,344	27	10.63	5.42	0.80	2.43
	1	Plan504	1,940	27	14.75	5.62	0.81	2.47
	1	Title 1	14,777	27	12.21	5.58	0.80	2.49
	1	In Person CBT	25,566	27	14.68	5.76	0.82	2.47
	1	Remote CBT	5,655	27	13.26	6.11	0.84	2.46
	2	All Students	31,876	27	14.54	5.36	0.83	2.24
	2	Economically Disadvantaged	12,592	27	11.80	5.00	0.80	2.27
	2	African American	2,848	27	11.70	4.89	0.78	2.28
	2	Asian	2,324	27	16.90	5.14	0.82	2.19
	2	Hispanic	7,155	27	11.55	5.02	0.80	2.27
	2	Native American	71	27	13.58	4.88	0.78	2.29
	2	White	18,048	27	15.80	4.89	0.80	2.20
	2	Pacific Islander/Hawaiian	27	27	15.85	6.13	0.86	2.33
	2	Multi-race	1,397	27	15.35	5.51	0.84	2.22
	2	Male	16,170	27	14.63	5.43	0.83	2.23
	2	Female	15,696	27	14.44	5.28	0.82	2.24
	2	Title 1	14,876	27	12.53	5.18	0.81	2.26
	2	Limited English Proficient	2,684	27	8.51	4.06	0.70	2.21
	2	Former LEP	3,556	27	13.91	4.83	0.78	2.27
5	2	LEPFLEP	6,240	27	11.59	5.25	0.81	2.26
	2	Special Education	6,233	27	11.20	5.16	0.81	2.25
	2	Plan504	1,957	27	15.04	4.95	0.80	2.23
	3	All Students	666	41	24.19	8.34	0.89	2.83
	3	Economically Disadvantaged	188	41	19.21	8.06	0.87	2.90
	3	African American	104	41	17.52	7.30	0.84	2.91
	3	Asian	57	41	27.82	7.21	0.86	2.74
	3	Hispanic	85	41	19.32	8.34	0.88	2.89
	3	Native American	1	---	--	--	--	--
	3	White	378	41	26.50	7.00	0.84	2.77
	3	Pacific Islander/Hawaiian	2	--	--	--	--	--
	3	Multi-race	39	41	25.82	9.72	0.92	2.71
	3	Male	327	41	24.43	8.46	0.89	2.79
	3	Female	339	41	23.97	8.22	0.88	2.86
	3	Limited English Proficient	30	41	13.00	5.95	0.78	2.77
	3	Former LEP	78	41	21.44	7.79	0.86	2.90
	3	LEPFLEP	108	41	19.09	8.23	0.88	2.88
	3	Special Education	105	41	16.79	8.10	0.88	2.83
	3	Plan504	38	41	25.05	6.35	0.80	2.86
	3	Title 1	330	41	21.60	8.61	0.89	2.87
	3	In Person CBT	666	41	24.19	8.34	0.89	2.83

continued

Grade	Session	Subgroup	Number of Students	Raw Score			Alpha	SEM
				Maximum	Mean	Standard Deviation		
	3	Remote CBT	0	--	--	--	--	--
5	3	In Person CBT	25,908	41	14.72	5.28	0.82	2.23
	3	Remote CBT	5,584	41	13.51	5.60	0.84	2.26
	1	All Students	25,652	27	14.40	5.34	0.82	2.26
	1	Economically Disadvantaged	8,471	27	11.44	4.99	0.79	2.26
	1	African American	2,080	27	11.20	4.86	0.78	2.25
	1	Asian	1,500	27	17.32	4.97	0.81	2.16
	1	Hispanic	4,646	27	11.25	5.08	0.80	2.26
	1	Native American	52	27	13.08	5.71	0.83	2.37
	1	White	16,377	27	15.41	4.92	0.79	2.25
	1	Pacific Islander/Hawaiian	20	27	12.95	5.18	0.80	2.32
	1	Multi-race	971	27	14.85	5.41	0.82	2.26
	1	Male	13,347	27	14.42	5.46	0.83	2.24
	1	Female	12,282	27	14.38	5.20	0.81	2.29
	1	Limited English Proficient	1,565	27	7.67	3.73	0.67	2.13
	1	Former LEP	1,443	27	12.65	4.72	0.76	2.29
	1	LEPFLEP	3,008	27	10.06	4.91	0.79	2.23
	1	Special Education	5,029	27	10.38	4.85	0.79	2.23
	1	Plan504	2,031	27	14.49	4.94	0.79	2.26
	1	Title 1	7,795	27	12.07	5.13	0.81	2.26
	1	In Person CBT	25,234	27	14.40	5.33	0.82	2.26
	1	Remote CBT	0	--	--	--	--	--
8	2	All Students	25,614	27	12.80	5.28	0.81	2.29
	2	Economically Disadvantaged	8,270	27	9.93	4.58	0.77	2.22
	2	African American	2,067	27	9.77	4.51	0.76	2.21
	2	Asian	1,454	27	15.99	5.52	0.83	2.27
	2	Hispanic	4,518	27	9.75	4.59	0.77	2.21
	2	Native American	66	27	10.73	4.23	0.73	2.18
	2	White	16,570	27	13.70	4.98	0.79	2.30
	2	Pacific Islander/Hawaiian	20	27	9.95	3.61	0.61	2.26
	2	Multi-race	912	27	13.46	5.51	0.83	2.29
	2	Male	13,405	27	12.69	5.44	0.82	2.29
	2	Female	12,183	27	12.91	5.09	0.80	2.29
	2	Title 1	7,661	27	10.50	4.83	0.78	2.24
	2	LEPFLEP	2,936	27	8.59	4.44	0.76	2.16
	2	Limited English Proficient	1,583	27	6.57	3.22	0.59	2.05
	2	Former LEP	1,353	27	10.95	4.51	0.75	2.23
	2	Special Education	4,926	27	8.89	4.44	0.76	2.18
	2	Plan504	1,923	27	12.94	4.82	0.77	2.29
	2	In Person CBT	25,294	27	12.79	5.29	0.81	2.29
	2	Remote CBT	0	--	--	--	--	--

continued

Grade	Session	Subgroup	Number of Students	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
	3	All Students	824	41	23.09	8.25	0.88	2.81
	3	Economically Disadvantaged	273	41	18.66	7.64	0.86	2.81
	3	African American	124	41	17.35	7.54	0.86	2.83
	3	Asian	43	41	26.53	7.86	0.88	2.76
	3	Hispanic	118	41	18.19	7.32	0.85	2.81
	3	Native American	0	--	--	--	--	--
	3	White	497	41	25.27	7.48	0.86	2.77
	3	Pacific Islander/Hawaiian	1	--	--	--	--	--
	3	Multi-race	41	41	24.66	7.95	0.88	2.76
8	3	Male	431	41	22.97	8.03	0.88	2.80
	3	Female	393	41	23.23	8.49	0.89	2.81
	3	Limited English Proficient	41	41	11.27	4.27	0.60	2.70
	3	Former LEP	46	41	19.54	6.06	0.78	2.85
	3	LEPFLEP	87	41	15.64	6.71	0.82	2.82
	3	Special Education	152	41	16.27	7.25	0.85	2.83
	3	Plan504	53	41	23.40	7.81	0.87	2.85
	3	Title 1	527	41	20.50	7.64	0.86	2.82
	3	In Person CBT	824	41	23.09	8.25	0.88	2.81
	3	Remote CBT	0	--	--	--	--	--

Table M-4. Subgroup Reliabilities—Biology

Grade	Session*	Subgroup	Number of Students	Raw Score			Alpha	SEM
				Maximum	Mean	Standard Deviation		
	--	All Students	36,383	60	37.39	12.22	0.91	3.59
	--	Economically Disadvantaged	12,633	60	30.62	11.97	0.91	3.65
	--	African American	3,138	60	31.77	11.68	0.90	3.64
	--	Asian	2,430	60	44.88	10.86	0.91	3.27
	--	Hispanic	7,358	60	29.47	11.99	0.91	3.65
	--	Native American	67	60	36.57	12.46	0.91	3.68
	--	White	22,115	60	39.96	10.85	0.90	3.48
	--	Pacific Islander/Hawaiian	29	60	37.07	14.27	0.93	3.74
	--	Multi-race	1,246	60	38.07	12.65	0.92	3.60
HS	--	Male	18,183	60	36.61	12.52	0.92	3.59
	--	Female	18,152	60	38.15	11.88	0.91	3.57
	--	Limited English Proficient	1,839	60	19.45	8.93	0.86	3.37
	--	Former LEP	1,804	60	32.58	11.26	0.90	3.64
	--	LEPFLEP	3,643	60	25.95	12.09	0.91	3.61
	--	Special Education	5,904	60	26.83	11.20	0.90	3.58
	--	Plan504	2,697	60	37.05	11.39	0.90	3.57
	--	Title 1	11,885	60	32.19	11.99	0.91	3.64
	--	In Person CBT	0	--	--	--	--	--
	--	Remote CBT	0	--	--	--	--	--

**Dashes in the Session column indicate a single session.*

Table M-5. Subgroup Reliabilities—Chemistry

Grade	Session*	Subgroup	Number of Students	Raw Score			Alpha	SEM
				Maximum	Mean	Standard Deviation		
	--	All Students	16	60	29.69	10.76	0.89	3.53
	--	Economically Disadvantaged	7	--	--	--	--	--
	--	African American	2	--	--	--	--	--
	--	Asian	3	--	--	--	--	--
	--	Hispanic	2	--	--	--	--	--
	--	Native American	0	--	--	--	--	--
	--	White	9	--	--	--	--	--
	--	Pacific Islander/Hawaiian	0	--	--	--	--	--
	--	Multi-race	0	--	--	--	--	--
HS	--	Male	7	--	--	--	--	--
	--	Female	9	--	--	--	--	--
	--	Limited English Proficient	1	--	--	--	--	--
	--	Former LEP	1	--	--	--	--	--
	--	LEPFLEP	2	--	--	--	--	--
	--	Special Education	2	--	--	--	--	--
	--	Plan504	1	--	--	--	--	--
	--	Title 1	2	--	--	--	--	--
	--	In Person CBT	0	--	--	--	--	--
	--	Remote CBT	0	--	--	--	--	--

**Dashes in the Session column indicate a single session.*

Table M-7. Subgroup Reliabilities—Introductory Physics

Grade	Session*	Subgroup	Number of Students	Raw Score			Alpha	SEM
				Maximum	Mean	Standard Deviation		
	--	All Students	11,563	60	36.40	12.71	0.92	3.59
	--	Economically Disadvantaged	3,397	60	27.94	11.65	0.90	3.64
	--	African American	1,103	60	26.21	11.05	0.89	3.61
	--	Asian	920	60	44.10	11.23	0.91	3.29
	--	Hispanic	1,990	60	28.44	11.92	0.91	3.65
	--	Native American	17	60	32.76	12.44	0.92	3.54
	--	White	7,051	60	39.09	11.28	0.90	3.49
	--	Pacific Islander/Hawaiian	3	--	--	--	--	--
	--	Multi-race	479	60	38.67	13.37	0.93	3.53
HS	--	Male	5,936	60	36.85	12.95	0.92	3.57
	--	Female	5,608	60	35.90	12.44	0.92	3.59
	--	Limited English Proficient	536	60	19.48	9.54	0.87	3.44
	--	Former LEP	677	60	31.19	11.60	0.90	3.62
	--	LEPFLEP	1,213	60	26.01	12.21	0.91	3.63
	--	Special Education	2,088	60	25.81	11.16	0.90	3.60
	--	Plan504	813	60	36.27	11.26	0.90	3.60
	--	Title 1	2,412	60	26.06	11.01	0.89	3.61
	--	In Person CBT	0	--	--	--	--	--
	--	Remote CBT	0	--	--	--	--	--

**Dashes in the Session column indicate a single session.*

Table M-8. Subgroup Reliabilities—Technology/Engineering

Grade	Session*	Subgroup	Number of Students	Raw Score			Alpha	SEM
				Maximum	Mean	Standard Deviation		
	--	All Students	372	60	30.13	10.10	0.88	3.49
	--	Economically Disadvantaged	175	60	27.49	9.77	0.87	3.52
	--	African American	25	60	22.40	11.55	0.90	3.60
	--	Asian	6	--	--	--	--	--
	--	Hispanic	71	60	27.14	8.72	0.84	3.44
	--	Native American	0	--	--	--	--	--
	--	White	260	60	31.64	9.83	0.87	3.48
	--	Pacific Islander/Hawaiian	0	--	--	--	--	--
	--	Multi-race	10	60	30.50	9.01	0.85	3.50
HS	--	Male	245	60	31.25	10.64	0.89	3.49
	--	Female	127	60	27.96	8.59	0.83	3.49
	--	Limited English Proficient	23	60	21.09	8.48	0.84	3.42
	--	Former LEP	22	60	25.09	10.38	0.88	3.57
	--	LEPFLEP	45	60	23.04	9.57	0.87	3.51
	--	Special Education	123	60	25.10	9.66	0.87	3.42
	--	Plan504	42	60	31.83	10.39	0.89	3.41
	--	Title 1	207	60	29.14	9.64	0.87	3.49
	--	In Person CBT	0	--	--	--	--	--
	--	Remote CBT	0	--	--	--	--	--

**Dashes in the Session column indicate a single session.*

Table M-4. Subgroup Reliabilities—Alt/ELA

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
3	All Students	820	39	28.09	3.75	0.65	2.23
	Economically Disadvantaged	536	39	28.15	3.73	0.64	2.24
	African American	147	39	28.41	3.87	0.5	2.74
	Asian	47	39	27.4	3.38	0.42	2.57
	Hispanic	244	39	28.13	3.78	0.72	1.99
	Native American	3					
	White	334	39	27.99	3.72	0.65	2.21
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	45	39	28.16	3.79	0.43	2.86
	Male	591	39	28.03	3.8	0.67	2.19
	Female	229	39	28.24	3.62	0.59	2.32
	Limited English Proficient	135	39	29.11	3.3	0.63	2
	Former LEP	29	39	27.14	4.21	0.57	2.76
	LEPFLEP	164	39	28.76	3.55	0.63	2.15
	Special Education	820	39	28.09	3.75	0.65	2.23
	Plan 504	4	--	--	--	--	--
	Title I	484	39	28.27	3.74	0.64	2.25
4	All Students	778	39	28.21	3.68	0.68	2.08
	Economically Disadvantaged	506	39	28.26	3.68	0.72	1.95
	African American	119	39	28.54	3.62	0.66	2.13
	Asian	59	39	27.59	3.81	0.68	2.17
	Hispanic	221	39	28.4	3.64	0.7	2
	Native American	3					
	White	348	39	28.06	3.72	0.67	2.14
	Pacific Islander/Hawaiian	1	--	--	--	--	--
	Multi-race	27	39	28.59	3.38	0.75	1.7
	Male	528	39	28.13	3.77	0.68	2.14
	Female	250	39	28.37	3.47	0.68	1.96
	Limited English Proficient	422	39	28.57	3.61	0.71	1.94
	Former LEP	137	39	28.32	3.69	0.69	2.05
	LEPFLEP	157	39	28.37	3.63	0.71	1.95
	Special Education	778	39	28.21	3.68	0.68	2.08
	Plan 504	7	--	--	--	--	--
	Title I	137	39	28.32	3.69	0.69	2.05
5	All Students	758	39	28.34	3.67	0.64	2.21
	Economically Disadvantaged	507	39	28.38	3.72	0.66	2.16
	African American	117	39	28.52	3.96	0.66	2.32
	Asian	49	39	28.22	3.86	0.57	2.52
	Hispanic	218	39	28.67	3.42	0.61	2.14
	Native American	2	--	--	--	--	--
	White	339	39	28.09	3.71	0.65	2.18
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	33	39	28.36	3.54	0.46	2.61
	Male	528	39	28.23	3.74	0.64	2.24
	Female	230	39	28.59	3.51	0.63	2.13
	Limited English Proficient	138	39	29.28	3.35	0.66	1.94
	Former LEP	15	39	29	3.7	0.68	2.1
	LEPFLEP	153	39	29.25	3.37	0.66	1.97
	Special Education	758	39	28.34	3.67	0.64	2.21
	Plan 504	9	--	--	--	--	--
	Title I	400	39	28.9	3.39	0.62	2.09

continued

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
6	All Students	751	39	28.28	3.56	0.62	2.2
	Economically Disadvantaged	478	39	28.18	3.61	0.62	2.22
	African American	120	39	27.87	4.11	0.66	2.38
	Asian	55	39	28.29	3.36	0.49	2.4
	Hispanic	221	39	28.2	3.77	0.65	2.22
	Native American	0	--	--	--	--	--
	White	325	39	28.45	3.29	0.61	2.07
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	30	39	28.7	2.64	0.42	2.02
	Male	524	39	28.41	3.53	0.59	2.26
	Female	227	39	27.97	3.62	0.67	2.07
	Limited English Proficient	118	39	28.74	3.5	0.44	2.63
	Former LEP	18	39	27.5	4.31	0.64	2.57
	LEPFLEP	136	39	28.57	3.62	0.52	2.52
	Special Education	751	39	28.28	3.56	0.62	2.2
	Plan 504	5	--	--	--	--	--
	Title I	337	39	28.55	3.57	0.59	2.29
7	All Students	745	39	28.08	3.87	0.69	2.17
	Economically Disadvantaged	481	39	28.22	3.96	0.7	2.16
	African American	100	39	27.91	4.05	0.65	2.39
	Asian	44	39	28.3	3.04	0.65	1.79
	Hispanic	244	39	28.8	3.74	0.6	2.38
	Native American	3	--	--	--	--	--
	White	320	39	27.53	3.94	0.73	2.05
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	32	39	28.28	3.8	0.6	2.4
	Male	521	39	28.05	3.86	0.68	2.18
	Female	224	39	28.13	3.89	0.7	2.14
	Limited English Proficient	129	39	28.99	3.39	0.49	2.41
	Former LEP	16	39	29.94	3.13	0.12	2.94
	LEPFLEP	145	39	29.1	3.36	0.49	2.39
	Special Education	744	39	28.08	3.87	0.68	2.17
	Plan 504	4	--	--	--	--	--
	Title I	335	39	28.79	3.53	0.59	2.25
8	All Students	662	39	28.46	3.72	0.61	2.33
	Economically Disadvantaged	441	39	28.43	3.78	0.62	2.32
	African American	94	39	28.67	3.56	0.63	2.16
	Asian	35	39	28.23	4.04	0.4	3.14
	Hispanic	197	39	28.92	3.69	0.59	2.37
	Native American	1	--	--	--	--	--
	White	308	39	28.14	3.71	0.57	2.44
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	27	39	28.22	4.25	0.85	1.66
	Male	451	39	28.67	3.62	0.55	2.43

continued

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
8	Female	211	39	28	3.9	0.67	2.25
	Limited English Proficient	96	39	29.35	3.37	0.54	2.29
	Former LEP	10	39	29.8	3.26	0.09	3.11
	LEPFLEP	106	39	29.4	3.34	0.51	2.34
	Special Education	662	39	28.46	3.72	0.61	2.33
	Plan 504	4	--	--	--	--	--
	Title I	304	39	29	3.47	0.49	2.48
10	All Students	698	39	28.08	3.93	0.64	2.37
	Economically Disadvantaged	434	39	27.87	3.99	0.65	2.35
	African American	114	39	28.96	3.71	0.68	2.09
	Asian	35	39	27	4.27	0.67	2.47
	Hispanic	172	39	27.87	3.92	0.67	2.23
	Native American	0	--	--	--	--	--
	White	355	39	28.12	3.9	0.59	2.49
	Pacific Islander/Hawaiian	1	--	--	--	--	--
	Multi-race	21	39	26.43	4.23	0.68	2.41
	Male	432	39	28.04	3.98	0.63	2.41
	Female	266	39	28.13	3.85	0.65	2.28
	Limited English Proficient	92	39	27.99	3.81	0.56	2.52
	Former LEP	3	--	--	--	--	--
	LEPFLEP	95	39	28.11	3.8	0.56	2.51
	Special Education	698	39	28.08	3.93	0.64	2.37
	Plan 504	4	--	--	--	--	--
	Title I	242	39	28.17	3.89	0.69	2.17

Note: No reliability or SEM values are reported for some subgroups, because there were some items for which only one student in the subgroup received a score.

Table M-5. Subgroup Reliabilities—Alt/Mathematics

Grade	Subgroup	Number of Students	Raw Score			Alpha	SEM
			Maximum	Mean	Standard Deviation		
3	All Students	729	26	21.27	1.29	0.56	0.86
	Economically Disadvantaged	472	26	21.24	1.34	0.59	0.86
	African American	132	26	21.46	1.09	0.5	0.78
	Asian	41	26	21.27	1.05	0.24	0.91
	Hispanic	218	26	21.31	1.35	0.67	0.77
	Native American	3	--	--	--	--	--
	White	300	26	21.13	1.4	0.54	0.95
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	35	26	21.49	0.78	0.28	0.66
	Male	529	26	21.22	1.37	0.59	0.88
	Female	200	26	21.39	1.05	0.42	0.79
	Limited English Proficient	126	26	21.43	1.13	0.6	0.72
	Former LEP	26	26	21.04	1.34	0.26	1.15
	LEPFLEP	152	26	21.36	1.18	0.53	0.81
	Special Education	729	26	21.27	1.29	0.56	0.86
	Plan 504	4	--	--	--	--	--
	Title I	422	26	21.32	1.29	0.61	0.8
4	All Students	715	26	21.08	1.61	0.68	0.91
	Economically Disadvantaged	463	26	21.12	1.55	0.69	0.86
	African American	112	26	21.21	1.25	0.51	0.88
	Asian	49	26	21.24	1.63	0.7	0.9
	Hispanic	200	26	21.21	1.54	0.68	0.87
	Native American	3	--	--	--	--	--
	White	326	26	20.92	1.77	0.71	0.95
	Pacific Islander/Hawaiian	1	--	--	--	--	--
	Multi-race	24	26	21.17	1.2	0.58	0.78
	Male	485	26	21.03	1.69	0.69	0.94
	Female	230	26	21.19	1.4	0.65	0.83
	Limited English Proficient	122	26	21.29	1.41	0.65	0.83
	Former LEP	17	26	21.18	1.42	0.7	0.78
	LEPFLEP	139	26	21.27	1.4	0.66	0.82
	Special Education	715	26	21.08	1.61	0.68	0.91
	Plan 504	7	--	--	--	--	--
	Title I	387	26	21.32	1.4	0.7	0.76
5	All Students	717	26	21.18	1.42	0.6	0.89
	Economically Disadvantaged	469	26	21.27	1.33	0.63	0.81
	African American	105	26	21.25	1.33	0.59	0.85
	Asian	47	26	21.11	1.64	0.62	1.01
	Hispanic	211	26	21.36	1.22	0.55	0.81
	Native American	0	--	--	--	--	--
	White	320	26	21.01	1.56	0.62	0.95
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	34	26	21.5	0.99	0.5	0.71
	Male	494	26	21.19	1.43	0.6	0.91
	Female	223	26	21.14	1.41	0.62	0.87
	Limited English Proficient	142	26	21.42	1.16	0.67	0.67
	Former LEP	14	26	21.43	1.6	0.83	0.67
	LEPFLEP	156	26	21.42	1.2	0.69	0.67
	Special Education	717	26	21.18	1.42	0.6	0.89
	Plan 504	7	--	--	--	--	--
	Title I	379	26	21.4	1.27	0.68	0.72
6	All Students	708	26	21.06	1.58	0.64	0.95
	Economically Disadvantaged	460	26	21.05	1.61	0.64	0.97
	African American	115	26	20.83	2.02	0.76	0.98
	Asian	48	26	21.17	1.33	0.5	0.94
	Hispanic	203	26	21.16	1.55	0.69	0.87

continued

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
6	Native American	0	--	--	--	--	--
	White	313	26	21.02	1.46	0.53	1
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	29	26	21.59	1.18	0.51	0.83
	Male	484	26	21.16	1.48	0.62	0.92
	Female	224	26	20.86	1.74	0.65	1.02
	Limited English Proficient	107	26	21.37	1.23	0.56	0.82
	Former LEP	16	26	21.44	1.55	0.8	0.69
	LEPFLEP	123	26	21.38	1.27	0.6	0.81
	Special Education	708	26	21.06	1.58	0.64	0.95
	Plan 504	5	--	--	--	--	--
	Title I	323	26	21.2	1.49	0.65	0.88
7	All Students	691	26	21.12	1.56	0.67	0.9
	Economically Disadvantaged	444	26	21.18	1.57	0.72	0.83
	African American	96	26	21.36	1.63	0.76	0.79
	Asian	43	26	20.74	1.38	0.28	1.17
	Hispanic	214	26	21.32	1.31	0.65	0.77
	Native American	3					
	White	300	26	20.97	1.7	0.68	0.97
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	34	26	21.03	1.47	0.62	0.91
	Male	475	26	21.17	1.51	0.66	0.88
	Female	216	26	21	1.67	0.68	0.94
	Limited English Proficient	115	26	21.32	1.5	0.8	0.67
	Former LEP	17	26	21.35	1.06	0.06	1.02
	LEPFLEP	132	26	21.33	1.44	0.75	0.72
	Special Education	690	26	21.13	1.54	0.66	0.9
	Plan 504	4	--	--	--	--	--
	Title I	323	26	21.34	1.39	0.68	0.79
8	All Students	601	26	21.24	1.4	0.63	0.85
	Economically Disadvantaged	395	26	21.26	1.42	0.65	0.85
	African American	91	26	21.25	1.43	0.65	0.85
	Asian	33	26	21.06	1.71	0.77	0.82
	Hispanic	175	26	21.5	1.26	0.74	0.64
	Native American	1	--	--	--	--	--
	White	274	26	21.11	1.38	0.52	0.96
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	27	26	20.96	1.76	0.78	0.83
	Male	408	26	21.38	1.17	0.55	0.79
	Female	193	26	20.95	1.76	0.7	0.96
	Limited English Proficient	88	26	21.56	1.02	0.58	0.66
	Former LEP	11	26	21.91	0.3	0	0.3
	LEPFLEP	99	26	21.6	0.97	0.58	0.63
	Special Education	601	26	21.24	1.4	0.63	0.85
	Plan 504	5	--	--	--	--	--
	Title I	277	26	21.53	1.1	0.65	0.65
10	All Students	684	39	30.62	3.53	0.83	1.45
	Economically Disadvantaged	430	39	30.48	3.68	0.85	1.41
	African American	109	39	31.21	3.03	0.75	1.51
	Asian	34	39	30.06	4.31		
	Hispanic	169	39	30.35	3.88	0.83	1.61
	Native American	0	--	--	--	--	--
	White	352	39	30.63	3.42	0.78	1.6
	Pacific Islander/Hawaiian	1	--	--	--	--	--
	Multi-race	19	39	30.37	3.09	0.78	1.47
	Male	414	39	30.76	3.42	0.84	1.35
	Female	270	39	30.4	3.68	0.8	1.66
	Limited English Proficient	88	39	30.74	3.62	0.72	1.92

continued

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
	Former LEP	7	--	--	--	--	--
	LEPFLEP	95	39	30.72	3.65	0.72	1.94
10	Special Education	684	39	30.62	3.53	0.83	1.45
	Plan 504	4	--	--	--	--	--
	Title I	240	39	30.65	3.65	0.81	1.59

Note: *No reliability or SEM values are reported for some subgroups, because in some cases there were some items for which only one student in the subgroup received a score, and in other cases, the sample size of the subgroup or the number of items is too small to produce meaningful calculations.*

Table M-6. Subgroup Reliabilities—Alt/STE

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
	All Students	653	39	29.7	3.61	0.8	1.61
	Economically Disadvantaged	437	39	29.8	3.71	0.83	1.53
	African American	106	39	29.87	3.66	--	--
	Asian	41	39	29.54	3.76	--	--
	Hispanic	194	39	30.03	3.47	0.73	1.81
	Native American	2	--	--	--	--	--
	White	283	39	29.34	3.68	0.81	1.59
	Pacific Islander/Hawaiian	0	--	--	--	--	--
5	Multi-race	27	39	31.19	2.69	--	--
	Male	455	39	29.57	3.77	0.81	1.66
	Female	198	39	30.01	3.19	0.77	1.52
	LEP	127	39	30.35	3.4	--	--
	FLEP	14	39	29.64	4.01	--	--
	LEPFLEP	141	39	30.28	3.46	0.7	1.88
	Special Education	653	39	29.7	3.61	0.8	1.61
	Plan 504	8	--	--	--	--	--
	Title I	327	39	30.19	3.54	0.89	1.16
	All Students	565	39	30.06	3.16	0.76	1.56
	Economically Disadvantaged	367	39	30.24	3.13	0.77	1.5
	African American	72	39	30.21	3.44	0.74	1.76
	Asian	34	39	30.09	3.06	--	--
	Hispanic	177	39	30.47	2.99	0.84	1.21
	Native American	0	--	--	--	--	--
	White	261	39	29.7	3.21	0.72	1.71
	Pacific Islander/Hawaiian	0	--	--	--	--	--
8	Multi-race	21	39	30.48	2.82	0.72	1.51
	Male	381	39	30.13	3.11	0.75	1.56
	Female	184	39	29.93	3.26	0.78	1.54
	LEP	87	39	30.61	2.93	0.77	1.41
	FLEP	10	39	31.9	2.81	--	--
	LEPFLEP	97	39	30.74	2.93	0.77	1.39
	Special Education	565	39	30.06	3.16	0.76	1.56
	Plan 504	3	--	--	--	--	--
	Title I	262	39	30.66	2.81	0.79	1.3

Table M-7. Subgroup Reliabilities—Alt/Biology

Grade	Subgroup	Number of Students	Raw Score			Alpha	SEM
			Maximum	Mean	Standard Deviation		
HS	All Students	44	39	28.73	3.83	0.7	2.1
	Economically Disadvantaged	23	39	29.52	3.48	0.68	1.97
	African American	6	--	--	--	--	--
	Asian	6	--	--	--	--	--
	Hispanic	8	--	--	--	--	--
	Native American	0	--	--	--	--	--
	White	24	39	28.83	4.2	0.75	2.1
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	0	--	--	--	--	--
	Male	27	39	28.07	3.96	0.66	2.32
	Female	17	39	29.76	3.47	0.75	1.72
	LEP	6	--	--	--	--	--
	FLEP	1	--	--	--	--	--
	LEPFLEP	7	--	--	--	--	--
	Special Education	44	39	28.73	3.83	0.7	2.1
	Plan 504	0	--	--	--	--	--
	Title I	6	--	--	--	--	--

**Due to the small sample size of the subgroup and the small number of items, the calculation of coefficient alpha does not produce meaningful values.*

Table M-8. Subgroup Reliabilities—Alt/Chemistry

Grade	Subgroup	Number of Students	Raw Score			Alpha	SEM
			Maximum	Mean	Standard Deviation		
HS	All Students	12	39	32	1.21	0.45	0.9
	Economically Disadvantaged	4	--	--	--	--	--
	African American	2	--	--	--	--	--
	Asian	2	--	--	--	--	--
	Hispanic	4	--	--	--	--	--
	Native American	0	--	--	--	--	--
	White	4	--	--	--	--	--
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	0	--	--	--	--	--
	Male	8	--	--	--	--	--
	Female	4	--	--	--	--	--
	LEP	0	--	--	--	--	--
	FLEP	0	--	--	--	--	--
	LEPFLEP	0	--	--	--	--	--
	Special Education	12	39	32	1.21	0.45	0.9
	Plan 504	0	--	--	--	--	--
	Title I	0	--	--	--	--	--

**Due to the small sample size of the subgroup and the small number of items, the calculation of coefficient alpha does not produce meaningful values.*

Table M-9. Subgroup Reliabilities—Alt/Introductory Physics

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
HS	All Students	2	--	--	--	--	--
	Economically Disadvantaged	1	--	--	--	--	--
	African American	0	--	--	--	--	--
	Asian	0	--	--	--	--	--
	Hispanic	1	--	--	--	--	--
	Native American	0	--	--	--	--	--
	White	1	--	--	--	--	--
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	0	--	--	--	--	--
	Male	2	--	--	--	--	--
	Female	0	--	--	--	--	--
	LEP	0	--	--	--	--	--
	FLEP	0	--	--	--	--	--
	LEPFLEP	0	--	--	--	--	--
	Special Education	2	--	--	--	--	--
	Plan 504	0	--	--	--	--	--
	Title I	2	--	--	--	--	--

Table M-10. Subgroup Reliabilities—Alt/Technology/Engineering

Grade	Subgroup	Number of Students	Raw Score		Standard Deviation	Alpha	SEM
			Maximum	Mean			
HS	All Students	33	39	29.85	3.18	0.68	1.8
	Economically Disadvantaged	20	39	29.7	3.56	0.8	1.58
	African American	3	--	--	--	--	--
	Asian	3	--	--	--	--	--
	Hispanic	11	39	28.91	3.02	0.73	1.56
	Native American	0	--	--	--	--	--
	White	15	39	30.47	3.36	0.61	2.1
	Pacific Islander/Hawaiian	0	--	--	--	--	--
	Multi-race	1	--	--	--	--	--
	Male	24	39	29.38	3.4	0.66	1.97
	Female	9	--	--	--	--	--
	LEP	3	--	--	--	--	--
	FLEP	0	--	--	--	--	--
	LEPFLEP	3	--	--	--	--	--
	Special Education	33	39	29.85	3.18	0.68	1.8
	Plan 504	0	--	--	--	--	--
	Title I	9	--	--	--	--	--

Table M-11. Reliabilities by Reporting Category by Grade—ELA

Grade	Session	Item Reporting Category	Number of Items	Raw Score			Alpha	SEM
				Maximum	Mean	Standard Deviation		
	1	Reading	10	12	7.86	2.94	0.75	1.48
	1	Language	2	5	1.95	1.16	0.45	0.86
3	1	Writing	1	4	0.45	0.74	--	--
	2	Reading	11	12	9.43	3.52	0.76	1.72
	2	Language	7	5	3.87	1.83	0.60	1.15
	1	Reading	8	10	6.89	2.36	0.71	1.27
	1	Language	4	6	3.08	1.55	0.49	1.10
4	1	Writing	1	4	1.08	1.08	--	--
	2	Reading	15	10	11.35	4.56	0.81	1.98
	2	Language	4	6	2.67	1.25	0.59	0.80
	1	Reading	9	12	8.09	2.79	0.67	1.62
	1	Language	3	5	2.62	1.27	0.46	0.94
5	1	Writing	1	4	1.36	0.82	--	--
	2	Reading	15	12	10.90	3.71	0.74	1.88
	2	Language	4	5	3.04	1.45	0.49	1.03
	2	Reading	1	4	1.16	0.89	--	--
	1	Language	10	12	7.36	2.71	0.65	1.62
6	1	Writing	2	4	2.20	1.19	0.29	1.00
	1	Reading	1	5	1.61	1.15	--	--
	2	Language	15	12	10.01	4.29	0.80	1.91
	2	Reading	5	4	3.77	1.85	0.53	1.27
	2	Language	1	5	1.56	1.18	--	--
7	1	Writing	10	12	6.86	3.07	0.69	1.72
	1	Reading	3	5	2.91	1.45	0.49	1.04
	1	Language	1	5	1.49	1.11	--	--
	2	Reading	15	12	10.96	3.94	0.78	1.85
	2	Language	4	5	3.36	1.61	0.49	1.15
8	2	Writing	1	5	1.53	1.01	--	--
	1	Reading	9	11	7.02	2.81	0.76	1.38
	1	Language	3	5	2.73	1.51	0.47	1.09
	--	Reading	1	5	1.67	1.21	--	--
10	--	Language	15	11	11.56	3.75	0.78	1.77
	--	Writing	5	5	4.37	1.79	0.55	1.19

**Dashes in the Session column indicate a single session.*

Table M-12. Reliabilities by Reporting Category by Grade—Mathematics

Grade	Session	Item Reporting Category	Number of Items	Raw Score			Alpha	SEM
				Maximum	Mean	Standard Deviation		
3	1	Operations and Algebraic Thinking	6	3.47	1.79	0.70	0.98	6
	1	Number and Operations in Base Ten	5	1.52	1.44	0.63	0.88	5
	1	Number and Operations-Fractions	4	2.22	1.23	0.55	0.83	4
	1	Measurement and Data	7	3.48	2.11	0.62	1.30	7
	1	Geometry	2	0.65	0.65	0.14	0.60	2
	2	Operations and Algebraic Thinking	6	4.30	2.60	0.75	1.29	6
	2	Number and Operations in Base Ten	5	1.71	0.99	0.42	0.76	5
	2	Number and Operations-Fractions	4	2.16	1.62	0.57	1.07	4
	2	Measurement and Data	7	2.39	1.51	0.62	0.93	7
	2	Geometry	2	1.08	0.68	0.13	0.64	2
4	1	Operations and Algebraic Thinking	7	3.54	1.93	0.69	1.07	7
	1	Number and Operations in Base Ten	6	3.36	1.87	0.47	1.36	6
	1	Number and Operations-Fractions	9	4.74	2.50	0.69	1.39	9
	1	Measurement and Data	4	1.82	1.30	0.62	0.81	4
	1	Geometry	1	0.19	0.39	--	--	1
	2	Operations and Algebraic Thinking	7	0.96	0.98	0.52	0.68	7
	2	Number and Operations in Base Ten	6	2.49	1.51	0.65	0.89	6
	2	Number and Operations-Fractions	9	3.98	2.28	0.76	1.11	9
	2	Measurement and Data	4	3.73	1.98	0.56	1.31	4
	2	Geometry	1	1.81	1.41	0.54	0.96	1
5	1	Operations and Algebraic Thinking	6	2.94	2.02	0.45	1.50	6
	1	Number and Operations in Base Ten	7	3.80	1.80	0.62	1.11	7
	1	Number and Operations-Fractions	5	2.28	1.41	0.61	0.89	5
	1	Measurement and Data	7	3.17	1.94	0.50	1.37	7
	1	Geometry	2	0.87	0.75	0.25	0.64	2
	2	Operations and Algebraic Thinking	6	0.64	0.69	0.16	0.63	6
	2	Number and Operations in Base Ten	7	4.61	2.65	0.62	1.62	7
	2	Number and Operations-Fractions	5	3.44	2.38	0.67	1.36	5
	2	Measurement and Data	7	1.52	1.06	0.55	0.71	7
	2	Geometry	2	1.85	1.14	0.41	0.87	2
6	1	Ratios and Proportional Relationships	4	1.96	1.29	0.55	0.86	4
	1	The Number System	5	2.68	1.37	0.54	0.93	5
	1	Expressions and Equations	9	4.39	2.59	0.64	1.56	9
	1	Geometry	6	1.92	1.75	0.58	1.13	6
	1	Statistics and Probability	3	1.05	0.98	0.44	0.73	3
	2	Ratios and Proportional Relationships	4	3.12	1.74	0.44	1.30	4
	2	The Number System	5	3.19	1.93	0.49	1.38	5
	2	Expressions and Equations	9	3.50	1.98	0.71	1.07	9
	2	Geometry	6	0.29	0.57	0.47	0.41	6
	2	Statistics and Probability	3	1.60	1.36	0.46	1.00	3
7	1	Ratios and Proportional Relationships	3	1.80	1.06	0.59	0.68	3
	1	The Number System	8	3.48	2.37	0.56	1.57	8
	1	Expressions and Equations	10	3.78	2.83	0.80	1.28	10
	1	Geometry	2	1.31	0.79	0.54	0.53	2
	1	Statistics and Probability	4	1.48	1.18	--	--	4
	2	Ratios and Proportional Relationships	3	3.70	2.23	0.69	1.25	3
	2	The Number System	8	1.10	0.93	0.40	0.72	8
	2	Expressions and Equations	10	0.93	0.97	0.52	0.67	10
	2	Geometry	2	1.50	1.39	0.47	1.01	2
	2	Statistics and Probability	4	2.92	1.71	0.59	1.10	4
8	1	The Number System & Expressions /Equations	16	6.94	3.71	0.79	1.72	16
	1	Functions	8	3.17	2.49	0.65	1.48	8
	1	Geometry	3	1.42	1.08	0.52	0.75	3
	2	The Number System & Expressions /Equations	16	2.96	1.85	0.74	0.95	16
	2	Functions	8	1.29	0.85	0.23	0.74	8
	2	Geometry	3	5.54	3.55	0.77	1.71	3
	2	Statistics and Probability	5	2.95	1.38	0.31	1.15	5

continued

Grade	Session	Item Reporting Category	Number of Items	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
10	--	Number and Quantity	9	4.08	2.88	0.68	1.63	9
	--	Algebra and Functions	21	11.04	5.53	0.86	2.10	21
	--	Geometry	21	11.79	5.46	0.84	2.18	21
	--	Statistics and Probability	9	4.81	2.30	0.55	1.54	9

**Dashes in the Session column indicate a single session.*

Table M-13. Reliabilities by Reporting Category by Grade—STE

Grade	Session	Item Reporting Category	Number of Items	Raw Score				
				Maximum	Mean	Standard Deviation	Alpha	SEM
5	1	Earth and Space Science	4	5	3.02	1.45	0.49	1.04
	1	Life Science	3	4	2.45	1.11	0.32	0.92
	1	Physical Science	9	12	5.58	2.81	0.64	1.69
	1	Technology/Engineering	4	6	3.38	1.75	0.55	1.17
	3	Earth and Space Science	9	5	6.43	2.43	0.67	1.40
	3	Life Science	8	4	6.11	2.57	0.71	1.38
	3	Physical Science	9	12	5.80	2.44	0.58	1.59
	3	Technology/Engineering	7	6	5.85	2.23	0.68	1.26
	2	Earth and Space Science	7	5	4.86	1.97	0.61	1.24
	2	Life Science	8	4	5.21	2.29	0.64	1.38
	2	Physical Science	2	12	0.86	0.73	0.16	0.67
	2	Technology/Engineering	4	6	3.59	1.56	0.53	1.07
8	1	Earth and Space Science	5	7	3.45	1.71	0.52	1.19
	1	Life Science	5	6	3.87	1.68	0.60	1.07
	1	Physical Science	6	8	4.16	1.92	0.54	1.30
	1	Technology/Engineering	4	6	2.92	1.24	0.40	0.96
	3	Earth and Space Science	6	7	3.89	1.95	0.55	1.31
	3	Life Science	10	6	7.62	2.63	0.75	1.33
	3	Physical Science	9	8	6.53	2.95	0.70	1.62
	3	Technology/Engineering	8	6	5.06	2.03	0.57	1.33
	2	Earth and Space Science	4	7	2.27	1.43	0.46	1.05
	2	Life Science	7	6	4.77	1.98	0.61	1.24
	2	Physical Science	5	8	2.81	1.71	0.51	1.20
	2	Technology/Engineering	5	6	2.95	1.47	0.46	1.08

**Dashes in the Session column indicate a single session.*

Table M-14. SEM by Performance Level by Grade—Alt/ELA

Grade	Performance Level	Number of Students	Raw Score			SEM
			Maximum	Mean	Standard Deviation	
3	Awareness	26	39	19.81	2.61	2.4
	Emerging	419	39	26.05	3.21	2.51
	Progressing	375	39	30.94	1.09	0.86
	Not Meeting Expectations	2	--	--	--	--
4	Awareness	21	39	19.86	2.99	2.69
	Emerging	376	39	25.83	2.99	2.35
	Progressing	381	39	31.02	0.99	0.88
	Not Meeting Expectations	3	--	--	--	--
5	Awareness	17	39	19.12	3.2	2.94
	Emerging	352	39	25.8	2.95	2.18
	Progressing	389	39	31.03	1.1	0.92
	Not Meeting Expectations	1	--	--	--	--
6	Awareness	21	39	20.52	2.96	3.55
	Emerging	358	39	25.96	2.91	2.29
	Progressing	372	39	30.95	1.11	0.95
	Not Meeting Expectations	0	--	--	--	--
7	Awareness	18	39	19.44	3.84	2.88
	Emerging	359	39	25.44	3.04	2.25
	Progressing	368	39	31.07	1.08	0.89
	Not Meeting Expectations	4	--	--	--	--
8	Awareness	16	39	19.75	2.79	4.12
	Emerging	276	39	25.5	3.02	2.53
	Progressing	370	39	31.04	1.1	0.91
	Not Meeting Expectations	2	--	--	--	--
10	Awareness	13	39	19.15	2.61	3.79
	Emerging	316	39	24.87	2.77	2.16
	Progressing	370	39	31.14	1.2	0.95
	Partially Meeting Expectations	1	--	--	--	--
	Not Meeting Expectations	15	39	30.87	6.38	3.64

**Due to the small sample size of the subgroup, the calculation of SEM does not produce meaningful values.*

Table M-15. SEM by Performance Level by Grade—Alt/Mathematics

Grade	Performance Level	Number of Students	Raw Score		Standard Deviation	SEM
			Maximum	Mean		
3	Awareness	10	26	16.2	1.14	1.77
	Emerging	86	26	19.12	1.3	1.8
	Progressing	634	26	21.64	0.71	0.54
	Not Meeting Expectations	0	--	--	--	--
4	Awareness	19	26	15	2.08	1.74
	Emerging	98	26	18.95	1.07	1.73
	Progressing	598	26	21.63	0.74	0.54
	Not Meeting Expectations	2	--	--	--	--
5	Awareness	16	26	16.31	1.2	2.08
	Emerging	85	26	18.79	1.18	1.73
	Progressing	616	26	21.63	0.71	0.55
	Not Meeting Expectations	1	--	--	--	--
6	Awareness	25	26	15.8	1.32	2.39
	Emerging	88	26	18.89	1.09	1.69
	Progressing	595	26	21.61	0.74	0.56
	Not Meeting Expectations	0	--	--	--	--
7	Awareness	25	26	15.6	2.02	2.29
	Emerging	68	26	19.25	1.26	1.74
	Progressing	598	26	21.56	0.77	0.59
	Not Meeting Expectations	3	--	--	--	--
8	Awareness	14	26	15.5	1.56	2.25
	Emerging	54	26	19.02	1.12	1.81
	Progressing	534	26	21.62	0.72	0.56
	Not Meeting Expectations	5	--	--	--	--
10	Awareness	15	39	21.2	2.54	2.36
	Emerging	141	39	25.19	2.2	1.02
	Progressing	529	39	32.32	1.18	0.67
	Not Meeting Expectations	13	39	26.85	6.34	2.68

**Due to the small sample size of the subgroup, the calculation of SEM does not produce meaningful values.*

Table M-16. SEM by Performance Level by Grade—Alt/STE

Grade	Performance Level	Number of Students	Raw Score		Standard Deviation	SEM
			Maximum	Mean		
5	Awareness	29	39	22.69	2.78	
	Emerging	174	39	25.63	2.61	1.76
	Progressing	450	39	31.73	1.42	0.77
	Not Meeting Expectations	0	--	--	--	--
8	Awareness	25	39	23.6	1.53	
	Emerging	121	39	26.11	2.49	2.19
	Progressing	420	39	31.59	1.48	0.86
	Not Meeting Expectations	0	--	--	--	--

**Due to the small sample size of the subgroup, the calculation of SEM does not produce meaningful values.*

Table M-17. SEM by Performance Level by Grade—Alt/Biology

Grade	Performance Level	Number of Students	Raw Score			SEM
			Maximum	Mean	Standard Deviation	
HS	Awareness	3	--	--	--	--
	Emerging	15	39	25.8	2.83	2.21
	Progressing	26	39	31.15	1.97	1.05
	Not Meeting Expectations	1	--	--	--	--

**Due to the small sample size of the subgroup, the calculation of SEM does not produce meaningful values.*

Table M-18. SEM by Performance Level by Grade—Alt/Chemistry

Grade	Performance Level	Number of Students	Raw Score			SEM
			Maximum	Mean	Standard Deviation	
HS	Awareness	0	--	--	--	--
	Emerging	0	--	--	--	--
	Progressing	12	39	32	1.21	0.9
	Not Meeting Expectations	0	--	--	--	--

**Due to the small sample size of the subgroup, the calculation of SEM does not produce meaningful values.*

Table M-19. SEM by Performance Level by Grade— Alt/Introductory Physics

Grade	Performance Level	Number of Students	Raw Score			SEM
			Maximum	Mean	Standard Deviation	
HS	Awareness	0	--	--	--	--
	Emerging	0	--	--	--	--
	Progressing	2	--	--	--	--
	Not Meeting Expectations	9	--	--	--	--

**Due to the small sample size of the subgroup, the calculation of SEM does not produce meaningful values.*

Table M-20. SEM by Performance Level by Grade— Alt/Technology/Engineering

Grade	Performance Level	Number of Students	Raw Score			SEM
			Maximum	Mean	Standard Deviation	
HS	Awareness	1	--	--	--	--
	Emerging	5	--	--	--	--
	Progressing	27	39	30.96	2.19	1.2
	Not Meeting Expectations	0	--	--	--	--

**Due to the small sample size of the subgroup, the calculation of SEM does not produce meaningful values.*

APPENDIX N
ACHIEVEMENT-LEVEL SCORE DISTRIBUTIONS

Table N-1. Achievement-Level Distributions by Grade—ELA[1]

Grade	Achievement Level	N[3]	Percent in Level			
			2021[4]	2019	2018	2017
3	Not Meeting Expectations	5,424	8.6	6.5	5.9	8.8
	Partially Meeting Expectations	25,098	40.0	36.6	41.7	43.2
	Meeting Expectations	26,298	41.9	46.6	43.2	40.1
	Exceeding Expectations	5,996	9.6	10.3	9.2	7.9
4	Not Meeting Expectations	7,736	12.0	7.5	7.6	8.6
	Partially Meeting Expectations	24,609	38.3	40.0	38.9	42.4
	Meeting Expectations	27,886	43.4	43.2	43.5	41.4
	Exceeding Expectations	4,047	6.3	9.3	10.1	7.6
5	Not Meeting Expectations	7,326	11.3	7.2	6.3	8.1
	Partially Meeting Expectations	26,852	41.5	40.0	39.0	42.5
	Meeting Expectations	25,393	39.3	45.5	48.3	43.4
	Exceeding Expectations	5,079	7.9	7.4	6.5	6.0
6	Not Meeting Expectations	13,885	21.2	12.2	10.3	8.5
	Partially Meeting Expectations	20,640	31.4	33.9	38.1	40.2
	Meeting Expectations	23,101	35.2	41.1	41.0	44.0
	Exceeding Expectations	8,026	12.2	12.8	10.7	7.3
7	Not Meeting Expectations	12,737	19.1	12.1	14.2	9.5
	Partially Meeting Expectations	25,021	37.5	38.8	39.6	39.9
	Meeting Expectations	24,925	37.3	40.6	38.5	45.0
	Exceeding Expectations	4,076	6.1	8.5	7.7	5.7
8	Not Meeting Expectations	11,575	17.3	12.4	14.0	9.9
	Partially Meeting Expectations	27,783	41.6	35.3	34.3	40.0
	Meeting Expectations	23,115	34.6	40.9	41.9	42.0
	Exceeding Expectations	4,325	6.5	11.4	9.8	8.1
10[2]	Not Meeting Expectations	5,354	7.7	7.0	--	--
	Partially Meeting Expectations	18,522	26.6	31.6	--	--
	Meeting Expectations	31,898	45.7	47.9	--	--
	Exceeding Expectations	13,993	20.1	13.5	--	--

1 This table presents distributions from the standard MCAS ELA tests. Distributions from the MCAS-Alt assessment are displayed beginning with Table P-4.
2 For Grade 10, only results from 2019 on are displayed because 2019 was the first year of the Next-Generation MCAS program in Grade 10.
3 These results are based on the psychometric data sample used to conduct equating, not on the whole population of students.
4 Testing was not conducted in 2020 due to Covid 19.

Table N-2. Achievement-Level Distributions by Grade—Mathematics[1]

Grade	Achievement Level	N[3]	Percent in Level			
			2021[4]	2019	2018	2017
3	Not Meeting Expectations	15,822	25.2	11.3	10.8	11.1
	Partially Meeting Expectations	25,715	40.9	38.8	39.1	39.1
	Meeting Expectations	17,845	28.4	40.5	40.5	42.4
	Exceeding Expectations	3,443	5.5	9.3	9.6	7.41
4	Not Meeting Expectations	14,528	22.6	10.5	11.4	11.2
	Partially Meeting Expectations	28,112	43.7	39.3	40.2	39.6
	Meeting Expectations	19,110	29.7	41.9	41.3	43.3
	Exceeding Expectations	2,572	4.0	8.3	7.1	5.98
5	Not Meeting Expectations	12,016	18.6	8.8	8.7	8.7
	Partially Meeting Expectations	30,730	47.6	42.4	45.2	44.7
	Meeting Expectations	19,222	29.8	43.3	41.5	39.4
	Exceeding Expectations	2,651	4.1	5.6	4.7	7.2
6	Not Meeting Expectations	14,159	21.6	9.1	9.6	9.9
	Partially Meeting Expectations	29,242	44.6	38.7	42.4	39.9
	Meeting Expectations	19,194	29.2	41.7	41.3	43.0
	Exceeding Expectations	3,046	4.6	10.5	6.8	7.2
7	Not Meeting Expectations	11,497	17.2	12.1	12.4	10.1
	Partially Meeting Expectations	31,782	47.6	39.8	40.9	42.5
	Meeting Expectations	19,288	28.9	37.5	39.2	38.4
	Exceeding Expectations	4,176	6.3	10.6	7.6	8.9
8	Not Meeting Expectations	13,723	20.5	11.1	10.9	9.2
	Partially Meeting Expectations	31,418	47.0	42.0	38.9	42.6
	Meeting Expectations	19,056	28.5	37.3	41.9	39.4
	Exceeding Expectations	2,651	4.0	9.6	8.2	8.9
10[2]	Not Meeting Expectations	7,266	10.5	8.3	--	--
	Partially Meeting Expectations	24,186	35.0	33.4	--	--
	Meeting Expectations	28,759	41.6	45.2	--	--
	Exceeding Expectations	8,900	12.9	13.2	--	--

1 This table presents distributions from the standard MCAS ELA tests. Distributions from the MCAS-Alt assessment are displayed beginning with Table P-4.
2 For Grade 10, only results from 2019 on are displayed because 2019 was the first year of the Next-Generation MCAS program in Grade 10.
3 These results are based on the psychometric data sample used to conduct equating, not on the whole population of students.
4 Testing was not conducted in 2020 due to Covid 19.

Table N-3. Achievement-Level Distributions by Grade—STE[1]

Grade	Achievement Level	N[2]	Percent in Level			
			2021[3]	2019	2018	2017
5	Not Meeting Expectations	11,273	17.5	10.8	--	--
	Partially Meeting Expectations	25,648	39.8	39.8	--	--
	Meeting Expectations	23,162	35.9	40.9	--	--
	Exceeding Expectations	4,376	6.8	8.5	--	--
8	Not Meeting Expectations	7,645	14.7	11.4	--	--
	Partially Meeting Expectations	22,664	43.5	41.8	--	--
	Meeting Expectations	17,563	33.7	38.5	--	--
	Exceeding Expectations	4,293	8.2	8.3	--	--

[1] This table presents distributions from the standard MCAS STE tests. Distributions from the MCAS-Alt assessment are displayed beginning with Table P-4. Only results from 2019 on are displayed because 2019 was the first year of the Next-Generation MCAS program for STE.
2 These results are based on the psychometric data sample used to conduct equating, not on the whole population of students.
3 Testing was not conducted in 2020 due to Covid 19.

Table N-4. Achievement-Level Distributions by Grade—Alt/ELA

Grade	Achievement Level	Percent in Level			
		2021[1]	2019	2018	2017
3	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	41.2	53.2	55.0	55.0
	Emerging	45.9	39.0	38.7	38.7
	Awareness	2.9	2.3	1.9	2.2
	Incomplete	9.9	5.4	4.4	4.1
4	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	44.7	57.9	56.0	65.5
	Emerging	44.1	36.5	36.8	30.0
	Awareness	2.5	2.1	1.8	1.8
	Incomplete	8.7	3.5	5.4	3.1
5	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	45.8	56.9	62.6	62.5
	Emerging	41.5	36.2	31.7	31.7
	Awareness	2.0	2.2	1.2	1.4
	Incomplete	10.7	4.8	4.6	4.4
6	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	43.5	54.9	58.9	62.7
	Emerging	41.8	37.1	33.5	30.5
	Awareness	2.5	1.8	1.6	1.4
	Incomplete	12.3	6.3	6.1	5.5
7	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	42.2	56.3	62.1	62.8
	Emerging	41.2	34.2	30.0	31.4
	Awareness	2.0	1.7	1.6	1.0
	Incomplete	14.6	7.8	6.3	4.9
8	Partially Meeting Expectations	0.0	0.0	0.0	0.1
	Progressing	46.7	57.5	59.7	62.4
	Emerging	34.9	35.3	32.2	30.3
	Awareness	2.0	2.0	1.9	1.9
	Incomplete	16.4	5.2	6.2	5.4
10	Advanced	0.0	0.0	0.0	0.0
	Proficient	0.0	0.0	0.0	0.0
	Needs Improvement	0.0	0.0	0.2	0.0
	Progressing	45.3	55.1	49.9	54.2
	Emerging	40.1	35.9	36.1	34.6
	Awareness	1.7	1.3	3.0	2.2
	Incomplete	12.9	7.7	10.8	9.0

1 Testing was not conducted in 2020 due to Covid 19.

Table N-5. Achievement-Level Distributions by Grade—Alt/Mathematics

Grade	Achievement Level	Percent in Level			
		2021[1]	2019	2018	2017
3	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	69.1	77.6	79.3	79.8
	Emerging	9.4	9.0	8.1	6.5
	Awareness	1.1	2.2	1.5	1.3
	Incomplete	20.2	11.2	11.0	12.4
4	Partially Meeting Expectations	0.0	0.0	0.0	0.1
	Progressing	70.9	78.8	77.5	84.1
	Emerging	11.6	8.4	9.7	5.6
	Awareness	2.3	2.3	1.9	0.9
	Incomplete	15.2	10.6	10.9	9.4
5	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	71.5	77.1	78.0	78.3
	Emerging	9.9	9.6	7.9	7.2
	Awareness	1.9	1.6	0.7	1.1
	Incomplete	16.8	11.7	13.5	13.4
6	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	69.9	81.0	76.6	78.2
	Emerging	10.3	7.0	8.5	7.6
	Awareness	2.9	1.6	1.6	1.3
	Incomplete	16.8	10.4	13.3	12.9
7	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	67.1	75.2	78.8	78.4
	Emerging	7.6	8.9	7.2	8.9
	Awareness	2.8	1.3	1.2	1.1
	Incomplete	22.5	14.6	12.9	11.7
8	Partially Meeting Expectations	0.0	0.0	0.0	0.0
	Progressing	67.3	75.8	74.3	75.7
	Emerging	6.8	8.9	9.8	7.4
	Awareness	1.8	1.1	0.9	1.6
	Incomplete	24.1	14.3	15.0	15.3
10	Advanced	0.0	0.0	0.1	0.0
	Proficient	0.0	0.1	0.2	0.3
	Needs Improvement	0.0	0.1	0.1	0.1
	Progressing	65.5	71.8	61.1	66.6
	Emerging	17.6	17.3	22.1	18.0
	Awareness	1.9	0.7	1.5	1.1
	Incomplete	14.9	10.1	14.9	14.0

[1] *Testing was not conducted in 2020 due to Covid 19.*

Table N-6. Achievement-Level Distributions by Grade—Alt/STE

Grade	Achievement Level	Percent in Level			
		2021[1]	2019	2018	2017
5	Needs Improvement	0.0	0.0	0.0	0.0
	Progressing	56.9	64.8	79.4	79.6
	Emerging	22.0	22.5	11.9	12.6
	Awareness	3.7	2.8	0.5	0.3
	Incomplete	17.5	9.9	8.3	7.5
8	Needs Improvement	0.0	0.0	0.0	0.1
	Progressing	56.9	70.2	76.1	77.1
	Emerging	16.4	16.1	15.7	12.6
	Awareness	3.4	2.4	0.3	0.8
	Incomplete	23.3	11.3	7.9	9.4

1 Testing was not conducted in 2020 due to Covid 19.

Table N-7. Achievement-Level Distributions—Alt/Biology

Grade	Achievement Level	Percent in Level			
		2021[1]	2019	2018	2017
HS	Advanced	0.0	0.0	0.0	0.0
	Proficient	0.0	0.0	0.1	0.0
	Needs Improvement	0.0	0.0	0.1	0.1
	Progressing	45.2	74.8	62.5	72.0
	Emerging	24.2	13.8	18.4	13.3
	Awareness	4.8	0.7	1.8	0.7
	Incomplete	25.8	10.7	17.1	14.0

[1] Testing was not conducted in 2020 due to Covid 19.

Table N-8. Achievement-Level Distributions—Alt/Chemistry

Grade	Achievement Level	Percent in Level			
		2021[1]	2019	2018	2017
HS	Advanced	0.00	0.0	0.0	0.0
	Proficient	0.00	0.0	0.0	0.0
	Needs Improvement	0.00	1.8	9.7	1.3
	Progressing	77.8	76.4	52.8	77.9
	Emerging	0.00	5.5	18.1	3.9
	Awareness	0.00	0.0	0.0	0.0
	Incomplete	22.2	16.4	19.4	16.9

1 Testing was not conducted in 2020 due to Covid 19.

Table N-9. Achievement-Level Distributions—Alt/Introductory Physics

Grade	Achievement Level	Percent in Level			
		2021[1]	2019	2018	2017
HS	Advanced	0.00	0.0	0.0	0.0
	Proficient	0.00	0.0	2.5	1.5
	Needs Improvement	0.00	2.7	8.6	10.5
	Progressing	40.0	72.6	55.6	56.7
	Emerging	0.00	13.7	21.0	14.9
	Awareness	0.00	2.7	2.5	3.0
	Incomplete	60.0	8.2	9.9	13.4

1 Testing was not conducted in 2020 due to Covid 19.

Table N-10. Achievement-Level Distributions—Alt/Technology/Engineering

Grade	Achievement Level	Percent in Level			
		2021[1]	2019	2018	2017
HS	Advanced	0.00	0.0	0.0	0.0
	Proficient	0.00	0.0	0.0	0.0
	Needs Improvement	0.00	0.0	0.0	0.0
	Progressing	64.3	73.8	52.1	64.5
	Emerging	16.7	15.0	21.9	22.6
	Awareness	2.4	0.0	2.1	2.2
	Incomplete	16.7	11.2	24.0	10.8

1 Testing was not conducted in 2020 due to Covid 19.

APPENDIX O
SAMPLE REPORTS—MCAS

Name:
SASID:

Science and Technology/Engineering

Grade 5
Spring 2021
Computer-based test

2021 Score is **501 – Meeting Expectations**

Your child met grade-level expectations and is academically on track to succeed in the current grade in this subject.

The dashed line below shows the range of likely scores your child would receive if they took the tests multiple times.

501

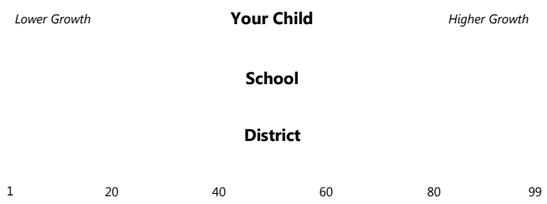
How did my child perform compared to students in their school, district, and state?

Your Child's		Year	Average Score		
Grade	Score		School	District	State
5	501	2021	501	500	494

How does my child's academic progress, or growth, compare to students with similar prior MCAS scores in their school, district, and state?

2021 Student Growth Percentiles

The student growth percentile (1-99) compares your child's progress to the progress of other students with similar prior MCAS scores.



The questions below can help you talk with your child and your child's teacher about what they are currently learning in their **sixth grade** Science and Technology/Engineering class. The complete ***Family Guide for grade 6*** is available at www.doe.mass.edu/highstandards and contains information about what your child is expected to know by the end of the school year.

QUESTIONS YOU CAN ASK YOUR CHILD:

- What kinds of materials and tools would you use to build a birdhouse?
- What are some ways to separate salt from salt water?

TOPICS YOU CAN DISCUSS WITH YOUR CHILD'S TEACHER:

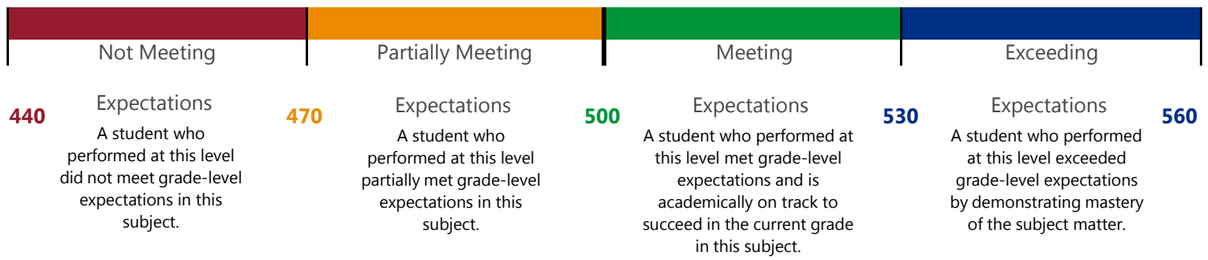
- Ways of applying what your child learns in science to everyday situations
- Places in the community that can help your child learn science

Spring 2021 MCAS Tests
Parent/Guardian Report

MASSACHUSETTS DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION

Name:
SASID:
Date of Birth:
District:
School:
Grade: 5

This report provides your child's results on the spring 2021 Massachusetts Comprehensive Assessment System (MCAS) tests. For each test your child took in spring 2021, the report shows your child's score (between 440 and 560) and an associated achievement level. See the graphic below for a description of each achievement level.



NOTE: Due to the interruptions to teaching and learning that occurred during the 2020-2021 schoolyear, there are important differences to this year's MCAS tests and the results on this report for your child, compared to MCAS tests in previous years.

The amount of time for testing was reduced to help schools adapt to different learning schedules.

Students took one-half of a regular test in each subject. Some students took Session 1 of the test,and others took Session 2.

Students learning remotely could take the tests on a computer at home.

Information about your child's achievement in this report should be used alongsideother assessments, such as school tests and classroom work, when possible.

In addition to your child's results, the report also shows how students in your child's school and the state did on thetest, how achievement changed over time, and how your child's academic progress, or growth, compares to other students.

Participation rates varied across schools and districts in 2021 more than they did in prior years. If the participationrate in your child's school and/or district was lower this year than in prior years, be aware that the school and/or district results may have been different if more students had taken the test. Information about school and district participation rates is available at profiles.doe.mass.edu/statereport/participation.aspx.

The bottom of each page has information specifically designed for families to help you support your child's learning intheir *current grade*. Visit the link to view the ***Family Guides*** to review the grade-specific knowledge and skill expectations for your child in each subject for the 2021-2022 school year.

Consider meeting with your child's principal, counselor, or teacher to discuss areas where improvement may be neededand/or ways to keep your child challenged and performing at a high level.

Name:
SASID:

English Language Arts

Grade 5
Spring 2021
Computer-based test

2021 Score is **514 – Meeting Expectations**

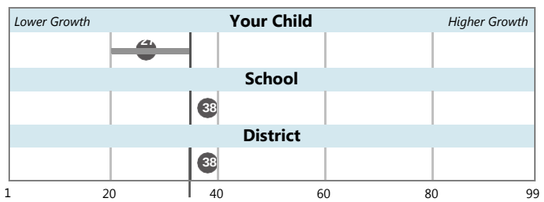
Your child met grade-level expectations and is academically on track to succeed in the current grade inthis subject.
The dashed line below shows the range of likely scores your child would receive if they took the tests multiple times.

How did my child perform compared to students in their school, district, and state?

Your Child's		Year	Average Score		
Grade	Score		School	District	State
5	514	2021	501	501	497
3	533	2019			

How does my child's academic progress, or growth, compare to students with similar prior MCAS scores in their school, district, and state?

2021 Student Growth Percentiles
The student growth percentile (1-99) compares your child's progress to the progress of other students with similar prior MCAS scores.



State Avg.

The questions below can help you talk with your child and your child's teacher about what they are currently learning in their **sixth grade** English Language Arts class. The complete ***Family Guide for grade 6*** is available at www.doe.mass.edu/highstandards and contains information about what your child is expected to know by the end of the school year.

QUESTIONS YOU CAN ASK YOUR CHILD:

- Can you tell me about the last research project you did?
- When you are working in a group, how do you and your classmates decide how you will get your work done?

TOPICS YOU CAN DISCUSS WITH YOUR CHILD'S TEACHER:

- What new types of writing your child is exploring
- What topics your child is curious about and what types of things they read at home

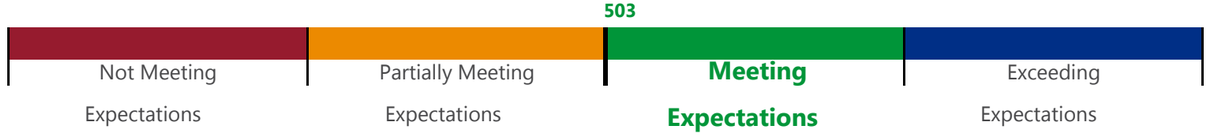
Name:
SASID:

Mathematics

Grade 5
Spring 2021
Computer-based test

2021 Score is **503 – Meeting Expectations**

Your child met grade-level expectations and is academically on track to succeed in the current grade inthis subject.
The dashed line below shows the range of likely scores your child would receive if they took the tests multiple times.

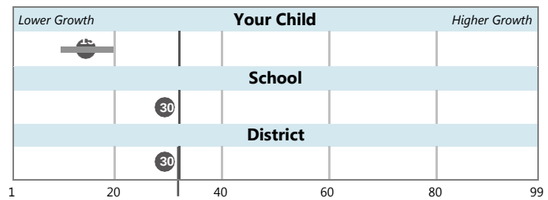


How did my child perform compared to students in their school, district, and state?

Your Child's		Year	Average Score		
Grade	Score		School	District	State
5	503	2021	493	492	490
3	520	2019			

How does my child's academic progress, or growth, compare to students with similar prior MCAS scores in their school, district, and state?

2021 Student Growth Percentiles
The student growth percentile (1-99) compares your child's progress to the progress of other students with similar prior MCAS scores.



State Avg.

The questions below can help you talk with your child and your child's teacher about what they are currently learning in their **sixth grade** Mathematics class. The complete ***Family Guide for grade 6*** is available at www.doe.mass.edu/highstandards and contains information about what your child is expected to know by theend of the school year.

QUESTIONS YOU CAN ASK YOUR CHILD:

- How long will it take to drive home if we go 30 miles per hour?
- How many goals does your soccer team typically score?

TOPICS YOU CAN DISCUSS WITH YOUR CHILD'S TEACHER:

- Ways to practice using ratios and rates at home
- Your child's fluency with basic operations (addition, subtraction, multiplication, and division)

APPENDIX P

SPRING 2021 ANALYSIS AND REPORTING BUSINESS REQUIREMENTS

Massachusetts Comprehensive Assessment System (MCAS) Reporting Business Requirements

Table of Contents

I. Overview

Due to the COVID-19 pandemic the 19-20 Spring administration of the MCAS NextGen and HS STE Legacy tests were cancelled. The pandemic has also caused several changes in administration to be necessary for Spring 2021. The following changes in test administration have been made:

1. Remote administration has been allowed for grades 3-8
2. New Tests in 3-8 for all subjects have been created by breaking the test forms up by sessions. Students are required to only take 1 session which comprises their test form in 2021. The online tests will expose the students to only 1 session. Session assignments are at the school level. Students testing on paper will have the full answer document available to them although they are to only take one session.
3. Test administration timelines were later in Spring 2021 and all administrations ended on 6/11/21.
4. The student report for NextGen was redesigned.
5. Additional fields added to the megafile to support the remote testing for NextGen.
6. Also in Spring 2021 is an online only administration of Grade 8 Civics Field Test. The field test is broken into the Performance Task test and the End of Course Test.
7. Grades 5 & 8 STE Short (mini) Form is being administered to students participating in the Innovative Science Pilot-both the short form and the pilot are being administered in Pearson TestNav. The mini form was created by using only a subset of the operational items in the grade/subject.

Operational Grades and subjects are:

NextGen			**Legacy**		
Grade	Subject	Mode of test	**Grade**	Subject	Mode of Test
3-8	ELA	Online Paper Remote	**9**	Legacy Introductory Physics Legacy Biology Legacy Technology/Engineering Legacy Chemistry	Paper
3-8	Math	Online Paper Remote			
5 and 8	Science and Technology/Engineering (STE)	Online Paper Remote			
10	ELA	Online Paper	**10**	Legacy Introductory Physics Legacy Biology Legacy Technology/Engineering Legacy Chemistry	Paper
10	Math	Online Paper			

A. Contract Code

163552

B. Reporting Deliverables

Preliminary Reporting		Final Reporting	
External	Internal	External	Internal
• Megafiles-All grades and subjects • Questionnaire Data files • Accommodations-by subject • Accommodations-by subject and item • Testing time files • Students with both Alt and General results • Missing Grade Span List	• Letter counts • Language counts • Discrepancy table	• Megafiles-All grades and subjects • 1 student report-print copy • Web student report • Student label-print copy • State File	• Printer data • iCore data

C. Delivery of Reports

- 1 copy of the Student Report is printed and shipped.
- 1 Student Results Labels is printed and shipped for each student.
- Online reports are available to the school and district where the student tested.
- Online reports are available in PAN.
- Students are reported to their tested school.

D. Test Design

Item Metadata data is stored in the ABBI item banking system. Pearson provides a test map which is an extract from ABBI that provides the item metadata for each operational and field test being administered.

Grade(s)	Subject(s)	Form(s)	Items included in Raw Score	Item Types
HS	Chemistry and Technology/Engineering	00 = common + Matrix forms	Common	MC, OR, SA
3-8	ELA	Online, Paper, Paper accommodated, online accommodated	Common (OP)	MC or SR1=Multiple Choice, SR2=TEI, TECR, 2pt. MC, EBSR, CR-3 pt. ES-7pt.
3-8	Math	Online, paper, online accommodated, Paper accommodated	Common (OP)	MS1=Multiple Choice, TEI, 1pt. MS2=Machine Scored 2 pt. CR=Hand scored 3 pt. or 4 pt.
5 and 8	Science	Online, Paper, online accommodated, Paper accommodated	Common (OP)	MS1=Machine Scored 1pt. MS2=Machine Scored 2 pt. HS2=Hand Scored 2pt. HS3=Hand Scored 3pt.

Grade(s)	Subject(s)	Form(s)	Items included in Raw Score	Item Types
HS	Biology and Introductory Physics	Online, Paper. Online accommodated, Paper accommodated	Common (OP)	MS1=Machine Scored 1pt. MS2=Machine Scored 2pt. HS3=Hand Scored 3pt. HS4=Hand Scored 4pt.
10	ELA	Online, Paper, online accommodated, Paper accommodated	Common (OP)	SR1=Multiple Choice SR2=TEI, TECR, 2pt. MC, EBSR, CR3=Hand Scored 3 pt. ES=Hand Scored 8 pt.
10	Math	Online, Paper, online accommodated, Paper accommodated, Online Spanish, Paper Spanish	Common (OP)	MS1=Machine Scored 1pt. MS2=Machine Scored 2pt. CR=Hand Scored 4pt.

E. Forms

Form 01 is used for the accommodated forms.

Form conventions:

Form_Code=Year||subject||grade||Admin||Accommodation/Mode||Language||Form Number||Unit Number||Special

Where year=20 or 21;

Subject=EL, MA, SC, SS;
Grade=03,04,05,06,07,08, 10, 11, BI, PH, CV

Remote Mini STE testers have admin=MR
Spring online remote testers have admin=SR
Spanish testers have Language=ES
Paper testers have accommodation/mode=PA

See MCAS Scoring Form ID Key.xlsx for more information

Mini STE:

1. We will receive a separate lookup table for these students.
2. The full scale should be used.
3. The short form consists of a subset of the OP items on the long form. It contains no FT, or matrix equating items.
4. There is 1 form per grade

F. Scoring

Machine scored items are scored according to the scoring rules and QTI in ABBI. The following table is applicable to hand scored items.

Raw Data Value	Reported Value	Description	Point Value	Response Attempted
0-max pts	Final score	Open Response / Short Answer	0-max	ü
N	0	Not Scorable	0	ü
B		Blank response	0	

G. Test Attemptedness

Grades 3-8: On the operational tests, a test meets attemptedness if there is at least one operational item that is attempted.

Grade 8 Civics: The test meets attemptedness if there is at least one item attempted per session.

Grade 10: The test meets attemptedness if there is at least one operational item that is attempted per session.

H. Not Tested Reasons

The following not tested reasons apply to the Spring tests:

1. Medically Documented Absence (MED)
2. Transfer
3. First-year EL (ELA only)
4. Void
5. Previously Passed (High School)
6. Previously Failed (High School)
7. Multiple Answer Booklet
8. Invalidated
9. Absent
10. ALT

The table below describes the calculation of the applicable participation statuses.

Summarize	Prior Results	Description	Part Status	Test Stat*	Discrepancy Site	
					Code	**Text**
n/a	*n/a*	Breach	*Breach Instructions are applied at the student level regardless of participation status and are identified by Amend > '1'*			
		Void *(Preliminary Only)*	H	NTO	VAB	Void Answer Booklet
		Multiple Answer Documents *(Security Breach)*				
		Preliminary	I	NTO	DUP	Multiple Answer Booklets
		Final	N	NTO	*n/a*	*n/a*

Summarize	Prior Results	Description	Part Status	Test Stat*	Discrepancy Site	
					Code	**Text**
		Invalidated *(Only assigned via Breach List)*	N	NTO	INV	Invalidated
1 (or Grade=09)	*n/a*	Tested Accountable Alternate Assessment	A	T	ALT	Tested Alternate Assessment
		Tested	Z	T	STD	Tested Standard
		Not Tested (/Partially Tested) – LEP *(ELA Only)*	F	NTL	LEP	Not Tested First Year EL
		Not Tested (/Partially Tested) - Transfer	D	NTO	TRN	Transferred
		Not Tested (/Partially Tested) – Medically Excused Absent	G	NTM	MED	Medically Excused
		Not Tested (/Partially Tested) - Absent	E	NTA	ABS	Absent
		Incomplete	S	NTO	INC	Incomplete
	Prev. Failed	Tested Alternate Assessment Accountable Retest	C	TR	ALR	Retested Alternate Assessment
	Prev. Failed	Tested Accountable Retest	Y	TR	RET	Retested
	Prev. Failed	Previously Failed (Not Tested /Partially Tested Accountable Retest)	L	NTO	PRF	Previously Failed
	Prev. Passed	Ineligible Accountable Retest – Previously Passed & Retested *(Preliminary Only- final see K)*	P	NTO	PPR	Previously Passed & Retested
	Prev. Passed	Previously Passed	K	NTO	PAS	Previously Passed

continued

0	*Any*	Tested Not Accountable Alternate Assessment (Retest)	W	TR	ALN	Retested Alternate Assessment Not Aggregated
		Tested Not Accountable (Retest)	R	TR	REN	Retested Not Aggregated
		Partially Tested Not Accountable (Retest)	B	NTO	INC	Incomplete
		Not Tested Not Accountable (Retest)	J	NTO	DNT	Did Not Test

* Student results achieved while First-year EL, or students currently First-year EL (see rptLEPFirst calculation) are reported with TestStat = "NTL" in place of listed TestStat (all subjects). See Calculations by Participation Status Summary Table for more details.

I. Calculations

1. Item Analysis Student Inclusion/Exclusion (Ex[sub]) & Matrix Files
2. Only first-time accountable test takers that are not first-year LEP (Partstatus = 'Z' and rptLEP[sub] are included for item analysis and psychometric equating files (Ex[sub] = '0').
3. Exclude students if stugrade='11' or '12'.

4. All other students are excluded (Ex[sub] = ‘1’).
5. All analysis will be based off CBT tests for Next Gen
6. For Next Gen tests due to the way some accommodations cannot be spiraled. The accommodations listed below will have the following special handling
    a. Students with unique accommodations to be excluded include: paper-based testing, text-to-speech (TTS), Braille, Spanish, human reader, screen reader, ASL, and assistive technology);
    b. At DESE’s discretion data will be provided to psychometrics to study mode effects. However, this data will not be expected to determine operational results in 2021.
    c. Students with these accommodations will be excluded from all matrix files
    d. Students with these accommodations will be excluded from CTT and dif calculations from for matrix items but will be included for scaling items.
7. For High School Science (STE’s) if an included student does not attempt at least one of the first 10 items (common or matrix/field-test) they are excluded (Exsci = ‘1’).
8. For High School STE in addition to the rules outlined above, students with stugrade in (‘11’,’12’) are excluded.

J. Files from DESE

1. Breach List
    a. Students who are considered a security breach are provided by DESE in the Breach List. Instructions for processing and reporting each security breach case are provided
    b. Data Analysis reviews the breach list and adds necessary Amend flag values (> ‘1’) and instructions to the Amend Code Definition Lookup for each distinct scenario on the Breach List.
    c. Data Processing applies any necessary changes to the raw student record based on DESE instructions and applies the corresponding Amend Flag value from the lookup to the student for Data Analysis processing.
2. Technology Failure List
    a. DESE will provide a list of students who could not complete the assessment based on a persistent technology issue with the testing platform. This file will be provided at the same time as the Breach List.
    b. These students are processed with an Amend code (AmendCode=13).
        i. If a student has a PerfLevel = 2, 3, or 4, the following information is reported:
        ii. Student’s earned raw score, earned item scores, and earned mfScaledScore. These students will be reported as NTO
    c. If a student does not have a PerfLevel equal to 2, 3, 4, then the student is reported as “INC” with their raw score and item scores reported. The student’s perf2, numin, and assess values will all be blank

d. In 2021, there is a special case of Technology Failure students not reported by DESE. These students are identified as students who tested remotely in grade 8 STE. An amend code is being set for these students. They will be treated as follows:

   i. The student will not have any items reported (megafile and student report)
   ii. No rawscore, no scaled score (megafile, student report and student labels)
   iii. Performance level=blank/null in the megafile and 'Not Available' on the student report and student labels
   iv. These students will be flagged as remote testers in the megafile and for tblDiscrepancy.
   v. Their test status for science will be blank/null
   vi. Their perf2, numin, and assess values will all be blank

3. SIMS

   a. Student data are provided by DESE for reporting use following the SIMS file layout (also provided by DESE.)

   b. SIMS contains various demographic, historical scores, and accountability data field. The data populated depends on the time of year of the handoff

   c. Multiple handoffs occur during the year

4. Current Year Student Growth Data

   a. Current year student growth percentiles (and corresponding standard errors) are provided for ELA and Math at the student level from DESE based on preliminary results.

   b. In 2021, if DESE uses the Baseline Growth method, the state mean may not be fixed at 50.

5. Grade Span Lookup

   a. DESE provides a grade span lookup for all public official schools. It is used to assign "SchType" in the various megafile handoffs.

   b. Cognia will provide DESE with a list of any public schools that have students assigned to them that are not included in the lookup, resulting in blank grade span data based on the Preliminary data release.

   c. All public schools must have a grade span for final post-discrepancy reporting. For earlier releases grade spans may be blank for schools missing from the lookup.

6. Discrepancy Site

   a. Data from preliminary reporting is posted to the discrepancy site for clean up by the field and the department.

   b. See the Discrepancy Site Requirements for more details on which fields are available for editing at each user level.

   c. Data Processing re-processes data post-discrepancy to incorporate the updated information and discrepancy resolutions from DESE for DA for final reporting.

   d. During final processing all information from the discrepancy site is considered final and is maintained, however, changes to certain fields require additional data audits and/or

recalculation of student participation status to ensure consistency. See the Data Reconciliation section for these details.

e. In 2021, the discrepancy site will not include scaled scores and performance levels for all grades ELA, Math, and grades 5 and 8 STE. The conversion tables were provided to DESE to apply and distribute scores to schools.

7. Sprp_sch and Sprp_dis: Exceptions List
    a. DESE will provide this list to Cognia
    b. The lookup is used in the assignment of official student school and district (See Data Reconciliation Audits for details)
8. One School District List (daSingleSchDisLookup)
    a. DESE will provide this list to Cognia
    b. The lookup is used in the aggregate calculations (see Aggregate Calculations for details)
9. Official School and Official District Code
    a. Official District (sprp_dis)
        i. If the student's testing discode+schcode is on the Exceptions List (System+School) then the official district is the sprp_dis from the Exceptions List.
        ii. If the student's testing orgtype is 6, 13 or 22 then the official district is set to the discode concatenated with four zeroes.
        iii. Otherwise, the official district is the sending district from SIMS (senddiscode) if it exists, concatenated with four zeroes at the end. If senddiscode is blank the official district is set to '99999999'.
    b. Official School (sprp_sch)
        1. If the student's testing school (discode+schcode) is on the Exceptions List (System+School) then the official school is the sprp_sch from the Exceptions List.
        2. If a student is from a collaborative school (testing OrgType = 3 or 4) then the official school is = 05XX0000 where XX is the 3rd and 4th digit of the testing district code.
        3. If the student's testing orgtype is 25,31, or 50 then the official school is the official school code from SIMS (simsDiscode + SimsSchcode). If the simsDiscode and simsSchcode are blank the official school is set to the testing school code (discode+schcode). If the official school from SIMS turns out to be orgtype 22, then use the Exceptions list for official school.
        4. Otherwise, the official school is the testing school (discode+schcode).
    c. Setting of Orgtype
        1. Orgtype is based on the official school code
        2. Using the official school code link to the MCAS org data file (DA use: icore) and pull the org type (DA use: Reportcode2).
        3. In the event that an orgtype is not assigned, default orgtype to 'X'. This is expected due to some SPRP schools not being in the Org data file
    d. The table below displays possible values for a school's Orgtype

Orgtype Code	Description
2	Special Education School
3	Collaborative
4	Collaborative
6	Public School
10	MA State Agency
11	Private School
13	Charter School
22	Charter School Program
25	ALT Ed Program
29	Out-of-State School
30	Adult Diploma Site
31	MCAS Test Site
34	SEIS Program
37	Adult Basic Education
50	School Program
95	Special Education Program

K. Rounding Rules

Calculation	Rounded (to the nearest)
Student Counts	Whole Number
Percentages	Whole Number
Mean Growth Percentile	Whole Number

II. Scaling, Equating and Item Statistics

1. Legacy Scaling
    a. Scaling is done using a lookup table provided by psychometrics and the student's overall raw score (by subject).
    b. The scaled score lookup achievable scaled scores are always even numbers and are between 200 and 280 every year.
    c. Psychometrics provides the High School Science lookup for Grade 09 and 10 in each subject. The grade 09 lookups are identical to the grade 10 lookups.
2. Next Gen Scaling
    a. Scaling is completed using a lookup table provided by Psychometrics. Scales are based on student's test mode, scaleform, and raw scores
3. Achievement Level Coding for G10 Legacy Tests (i.e., HS Science only this year)

a. The MCAS Standard Assessment has four possible achievement levels, assigned to students using the raw to scale score lookup provided by psychometrics.

b. Alternate Assessment achievement levels are translated to their corresponding standard assessment achievement level prior to computing any aggregate calculations that include alternate assessment achievement level results as shown below

Achievement Level Coding – NextGen and Legacy Tests

MCAS Achievement Level	MCAS Description	MCAS Alt Achievement Level	MCAS Alt Description
1		7	Incomplete Portfolio (INP)
		8	Awareness (AWR)
	HS STE: Failing (F)	9	Emerging (EMG)
	Not Meeting Expectations (NM)	10	Progressing (PRG)
2	*HS STE*: Needs Improvement (NI)	11	Needs Improvement (NIA)
	Partially Meeting Expectations (PM)	14	Partially Meeting Expectations-Alt (PM_A)
3	*HS STE*: Proficient (P)	12	Proficient (P_A)
	Meeting Expectations (M)	15	Meeting Expectations-Alt (M_A)
4	*HS STE*: Advanced (A)	13	Advanced (A_A)
	Exceeding Expectations (E)	16	Exceeding Expectations-Alt (E_A)

III. Student Level Calculations

A. Calculations by Participation Status Summary

Summarize	Prior Results		Part Stat	rptLEP[sub][1]	Test Stat	Current Year Reporting Results					Aggregation and Accountability Results		
						('---'indicates data are blank)							
		Description				Raw Scores	Item Scores	rScaled Score *(Cognia Reports)*	Achievement Level *(rPerfLevel, mfPerfLev)*	mfScaledScore	Achievement Level *(Perf2/mfPerf2)*	CPI / Numin	Assess [2]
		Breach	*Breach Instructions are applied at the student level regardless of participation status and are identified by Amend > '1'*										
		Void *(Preliminary Only)*	H	*any*	NTO	earned	earned	---	VAB	---	---	---	0 [3]
		Multiple Answer Documents (Security Breach):											
		Preliminary	I	*any*	NTO	earned	earned	---	DUP	---	---	---	---

		Final	N	*any*	NTO	---	---	---	INV	---	---	---	---
1 (or Grade=09*)		Tested Alternate Assessment	A	0	T	---	---	---	earned (Alt)	---	earned (Alt)	ü	1
				1	NTL					---	---	---	1
		Tested	Z	0	T	earned	earned	earned	earned	earned	earned	ü	1
				1	NTL			*Pass:* earned *Else:* ---	*Pass:* earned *Else:* LEP	*Pass:* earned *Else:* --	---	---	1
		Not Tested /Partially Tested – LEP (ELA Only)	F	1	NTL	Earned		*HS Pass:* earned *Else:* ---	*HS Pass:* earned *Else*: LEP	*HS Pass:* earned *Else:* --	---	---	1
		Not Tested /Partially Tested - Transfer	D	0 (M/S 1)	NTO				*HS Pass:* earned *Else*: TRN		---	---	---
		Not Tested /Partially Tested – Medically Excused Absent	G	0 (M/S 1)	NTM				*HS Pass:* earned *Else*: MED		---	---	0
		Not Tested /Partially Tested - Absent	E	0 (M/S 1)	NTA				*HS Pass:* earned *Else*: ABS		---	---	0
	F	Tested Alternate Assessment Accountable Retest	C	0	TR	---	---	---	earned (Alt)	---	highest (Alt)	ü	1
				1	NTL					---	---	---	1
	F	Tested Accountable Retest	Y	0	TR	earned	earned	earned	earned	highest	highest	ü	1
				1	NTL			*Pass:* earned *Else:* ---	*Pass:* earned *Else*: LEP	*Pass:* highest *Else:* ---	---	---	1
	F	Previously Failed (Not Tested /Partially Tested Accountable Retest)	L	0	NTO	*Pass:* earned *Else:* --	*Pass:* earned *Else:* --	*Pass:* earned *Else:* --	*Pass:* earned *Else:* PRF	highest	highest	ü	1
				1	NTL				*Pass:* earned *Else:* LEP	*Pass:* highest *Else:* --	---	---	1
	P	Ineligible Accountable Retest – Previously Passed & Retested *(Preliminary Only)*	P	0	NTO	earned	earned	---	INE	prior	prior	ü	1
				1	NTL					prior	---	---	1

	P	Previously Passed	K	0	NTO	---	---	---	PAS	prior	prior	ü	1
				1	NTL					prior	---	---	1
0		Tested Not Accountable Alternate Assessment (Retest)	W	0	TR	---	---	---	earned (Alt)	---	---	---	---
				1	NTL								
		Tested Not Accountable (Retest)	R	0	TR	earned	earned	earned	earned	earned	---	---	---
				1	NTL			*Pass:* earned *Else:* --	*Pass*: earned *Else:* LEP	*Pass:* earned *Else:* --			
		Partially Tested Not Accountable (Retest)	B	*any*	NTO	earned	earned	*Pass:* earned *Else:* --	*Pass:* earned *Else:* INC	*Pass:* earned *Else:* --	---	---	---
		Not Tested Not Accountable (Retest)	J	*any*	NTO	---	---	---	DNT	---	---	---	---

[1] rptLEP is LEPFirst for all grades/subjects/participation statuses that do not have prior results. It is a calculated combination of LEPFirst and prior LEP First status for Accountable partstatuses with prior results. See calculations section for details.
[2] Assess exceptions for ELA: there is an additional condition of participation on the Access test. See calculation specifics for details.
[3] If Summarize = 1 then Assess = 0. If Summarize = 0 then Assess is blank.
*Grade = 09 students are assigned participation statuses as if Summarize = '1'. Perf2, CPI, Numin, and Assess are populated for calculations but set to blank in the Megafile deliverable.
Note: "(M/S 1)" indicates that rptLEP[sub] may also be '1' in Math and Science for the listed participation statuses.

B. Other Calculations

1. StudentID
    a. StudentID = rptStudentID from DPRaw (verified SASID)
    b. For non-demonstration students, if StudentID does not begin with '10' it was generated by DP for linking purposes, and will be set to blank for reporting
2. Accommodations and Accommodation Footnotes
    a. If a student did not attempt any items in a subject, the corresponding raw accommodation indicators (from DPRaw) are ignored during the determination of accommodations and footnotes for reporting. Otherwise, if a student attempts at least one item in a subject, the corresponding raw accommodation indicators are evaluated:
        i. For ELA and Math accommodation all items (common, matrix, and field-test) are considered.
        ii. All the underlying accommodation fields in DPRaw are maintained as provided, regardless of student attempt status.
    b. Standard Accommodations

i. Accom_e = ‘1’ if the student received any accommodations (except color contrast answer masking and Alternative Mouse Cursor Pointer, non-IEP/non-504) in ELA, otherwise set it to blank.
ii. Accom_m = ‘1’ if the student received any accommodations in Math (except color contrast, answer masking and Alternative Mouse Cursor Pointer, non-IEP/non-504), otherwise set it to blank.
iii. Accom_s = ‘1’ if the student received any accommodations in science (except color contrast, answer masking and Alternative Mouse Cursor Pointer, non-IEP/non-504), otherwise set it to blank.

c. Special Access ELA Accommodations

i. Human Read-Aloud as a special access Accommodation is indicated then Accom_ReadAloud=’H’
ii. If Text to Speech accommodation is indicated, then Accom_ReadAloud=’T’
iii. If Kurzweii special access Accommodation is indicated, then set Accom_Readaloud=’K’
iv. If Human Scribe special access Accommodation is indicated, then Accom_Scribe=’H’
v. If Speech to Text Non-Standard Accommodation is indicated, then Accom_Scribe=’S’

d. Special Access Math Accommodation

i. If calculation Device Accommodation is indicated, then Accom_Calculator=’1’

e. For special access Accommodation Student Report text based on elaNSAFootnote and matNSAFootnote see table Special Access Accommodation Footnote Text (Student Report)

3. Reporting First Year LEP Status

a. RptLEP is determined for each subject based on current year partstatus, test attemptedness, First Year LEP status, and Prior First Year LEP Status (where applicable) to determine if a student’s results should be considered achieved while under First-Year LEP status or as currently First-year LEP. This takes into consideration the prior status of the student when prior results are eligible for accountability (currently only allowed in science)

b. For all participation statuses that are considered Not Accountable rptLEP[sub] = LEPFirst.

c. Otherwise, if the student is considered Accountable then:

i. If the student has prior results:
1) If the student meets attemptedness this year, then: rptLEP[sub] = LEPFirst.
2) If the student partially attempts or does not attempt this year, then:
a) rptLEP[sub] = ‘1’ if either LEPFirst = ‘1’ or [sub]NTL = ‘1
b) Otherwise rptLEP[sub] = ‘0

ii. If the student does not have prior results, then rptLEP[sub] = LEPFirst

4. Alt

a. [e/m/s]Alt is set to ‘1’ if a student is considered Tested or Retested Alternate Assessment (accountable or not accountable; PartStatus in ‘A’,’C’,’W’). Otherwise, it is set to ‘0’.

5. SpecialEd

    a. If a student is considered Tested or Retested Alternate Assessment (accountable or not accountable) in any subject (eAlt, mAlt, or sAlt = ‘1’) then SpecialEd = ‘1’. Otherwise, it is taken from IEP in SIMS. If it is blank it is defaulted to ‘0’.

6. Sims CD

    a. The latest CD value from SIMS for Math, ELA, and Science is stored for each student as-is, without any additional formatting as SIMS_[sub]CD

7. SSubject

    a. SSubject is set to the science subject that is used for reporting

    b. Data Processing will provide the science subject for the current test as well as science subject for prior results

    c. If a student took alt, then the alt science subject is reported

    d. If a student is reported using their prior results, then the prior science subject will be reported.

    e. Otherwise, the current science subject will be reported.

    f. Released = daIref.Released (where ‘1’ = released item, ‘0’ = unreleased item)

    g. RepCatCode is the 2-character reporting category code for each item:

        i. Assigned by Item Number for Math and ELA using daReportingCategoriesCrosswalk.
        ii. Assigned by daIref.Cat2 for Science using daSciRepCatCodes

8. Raw Scores

    a. Overall Raw Score

        i. The student’s overall raw score is the sum of scores for all scaling items
        ii. If a student has a partstatus that does not receive reported raw scores or if the student did not attempt any items (Attempt[sub]=’N’) then the raw score is set to blank after all subsequent calculations are complete.

9. Points Earned

    a. MCpts are based on common, scaling multiple choice or selected response items with point values stored in item metadata tables.

    b. ORpts are based on non-MC or involving open-response and constructed response (including essay scores). Item point totals are calculated based on item metadata tables.

    c. If a student does not receive reported raw scores these calculations are set to blank.

10. Reporting Category Points Earned (In 2021, N/A for Grades 3-8)

    a. The total points earned, and the percent of possible points earned by the student are calculated by reporting category.

b. Calculations include all scaling items.

a. If a student does not receive reported raw scores the number of points earned, and the percent of possible points earned are set to blank

11. Legacy Item Responses

    a. If a student has a participation status that does not receive reported item scores, or does not receive item scores because of attempt status, pass requirements or rptLEP conditions, all item responses will be blanked out (NULL) after raw score calculations are complete.

    b. Otherwise, re-formatted and re-ordered (by released item order) responses to all common items are reported to support the student report and megafile deliverables (excluding the State File, which includes all items):

        i. Released and unreleased OR items: the item score or not scorable code is reported. Responses of 'B' (blank) are set to NULL.
        ii. Released MC items: the plus-data from daPlusData is stored, where a "+" indicates a correct response and an alpha character (A, B, C, D, *) indicates an incorrect response choice.
        iii. Unreleased MC items: the plus-data from daPlusData is stored after re-formatting such that a "+" indicates a correct response, and "- "indicates a masked incorrect response choice (multiple responses ("*") remain unmasked).
        iv. HS STE has no released items in 2021

12. Next Gen Item Responses

    a. In grades 3-8 students take only 1 session of the test. This applies to ELA, Math and Science and Technology/Engineering (STE)

    b. Students with a participation status that does not receive reported item scores and those who do not receive item scores due to test attempt status, passing status, or rptLEP conditions will have scores blanked out (NULL) after raw scores have been calculated, if applicable.

    c. Otherwise, re-formatted and re-ordered responses to all scaling items are reported and stored to support the student report and megafile deliverables (excluding the State File, which includes all items):

        i. Released Essays: see the Essay Total Score calculations.
        ii. OR and MC items: the item score or not scorable code is reported. Responses of 'B' (blank) are set to NULL.

    d. For Grades 3-8 operational items that students are not exposed to in the session they attempted put "\". This is reported in the megafile.

    e. Only operational items are reported. The order of the items is the reporting sequence in the test map.

13. Current-Year Reporting Results

    a. Information stored in ScaledScore, Perflevel, rScaledScore, and rPerflevel are based on current year test results only. See the Calculations by Participation Status Summary table for details.

b. ScaledScore

   i. Current year scaled score results that are eligible to earn a current year scaled score. Conditions based on pass/fail, rptLEP or breach codes are not applied. This is an internal Cognia field that is not directly reported.
   ii. Blank for alternate assessment students and students not eligible to receive a scaled score based solely on participation status.

c. PerfLevel

   i. Earned current-year achievement level based on scaledscore (1-4). Conditions based on pass/fail, rptLEP, or breach codes are not applied.
   ii. For Alternate Assessment students the un-translated PerfLevel from the Alternate Assessment data table StuPL is stored (7-17).
   iii. If the student does not receive an achievement level based solely on partstatus PerfLevel is blank.
   iv. Valid Values: numeric achievement levels (1-4, 7-17) or blank. Internal Cognia field that is not directly reported.

d. rScaledScore

   i. rScaledScore is the current year earned scaled score for Cognia reporting purposes.
   ii. rScaledScore = ScaledScore, with suppression based on pass/fail status, rptLEP, or breach codes applied from the participation status summary table.

e. rPerfLevel

   i. rPerfLevel is the current year achievement level or partstatus.
   ii. rPerfLevel = Perflevel, modified based on pass/fail status, rptLEP, or breach codes for reporting as follows:
      1) If perflevel = '1' and rptLEP[sub] = '1' and the student has a partstatus that receives the text "LEP" in place of a non-passing achievement level, then rPerfLevel = 'F'. This is applied by subject for all subjects.
      2) Otherwise, if perflevel is blank then rPerflevel = partstatus.
      3) If a student has a breach code, then rPerfLevel is assigned per the breach instructions to override any other standard rules.

   i. Valid values: numeric achievement levels (1-4, 7-17) and partstatus codes.

f. mfPerfLev (megafile: [e/m/s]PerfLev)

   i. Formatted rPerfLevel (current year reporting results) to contain either the student's achievement level abbreviated text (Standard or Alt), or 3-character participation status code for all students (e.g., 'P' or 'P_A' or 'LEP' or 'TRN').

14. Aggregation/Accountability Results

   a. Aggregation and Accountability Results combine prior and current results, where applicable. See the Calculations by Participation Status Summary table for details.

   b. mfScaledScore (megafile: [e/m/s]scaleds)

      i. For Accountable or Grade 09 students mfScaledScore is populated with either the current year scaled score, or prior scaled score as applicable for

accountability. For Not-Accountable students mfScaledScore is populated with current year results as applicable.

ii. mfScaledScore is populated as follows for Accountable students (or Grade 09):

4) mfScaledScore = rScaledScore for First Time Testers and First Time Testers that did not meet attemptedness (ABS, MED, TRN, LEP).
5) mfScaledScore = Highest between rScaledScore and the prior highest ScaledScore ([sub]ScaledScore from DPRaw) for Accountable Retest Students.
6) mfScaledScore = Prior highest scaled score for Previously Passed students ([sub]ScaledScore] from DPraw).
    a) Note: if [sub]ScaledScore is blank for the above scenario, the student passed via appeals and an accurate scaled score may not be available. mfScaledScore is left blank.
7) Otherwise mfScaledScore is blank

iii. If rptLEP = '1' and the student's mfScaledScore (as determined above) is considered Failing, then mfScaledScore is set to blank.

iv. mfScaledScore = rScaledScore for Not-Accountable students.

c. Perf2 (used in aggregate calculations)

i. Populated with the achievement level for aggregate calculations and to support the megafile Perf2 using current year and prior results as applicable.

ii. Perf2 is blank for all students with rptLep[sub] = '1'.

iii. Otherwise Perf2 is populated as follows for Accountable or Grade 09 students:

1) Perf2 = rPerfLevel for First Time Testers (1-4, '6' is translated to '1').
2) Perf2 is blank for First Time Testers that did not meet attemptedness (ABS, MED, TRN, LEP).
3) Perf2 = Highest achievement level between rPerfLevel and High_xPerf for Accountable Retesters (science only).
4) Perf2 = Highest prior achievement level (High_sPerf) for Previously Passed students.
5) Perf2 = Translated Alternate Assessment Perf2 for students Tested Alternate Assessment or Accountable Retested Alternate Assessment. Translation is done from Alternate Assessment Achievement Levels of 7-16 to Standard Achievement Levels 1-4

iv. Otherwise perf2 is blank. Perf2 is blank for all Not-Accountable students except for grade 09 (available for grade 09 specific Cognia aggregations).

d. mfPerf2 (megafile: [e/m/s]Perf2)

i. Perf2 formatted to contain the student's achievement level abbreviated text (using Standard Assessment text only, e.g., 'P' or 'A'). Blank if Perf2 is blank.

ii. mfPerf2 is set to blank for grade 09 students in the megafile export.

15. Competency: Updating ELA_CD, Mat_CD, and Sci_CD

a. These variables represent whether a student has met the testing graduation requirement for the subject, combining prior CD information from SIMS with the current test results.

b. The updated mfCD fields begin with the prior CD value from SIMS (studemo SIMS_[sub]CD) for all students, regardless of participation status on this year's test. The prior value may be blank for students that have not previously tested in a subject.

c. The mfCD fields are then updated using current year scaled score results (rscaledscore) if and only if the CD value increases, otherwise the prior value is retained:

d. For NextGen ELA:

   i. If scaled score is ≥ 455 and scaled score is <472 then CD = '1'.
   ii. Otherwise, if scaled score ≥ 472 then CD = '2'.
   iii. Otherwise, CD is '0'.

e. For NextGen Math:

   i. If scaled score is ≥ 469 and scaled score is <486 then CD = '1'.
   ii. Otherwise, if scaled score ≥ 486 then CD = '2'.
   iii. Otherwise, CD is '0'.

f. For Legacy HS Science:

   i. If scaled score ≥ 220 then CD = '1'.
   ii. Otherwise, CD is '0'.

g. For students tested via the Alternate Assessment (Partstatus in 'A', 'C', or 'W') the CD field is taken from the current-year updated CD field in the alternate assessment data (tblStuPL.mfCD) and is not re-calculated.

16. Graduation Requirement Footnote (CDFootnote) (tblScoredItem)

    a. The graduation requirement footnote is for High School students and indicates if a student has met, previously met, or still needs to meet the testing requirements for graduation.

    b. Using the previous CD value from SIMS (tblstudemo.SIMS_[sub]CD) and the updated CD value incorporating current test results (tblScoredItem.mfCD) for each subject:

       i. If SIMS_[sub]CD is '1' or '2' then CDFootnote = '4' (Already Met).
       ii. Otherwise:
           1) If mfCD = '0' then CDFootnote = '1' (Not Met).
           2) If subject is ELA or Math:
              a) and mfCD = '1' then CDFootnote = '2' (Met but requires proficiency plan).
              b) And mfCD = '2' then CDFootnote = '3' (Met.)
           3) If subject is Science and mfCD = '1' then CDFootnote = '3' (Met).

       iii. For Student Report text see Appendix F.

17. Legacy Composite Performance Index (CPI) Points (HS Science and Technology/Engineering only) This is not being calculated in 2021.

    a. CPI Points are assigned based on results used for Aggregations and Accountability.

    b. For students whose accountability results are from the Standard MCAS Assessment:

       i. CPI points are assigned based on their Accountability Scaled Score (mfScaledScore) per the following table:

Test	mfScaledScore Range	CPI Points
Legacy HS STE	240-280	100
	230-238	75
	220-228	50

	210-218	25
	200-208	0

ii. If Partstatus in ('K','P') and mfscaledscore is missing:

1) If mfperf2 is "NI" (Standard Assessment) set CPI = 50 to indicate the student passed via appeals.
2) Otherwise, mfPerf2 is from a prior year Alternate Assessment. CPI points are set per the following table in tblScoredItem:

Test	Alt Perf2:	CPI Points
Alternate Assessment (Only when re-assigning based on prior-year Alt Results for Accountability)	A_A P_A PRG	100
	EMG NIA	75
	AWR	50
	INP	25

c. For Accountable Alternate Assessment students (Tested Alt or Accountable Retested Alt) CPI points are taken from the Alternate Assessment data

18. Next Gen Composite Performance Index (CPI) Points

a. Not Calculated

19. NumIn

a. See the calculations by participation status summary for a list of statuses that receive CPI points and numin = '1'. Otherwise, it is '0'

20. Assess

a. The subject specific Assess field is populated to indicate whether Accountable students have met the participation requirement this year based on the Calculations by Participation Status Summary table.

b. Exception for ELA only, when Assess = '1': If LEP_off = '1' and ACCESS_Part = '0' then Assess = '0'.

c. Fields are prefixed with e/m/s in the megafile.

d. Student was assessed: 1=student tested on MCAS or student is first year EL, 0=ABS or MED or EL student who did not take ACCESS for ELLs test, blank=not included in participation reports. See the table on page 12 for more detailed information.

21. Student Growth Percentile (GP)

a. Student growth percentiles (and standard error range) are reported for accountable first-time test takers that are not considered First Year LEP (PartStatus = 'Z' and LEPFirst[sub] = '0') in year 2 (students must receive test scores in consecutive grades two years in a row or have test scores in grade 8 and grade 10 over three years).

b. For all other students, GP is blank.

c. Growth is provided by DESE for students in Math and ELA, in grades 4-8 & 10.

d. After the discrepancy period, any student with changes to their preliminary raw score, perf2, partstatus, or StudentID will have growth data suppressed.

22. Complexity is populated with the student's alternate assessment composite complexity score for all students Tested or Retested (accountable or not-accountable) Alternate Assessment.

IV. Aggregate Calculations

1. Aggregation Summary

a. These rules are applied to all aggregate calculations. Any additional rules specific to a particular calculation will be listed under the rules for the calculation.

i. All reporting levels (sch/dis/sta): Only students eligible for accountability (Summarize = '1') and test status ='T' are included in aggregate calculations, except for Grade 09 specific calculations.
ii. For grade 9 HS STE: aggregations include students with Teststatussci='T'
iii. Students are aggregated to their official school (sprp_sch) and official district (sprp_dis), unless their sprp_dis is in daSingleSchDisLookup , in which case they are aggregated to the school associated with their sprp_dis and inclusion rules are dictated by the district (school and district calculations must match).
iv. Students with an SPRP Orgtype of 6 or 13 are used for school-level aggregations.
v. For district aggregations, if sprp_dis = '99999999' then delete.
vi. Exclusions based on OctEnrol are not applied to one-school district school or district level calculations.

b. Number and Percent of Students by Achievement Level

i. Calculated by grade and subject at the school, district, and state level.
ii. All Legacy sciences are aggregated together as "Science and Technology/Engineering". Grades 09 and 10 will be aggregated together Both grades 9 & 10 STE will show grade 10 students with perf2 populated.
iii. Calculations are performed using Perf2. All students with a non-blank Perf2 are eligible to be included in the calculations, including Alternate Assessment students (Achievement Levels are already translated to Standard-Assessment Achievement Level codes in Perf2).
iv. The following exclusions are applied to the pool of eligible students:
1) Next Gen - Grade 05, 08 (SCI), 03-10 Math and ELA:
a) Students with OctEnrol ≠'1' are excluded at the school level, unless they are in a one-school district
2) Legacy - Grade 10 Science (HS STE's):

a) Students with ConEnr_Sch ≠ ’1’ are excluded at the school level, unless they are in a one-school district, in which case students with ConEnr_Dis ≠ ’1’ are excluded.
b) Students with ConEnr_Dis ≠ ’1’ are excluded at the district level (as well as at the school level for one-school districts).
c) Students with ConEnr_Sta ≠ ’1’ are excluded at the state level.

v. N = the total number of students included in the calculation of the number of students at each achievement level (n1-n4) and is the denominator for the calculation of the percent of students at each achievement level (p1-p4).
vi. Minimum N-Requirement: if N < 10 for a school or district results are calculated but suppressed from reports.

c. P34

i. This is the sum of the percent of students in the Proficient Achievement Level (p3) and the students in the Advanced Achievement Level (p4) in each school, district or state as calculated above in Number and Percent of Students by Achievement Level

d. Growth Aggregations

i. All students with tblScoredItem.GP populated are eligible to be included in the calculations.
ii. The following exclusions are applied to the pool of eligible students:
1) Students with OctEnrol ≠ ’1’ are excluded at the school and district level unless they are at a one-school district.

iii. State Mean growth is defaulted to 50 (after computing MeanIncluded at the state level) for Math and ELA, all grades.
iv. Minimum N-Requirement: if N < 20 for a school or district results are calculated but suppressed from reports.

e. Legacy State Reporting Category Performance Comparison

i. The average number of points earned (nPoints) and the percent of total possible points earned (pPoints) by students at the “low end of the Proficient level” is calculated for each reporting category at the state level, stacked by subject and reporder. The student group used must be greater or equal to 200.
ii. Standard assessment students with partstatus = ‘Z’ and a scaledscore = ‘240’ are included.
iii. If there aren’t enough students at the cut, then add students at the cut+1 scaled score and reevaluate. Repeat until there are at least 200 students included or we are at 5 scaled scores above the cut score.
iv. Includes both grade 9 and 10 first time test takers.

f. Next Gen Reporting Category Calculations

i. Paper and Online tests are aggregated together.
ii. Students near Meeting Expectations
1) The average number of points earned (nPoints) and the percent of total possible points earned (pPoints) by students at the “low end of the Meeting Expectations level” is calculated for each reporting category at the state level,

stacked by subject and reporder. The student group used must be greater or equal to 200; if not, students from the next (higher) scaled score will be included in the analysis,

2) If any test/mode at a grade/content level does not reach the 200-student threshold within the scaled score range of 500-505, the student's report will not include the percent possible points for students scoring near Meeting Expectations for the reporting categories.

iii. Average Points Earned

1) Calculate average points earned for School, District and State

V. Data Deliverables Specifications

A. MegaFile(s)

1. Generic Details

a. Megafile deliverables are posted by grade to the FTP site for the state and contain data for all processed students.

b. All MegaFile deliverables follow the most recent layout: MCAS 2020-21 File Layout_Cognia_new6-2-21.xlsx

c. Test-result based fields that are not applicable to particular deliveries are left blank. SIMS based fields are populated for all releases, where available.

d. Amend

i. If a student receives an amend code for the General or Alternate Assessment, then the amend field will contain the first letter of that test (e.g., A value of "EM" indicates the student received an amend code in ELA and Math).

e. DataChanged

i. DataChanged indicates if a student's record has changed since a prior release of the file. It is defaulted to '0' for all students.

ii. Students whose record changes during the discrepancy period are flagged as datachanged = '1' (first full revision) in the post-discrepancy reporting file (release 4).

iii. Only use the following fields when calculating datachanged:

1) sprp_dis
2) sprp_sch
3) e/m/steststat
4) e/m/srawsc
5) e/m/sscaleds
6) e/m/sperflev
7) e/m/sperf2
8) e/m/scpi
9) e/m/snumin
10) e/m/sassess

f. Commas are suppressed from school and district names, and student names.

g. If [e/m/s]Alt. = ‘0’ then set to blank.

h. If LEPFirst = ‘0’ then set to blank.

i. For the following Accommodation variables, if the accommodation equals ‘0’, then set to blank: Accom_readaloud, accom_scribe, accom_calculator.

j. [e/m/s]ScaledS is the combined current year and prior year official scaled score results for students included in aggregations and accountability.

k. [e/m/s]Perflev is the formatted current year achievement level or code.

l. [e/m/s]Perf2 is the formatted combined current and prior year achievement level results for accountability and aggregations. Set to blank for Grade = ‘09’.

m. [e/m/s]_CD is updated with current-year results.

n. [e/m/s]SGP is the reported current-year student growth percentile.

o. If Grade = ‘09’ then the following accountability fields are set to blank:

   i. sPerf2
   ii. sCPI
   iii. sNumin
   iv. sAssess
   v. (Grade 09 test results are not included in DESE aggregate calculations until their accountability year)

p. In 2021 Additional fields were added to indicate the session taken in grades 3-8 for each subject.

q. In 2021 Additional fields were added to indicate if a student tested remotely for each subject.

2. Preliminary Release Specifics

   a. File Name:MCASYYYY_XX.dat

   b. Where YYYY = 4-digit test year (e.g., 2021), XX = 2-digit test grade.

   c. Files are produced for grades 03-08 and HS (includes test grade 09 and 10 data).

   d. DataChanged is originally set to ‘0’. If a student record is new or was modified during the discrepancy period, datachanged is set to ‘1’. For any subsequent updates the datachanged flag will be maintained and incremented as necessary.

   e. MCASRowID
   The mcasrowid is a 15-digit alpha-numeric field created in the following manner:

      i. 2 digits = administration year (ie: 21 for the 2021 test)
      ii. 2 digits = file grade (03-08 or HS)
      iii. 1 digit = test (1 = Standard)
      iv. 10 digits = bookletnumber (derived by DP from the student’s SASID or submitted answer document)

B. Assigned Accommodations Data File(s)

1. File Name: [sub]Accom.csv
2. One file is produced by subject including all students in all grades and posted to the FTP.
3. The fields are described in the Accommodation File layout.

C. Accessed Accommodations Data File(s)

1. File Name: [sub]AccomByItem.csv
2. One file is produced by subject including all students in all grades and posted to the FTP.
3. For each test the file is stacked by item UIN and indicates which accommodations were accessed for that item.
4. Items with no accommodations accessed are not included in the file. If a student has not accessed any accommodations on the test this will result in that student not being included in the file.

D. Questionnaire (VOCAL) Data File(s)

1. File Name: Questionnaire Data GrXX.csv where XX = 2-digit grade
2. Layout: MCAS[4-digit year]Questionnairelayout.xlsx
3. Files are produced for Grades 04, 05, 08, and 10 and posted via FTP.
4. All students are included regardless of responses to questionnaire items, listed by SASID (StudentID)

E. Alt & Standard Results Data Files

1. One file is produced including students in all grades that took both the Alternate Assessment and Standard Assessment in the same subject. This file provides score and achievement level information for DESE to determine if any students should have their Standard Assessment results override their Alternate Assessment results. This file is posted to the FTP.

VI. Report Deliverables Specifications

A. Definitions

1. The following terms will be used to describe certain formats/behavior:
    i. Next Gen Online suppression rules
        1) If a student does not receive a student report, then no label is printed for the student
        2) If all tested subjects for the student are under the Alternate Assessment, then students will not receive a label or student report.

B. Student Labels

1. Templates
    a. There are three different label templates that differ depending on the number of subjects reported for the tested grade:
        i. One subject – grade 09, grade 10 where summarize='0' and both math and ela tests were not submitted.
        ii. Two subjects – grades 03, 04, 06, 07
        iii. Three subjects – grades 05, 08, 10
2. Label Displays
    a. Student Name
        i. Presented as: FName MI. LName (with a period after the middle initial when the middle initial is not blank). Examples: JOHN T. SMITH or JENNY JONES
        ii. This section requires special formatting when one or more of the names are missing:
            1) If Lname is blank and Fname is blank, then section = "BLANK NAME"
            2) If Lname is blank and Fname is not blank, then section = "Fname BLANK"
            3) If Lname is not blank and Fname is blank, then section = "BLANK Lname"
    b. Grade
        i. If grade='10' and summarize = 0 and StuGrade <> 'SP' then use StuGrade from SIMS.
        ii. Otherwise use the Test Grade and remove any leading zeroes.
    c. SASID – Student ID from SIMS, no special formatting applied.
    d. School Name, School Code, and District Name – School and District names and School Code from iCore based on testing school (discode,schcode). No special formatting applied.
    e. Birth Date – DOB from SIMS, no special formatting applied. Stored in tblStudemo.DOB. Must be equal to 10 characters in length (MM/DD/YYYY).
    f. Test Date: "Spring 20YY" where 20YY = test year, e.g., 2021.
    g. Subject Title (Section1i, Section1l, Section1o) – Formatted with the following values:
        i. If subject = 'ela' then 'English Language Arts'
        ii. If subject = 'mat' then 'Mathematics'
        iii. If subject = 'sci' then and grade is 05 or 08 then 'Science and Technology/Eng'
        iv. Otherwise, if subject = 'sci' and grade is 09 or 10 (HS STE's) then:
            1) If rptSciTry = '1' then 'Biology'
            2) If rptSciTry = '2' then 'Chemistry'
            3) If rptSciTry = '3' then 'Introductory Physics'
            4) If rptSciTry = '4' then 'Technology/Engineering'
    h. Scaled Score – student earned scaled score stored as rScaledScore. If a student did not earn a scaled score for a tested subject (rScaledScore is NULL) the display is formatted as "---".

i. Achievement level contains either the achievement level text or the not-tested statement stored in tblPerfLevelLookup (see Appendix A- Description). This is set using the student's rPerfLevel. This is always populated if the subject existed at the tested grade.

C. Legacy HS Student Report Template (Grade 9 Science)

1. The following sections discuss the formatting of the various displays presented on the legacy high school student report. All calculations and aggregation rules can be found in earlier sections of this document. Please note that all details mentioned below cover reporting of tested students as outlined in Test Administration Table.
2. Cover Page
    a. Title – "Spring 20YY MCAS Tests" where 20YY = test year, e.g., 2021.
    b. Student Name – Presented as: LName, FName MI. (with a period after the middle initial when the middle initial is not blank). Examples: SMITH, JOHN T. or JONES, JENNY
    c. This section requires special formatting when one or more of the names is missing:
        i. If Lname is blank and Fname is blank, then section = "BLANK NAME"
        ii. If Lname is blank and Fname is not blank, then section = "BLANK, Fname"
        iii. If Lname is not blank and Fname is blank then section = "Lname, BLANK"
    d. SASID – Student ID from SIMS, no special formatting applied.
    e. School Name and District Name – School and District names from iCore based on testing school. No special formatting applied.
    f. Grade
    g. Test Grade and remove any leading zeroes.
    h. DOB – DOB from SIMS, no special formatting. Must be equal to 10 characters in length (MM/DD/YYYY).
3. Reporting Category Display
    a. Subject (Section6a) – Formatted with the following values:
        i. If rptSci = '1' then 'Biology'
        ii. If rptSci = '2' then 'Chemistry'
        iii. If rptSci = '3' then 'Introductory Physics'
        iv. If rptSci = '4' then 'Technology/Engineering'
    b. Reporting category text and two-character codes for the approved text and codes see Appendix D.
    c. Reporting category results and state comparisons are displayed only for students who are Tested.
    d. Points earned by your child is the points earned by the student in that reporting category.
    e. Possible Points – points possible for that reporting category.
    f. Percent of points earned by your child is points earned by child/points possible times 100. Place % symbol immediately after the number. Example: 15%.

g. Percent of points earned by minimally proficient kids. Place % symbol immediately after the number. Example: 15%.

i. This data is always displayed when the grid is displayed, regardless of whether the individual student has earned reporting category points.
ii. For HS STE's join to tblRepCatSummary based on the subject associated with the student's rptSciTry (if a student's rptSciTry = '2' then pPoints summarizing minimally proficient students in Chemistry is displayed).

h. Students identified as Suppress do not have this display on the report (all subjects).

4. Released Item Display

a. Subject Title (Section7a) – Formatted with the following values:

i. Otherwise, if subject = 'sci' and grade is 09 or 10 (HS STE's) then:
1) If rptSci = '1' then 'Biology'
2) If rptSci = '2' then 'Chemistry'
3) If rptSci = '3' then 'Introductory Physics'
4) If rptSci = '4' then 'Technology/Engineering'

b. Order of rows within each grid

The following definitions are used to both describe what appears and what is printed in Section7b.

i. 1 = "Question Number" – this is the released item order number.
ii. 2 = "Reporting Category" – this is the two-character reporting category code.
iii. 3 = "Your Child's Score" - this is the response provided by the student.

c. Formatting of Student Responses

i. If the student correctly responded for all MC items, this is translated to a 'P' in the reporting data so that a check mark is displayed.
ii. Incorrect MC items are already formatted to display the student's incorrect response option.
iii. Otherwise for all other items the points earned by the student from tblStuScore is presented along with the possible points for the item separated by a "/". Examples: 2/4 or 7/12.

d. Students identified as NoScience do not have the science grid portion of the display.

e. Item responses are blanked out in tblstuitem for students that should not receive reported item responses in the display

5. Student Achievement Level and Scaled Score Statements (inside Section 2)

a. Achievement level – contains either the achievement level text or the not-tested statement stored in tblPerfLevelLookup (see Appendix A- Description). This is set using the rPerfLevel

b. Score is the earned scaled score

c. For HS students where Test status not equal to 'T', scaledscores are displayed if earning a passing raw score ("Needs Improvement" or higher)

d. State results will only include Test Status ='T'.

e. Graduation requirement notes:

SIMS grade	first-time g10	repeating g10, 11, 12, SP	blank (adults) or g9 STE
summarize	1	0/blank	0/blank
ELA/math: CD=2	PASSED and met the MCAS graduation requirement in this subject	PASSED and met the MCAS graduation requirement in this subject	PASSED and met the MCAS graduation requirement in this subject
ELA/math: CD=1	PASSED but an Educational Proficiency Plan may be required in this subject. See above for details about MCAS graduation requirements.	PASSED but an Educational Proficiency Plan may be required in this subject. See above for details about MCAS graduation requirements.	PASSED but an Educational Proficiency Plan may be required in this subject. See above for details about MCAS graduation requirements.
ELA/math: CD=0	HAS NOT MET the MCAS graduation requirement in this subject	Your child was not required to participate in this subject. See above for details about MCAS graduation requirements	HAS NOT MET the MCAS graduation requirement in this subject
STE: CD=1	PASSED and met the MCAS graduation requirement in this subject	PASSED and met the MCAS graduation requirement in this subject	'Your child has met the MCAS graduation requirement in this subject.'
STE: CD=0	Your child was not required to participate in this subject. See above for details about MCAS graduation requirements.	Your child was not required to participate in this subject. See above for details about MCAS graduation requirements.	'Your child has not met the MCAS graduation requirement in this subject.'

6. Scaled Score / Achievement Level Bar Graph Display
    a. Current year scaled scores
        i. Use rScaledScore
        ii. Contains standard error bar (lowScaledScore and highScaledScore)
7. Achievement Level Comparison Table (In 2021 this is not being reported for HS STE)
    a. Your child column – a check mark is placed in the row associated with the earned achievement level based on the data stored in the rPerfLevel.
        i. Students who participated through the Alternate assessment are included in the row where they are counted for aggregations.
        ii. Students who did not earn an achievement level on this year's test do not receive a checkmark.
    b. School/District columns – the school and district achievement level percentages from tblSummary based on the student's official school and district (sprp_sch and sprp_dis respectively).
    c. State column – the state achievement level percentages from tblSummary.
    d. Percentages are formatted with a % directly after the number. Example: 15%
    e. Display is not shown on reports for students identified as Suppress = 1 or 2.
    f. If the display is shown, the school, district, and state data are displayed regardless of whether the student earned an achievement level.
8. Student Growth Percentile Display (In 2021 this is not reported on 4th grade reports)
    a. Your Child – presents the student's growth percentile

i. GP is used to mark the location of the circle with score.
ii. lowGP and highGP are used to draw a standard error bar behind the student score circle.

b. School/District – Mean value from tblSummary for school/district based on official school and district (sprp_sch and sprp_dis).

c. School/District Means are displayed regardless of whether the student has a growth percentile displayed

d. In 2021, State mean is not fixed at 50. The display will reflect the calculated value.

D. Next Gen Student Report Template

(NOTE THAT THIS ALSO INCLUDES LEGACY HS SCIENCE INFORMATION IN THE REPORT)

The following sections discuss the formatting and displays presented on the Next Gen P/G Student Report. All calculations and aggregation rules can be found in earlier sections of this document.

1. Definitions—The following terms will be used to describe certain formats/behavior:

    a. Tested v. Not tested – Students who fully attempt are considered tested. Otherwise, students who are partially or did not attempt the test are considered "Not Tested." These two distinctions have separate impacts on information displayed on the student's report as explained below.

    b. Suppression - If all tested subjects for the student are under the Alternate Assessment, then students will not receive a student report or label.

    c. Test mode – Displayed is which mode of test the student used

        i. "Paper-based test", "Computer-based test" or "Remote Test"
        ii. If a student is not-tested (Test Status not equal to 'T'), then test mode will be blank on the student's report.

2. Cover Page

    a. Test Grade reference – "Your Child's Overall Results in Grade [GG]" (where grade = student's tested grade)

    b. Title – "Spring 20YY MCAS Tests Parent Guardian Report" where 20YY = test year, e.g. 2021.

    c. Student Name – Presented as proper case based on LName, FName MI. (with a period after the middle initial when the middle initial is not blank). Examples: Smith, John T. or Jones, Jenny

        i. This section requires special formatting when one or more of the names is missing:
            1) If Lname is blank and Fname is blank, then section = "Blank Name"
            2) If Lname is blank and Fname is not blank, then section = "Blank, Fname"
            3) If Lname is not blank and Fname is blank then section = "Lname, Blank"

    d. SASID – Student ID from SIMS, no special formatting applied.

    e. School Name and District Name – School and District names are trunc names from iCore based on testing school. No special formatting applied.

f. Grade – Student's tested grade will be used for reports

g. DOB – DOB from SIMS, no special formatting. Must be equal to 10 characters in length (MM/DD/YYYY).

h. Achievement level– contains either the achievement level text or the not-tested statement stored in tblPerfLevelLookup (see Appendix A- Description). This is set using the rPerfLevel variable from tblStuTest

i. High School: Use the following table and the earned CD to determine the appropriate note:

SIMS grade	first-time g10	repeating g10, 11, 12, SP	blank (adults) or g9 STE
summarize	1	0/blank	0/blank
ELA/math: CD=2	PASSED and met the MCAS graduation requirement in this subject	PASSED and met the MCAS graduation requirement in this subject	PASSED and met the MCAS graduation requirement in this subject
ELA/math: CD=1	PASSED but an Educational Proficiency Plan may be required in this subject. See above for details about MCAS graduation requirements.	PASSED but an Educational Proficiency Plan may be required in this subject. See above for details about MCAS graduation requirements.	PASSED but an Educational Proficiency Plan may be required in this subject. See above for details about MCAS graduation requirements.
ELA/math: CD=0	HAS NOT MET the MCAS graduation requirement in this subject	Your child was not required to participate in this subject. See above for details about MCAS graduation requirements	HAS NOT MET the MCAS graduation requirement in this subject
STE: CD=1	PASSED and met the MCAS graduation requirement in this subject	PASSED and met the MCAS graduation requirement in this subject	'Your child has met the MCAS graduation requirement in this subject.'
STE: CD=0	Your child was not required to participate in this subject. See above for details about MCAS graduation requirements.	Your child was not required to participate in this subject. See above for details about MCAS graduation requirements.	'Your child has not met the MCAS graduation requirement in this subject.'

i. i. Print Student Growth Percentile under scaled score information

j. Reporting Category Display (HS STE 2021 if the student tested, they would receive their scores. If the student is not tested this display is covered and does not appear on the report)

i. Subject– Formatted with the following values:
   1) If subject = 'ela' then 'English Language Arts'
   2) If subject = 'mat' then 'Mathematics'
   3) If subject = 'sci' and grade is 05 or 08 then 'Science and Technology/Engineering'
   4) Otherwise, if subject = 'sci' and grade is 09 or 10 (HS STE's) then:
      a) If rptSciTry = '1' then 'Biology'
      b) If rptSciTry = '2' then 'Chemistry'
      c) If rptSciTry = '3' then 'Introductory Physics'
      d) If rptSciTry = '4' then 'Technology/Engineering'

ii. Order of the Grids
   1) The inner pages of the report display ELA on the left side of the page and Math on the right side of the page.

2) If grade is 05 or 08, then Science results are displayed on the back page

iii. Reporting category text, two-character codes, and report display ordering – refer to daRepCatTextLookup for the approved text and codes.

iv. Reporting categories are sorted in the order listed in the appendix.

v. Reporting category results and state comparisons are displayed only for students who are Tested. State results include only students who are Tested.

vi. Percent of points earned by your child– pRawScore variables from tblStuRepCatPoints, no special formatting with RepCatID indicating the Reporting category RepOrder in daPointsPossible. Values are then concatenated with the % symbol immediately after the number. Example: 15%.

vii. "Percent of points earned by" and "Average number of points earned by" comparisons

1) For ELA,Math, 05 and 08 Science, the comparison is "Average number of points earned by Meeting Expectation students who scored close to 500"
   a) Prior to calculation, the pool of students used must be no less than 200. If there are less than 200 students at the 500 level, increment the scaled score by one point up to 505 until a minimum n of 200 students is reached, only considering students within the same test mode and scaleform.
   b) For any mode at a grade/content level that does not reach the 200-student threshold within the scaled score range of 500-505, the student's report will not include the average points for the reporting categories.
   c) Data displaying averages in the scaled score table should include data from the full population, and not separated out by test mode.
   d) For students who are scored using a non-standard scaleform, the reporting category for which the reduced number of points is associated, display "N/A".

viii. For High School Science, the text reads "Percent of Possible Points Earned by Students Who Performed At the Low End of the Proficient Level"

1) Data pulled from tblrepcatsummary.points where replevel = 'sta' joined on subject and grade. Place % symbol immediately after the number. Example: 15%.
2) The average number of points earned (nPoints) and the percent of total possible points earned (pPoints) by students at the "low end of the Proficient level" is calculated for each reporting category at the state level, stacked by subject and reporder.
3) Standard assessment students with partstatus = 'Z' and a scaledscore = '240' are included.

3. Released Item Display (For HS STE 2021 this display does not appear if they student does not test)

a. Subject Title and Subject Ordering follow the same rules as above.

b. Order of rows within each grid

c. The following definitions are used to both describe what appears and also what is printed in item tables.

i. 1 = "Question Number" – this is the released item order number.

ii. 2 = “Reporting Category” – this is the two-character reporting category code. This is displayed for HS Science students only
iii. 3 = “Your Child’s Score” - this is the response provided by the student.

d. Order of items

i. Items are ordered from left to right in order specified in the test maps.
ii. Item responses in tblStuItem are already ordered by released item order
iii. For essays points for each trait will be printed separately on the report in released item and trait order.

e. Formatting of Student Responses

i. Formatting of the items for the Student Report is completed in tblStuItem
ii. HS Science data will include the following
1) Check marks for correct answers
2) The letter answer displayed if a student answered incorrectly
3) An asterisk for more than one answer provided
4) A dash if a student incorrectly answered an unreleased item
5) Open response items are displayed with the number of points earned out of the total possible points (Ex. 3/4 or 0/1).
a) ELA and Math and 5&8 Science data are displayed as the number of points earned out the total points possible (Ex. 1/1 or 0/3).
b) If a student did not answer an item, that cell will be blank.

4. Student Achievement Level and Scaled Score Statements

a. Achievement level– contains either the achievement level text or the not-tested statement stored in tblPerfLevelLookup (see Appendix A- Description). This is set

b. Score – contains the reported scaled score, the rScaledScore variable from tblStuTest.

c. First-year EL students

i. Students who are not Tested do not receive scaled scores
ii. Otherwise, if TestStat = NTL:
1) Scaled scores printed for ELA and Math and 05&8 Science if earned Achievement Level is PM or above.
2) Scaled scores printed for HS Science students earning an achievement level of NI or above.

d. State results will only include students who fully attempted.

e. For Special Access Accommodation Student Report text based on table Non-Standard Accommodation Footnote Text (Student Report).

5. Average Scaled Scores and Prior Scaled Scores

a. Display current year average scaled score based on sprp school and district

b. Prior grades and scaled scores will be pulled from the SIMS data

c. Prior scores to be reported are for years 2019 and 2018 (In 2021 Grades 5-8,10 ELA and Math)

6. Achievement Level Comparison Table (2021 HS STE N/A)

a. This appears for the grade 10 STE section only for current reporting year.

b. Your child column – a check mark is placed in the row associated with the earned achievement level based on the data stored in the Perf2 column in tblStuItem.

    i. Students who participated through the Alternate assessment are included in the row where they are counted for aggregations.
    ii. Students who did not earn an achievement level on this year's test do not receive a checkmark.

c. School/District columns – the school and district achievement level percentages from tblSummary based on the student's official school and district (sprp_sch and sprp_dis respectively).

d. State column – the state achievement level percentages from tblSummary.

e. Percentages are formatted with a % directly after the number. Example: 15%

f. If the display is shown, the school, district, and state data are displayed regardless of whether the student earned an achievement level.

7. Student Growth Percentile Display

    a. Growth is provided by DESE

    b. If a student's test status changes to Not Tested, then growth will be blanked out

    c. Median growth is based on sprp school and district

8. Special access accommodation footnote

Special Access Accommodation	Student Report Text
Read aloud	Information provided by the school indicates your child received a special access accommodation (the ELA test was read aloud to your child) as required by their IEP or 504 plan.
Scribe	Information provided by the school indicates your child received a special access accommodation (your child used a scribe for the ELA test) as required by their IEP or 504 plan.
Calculator	Information provided by the school indicates your child received a special access accommodation (your child used a calculator for the non-calculator session of the mathematics test) as required by their IEP or 504 plan.

Cognia Use Only:

a. Only tests with ex[sub]='0' will be loaded to ODS

b. Remote students (applicable to grades 3-8 only) are loaded to ODS if they meet requirement a.

c. Unique 4-character forms are created

d. Testmode is added to studenttest.demographic (values to indication: online, paper and remote)

e. Students in grades 11 and 12 are excluded from Psychometric analyses and FT stats.

f. Form definition for Psych Portal:

g. For Grade 10

Paper Spanish form = 'PS00'
Online Spanish without speical indicator = 'ES01'
Online Spanish with speical indicator = 'ES' + first two characters of the special code
Remote test without Accommodation indicatory = 'XX'+form#
Remote test with Accommodation indicator = 'XX'+ Accommodation/mode indicator
Online Form without special indicator = Accommodation/mode indicator + form #
Online Form with special indicator = special indicator + form #

h. For Grade 3-8

Remote test without Accommodation indicatory = 'X'+form# + unit#
Remote test with Accommodation indicator = 'X'+ Accommodation/mode indicator + unit#
Mini test without Accommodation indicatory = admin + form#
Mini test with Accommodation indicator = admin + Accommodation/mode indicator
Online Form without accommodation indicator = 'O' + form # + unit#
Online Form with accommodation indicator = accomodation/mode + unit#

Analysis and Reporting Requirements
Massachusetts Comprehensive Assessment System (MCAS)
Alternate Assessment
Spring 2021

This document details requirements for analysis and reporting. The final student level data used for analysis and reporting is described in the "Data Processing Specifications." This document is considered a draft until the Massachusetts Department of Elementary and Secondary Education (ESE) signs off. If there are rules that need to be added or modified after said sign-off, ESE sign-off will be obtained for each such rule.

Table of Contents:

I. Contract Overview

A. New for This Year

- CPI will only be calculated for legacy high school science and technology/engineering (STE). This calculation will not be done this year as STE was not required for HS Students in 2021.
- Grade 6 Mathematics: Statistics and Probability replaces Ratios and Proportional Relationships as a required strand in the portfolio.
- For Grade 10 STE, if a student does not have results instead of "Required, but not submitted" being printed on student report, the achievement level column on the report will be blank. These will be treated as students in grades 11,12, or 12+.
- Set Failing or Not Meeting Expectations for any student that is attempting competency/Grade Level (marked at or close to grade level) but does not meet the requirement for any reason

A. Test Administration(s) Adminid=5

Subject	Required Grades	Permissible Grades	Test Type
ELA	03-08, 10	03-08, 10+	Portfolio
Mathematics	03-08, 10	03-08, 10+	Portfolio
Science & Technology/Engineering	05, 08	05, 08	Portfolio
One of either High School Biology, Chemistry, Introductory Physics, or Technology/Engineering		09, 10+	Portfolio

B. General Information

- Client and internal deliverables for this contract are listed. Specifications for each deliverable are detailed in the Deliverable Specifications section provided.

Deliverable	Type	Delivery	Administration		
			June	Prelim	Post-Discrepancy
Student data Files	.xls	To PM	✓		✓
Alt Mega File	.dat	To PM	✓		
Comments Summary	.xls	To PM			✓
General Portfolio Comments Summary	.xls	To PM			✓
State Performance Level Summary	.xls	To PM		✓	✓
State Participation Summary	.xls	To PM			✓
Teacher Survey	.xls	To PM		✓	

Deliverable	Type	Delivery	Administration		
			June	Prelim	Post-Discrepancy
Participation by Disability	.xls	To PM			✓
Portfolio Feedback Form(school level pdf)	.pdf	FTP for State	✓		
Portfolio Feedback Form(by student pdf)	.pdf	Shipped with Portfolio	✓		
Parent/Guardian Report (school and district copy)	.pdf	Shipped to District			✓

II. Internal Data Sources

A. Scoring

i. If score 1 does not match score 2 for any dimension, there must be a 3rd score for that dimension.

ii. If there is a 3rd score for a dimension, that score is the score of record. Otherwise, the 1st score is the score of record.

iii. If scorer 3 bubbles Strand not Submitted, the strand will be considered not submitted and no scores will be reported.

iv. If Demonstration of Skills or Independence has a score of 'M' then both Demonstration of Skills and Independence must have a score of 'M'.

v. A score of 'M' for scorer 1 and/or 2 will always have a 3rd score.

vi. A score of '1' for Level of Complexity from scorer 1 and/or 2 will always have a 3rd score.

vii. If Level of Complexity has a score of 1 then all other scores for that strand must be blank.

viii. If 'At or Close to Grade Level Bubble' is 1 for a content area then at least one of the required strands for that content area must have a Complexity score of 3 or higher.

ix. A score of 'M' for Demonstration of Skill and Independence counts as a 1 for analysis.

x. The performance level for each strand is determined by a lookup table (see section VI.B) using scores from Complexity, Demonstration of Skills, and Independence.

xi. Bubbled comments that do not have text associated with them will be suppressed.

xii. Strands with a Level of Complexity score of 1 will be treated as not submitted for analysis. If a required strand has a Level of Complexity score of 1, then the resulting performance level will be incomplete.

xiii. For High School sciences DP sets the SciTry variable to indicate which science test was submitted for the current year, SciTry is calculated by reconciling the subject indicated by scorer 1 with scorer 3.

- '1' = Biology
- '2' = Chemistry
- '3' = Introductory Physics
- '4' = Technology/Engineering
- For grades 10+ where science was not submitted, default sciTry to 1.
- SciTry is blank for grades 03-08.
- DA calculates the final reporting SciTry value as rptScitry.

B. Data Processing (DP)

i. Amend Flag

- The Amend flag for each content area is set by DP based on test booklet reconciliation and the DESE Breach List on an individual student basis. The default Amend flag value for all students is '0'.
- See the Amend Flag Lookup (a Cognia internal Document) for valid Amend Flag values and their impact on reporting.

III. External Data Sources

A. Breach List

i. Students who are considered a security breach are provided by the DESE in the Breach List. These students are identified as Security Breach: Cheating and instructions for processing and reporting the tests on an individual case basis are provided.

ii. Data Analysis adds necessary Amend flag values (> '1') and instructions to the Amend Flag Lookup for each distinct scenario on the Breach List.

iii. Data Processing applies any necessary changes to the student record based on the ESE instructions, and applies the corresponding Amend Flag value from the lookup to the student for Data Analysis processing.

B. SIMS

i. Student demographic data is provided by the ESE for reporting use. Please see the Data Processing specifications for internal validations and requirements of the data.

ii. Summarize

- Summarize is populated in SIMS as either '1' or '0' or blank:
    a) Summarize = '1' indicates that the student is expected to test in the subjects specified for their grade and should be included in aggregations (where applicable). Their results are included in accountability determinations.
- Students in Grades 03-08 are all expected to test.
- Students in Grade 10 (or students skipping grade 10 who have not yet been tested) are expected to test in Math and ELA and are expected to test or to have prior scores for Science. They will have Summarize = '1'.
    a) Summarize = blank in SIMS is only applicable to students from the student directory that do not link to SIMS.
    b) Summarize = '0' indicates that the student is not expected or required to test at this time for accountability. These students are excluded from aggregations (except for grade 09 specific aggregations). Their results are not counted towards accountability determinations. This includes but is not limited to: student grade 09 students, students that are retesting to meet graduation requirements in a subject they previously failed or missed, students that are retesting to increase their scores for scholarship purposes, or students that are new to Massachusetts.
- See the Data Reconciliation section IV.A for Data Processing rules for determining the final Summarize source or default value in the views for DA based on Test Grade and SIMS data.

iii. Banked Prior Achievement Level

- Only applicable for Science. All references are specific to science; in the event that these determinations are needed for Math or ELA, the corresponding Math and ELA specific fields would be used.
- High_sPerf in SIMS contains the prior high achievement level to be considered during participation status assignment. ELA and Math fields are High_ePerf and High_mPerf respectively and are expected to be blank for HS students with Summarize = '1'.
- All other fields with historical score or performance information, including the CD fields, are ignored during the participation status determination for students.
- Data are stored in DPRaw for DA in [sub]PerfLevelHigh (for all subjects) and [sub]NTL fields (for Science).

iv. SciNTL

- If SciNTL = '1' a student is considered to have previously tested in science as a first-year LEP student and was reported with a sTestStat = 'NTL'.

C. Grade Span Lookup

i. The ESE provides a grade span lookup for all public official schools. These are joined to student data based on sprp_sch in tblStudemo.

ii. Cognia will provide the ESE with a list of any public schools that have student's assigned to them that are not included in the lookup, resulting in blank grade span data based on the Preliminary data release.

iii. All public schools must have a grade span for final post-discrepancy reporting. For earlier releases grade spans may be blank for schools missing from the lookup.

D. Discrepancy Site

i. Data from preliminary reporting is posted to the discrepancy site for clean up by the field and the department.

ii. See the Discrepancy Site Requirements for more details on which fields are available for editing at each user level.

iii. Data Processing re-processes data post-discrepancy to incorporate the updated information and discrepancy resolutions from the ESE for DA for final reporting.

iv. During final processing all information from the discrepancy site is considered final and is maintained, however, changes to certain fields require additional data audits and/or recalculation of student participation status to ensure consistency. See the Data Reconciliation section for these details.

E. Alternate Assessment Override

i. Based on preliminary results from the Alt and Standard Results data file, the ESE may identify any students whose Standard Assessment results should be reported instead of their Alternate Assessment results during final reporting (subject specific).

ii. The ESE will provide this list to Data Processing with the discrepancy resolutions.

iii. DP will set the amend flag to appropriately identify these students for DA.

IV. Data Reconciliation

The following cleanup will be performed on student level data prior to analysis once demographic data and reconciled test information are compiled to ensure consistency. Calculations are performed in the order listed below, and audited values are used in each subsequent check and for all analysis and reporting, as applicable:

A. *Summarize* (performed by DP)

i. If test grade is in 03-08, summarize is defaulted to '1' for all students, regardless of SIMS value.

ii. If test grade is '09' summarize is defaulted to '0' for all students, regardless of SIMS value.

iii. If test grade is '10':

- If student grade is ≤ '09':
    a) If the student submitted both Math and ELA (Alt or Standard), then summarize = '1'.
    b) Otherwise, summarize = '0'.
- If student grade = '10','11','12', or 'SP' then summarize is taken from SIMS. If summarize is missing, or if student grade is missing, it is defaulted to '0'.

iv. The same rules are applied post-discrepancy, except summarize is taken from the updated Discrepancy data in place of SIMS. If summarize is updated during discrepancy reporting the participation status is set to blank to be reassigned.

B. LEPFirst/ YrsInmass/ YrsInmass_num

i. Lepfirst is provided in SIMS and is not audited by Measured Progress

ii. YrsInmass and YrsinMass_num are not audited by Measured Progress

C. LEP

i. If LEPFirst = '1' then update existing LEP to '1'.

D. LEPFLEP

i. If LEPFirst = '1' or LEP = '1' or LEPFormer (DA Use: "flep_off" in dpraw) = '1' then update existing LEPFLEP to '1'.

V. Official School and Official District Code

A. Terminology:

i. Discode = Cognia Testing Discode from DPRaw (See DP Specifications)

ii. SchCode = Cognia Testing SchCode from DPRaw (See DP Specifications)

iii. SendDiscode = Sending District from SIMS

iv. SimsDisCode = Official Discode from SIMS

v. SimsSchCode = Official SchCode from SIMS

vi. Testing Orgtype = Testing school (discode+schcode) Org type

vii. OrgType = SPRP school org type

viii. Exceptions List is provided to Cognia by the DESE.

ix. *(DA Use)*: The exceptions list is stored in daTestSitelookup

B. Official District (sprp_dis)

i. If the student's testing discode+schcode is on the *Exceptions List* (System+School) then the official district is the sprp_dis from the *Exceptions List*.

ii. If the student's testing orgtype is 6, 13 or 22 then the official district is set to the discode concatenated with four zeroes.

iii. Otherwise, the official district is the sending district from SIMS (senddiscode) if it exists, concatenated with four zeroes at the end. If senddiscode is blank the official district is set to '99999999'.

C. Official School (sprp_sch)

i. If the student's testing school (discode+schcode) is on the *Exceptions List* (System+School) then the official school is the sprp_sch from the *Exceptions List*.

ii. If a student is from a collaborative school (testing OrgType = 4) then the official school is = 05*XX*0000 where *XX* is the 3rd and 4th digit of the testing district code.

iii. If the student's testing orgtype is 25 or 31 then the official school is the official school code from SIMS (simsDiscode + SimsSchcode). If the simsDiscode and simsSchcode are blank the official school is set to the testing school code (discode+schcode). If the official school from SIMS turns out to be orgtype 22, then use the Exceptions list for official school.

iv. Otherwise, the official school is the testing school (discode+schcode).

D. Setting of Orgtype

i. Orgtype is based on the official school code

ii. Using the official school code link to the MCAS org data file (DA use: icore) and pull the org type (DA use: Reportcode2).

- In the event that an orgtype is not assigned, default orgtype to 'X'. This is expected due to some SPRP schools not being in the Org data file.

E. YrsInSch and YrsInDis

i. If sprp_sch or testing school (discode+schcode) = the official SIMS school code from June SIMS (simsDiscode + simsSchcode) then use YrsInSch value from SIMS. Otherwise set YrsInSch = '1'.

ii. If sprp_dis = SendDiscode+0000 from June SIMS then use the YrsInDis value from SIMS. Otherwise set YrsInDis = '1'.

F. Oct_Enrol *(enrolled in same location since Oct)*

i. If sprp_sch or testing school (discode+schcode) = SIMS school code from June SIMS (simsDiscode+simsSchcode) then OctEnr = Oct_off from SIMS. Otherwise set Oct_Enr = '0'.

G. Con_Enrol *(continuously enrolled for 2 years)*

i. Only populated for students in the grade 10 view, otherwise blank.

ii. If sprp_sch or testing school (discode+schcode) = the official SIMS school code from June SIMS (simsDiscode + simsSchcode) then use con_enr_sch value from SIMS. Otherwise set con_enr_sch = blank.

iii. If sprp_dis = SendDiscode+0000 from June SIMS then use the con_enr_dis value from SIMS. Otherwise set con_enr_dis = blank.

iv. ConEnr_sta is taken from SIMS.

VI. Student Participation and Reporting Status

A. Basic Definitions

i. ***Test Attemptedness*** *(by subject)*

- A strand was submitted if there is at least one scoring dimension with a valid score
- Attempt: A student participated if at least one required strand was submitted
- Did not attempt: Students did not submit any required strands.

ii. ***Not Tested Indicators*** *(by subject)*

The following Not Tested reasons may be bubbled on the student's answer booklet.

- Tested Standard MCAS
- Absent-Medically Excused Documented (MED)

iii. ***Transfer***

- If Active_Test ≠ '1' and at least one required strand is missing the student is considered a transfer student.

iv. ***Void***

- Students whose only Student Information booklet (SIB) has been voided (Void = '1') are considered "Void".

v. ***Prior Results*** *(by subject)*

Prior results currently only apply to HS Science. All references to High_sPerf and SciNTL should be considered subject specific in the event that ELA and Math are updated to allow for prior result determinations.

- **No Prior Results**
  Students with a blank High_*x*Perf and sciNTL ≠ '1' from SIMS are considered to not have prior results.
- **Previously Passed**
  Students with a High_*x*Perf from SIMS in ('A', 'P', 'NI', 'A_A','P_A', 'NIA','M','E', or 'PM') are considered to have previously passed the subject.
- **Previously Failed**
  Students with a High_*x*Perf from SIMS in ('F', 'PRG', 'EMG', 'AWR', and 'INP','NM') are considered to have previously failed the subject.
- **Previously First Year LEP**
  a) Students with SciNTL = '1' from SIMS are considered to have previously tested in science as a First Year LEP student and were reported as TestStat = 'NTL'.
    - Applies to Science only, corresponding variables for ELA and Math do not currently exist in SIMS.
    - If High_sPerf is not a Previously Passed status and SciNTL = '1', the student is considered Previously Failed.

B. Participation Status Assignment Hierarchy (by subject):

i. Breach List (Amend Flag > '1:' continue through assignment, breach instructions will trump all reporting instructions)

ii. Summarize = '1' or Grade='09' without prior results:

- If the student **meets attemptedness** Tested *(PartStatus='A).*
- If the student did not attempt:
  - *a)* If subject = 'ELA' and First Year LEP then: **Not Tested, LEP** *(PartStatus='F')*
  - *b)* Otherwise if MED then: **Not Tested Medically Documented** *(PartStatus='G')*
  - *c)* Otherwise if Tested Standard MCAS is indicated then : **Tested MCAS Standard Assessment** (PartStatus='Z')
  - *d)* Otherwise: **Not Tested Absent** *(PartStatus='E')*

iii. If (Summarize='1' or Grade='09') and Previously Failed:

- If the student *meets attemptedness* then: **Tested Accountable Retest** (PartStatus='C').
- If the student *partially attempted* or *did not attempt* then: **Not Tested Accountable Retest** (PartStatus='L').

iv. If (Summarize='1' or Grade='09') and Previously Passed: **Previously Passed** (PartStatus='K')

v. Summarize = '0' and grade≠'09' (regardless of any prior test results):

- If the student meets attemptedness: **Not Accountable Retester** *(PartStatus='W').*
- If the student did not attempt: **Not Tested Not Accountable** (P*artStatus='J').*

C. Participation Status Summary

i. Note there are some participation statuses in the chart that are not in the hierarchy above. These are not achievable in the alt and will only come out of the discrepancy site.

Summarize	Prior Results	Description	Part Status	Test Stat*	Discrepancy Site Code	Discrepancy Site Text
n/a	*n/a*	Breach	*Breach Instructions are applied at the student level regardless of participation status and are identified by Amend > '1'*			
		Void *(Preliminary Only)*	H	NTO	VAB	Void Answer Booklet
		Multiple Answer Documents (Security Breach)				
		Preliminary	I	NTO	DUP	Multiple Answer Booklets
		Final	N	NTO	*n/a*	*n/a*
		Invalidated (Only assigned via Breach List)	N	NTO	INV	Invalidated
1 (or Grade=09)	*n/a*	Tested Accountable Alternate Assessment	A	T*	ALT	Tested Alternate Assessment
		Tested	Z	T*	STD	Tested Standard
		Not Tested (/Partially Tested) – LEP *(ELA Only)*	F	NTL	LEP	Not Tested First Year LEP
1 (or	*n/a*	Not Tested (/Partially Tested) - Transfer	D	NTO	TRN	Transferred

Summarize	Prior Results	Description	Part Status	Test Stat*	Discrepancy Site Code	Discrepancy Site Text
Grade=09)		Not Tested (/Partially Tested) – Medically Documented	G	NTM	MED	Absent-Medically Documented
		Not Tested (/Partially Tested) - Absent	E	NTA	ABS	Absent
	Prev. Failed	Tested Alternate Assessment Accountable Retest	C	TR*	ALR	Retested Alternate Assessment
	Prev. Failed	Tested Accountable Retest	Y	TR*	RET	Retested
	Prev. Failed	Previously Failed (Not Tested /Partially Tested Accountable Retest)	L	NTO*	PRF	Previously Failed
	Prev. Passed	Ineligible Accountable Retest – Previously Passed & Retested *(Preliminary Only- final see K)*	P	NTO*	PPR	Previously Passed & Retested
	Prev. Passed	Previously Passed	K	NTO*	PAS	Previously Passed
0	*Any*	Tested Not Accountable Alternate Assessment (Retest)	W	TR*	ALN	Retested Alternate Assessment Not Aggregated
		Tested Not Accountable (Retest)	R	TR*	REN	Retested Not Aggregated
		Partially Tested Not Accountable (Retest)	B	NTO*	INC	Incomplete
		Not Tested Not Accountable (Retest)	J	NTO*	DNT	Did Not Test

* Student results achieved while First-year LEP, or students currently First-year LEP (see rptLEPFirst calculation) are reported with TestStat = "NTL" in place of listed TestStat (all subjects). See Calculations by Participation Status Summary Table for more details.

D. Post-Discrepancy Assignment

i. DA only "recalculates" participation statuses for students with a blank participation status during post-discrepancy processing. All other participation statuses are maintained as they are provided from the discrepancy data.

ii. DP will reset participation statuses to blank prior to final processing for the following discrepancy events so DA will recalculate a new status:

- Student test grade is changed.
- Summarize is changed (not applicable in unchanged grades 03-08, 09).
- First year LEP status is changed.
- Answer document is still void (entire book is suppressed).
- Answer document(s) are added or removed for a student.
- Prior results (high_xPerf, sciNTL) are changed for a student.

VII. Calculations

i. Calculation Summary by Participation Status (by subject)

Summarize	Prior Results	Description	Part Stat	rptLEP[sub] [1]	Test Stat	Current Year Reporting Results				Aggregation/Accountability Results			
						('---' indicates data are blank)							
						Raw Scores (n/A for Alt)	Item Scores (N/A for Alt)	rScaled Score (N/A for Alt)	Achievement Level (rPerfLevel, mfPerfLev)	mfScaledScore (N/A for Alt)	Achievement Level (mfperf2)	CPI (applicable to Legacy HS Sci / Numin	Assess [2]
		Breach	*Breach Instructions are applied at the student level regardless of participation status and are identified by Amend > '1'*										
		Void *(Preliminary Only)*	**H**	*any*	NTO	earned	earned	---	VAB	---	---	---	0 [3]
		Multiple Answer Documents (Security Breach) :											
		Preliminary	**I**	*any*	NTO	earned	earned	---	DUP	---	---	---	---
		Final	**N**	*any*	NTO	---	---	---	INV	---	---	---	---
1 (or Grade=09*)		Tested Alternate Assessment	**A**	0	T	---	---	---	earned (Alt)	---	earned (Alt)	✓	1
				1	NTL					---	---	---	1
		Tested	**Z**	0	T	earned	earned	earned	earned	earned	earned	✓	1
				1	NTL			*Pass:* earned *Else:* ---	*Pass:* earned *Else:* LEP	*Pass:* earned *Else:* ---	---	---	1
		Not Tested /Partially Tested – LEP (ELA Only)	**F**	1	NTL	earned		*HS Pass:* earned *Else:* ---	*HS Pass:* earned *Else:* LEP	*HS Pass:* earned *Else:* ---	---	---	1
		Not Tested /Partially Tested - Transfer	**D**	0 (M/S 1)	NTO				*HS Pass:* earned *Else*: TRN		---	---	---
		Not Tested /Partially Tested – Medically Documented Absent	**G**	0 (M/S 1)	NTM				*HS Pass:* earned *Else*: MED		---	---	0
		Not Tested /Partially Tested - Absent	**E**	0 (M/S 1)	NTA				*HS Pass:* earned *Else*: ABS		---	---	0
	F	Tested Alternate Assessment Accountable Retest	**C**	0	TR	---	---	---	earned (Alt)	---	highest (Alt)	✓	1
				1	NTL					---	---	---	1
	F	Tested Accountable Retest	**Y**	0	TR	earned	earned	earned	earned	highest	highest	✓	1
				1	NTL			*Pass:* earned *Else:* ---	*Pass:* earned *Else:* LEP	*Pass:* highest *Else:* ---	---	---	1
	F	Previously Failed (Not Tested /Partially Tested Accountable Retest)	**L**	0	NTO	*Pass:* earned *Else:* ---	*Pass:* earned *Else:* ---	*Pass:* earned *Else:* ---	*Pass:* earned *Else:* PRF	highest	highest	✓	1
				1	NTL				*Pass:* earned *Else:* LEP	*Pass:* highest *Else:* ---	---	---	1

Summarize	Prior Results	Description	Part Stat	rptLEP[sub] [1]	Test Stat	Current Year Reporting Results ('---' indicates data are blank)				Aggregation/Accountability Results			
						Raw Scores (n/A for Alt)	Item Scores (N/A for Alt)	rScaled Score (N/A for Alt)	Achievement Level (rPerfLevel, mfPerfLev)	mfScaledScore (N/A for Alt)	Achievement Level (mfperf2)	CPI (applicable to Legacy HS Sci / Numin	Assess [2]
	P	Ineligible Accountable Retest – Previously Passed & Retested *(Preliminary Only)*	**P**	0	NTO	earned	earned	---	INE	prior	prior	✓	1
				1	NTL					prior	---	---	1
	P	Previously Passed	**K**	0	NTO	---	---	---	PAS	prior	prior	✓	1
				1	NTL					prior	---	---	1
0		Tested Not Accountable Alternate Assessment (Retest)	**W**	0	TR	---	---	---	earned (Alt)	---	---	---	---
				1	NTL								
		Tested Not Accountable (Retest)	**R**	0	TR	earned	earned	earned	earned	earned	---	---	---
				1	NTL			*Pass:* earned *Else:* ---	*Pass*: earned *Else:* LEP	*Pass:* earned *Else:* ---			
		Partially Tested Not Accountable (Retest)	**B**	*any*	NTO	earned	earned	*Pass:* earned *Else:* ---	*Pass:* earned *Else:* INC	*Pass:* earned *Else:* ---	---	---	---
		Not Tested Not Accountable (Retest)	**J**	*any*	NTO	---	---	---	DNT	---	---	---	---

[1] rptLEP is LEPFirst for all grades/subjects/participation statuses that do not have prior results. It is a calculated combination of LEPFirst and prior LEP First status for Accountable partstatuses with prior results. See calculations section for details.
[2] Assess exceptions for ELA: there is an additional condition of participation on the Access test. See calculation specifics for details.
[3] If Summarize = 1 then Assess = 0. If Summarize = 0 then Assess is blank.
*Grade = 09 students are assigned participation statuses as if Summarize = '1'. Perf2, CPI, Numin, and Assess are populated for calculations but set to blank in the Megafile deliverable.
Note: "(M/S 1)" indicates that rptLEP[sub] may also be '1' in Math and Science for the listed participation statuses.

A. Student Level Calculations

i. ***StudentID (tblStudemo)***

- StudentID = rptStudentID from DPRaw.
- If StudentID begins with '8' it will be set to blank.

ii. ***Grade Span (tblStudemo)***

- Calculated using a lookup file provided by the ESE.

iii. ***Reporting First Year LEP Status (rptLEP[sub])*** *(tblStudemo)*

- RptLEP is determined for each subject based on current year partstatus, test attemptedness, First Year LEP status, and Prior First Year LEP Status (where applicable) in order to determine if a student's results should be considered achieved while under First-Year LEP status or as currently First-year LEP. This takes into consideration the prior status of the student when prior results are eligible for accountability.
- For all participation statuses that are considered Not Accountable rptLEP*[sub]* = LEPFirst.
- Otherwise, if the student is considered Accountable then:
    a) If the student has prior results:
        - If the student meets attemptedness this year then: rptLEP*[sub]* = LEPFirst.
        - If the student does not attempt this year then:
            1. rptLEP*[sub]* = '1' if either LEPFirst = '1' or SciNTL = '1'.
            2. Otherwise rptLEP*[sub]* = '0'.

    b) If the student does not have prior results then rptLEP*[sub]* = LEPFirst..

iv. ***SpecialEd*** (tblStudemo)

- If a student is considered Tested or Retested Alternate Assessment (accountable or not accountable) in any subject, then Sped_off = '1'. Otherwise, it is '0'.

v. ParentLetter (tblStudemo)

- The Parent Letter flag is set to '0' to indicate that the student should not receive a Parent/Guardian Report or Student Results Label in the following cases:
    a) If a student is classified as not tested or breach in each required subject, then ParentLetter = '0'.
- Class Pack Identifiers (Cognia) for printing the Parent version of the Parent/Guardian Report are produced for all students with ParentLetter = '1'.

vi. General Portfolio Comments (tblStuDemo)

- Scorers have the option of leaving comments for individual strands as well as for the portfolio as a whole.
- Comments will be sorted numerically (6-52) and then alphabetically (A-Z).
- Only the first 4 general portfolio comments will be kept and reported on the portfolio feedback form.
- If a student did not receive a performance level of incomplete and the student has less than 4 general portfolio comment codes, then
    a) Data Analysis will add comment code associated with Gen Comment 1 from the lookup provided by client services as a general portfolio comment. If the student still has less than 4 general portfolio comment codes, Data Analysis will add comment code associated with Gen Comment 2 from the lookup provided by client services as a general portfolio comment.

vii. Strand Specific Comments (tblStuScore)

- Scorers have the option of leaving comments for individual strands as well as for the portfolio as a whole.
- Comments will be sorted numerically and then alphabetically
- Data Analysis will set comment code associated with LOC=1 from the lookup provided by client services automatically when the Level of Complexity score is '1'.
- Only first 2 strand specific comments will be kept and reported on the portfolio feedback form.

- For Strand Specific comments, if the student's final score for a particular strand does not have an 'M' for Independence and Demonstration of Skill, then comments that refer to an 'M' in either of these dimensions will be suppressed.
- For strand specific comments, if a student's final score for a particular strand has an 'M' for Independence or Demonstration of Skills then the student will receive at least one comment that refers to an 'M.' (This is handled at scoring not programmatically)
- If the performance level for a particular subject is Student took the Standard MCAS then suppress all strand specific comments for that subject.
- For grades 11, 12, and 12+ suppress the comment "Strand required but not submitted" for all strands.

viii. Performance Level (tblStuPL)

- A content area has a performance level of Incomplete when one of the following occurs:
    a) When not all of the required strands are submitted for a content area, the content performance level is Incomplete.
    b) If Demonstration of Skills and Independence = M:
        - For contents requiring 3 strands, if there are 2 strands or more M's in either Independence or Demonstration of Skills, the content performance level is Incomplete.
        - For contents requiring 2 strands, if there is 1 strand or more M's in either Independence or Demonstration of Skills, the content performance level is Incomplete.
- For content areas that are not incomplete, the performance level is found using the overall strand performance level and the lookup table.
    a) The overall strand performance level for a content requiring 3 strands is found by averaging the performance levels of the 3 final strands of record. If the average is between 3 and 3.9 round down, otherwise, round to the nearest whole number.
    b) When more than 3 strands are submitted for a content area that requires the choice of 3, use the 3 strands that yield the highest overall strand performance level. If more than 3 strands have the same performance level, sort the strands by self-evaluation, complexity, and generalized performance, and select the top 3 based on those criteria.
    c) The overall strand performance level for a content requiring 2 strands is determined by averaging the performance levels of the 2 strands and rounding down.
    d) If the calculations for strand score average yield a performance level of 11 (Needs Improvement) or 14 (Partially Meeting Expectations), then check that the student meets other requirements to earn Needs Improvement before assigning the final performance level.
- Needs Improvement (STE only) or Partially Meeting Expectations (ELA and Math only):
    a) Grades 03-08 only
        - For grades 03-08, a student must complete 3 strands (including those required) in a specific subject and earn a performance level of 4 for each of the strands in order to earn an overall performance level of *Partially Meeting Expectations*. If the student is marked "at or close to grade level" and submits fewer than 3 strands with a performance level of 4, the student will be reported as Not Meeting Expectations.

- If a student submits 3 or more strands when 2 are required, the 2 required strands and the highest scoring additional strand will be used to determine Partially Meeting Expectations.

b) Competency: Grades 09-12+ only

- The Competency List is provided by DESE and lists students in grades 09-12+ who were judged by a panel of competency experts to be at a performance level of *Needs Improvement* or *Partially Meeting Expectations* or above. Only students on the Competency list are eligible for a performance level of *Needs Improvement*/*Partially Meeting Expectations* or above. The students must also meet the following criteria:
  1. For ELA, a student must complete the 3 required strands and earn a performance level of 4 for each of the strands.
  2. For Mathematics, complete all 5 strands and earn a performance level of 4 for each of the strands.
  3. For Science, a student must complete all 4 strands in one discipline and earn a performance level of 4 for each of the strands.
- If a student is on the Competency List and the requirements are met, the earned scores are reported but the performance level is taken from the list.
- If a student is on the Competency List and the requirements are not met a discrepancy list will be given to program management for resolution.
- If resubmitted appeal / competency determination portfolio, Math students will be tested against the 13-14 Math strands. Otherwise, students will be aligned with the 18-19 Math strands.

ix. ***Aggregation/Accountability Results*** *(tblStuPL)*

Aggregation and Accountability Results combine prior and current results, where applicable.

- **Perf2** (Cognia aggregate calculations)

a) Populated with the achievement level for aggregate calculations and the megafile.

b) Perf2 is blank for all students with rptLep[sub] = '1'.

c) Perf2 = rPerfLevel for Tested Alternate Assessment that are not first-year LEP (PartStatus = 'A' and rptLEP = '0'). It is translated to standard assessment achievement levels (1-4).

d) Perf2 = the highest achievement level between PerfLevel and [sub]PerfLevelHigh for Accountable Retest Alternate Assessment students that are not first-year LEP (PartStatus = 'C' and rptLEP = '0'). It is translated to standard assessment achievement levels (1-4).

e) Otherwise, Perf2 is calculated in general MCAS.

x. ***NumIn*** (***tblStuPL*** for Megafile)

- For HS students and 5 and 8 Science, the subject specific numin field is set to '1' if the student is assigned CPI Points for the subject. Otherwise, it is '0'. Fields are prefixed with *e/m/s* in the megafile.
- For 03-08 ela and math, See the calculations by participation status summary for a list of statuses that result in numin = '1'. Because this calculation is only be done at grade 03-08, if Teststat is 'T' then numin='1'. Otherwise, it is '0'.

xi. ***Assess*** (***tblStuPL*** for Megafile):

- Blank since alt mega file is only produced in June

xii. Composite Level of Complexity (tblStuPL)

- All students who receive an alt performance level will have a Composite Level of Complexity (CLC) computed.
- Composite Level of Complexity is calculated using the Complexity scores from the final strands used to calculate the content performance level, the 'At or Close to Grade Level' bubble (if it exists), and a lookup table, which is based on the number of strands.
- Students attempting Partially Meeting Expectations Grade 03-08
    a) When a two-strand portfolio contains the required strands plus at least one additional strand apply the rules for a three strand portfolio.
    b) If there is more than one additional strand submitted use the strand with the higher complexity score to compute the CLC.
- Incomplete Portfolios
    a) For portfolios with not all required strands submitted, only the required strands that were submitted will be used to compute the CLC.
    b) When a three-strand portfolio has a strand missing, apply the rules for a two-strand portfolio.
    c) When a two or three strand portfolio has only one of the required strands, apply the rules for a one strand portfolio.

xiii. Competency: Updating ELA_CD, Mat_CD, and Sci_CD (tblStuPL)

- These variables represent whether or not a student has met the testing graduation requirement for the subject, combining prior CD information from SIMS with the current test results.
- The updated CD fields begin with the prior CD value from SIMS (studemoSIMS_*[sub]*CD) for all students, regardless of participation status on this year's test.The prior value may be blank for students that have not previously tested in a subject.
- The CD Status from SIMS is then updated using the current test results if and only if it increases, otherwise the prior value is retained:
- For Math and ELA:
    a) If rPerflevel ='11' or '14' then CD = '1'.
    b) Otherwise, if rPerflevel in ('12','13','15','16') then CD = '2'.
    c) Otherwise, CD is '0'.
- For Science:
    a) If rPerflevel in ('11','12','13','14','15','16') then CD = '1'.
    b) Otherwise, CD is '0'.

xiv. Composite Performance Index Points (daStuCPI)

For HS science, DESE provides Cognia with the number for students tested in MCAS and MCAS-Alt. These counts are provided at the subject level. DA use: These counts are stored in tblstuCPILookup.

- CPI will be calculated for only high school science and technology/engineering (STE)
- CPI Points are assigned based on results used for Aggregations and Accountability.
- Students with Test Status='T' or (PartStatus="C" and rptLEP=0) will receive CPI points.
- Otherwise, CPI points will not be assigned.
- Breach cases will not receive CPI points.

- Assign cpi points for students with Test Status="T" as follows
    a) Assign cpi points based on performance level as follows for performance levels other than PRG
        - CPI=100 for PerfLevel=A_A or P_A.
        - CPI=75 for PerfLevel=EMG or NIA.
        - CPI=50 for PerfLevel=AWR
        - CPI=25 for PerfLevel=INP.
    b) Assign cpi points based on performance level as follows for PRG
        - Step 1
            1. CPI=100 for PerfLevel=PRG and NatureofDis=01, 09, 10, 11, or 13 and LevelOfNeed=04.
            2. CPI=75 for PerfLevel= PRG and NatureofDis not equal to 01, 09, 10, 11, or 13 or LevelOfNeed not equal to 04
            3. If Step 1 results in the number of students with 100 CPI points being less than 1.0499 percent of the total tested students in both the alt and standard MCAS then proceed to Step 2:
        - Step 2
            1. CPI=100 for PerfLevel=PRG and NatureofDis=01, 09, 10, 11, or 13 and LevelOfNeed=03 or 04.
            2. CPI=75 for PerfLevel= PRG and NatureofDis not equal to 01, 09, 10, 11, or 13 or LevelOfNeed not equal to 03 or 04
            3. If Step 2 results in the number of students with 100 CPI points being less than 1.0499 percent of the total tested students in both the alt and standard MCAS then proceed to Step 3:
        - Step 3
            1. CPI=100 for PerfLevel=PRG and NatureofDis=01, 09, 10, 11, or 13 and LevelOfNeed=01, 02, 03, or 04.
            2. CPI=75 for PerfLevel= PRG and NatureofDis not equal to 01, 09, 10, 11, or 13 or LevelOfNeed not equal to 01, 02, 03, or 04.
            3. If Step 3 results in the number of students with 100 CPI points being greater than 1.0499 percent of the total tested students in both the alt and standard MCAS then proceed to Step 4:
        - Step 4
            1. CPI=100 for PerfLevel=PRG and NatureofDis=01, 09, 10, 11, or 13 and LevelOfNeed=03 or 04.
            2. Also CPI=100 for PerfLevel=PRG and NatureofDis=01 and LevelOfNeed=01 or 02.
            3. CPI=75 for PerfLevel= PRG and NatureOfDis and LevelOfNeed do not satisfy I or II.
            4. If Step 4 results in the number of students with 100 CPI points being greater than 1.0499 percent of the total tested students in both the alt and standard MCAS then proceed to Step 5:
        - Step 5
            1. CPI=100 for PerfLevel=PRG and NatureofDis=01, 09, 10, 11, or 13 and LevelOfNeed=04.
            2. Also CPI=100 for PerfLevel=PRG and NatureofDis=01 and LevelOfNeed=03.

3. CPI=75 for PerfLevel= PRG and NatureOfDis and LevelOfNeed do not satisfy I or II.

c) If Step 4 or 5 results in the number of students with 100 CPI points being less than 1.0499 percent of the total tested students in both the alt and standard MCAS then stop.

d) If Step 5 results in the number of students with 100 CPI points being greater than 1.0499 percent of the total tested students in both the alt and standard MCAS then proceed to Step 1 and then stop.

- Assign student's with (PartStatus="C" and rptLEP=0) CPI points as follows

a) CPI points will be based on either current year Alternate assessment Achievement level or Prior year test results which may be from the Alternate Assessment or MCAS. The results from the assessment that produces the highest CPI points will be used.

- Calculate the current year CPI points using the Alternate Assessment translation below on the tblstuPL.rPerfLevel
- If ScaledScoreHigh is populated, calculate the prior year CPI points using the MCAS lookup table below. Otherwise, use the Alternate Assessment lookup table on PerfLevelHigh.

Composite Performance Index (CPI) – Legacy MCAS Tests *(High School Science and Technology/Engineering only)*		
Test	**ScaledScore Range**	**CPI Points**
Standard MCAS	240-280	100
	230-238	75
	220-228	50
	210-218	25
	200-208	0

CPI – MCAS-Alt *(High School Science and Technology/Engineering only)*		
Test	**Alt Performance Level:**	**CPI Points**
Alternate Assessment (Only when re-assigning based on prior-year Alt Results for Accountability)	A_A P_A PRG	100
	EMG NIA	75
	AWR	50
	INP	25

xv. Achievement Level Coding

- The MCAS Standard Assessment has four possible achievement levels, assigned to students using the raw to scale score lookup provided by psychometrics.
- Alternate Assessment achievement levels are translated to their corresponding standard assessment achievement level prior to computing any aggregate calculations that include alternate assessment achievement level results as shown below:

MCAS and MCAS-Alt Achievement Levels			
MCAS Achievement Level	**MCAS Description**	**MCAS Alt Achievement Level**	**MCAS Alt Description**
1	*03-08, 10 (Next Gen):* Not Meeting Expectations (NM) *Legacy HS Science:* Failing (F)	7	Incomplete (INC)
		8	Awareness (AWR)
		9	Emerging (EMG)
		10	Progressing (PRG)
		17	Not Meeting Expectations (NM)
2	Legacy HS Science: Needs Improvement (NI) NextGen: Partially Meeting Expectations (PM)	11	Needs Improvement (NIA)
		14*	Partially Meeting Expectations-Alt (PM_A)
3	Legacy HS Science: Proficient (P) NextGen: Meeting Expectations (M)	12	Proficient (P_A)
		15*	Meeting Expectations-Alt (M_A)
4	Legacy HS Science:Advanced (A) NextGen: Exceeding Expectations (E)	13	Advanced (A_A)
		16*	Exceeding Expectations-Alt (E_A)

**Used for grade 03-08, 10 ELA and math and 05 and 08 Science and NextGen HS Science.*

B. Aggregate Level Calculations

i. Aggregation Rules

- These rules are applied to all aggregate calculations. Any additional rules specific to a particular calculation will be listed under the rules for the calculation.
- Tested Students (PartStatus = 'A) are included in aggregations.

C. Lookup Tables

i. Required Strands by Content Area and Grade

Grade	Content Area	Number of Strands Required	Strands Required
3	ELA	3	Language, Reading & Writing*
3	Math	2	Operations and Algebraic Thinking, Measurement and Data
4	ELA	3	Language, Reading & Writing*
4	Math	2	Operations and Algebraic Thinking, Numbers and Operations – Fractions
5	ELA	3	Language, Reading & Writing*
5	Math	2	Number and Operations in Base Ten, Numbers and Operations – Fractions
5	Sci	3	Choice of 3***
6	ELA	3	Language, Reading & Writing*
6	Math	2	Statistics and Probability, The Number System
7	ELA	3	Language, Reading & Writing*
7	Math	2	Ratios and Proportional Relationships, Geometry
8	ELA	3	Language, Reading & Writing*
8	Math	2	Expressions and Equations, Geometry
8	Sci	3	Choice of 3***
10+	ELA	3	Language, Reading, Writing
10+	Math	3	Choice of 3**
09, 10+	Sci	3	Any three learning standards from one discipline: Biology, Chemistry, Introductory Physics, or Technology/Engineering

**ELA 03-08: Students that test at or near grade level will take strands:* Reading, Reading II & Writing.

*** Math 10+: Non-competency students test using the Common Core Standards. The strands titles are: 'Functions', 'Geometry', 'Statistics and Probability', 'Number and Quantity', and 'Algebra'. Competency Students test using the 13-14 strands: 'Number Sense and Operations', 'Patterns, Relations, and Algebra', 'Geometry' , 'Measurement' and 'Data Analysis, Statistics, and Probability'.*

**** Science 05 and 08: Choice of 3 of the following: 'Earth and Space Science', 'Life Science', 'Physical Sciences', and 'Technology/Engineering'*

ii. Strand Performance Level

Level of complexity	Demonstration of skills	Independence	Performance Level
2	1	1	1
2	1	2	1
2	1	3	1
2	1	4	1
2	2	1	1
2	2	2	1
2	2	3	1
2	2	4	1
2	3	1	1
2	3	2	1
2	3	3	2
2	3	4	2
2	4	1	1
2	4	2	1
2	4	3	2
2	4	4	2
3	1	1	1

Level of complexity	Demonstration of skills	Independence	Performance Level
3	1	2	1
3	1	3	1
3	1	4	1
3	2	1	1
3	2	2	1
3	2	3	2
3	2	4	2
3	3	1	1
3	3	2	2
3	3	3	3
3	3	4	3
3	4	1	1
3	4	2	2
3	4	3	3
3	4	4	3
4	1	1	1
4	1	2	1
4	1	3	1
4	1	4	1
4	2	1	1
4	2	2	1
4	2	3	2
4	2	4	2
4	3	1	1
4	3	2	2
4	3	3	3
4	3	4	3
4	4	1	1
4	4	2	2
4	4	3	3
4	4	4	3
5	1	1	1
5	1	2	1
5	1	3	2
5	1	4	2
5	2	1	1
5	2	2	2
5	2	3	3
5	2	4	3
5	3	1	1
5	3	2	2
5	3	3	3
5	3	4	4
5	4	1	1
5	4	2	2
5	4	3	3
5	4	4	4

iii. Content Area Performance Lookup

Strand Performance Levels	Content Achievement Level	Description
1	8	Awareness
2	9	Emerging
3	10	Progressing
4	11 14	Needs Improvement Partially Meeting Expectations
5	12 15	Proficient Meeting Expectations
6	13 16	Advanced Exceeding Expectations
NA	7 17	Incomplete Not Meeting Expectation

iv. Composite Level of Complexity

Composite Level of Complexity Look up for a 3 strand Portfolio

At or Near Grade Level Bubble	Strand 1: Level of Complexity Score	Strand 2: Level of Complexity Score	Strand 3: Level of Complexity Score	Composite Level of Complexity
0	2, or 1	2, or 1	2, or 1	ACC
0	3, 2, or 1	3, 2, or 1	3	EP
1	3, 2, or 1	3, 2, or 1	3, 2, or 1	GL
0,1	3, 2, or 1	3, 2, or 1	4, or 5	GL
0,1	3, 2, or 1	4	4	GL
0,1	3, 2, or 1	4	5	GL
0,1	3, 2, or 1	5	5	GL
0,1	4	4	4	GL
0,1	4	4	5	GL
0,1	4	5	5	GL
0,1	5	5	5	GL

Composite Level of Complexity Look up for a 2 strand Portfolio

At or Near Grade Level Bubble	Strand 1: Level of Complexity Score	Strand 2: Level of Complexity Score	Composite Level of Complexity
0	2, or 1	2, or 1	ACC
0	3, 2, or 1	3	EP
1	3, 2, or 1	3	GL
0,1	3, 2, or 1	4	GL
0,1	3, 2, or 1	5	GL
0,1	4	4	GL
0,1	4	5	GL
0,1	5	5	GL

Composite Level of Complexity Look up for a 1 strand Portfolio

At or Near Grade Level Bubble	Strand 1: Level of Complexity Score	Composite Level of Complexity
0	2, or 1	ACC
0	3	EP
1	3	GL
0,1	4, or 5	GL

Key:
ACC = Access Skill
EP=Entry Point
GL = Grade Level Achievement Standards

Data Deliverables Specifications

I. Student Data Files

A. Student Demographics
B. Student Scores
C. Student Performance Levels

i. Use Roster code for the Performance Levels

II. MegaFile(s)

A. Generic Details

i. Megafile deliverables are posted to the FTP site for the state and contain data for all processed students.

ii. All MegaFile deliverables follow the layout: MCASAlt1920AllStudentFileLayout.xls.

iii. Fields that are not applicable to particular deliveries are left blank.

iv. Students with Amend > '1' are reported as Amend = '1'.

v. Subject specific fields are prefixed by '*x*' such that: m=math, e=ela, s=science.

vi. *x*Alt = '1' if the student Tested or Retested Alternate Assessment, otherwise blank.

vii. Sped_Off = tblStudemo.SpecialEd.

viii. *x*Perflev = tblStuPL.rPerfLevel reformatted to ESE code or achievement level code based on rPerfLevelLookup. ESE Code (See Appendix D).

ix. *x*Perf2 = tblStuPL.Perf2.

x. The mcasrowid is a 15 digit number created in the following manner

- 2 digits=year(11)
- 2 digits=grade
- 1 digit=x

a) x=1 if at least one strand was submitted for all required content area.

b) x=2 if at least one strand was submitted for ELA and no strands were submitted for other required content areas.

c) x=3 if at least one strand was submitted for Math and no strands were submitted for other required content areas.

d) x=4 if at least one strand was submitted for Science and no strands were submitted for other required content areas.

e) x=5 if at least one strand was submitted for any 2 required content areas, but nothing was submitted for the third required content area.

f) X=6 if a student did not submit any content areas.

- 10 digits=bookletnumber

III. Summary Files

A. Comments Summary

i. Contains Counts of each strand specific comment by grade, subject, and strand

ii. One tab includes all students

iii. One tab includes student with Performance Level Incomplete

B. General Portfolio Comments Summary

i. Contains counts of each General Portfolio Comment by grade

ii. Includes all students

C. State Performance Level Summary

i. Layout is MCASAlt2021PerfSummaryLayout.xls

ii. Include counts and percents

iii. Only include students who earned an achievement level

iv. One tab will contain achievement levels aggregated by grade and subject

v. One tab will contain achievement levels aggregated across grades and subjects

vi. One tab will contain achievement level aggregations for grades 09 and 10 by subject.

- Will include the alt students who earned a competency in either May or July Competency determination.

vii. One tab will contain achievement levels aggregations for grades 11, 12, and 12+ by subject.

- This data will include the alt students who earned competency in either the May or July Competency determination.

D. State Participation Summary Files

i. Layout is MCASAlt2021PartSummaryLayout.xls

ii. “Assessed Student" = partstatus in ('A','Z') and TestStatus = 'T' based on data in MCAS tblStudemo (therefore NTL or first-year lep students are excluded).

iii. Retest Students (TestStatust = 'TR' or Alt students in grades, 11, 12, or 13) were excluded from all counts.

iv. Sort first tab by subject, then grade and the PartByCLC tab by grade then subject.

v. One tab will contain counts and percents by grade and subject.

vi. Percent is based on number of students assessed in standard MCAS or MCAS-Alt

vii. One tab will contain count and percent of students taking alt across all grade and subjects.

viii. Percent is based on number of students assessed in standard MCAS or alt.

ix. One tab will contain counts and percents by grade and subject for the tested in Standard MCAS, Tested in MCAS Alt with a composite level of complexity of Grade Level, and Tested in MCAS Alt with a composite level of complexity of Access Skills or Entry Point.

E. Teacher Survey Summary

i. This file is created every other year and will be produced for the 1819 reporting year.

ii. Only include records with a first and last name and at least one response.

iii. Calculate total number of surveys.

iv. Compute counts and percentages of responses for each question. Also compute number of non-responses for each question.

F. Participation by Disability

i. Counts of tested students by disability type

Report Deliverables Specifications

I. Specifications

A. Portfolio Feedback Form

i. The files will be named PortfolioFeedbackForms2021_[DisCode][SchCode].pdf

ii. A grade 09 or higher report lists the science discipline strands instead of the science strands that appear for grades 03-08.

iii. For grades 03-08 math and ela the titles of the strands that were not submitted and not required will not print.

- Indicated in tblStuScore where RepAction='0'
- For these cases the strands below will move up to display with all blank rows at the bottom.
- In grade five where there are six possible strands, if a student turns in all six only the first five will print based on the strand sort order. The strand "Measurement and Data" will not print in this case.

iv. An asterisk (*) is displayed in place of missing strand scores for required strands that were not submitted

v. For grades 11, 12, and 12+ do not display asterisks in any strands.

vi. If the performance level for a particular subject is Student took the Standard MCAS then do not display asterisks in any strands.

vii. Missing scores are left blank for non-required strands.

viii. All strands submitted will be reported.

ix. At most 4 general portfolio comments (see section III for description of choosing general portfolio comments).

x. At most 2 strand specific comments (see section III for description of choosing strand specific comments).

B. Parent Report

i. Cover Page Header

- For student name print Last Name, First Name, MI. in all caps.
- Print the two-digit grade print for grades 03-12 and 12+ will print for grade 13.
- Print the school name associated with the student's testing school.
- Print the district name associated with the student's sending district if it exists. Otherwise print the district name associated with the student's testing district.

ii. Achievement Display

- For tested students, place a check and shade the achievement level box corresponding to the student's performance level.
- For not tested students, print the not tested reason in the achievement display for that content area. Based on tblPerfLevelLookup
- If a content area is not tested at a given grade, then do not shade or check any achievement level boxes or that content area. Print 'NOT ASSESSED FOR STUDENTS IN THIS GRADE'.

iii. Score Display

- If the student did not submit the required number of strands print an asterisk (*) after the subject text.
    a) Print ‘REQUIRED BUT NOT SUBMITTED’ in the grid for required strands that were not submitted.
    b) If the achievement level for a particular subject is Student took a Standard MCAS then do not display the asterisk or print ‘REQUIRED BUT NOT SUBMITTED’ in the grid for any strand.

iv. A grade 09 or higher report lists the High School STE discipline strands instead of the STE strands that appear for grades 03-08.

v. Score Grid

- All strands submitted will be reported.
- For strands that were submitted, gray shade the box associated with the dimension score for level of complexity, demonstration of skills, independence, self-evaluation, and generalized performance.

vi. Data Page Header

- For student name print Last Name, First Name, MI in proper case.
- Print SASID.

Appendix

I. Assigning Sprp_sch and Sprp_dis: Exceptions List (daTestSiteLookup)
This information is collected and stored with the Operational General Assessment program. Please refer to the Operational General Assessment rules for the list of exceptions.

A. One-School District List
This information is collected and stored with the Operational General Assessment program. Please refer to the Operational General Assessment rules for the list of one-school districts.

B. rPerfLevel Lookup for MegaFile Codes

Achievement Level or Part Flag	MegaFile Code	Description
1	F	Failing
2	NI	Needs Improvement
3	P	Proficient
4	A	Advanced
6	W	Warning
7	INP	Incomplete Portfolio
8	AWR	Awareness
9	EMG	Emerging
10	PRG	Progressing
11	NIA	Needs Improvement-Alt
12	P_A	Proficient-Alt
13	A_A	Advanced-Alt
14	PM_A	Partially Meeting Expectations-Alt
15	M_A	Meeting Expectations-Alt
16	E_A	Exceeding Expectations-Alt
17	NM	Not Meeting Expectation
B	INC	Incomplete
D	TRN	Transferred
E	ABS	Absent
F	LEP	First-year LEP
G	MED	Absent - Medically Documented
H	VAB	Void
I	DUP	Invalidated
J	DNT	Did Not Test
K	PAS	Previously Passed
P	PPR	Previously Passed & Retested
L	PRF	Previously Failed
N	INV	Invalidated

C. Historical PerfLevel Translations
If the following achievement levels are provided in SIMS for a student they are translated to currently-reported achievement levels.

SIMS PerfLevel	Description	Code	PerfLevel	PerfLevel Description
A_M	Advanced Mastery	A	4	Advanced
P_M	Proficient Mastery	P	3	Proficient
NIM	Needs Improvement Mastery	NI	2	Needs Improvement
F_M	Failing Mastery	F	1	Failing
P+	Above Proficient	A	4	Advanced

APPENDIX Q
MCAS-ALT SKILLS SURVEY

MCAS-Alt SKILLS SURVEY

Introduction

The MCAS-Alt Skills Survey is a standardized component of the statewide alternate assessment (MCAS-Alt) that must be administered by the teacher to each student **BEFORE** selecting an entry point or access skill in the subject required for assessment. The survey will help determine a student's current level of knowledge, skills, and abilities so that challenging entry points can be selected in each strand. The survey will also familiarize teachers with the range of entry points in a strand/domain that may be selected for the assessment.

The results of the Skills Survey should be used as the basis for selecting an entry point or access skill listed in the *Resource Guide to the Massachusetts Curriculum Framework for Students with Disabilities*. A follow-up skills survey will not be required after teaching the skill, although it may be helpful to conduct the survey after the skill has been taught, especially if the student will attend a different classroom the following year.

Instructions for Completing the Skills Survey:

Conduct a brief assessment of each skill in the required strand/domain for a student in that grade. Check one box (A–E) for each skill in the required strand/domain(s). Teachers may use any combination of the following methods to conduct a brief assessment of each skill:

a) observations, informal assessments, progress reports, or classroom work; OR
b) 2–4 tasks, based on the **examples** provided in the survey form; or **tasks designed by the teacher** that are accommodated for each student's instructional level and needs.

If using specific tasks or activities to assess the student, please use the following protocol for each skill:

1) Present the first task to the student.
2) If the student does not respond on the first attempt, repeat the task with a verbal reminder or other prompt (if needed), but do not give the answer. (Note: If a prompt is given, the response may be accurate, but is not independent.)
3) If the student responds to the first task, give a second, more complex task. Repeat with a prompt if needed. Make notes on the survey form to remind you of the student's performance of each task.
4) If the student does not respond to the second task, even with a prompt, do not introduce a third task. Simply mark an "X" in the column (A, B, C, D, or E) that most closely describes his or her performance of the skill.
5) Introduce the next task in the survey. Repeat steps 2 through 4 until all skills in the required strand/domain are assessed.

Once the survey has been completed for each required strand/domain, review the results, and proceed as follows:

- **Select a related or higher-level-of-complexity entry point from the Resource Guide based on any skill that has been checked in columns A, B, or C**.
- **Do not select an entry point for any skills checked in columns D or E**.
- **If column A ("unable to perform the skill") is checked for all skills in the strand/domain**, consider assessing an access skill (i.e., a motor or communication skill).
- **If columns D and/or E are checked for most of the skills in the strand/domain**, then the IEP team should consider whether the standard MCAS test (paper or online) or grade-level/competency portfolio would be more appropriate for the student in that subject.

Submit a completed MCAS-Alt Skills Survey for each assessed strand in the student's portfolio, just after the Strand Cover Sheet. A strand without a Skills Survey will be considered incomplete.

Descriptors for each column listed on the following pages:

A	B	C	D	E
Student is **unable** to perform this skill. ---------OR-------- Teacher is unable to assess student on this skill.	Student is just starting to learn this skill and demonstrates the skill only **rarely** without support. --- Student performs this skill accurately with **0-25% independence**. ---------OR-------- Student performs this skill independently with **0-25% accuracy**.	Student demonstrates this skill **intermittently** and only **occasionally** without support. --- Student performs this skill accurately with **26-50% independence**. ---------OR-------- Student performs this skill independently with **26-50% accuracy**.	Student demonstrates this skill **more often than not** without support. --- Student performs this skill accurately with **51-75% independence**. ---------OR-------- Student performs this skill independently with **51-75% accuracy**.	Student demonstrates this skill **almost all the time** without support. --- Student performs this skill accurately with **76-100% independence**. --------OR--------- Student performs this skill independently with **76-100% accuracy**.

* % Independence refers to the average percent of unprompted responses by the student.

Student's Name_____ Grade_____ Date of Survey_____

ELA—All Grades

Language (Vocabulary Acquisition and Use)

	Based on exposure to vocabulary during academic activities, student can:	A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Communicate answers to simple questions about familiar objects.					
2.	Identify familiar objects/actions by name.					
3.	Match given words or symbols to pictures that mean the same or similar thing.					
4.	Answer questions about the meaning of words found in stories, poems, or during other academic activities.					
5.	Identify words/symbols/pictures that are opposite in meaning.					
6.	Identify words/symbols/pictures that are similar in meaning.					
7.	Use phrases to express a need, request, idea, or response during an academic activity.					
8.	Describe key attributes of different objects (e.g., the flower is colorful).					
9.	Communicate using common temporal words (e.g., before, after, now, later, first, next).					
10.	Identify examples of figurative language (e.g., idiom, metaphor, simile, hyperbole, or personification) used in a text.					

Student's Name_____ Grade_____ Date of Survey_____

ELA—All Grades

Reading (Informational or Literary Text)

	Based on a literary or informational text read by or to the student, student can:	A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Identify the main character(s) in the text.					
2.	Identify the setting of the text.					
3.	State key details from the text.					
4.	Identify events (or ideas) presented in the text.					
5.	Identify the central (main) idea of the text.					
6.	Explain *why* or *how* something occurred in the text.					
7.	Identify and define unknown words in the text; or match words or phrases from the text to their meaning.					
8.	Differentiate between a fact and the author's opinion.					
9.	Describe the author's point of view.					

Student's Name_____ Grade_____ Date of Survey_____

ELA—All Grades

Writing (Text Type and Purposes)

Does the student use a communication system* to express ideas, requests, and responses? ☐ YES ☐ NO If YES, student can use their communication system to:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Initiate expressive communication using a single word or symbol.					
2.	Respond to questions or writing prompts with single words.					
3.	Respond to questions or writing prompts with sentence fragments (i.e., phrases).					
4.	Respond to questions or writing prompts with one complete sentence.					
5.	Respond to questions or writing prompts with at least one paragraph (three or more sentences).					
6.	Retell at least three events in chronological order.					
7.	Express an opinion on a topic and gives at least one reason.					
8.	Express at least two relevant facts or details based on a given topic or text.					
9.	Respond to questions or writing prompts using descriptive language and connecting words or phrases.					

* Communication systems may include verbal/gestural/symbolic/or iconic expression using a keyboard, handwriting, dictation, symbol-based system, assistive technology, ASL or other sign system, Braille, etc.

Student's Name_____ Grade_____ Date of Survey_____

Grade 3 Mathematics

Operations and Algebraic Thinking (OA)

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Count up to 5 objects to answer questions about "how many all together."					
2.	Match numerals (up to 10) with the number of objects/pictures displayed.					
3.	Add two or more objects, or take away two or more objects, from a set of up to 5 objects and express "how many are left?"					
4.	Create two sets with an equal number of objects in each set.					
5.	Compare two groups of objects and indicate which has "more" and which has "less."					
Using standard numerals, symbols, and notation, student can:						
6.	Plot three single-digit numbers on a number line relative to each other.					
7.	Solve addition problems involving one-digit numbers up to a total of 10 (e.g., 1+3; 2+5; 4+6)					
8.	Solve one-step word problems using addition within 100.					
9.	Solve one-step word problems using subtraction within 100.					
10.	Identify the missing number in a problem involving addition and subtraction (up to 15), with an unknown quantity (e.g., 12 - ? = 5).					
11.	Show equalities in number sentences (e.g., 2 + 4 = 4 + 2; 3 + 1 = 2 + 2).					
12.	Count by 2's to 20.					
13.	Count by 5's to 25.					
14.	Identify the missing number in a problem involving multiplication and division (within 25), with an unknown quantity (e.g., 2 X ? = 20; 20 ÷ ? = 5).					
15.	Use estimation to approximate the solution to a one-step word problem (e.g., if I have 12 marbles and I add 9 more, about how many marbles will I have in all?).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 3 Mathematics

Measurement and Data

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Given two objects, identify the object that is bigger.					
2.	Count the number of objects with a similar characteristic (e.g., count the number of red objects; count the objects with straight edges).					
3.	Compare up to three objects based on length, width, or height (longer, shorter, tallest, shortest).					
4.	Tell time to the nearest hour using analog clocks.					
5.	Identify up to three U.S. coins either by name or value.					
6.	Express the value of a combination of at least two coins up to 99 cents.					
7.	Measure the length of objects using a pre-selected standard tool (e.g., ruler).					
8.	Express time on an analog clock to the nearest minute.					
9.	Find the area of a rectangle by multiplying side lengths.					
10.	Calculate the perimeter of straight-edged polygons.					
11.	Solve word problems involving the addition or subtraction of distances (e.g., miles, yards) and/or money (e.g., dollars, cents).					
12.	Represent a set of data graphically (e.g., on a list, table, bar graph, or circle graph, etc.).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 4 Mathematics

Operations and Algebraic Thinking (OA)

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Add ("put together") or subtract ("take away") one object from a set of objects and express the resulting quantity.					
2.	Add two or more objects, or take away two or more objects, from a set of 5 objects and express the resulting quantity.					
3.	Create sets with an equal number of objects in each set.					
4.	Compare two groups of objects and indicate which has "more" and which has "less."					
5.	Answer questions about "how many altogether" (up to 10 objects).					
6.	Sort or group objects by multiples of two.					
7.	Match numerals (up to 10) with the number of objects/pictures displayed.					
Using standard numerals, symbols, or notations, student can:						
8.	Plot at least three single-digit numbers on a number line.					
9.	Solve addition problems involving one-digit numbers up to a total of 10.					
10.	Identify the missing number in a problem involving subtraction (up to 15) (e.g., 12 - ? = 5).					
11.	Show equalities in number sentences (e.g., 2 + 4 = 4 + 2; 3 + 1 = 2 + 2).					
12.	Count by 2's to 20.					
13.	Count by 5's to 25.					
14.	Determine the unknown quantity in a multiplication problem (within 20) (e.g., how many groups of 5 objects is equal to 15?).					
15.	Solve multiplication problems with multipliers of 1–10.					
16.	Solve division problems within 100 with divisors of 1–10.					
17.	Identify the missing number in a word problem involving multiplication and division (within 25), with unknowns in all positions (e.g., 20 ÷ ? = 5).					
18.	Create or extend a numerical pattern based on a given rule (e.g., "begin with 7, then the rule is to add 4").					

Student's Name_____ Grade_____ Date of Survey_____

Grade 4 Mathematics

Number and Operations—Fractions

Identify/recognize fractions:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Identify ½ and whole using manipulatives and/or familiar objects.					
2.	Partition a whole into 1/2, 1/3, and 1/4 equal parts.					
3.	Compare parts of the same whole (quarter, third, half) to determine the relative size of each.					
4.	Compare fractions of the same whole with like denominators to determine which is greater (e.g., ¼ or ¾).					
5.	Label points on a number line with simple fractions with like denominators (e.g., label 1/6, 3/6, 5/6 on the same number line).					
6.	Demonstrate one or more fractions that are equivalent to ½ using models or manipulatives (e.g., 2/4, 3/6, 4/8).					
7.	Compare two fractions with unlike denominators and indicate which is greater or less (1/3 or 3/5).					
Operations with fractions:						
8.	Add and subtract "unit fractions" with like denominators (e.g., ¼ + ¼ = ?).					
9.	Add and subtract fractions with like denominators (e.g., 1/8 + 3/8 = ? and 5/8 – 3/8 = ?).					
10.	Multiply simple fractions by a whole number (e.g., 3/5 X 5 = 15/5 = 3).					
11.	Multiply fractions by fractions (e.g., 2/4 X 4/5 = 8/20).					
12.	Convert simple decimals to simple fractions and vice versa (e.g., .25 = ¼; ½ = .50).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 5 Mathematics

Number and Operations in Base Ten (NBT)

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Count by ones to 10.					
2.	Represent up to 5 objects with numerals, including 0.					
3.	Compose numbers from 1 to 9 to create 10, using objects.					
4.	Count by tens to 100.					
5.	Count forward beginning from a given number up to 100 (e.g., count on from 23).					
6.	Identify "ten more" (or "ten less") than a given two-digit number.					
7.	Add and subtract single-digit numbers.					
8.	Add and subtract two-digit numbers.					
9	Round a given amount of money to the nearest dollar (e.g., $2.57 rounds to $3.00).					
10.	Round whole three-digit numbers to the nearest 100.					
11.	Multiply a one-digit number by a two-digit number.					
12.	Divide a three-digit number by a one-digit number (without remainders).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 5 Mathematics

Number and Operations—Fractions

Identify/recognize fractions:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Identify ½ and whole using manipulatives and/or familiar objects.					
2.	Partition a whole into ½, ⅓, and ¼ equal parts.					
3	Compare parts of the same whole (½, ⅓, and ¼) to determine the relative size of each.					
4.	Compare fractions of the same whole with like denominators to determine which is greater (e.g., ¼ or ¾).					
5.	Label points on a number line with simple fractions with like denominators (e.g., label 1/6, 3/6, 5/6 on the same number line).					
6.	Demonstrate one or more fractions that are equivalent to ½ using models or manipulatives (e.g., 2/4, 3/6, 4/8).					
7.	Compare two fractions with unlike denominators and indicate which is greater or less (1/3 or 3/5).					
Operations with fractions:						
8.	Add and subtract "unit fractions" with like denominators (e.g., ¼ + ¼ = ?).					
9.	Add and subtract fractions with like denominators (e.g., 1/8 + 3/8 = ? and 5/8 – 3/8 = ?).					
10.	Multiply simple fractions by a whole number (e.g., 3/5 x 5 = 15/5 = 3).					
11.	Multiply fractions by fractions (e.g., 2/4 x 4/5 = 8/20).					
12.	Convert simple decimals to simple fractions and vice versa (e.g., .25 = ¼; ½ = .50).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 6 Mathematics

Statistics and Probability

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Record responses to a survey.					
2.	Represent a simple set of data graphically, either from a survey or based on observations (e.g., on a table, chart, tally, bar graph, or circle graph).					
3.	Describe what is being shown in a simple data display (e.g., in a table or on a bar, line, or circle graph).					
4.	Answer questions related to the data shown in a data display (e.g., do more students have brown eyes or blue eyes?).					
5.	Order a set of numerical data.					
6.	Find the median in an ordered set of numerical data.					
7.	Calculate the range (spread) of a given set of data (e.g., by finding the difference of the greatest and least values).					
8.	Given two sets of numerical data, decide which has the greatest mean.					
9.	Calculate the mean of a given set of data.					

Student's Name_____ Grade_____ Date of Survey_____

Grade 6 Mathematics

The Number System

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Match visual representation of a simple fraction to the fraction itself (e.g., match one-third of a pie to "$\frac{1}{3}$").					
2	Distinguish ¼ from ½ of the same object.					
3.	Locate positive whole numbers on a number line.					
4.	Add and subtract one-digit whole numbers.					
5.	Multiply and divide one-digit whole numbers					
6.	Add and subtract two-digit whole numbers.					
7.	Add and subtract fractions with like denominators.					
8.	Multiply two-digit whole numbers by one-digit whole numbers.					
9.	Multiply two- and three-digit whole numbers by two-digit whole numbers.					
10.	Divide two-digit numbers by one-digit whole numbers.					
11.	Multiply fractions by whole numbers (e.g., $4 \times \frac{2}{3}$).					
12.	Multiply fractions by fractions (e.g., ¼ x ⅜).					
13.	Solve word problems involving fractions (e.g., I have 2/3 cup of water. Paul has half as much as me. How much water does Paul have?).					
14.	Identify numbers that are multiples of 2 or 3 from a list of numbers.					
15.	Add and subtract numbers including decimals to tenths (e.g., 3.6 + 4.7).					
16.	Multiply and divide decimals by whole numbers to tenths (e.g., 7.4 X 4; 4.8 ÷ 6).					
17.	Locate and plot points in the first quadrant of a coordinate plane (e.g., plot and/or locate the points (4, 5), (8, 12), (6,3) on a graph).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 7 Mathematics

Ratios and Proportional Relationships

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Create a part-to-part ratio among objects already pre-sorted into sets or categories (e.g., the ratio of red to blue objects is 5:3).					
2.	Express a part-to-whole ratio (e.g., If 5 of 9 students are boys, then the part-to-whole ratio is 5:9).					
3.	Identify two or more equivalent fractions ($\frac{1}{2} = \frac{3}{6}$).					
4	Convert quantities from one measurement unit to another (e.g., 6 feet = 2 yards; 18 inches = 1½ feet).					
5.	Calculate a percentage of a given quantity (e.g., What is 25 percent of 48?).					
6.	Calculate a unit rate using real-world examples (e.g., If 5 apples cost $2.00, the unit rate is $0.40 per apple).					
7.	Determine the percentage given the quantities (e.g., 10 is what percent of 50; 9 is what percent of 45?).					
8.	Solve one-step equations using multiplication (e.g., $3x = 45$ or $4x = 36$).					
9.	Create a table given a ratio (e.g., given the ratio 1:3, make a table with 2:?; 3:?; and 4:?).					
10.	Express a percent as a fraction equivalent (e.g., 75% = $\frac{75}{100}$ or $\frac{3}{4}$).					
11.	Solve proportions where one quantity is represented by a variable (e.g., $\frac{3}{5} = \frac{x}{15}$).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 7 Mathematics

Geometry

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Find a shape that is round.					
2.	Partition a shape into two equal parts.					
3.	Match identical two-dimensional shapes (e.g., drawings of squares, triangles).					
4.	Match identical three-dimensional shapes (e.g., ball/sphere; box/cube).					
5.	Demonstrate the relative positions of objects (e.g., beside, inside, next to, above, below).					
6.	Sort two-dimensional shapes (e.g., squares, circles, and triangles).					
7.	Identify simple shapes by name (circle, square, triangle, box/cube, ball/sphere).					
8.	Sort two- and three-dimensional shapes by attribute, such as color, shape, and size.					
9	Identify and label a line and an angle.					
10.	Identify angles as either acute, obtuse, or right.					
11.	Plot a given number on a horizontal number line.					
12.	Plot a given ordered pair in the first quadrant of a coordinate plane (e.g., (4, 5); (8, 12); (8, 3)).					
13.	Calculate the area of a square or rectangle.					

Student's Name_____ Grade_____ Date of Survey_____

Grade 8 Mathematics

Expressions and Equations

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Express the meaning of "equal to, "greater than," or "less than" by comparing groups of objects.					
2.	Compare number quantities using the symbols <, =, or >.					
3.	Represent repeated addition using groups of objects with equal amounts (e.g., given 12 objects, create 2 groups of 6; 3 groups of 4; etc.).					
4.	Create equivalent expressions using commutative property (e.g., 4 + 2 = 2 + 4; 5 X 3 = 3 X 5).					
5.	Solve addition and subtraction equations where the sum or difference is represented by a variable (e.g., $5 + 7 = r$).					
6.	Identify the missing number in an equation involving addition or subtraction (e.g., $8 + ? = 13$).					
7.	Solve multiplication and division equations where the product or quotient is represented by a variable (e.g., $6 \times 7 = t;\ 32 \div 8 = n$).					
8.	Identify the missing factor in an equation involving multiplication (e.g., $4\ \times ? = 28$).					
9.	Identify equivalent numerical expressions (e.g., $8 + 8 + 8$ can be written as 3×8 or 8×3).					
10.	Evaluate expressions with numbers and letters involving addition and subtraction, given the value of an unknown number (e.g., What is 7-*p*, if *p*=2; *p*=3; *p*=5?).					
11.	Generate a number pattern given an initial value and an addition rule (e.g., initial value is 6, rule is "add 4," determine the next 5 numbers in the pattern).					
12.	Solve a one-step equation involving multiplication and/or division, with no remainder (e.g., $14 \div n = 7$).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 8 Mathematics

Geometry

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Find a shape that is round.					
2.	Match identical two-dimensional shapes (e.g., drawings of squares, triangles).					
3.	Match identical three-dimensional shapes (e.g., ball/sphere; box/cube).					
4.	Match similar shapes of different sizes.					
5.	Distinguish squares, circles, and triangles.					
6.	Communicate the names of simple shapes.					
7.	Describe the relative positions of objects (e.g., beside, inside, next to, above, below).					
8.	Sort two- and three-dimensional shapes by attribute, such as color, shape, and size.					
9.	Partition a shape into two equal parts.					
10.	Identify and label a line and an angle.					
11.	Identify angles as either acute, obtuse, or right.					
12.	Plot numbers on a horizontal number line.					
13.	Plot ordered pairs in the first quadrant of a coordinate plane (e.g., (4, 5); (8, 12); (8, 3)).					
14.	Calculate the area of a square or rectangle.					

Student's Name_____ Grade_____ Date of Survey_____

Grade 10 Mathematics

(Conduct the skills survey only in the three Conceptual Categories selected for the grade 10 MCAS-Alt.)

Number and Quantity

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Locate positive whole numbers on a number line.					
2.	Match visual representation of a simple fraction to the fraction itself (e.g., match one-third of a pie to "$\frac{1}{3}$").					
3.	Compare two fractions and communicate whether one is "less than," equal to," or "greater than" the other.					
4.	Add and subtract one-digit whole numbers.					
5.	Multiply and divide one-digit whole numbers.					
6.	Add and subtract two-digit whole numbers.					
7.	Add and subtract fractions with like or unlike denominators.					
8.	Multiply two-digit whole numbers by one- and two-digit whole numbers.					
9.	Identify perfect squares and their square roots up to 10 (e.g., $6^2 = 36; \sqrt{36} = 6$).					
10.	Divide two-digit numbers by one-digit whole numbers.					
11.	Multiply fractions by whole numbers (e.g., $4 \times \frac{2}{3}$).					
12.	Multiply fractions by fractions (e.g., ¼ x ⅜)					
13.	Divide fractions by fractions (e.g., $\frac{1}{3} \cdot \frac{3}{5} = \frac{3}{15}; \frac{1}{3} \div \frac{3}{5} = \frac{5}{9}$)					
14.	Solve word problems involving fractions (e.g., I have 2/3 cup of water. Paul has half as much as me. How much water does Paul have?)					
15.	Identify numbers that are multiples of 2 or 3 from a list of numbers.					
16.	Add and subtract numbers including decimals to tenths (e.g., 3.6 + 4.7).					
17.	Multiply and divide decimals by whole numbers to tenths (e.g., 7.4 X 4; 4.8 ÷ 6).					
18.	Plot and locate points on a coordinate grid (e.g., plot and/or locate the points (3, -2), (-4, 6), (-7,-3) on a graph).					
19.	Round a five-digit number (e.g., 25, 331) to the nearest hundred (e.g., 25, 300) and nearest thousand (e.g., 25,000).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 10 Mathematics

(Conduct the skills survey only in the three Conceptual Categories selected for the grade 10 MCAS-Alt.)

Algebra

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Compare number quantities using the symbols <, =, or >.					
2.	Create groups of objects with equal amounts in multiple ways (e.g., given 12 objects, create 2 groups of 6; 3 groups of 4 etc.).					
3.	Create equivalent expressions using the commutative property (e.g., 4 + 2 = 2 + 4; 5 X 3 = 3 X 5).					
4.	Solve addition and subtraction equations where the sum or difference is represented by a variable (e.g., $5 + 7 = r$).					
5.	Solve multiplication and division equations where the product or quotient is represented by a variable (e.g., $6 \times 7 = t$; $54 \div 7 = n$).					
6.	Identify the missing number in an equation involving addition or subtraction (e.g., $? + 8 = 13$).					
7.	Identify equivalent numerical expressions (e.g., $8 + 8 + 8$ can be written as 3×8).					
8.	Solve one- and two-step equations with one variable (e.g., solve for *x*, if 3*x*=15; 5*x* + 7 = 42).					
9.	Multiply a two-digit number by a one-digit number.					
10.	Evaluate expressions with numbers and letters involving addition and subtraction, given the value of an unknown number (e.g., 7-*p*, if *p*=2; *p*=3; *p*=5).					
11.	Extend a simple arithmetic sequence (e.g., 7, 10, 13, ?, ?).					
12.	Determine the point of intersection of two lines graphed on a coordinate plane by observation (e.g., the point of intersection of two lines is $(5, -1)$).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 10 Mathematics

(Conduct the skills survey only in the three Conceptual Categories selected for the grade 10 MCAS-Alt.)

Functions

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Create a part-to-part ratio among objects already pre-sorted into sets or categories (e.g., the ratio of red to blue objects is 5:3).					
2.	Express a part-to-whole ratio (e.g., If 5 of 9 students are boys, then 5/9 of the students are boys; or part-to-whole ratio is 5:9).					
3.	Identify two or more equivalent fractions ($\frac{1}{2} = \frac{3}{6}$).					
4.	Calculate a percentage of a given quantity (e.g., What is 25 percent of 48?).					
5.	Calculate a unit rate using real-world examples (e.g., If 5 apples cost $2.00, the unit rate is $0.40 per apple).					
6.	Determine the percentage given the quantity (e.g., 9 is what percent of 45?; what is 40 percent of 300?).					
7.	Express a percent as a fraction equivalent (e.g., 75% = $\frac{75}{100}$).					
8.	Solve proportions where one quantity is represented by a variable (e.g., $\frac{3}{5} = \frac{x}{15}$).					
9.	Complete missing values on an input-output table (or use manipulatives) when given the function rule and input values (e.g., Rule: ribbon costs $1.25 per yard; what is cost for 3 yards? 12 yards; etc.).					
10.	Create a table of ordered pairs (or generate a number pattern) representing a real-life relationship (e.g., based on $.95 cost of one donut, create a table of ordered pairs when multiple donuts are bought; or miles traveled over different periods of time at 60 mph).					
11.	Complete a table (or extend a number pattern) based on an initial value and an addition or subtraction rule.					
12.	Determine the addition or subtraction rule of an input/output table, given the ordered pairs.					

Student's Name_____ Grade_____ Date of Survey_____

Grade 10 Mathematics

(Conduct the skills survey only in the three Conceptual Categories selected for the grade 10 MCAS-Alt.)

Geometry

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Find a shape that is round.					
2.	Match identical two-dimensional shapes (e.g., drawings of squares, triangles).					
3.	Match identical three-dimensional shapes (e.g., ball/sphere; box/cube).					
4.	Match similar shapes of different sizes.					
5.	Distinguish squares, circles, and triangles.					
6.	Communicate the names of simple shapes.					
7.	Describe the relative positions of objects (e.g., beside, inside, next to, above, below).					
8.	Sort two- and three-dimensional shapes by attribute, such as color, shape, and size.					
9.	Partition a shape into two equal parts.					
10.	Identify and label a line and an angle.					
11.	Identify angles as either acute, obtuse, or right.					
12.	Plot numbers on a horizontal number line.					
13.	Graph ordered pairs in the first quadrant of a coordinate plane (e.g., (4, 5); (8, 12); (8, 3)).					
14.	Calculate the area of a square or rectangle.					
15.	Identify lines of symmetry within a two-dimensional figure.					
16.	Use the Pythagorean Theorem to find the length of the hypotenuse of a right triangle, given the length of the two other sides.					
17.	Calculate the area of a circle (πr^2), given its diameter or radius (e.g., find the area of a circle with a radius of 3; find the area of a circle with a diameter of 8).					

Student's Name_____ Grade_____ Date of Survey_____

Grade 10 Mathematics
(Conduct the skills survey only in the three Conceptual Categories selected for the grade 10 MCAS-Alt.)

Statistics and Probability

Using objects, manipulatives, technology, or paper-pencil, student can:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Order a set of numerical data from least to greatest.					
2.	Identify the minimum and maximum values in a set of numbers.					
3.	Identify the range of numerical data in a set of numbers arranged from least to greatest.					
4.	Identify the median (i.e., the middle value) for a set of numerical data.					
5.	Answer simple questions related to data represented on a data display (e.g., numbers on a pie chart showing the number of sunny days to rainy days in a given month).					
6.	Calculate the mean of a set of numerical data.					

Student's Name_____ Grade_____ Date of Survey_____

Next-Generation (Next-Gen) Science and Technology/Engineering (STE):
Grade 5 and 8 – All Strands
High School – Biology and Introductory Physics ONLY

Complete the skills survey **once** for each student in all eight science practices listed below.
Note: The Science Practices are the same across all next-gen STE strands and grade spans.

Before selecting entry points for the student, teachers should assess each student's skills and abilities in each Science Practice, checking the box if the student can perform the skill independently, at least some of the time.

The STE Skills Survey is based on the student's ability to independently perform a science skill (for example ask a question, follow directions, describe something), rather than on specific science content.

Teachers should select entry points at the highest grade span in which the checked boxes appear.
Teachers may select entry points from different grade spans, depending on the results of the skills survey. For example, a student in grade 8 may be able to perform one science practice listed in grade span 6-8, while performing another science practice in grade span 3-5.

NOTE: High School Chemistry and Technology/Engineering are legacy, rather than next-gen, assessments that will be conducted as they have been in previous years (i.e., by submitting a data chart with at least eight dates; plus at least two pieces of evidence in each strand).

SCIENCE and TECHNOLOGY/ENGINEERING (STE) SKILLS SURVEY

Instructions: For grades 5 and 8 STE and high school Biology and Introductory Physics, check the boxes below in each of the eight numbered Science Practices that the student can perform independently, at least some of the time. Select an entry point from each science practice in the highest grade span in which the checked boxes appear.

1. Asking Questions and Defining Problems		
Less Complex ↑	PreK–Grade 2	☐Ask clarifying questions about a topic or idea. ☐Use observations to ask relevant questions. ☐Define a simple problem related to a topic.
	Grades 3–5	☐Use observations and/or data (for example, multiple-word descriptors, descriptions or drawings of observations, counted observations, measurements) to ask a question about a topic or idea. ☐Identify questions on a topic that can be answered by an investigation. ☐Define a simple problem that can be solved related to a topic.
	Grades 6–8	☐Identify scientific (testable) and non-scientific (non-testable) questions. ☐Generate scientific questions about a topic based on research and/or observations.
	Grades 9–12	☐Evaluate a scientific question to determine if it is testable and/or relevant to a topic. ☐Generate a scientific question about a topic that is testable using available resources.
↓ More Complex		☐My student cannot perform any of the skills in this science practice

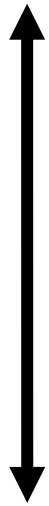
2. Planning and Carrying Out Investigations		
Less Complex ↕ More Complex	PreK–Grade 2	☐Choose how to collect data and/or observations (for example, using one-word descriptors, yes/no observations) on a topic. ☐Follow the steps of an investigation to collect data and/or observations (for example, using one-word descriptors, yes/no observations) on a topic. ☐Record observations (for example, based on first-hand experiences or through the media) on a topic. ☐Use pictures and/or drawings to collect observations related to a topic.
	Grades 3–5	☐Choose how to collect data and/or observations (for example, using multiple-word descriptors, descriptions or drawings of observations, counted observations, measurements) on a topic. ☐Follow the steps of an investigation to collect data and/or observations (for example, multiple-word descriptors, descriptions or drawings of observations, counted observations, measurements) on a topic. ☐From multiple options, select the best method to collect data and/or observations on a topic. ☐Record observations (for example, based on first-hand experiences, or through the media) to collect data on a topic.
	Grades 6–8	☐Choose how to collect data to serve as evidence (for example, descriptions or drawings of observations over time, measurements that may show a pattern). ☐Follow the steps of an investigation on a topic to produce data to serve as evidence (for example, descriptions or drawings of observations over time, measurements that may show a pattern). ☐Select and use appropriate methods and/or tools (for example, ruler, graduated cylinder, thermometer, carbon dioxide sensor) for collecting data in an investigation. ☐Record observations and/or measurements to produce data to serve as evidence for an investigation. ☐Test two different models of the same proposed design solution to determine which better meets the criteria for success.
	Grades 9–12	☐Choose how to collect data to serve as evidence (for example, measurements, or descriptions of observations comparing an experimental and control group over time). ☐Follow the steps of an investigation to produce data to serve as evidence (for example, measurements, or descriptions of observations comparing an experimental and control group over time). ☐Select appropriate tools (for example, ruler, graduated cylinder, thermometer, carbon dioxide sensor) to conduct an investigation on a topic. ☐Select and/or create the appropriate organizer (for example, table, chart, graphic organizer) to collect data from an investigation.
		☐My student cannot perform any of the skills in this science practice.

3. Analyzing and Interpreting Data		
Less Complex ↑	PreK–Grade2	☐Display data (for example, one-word descriptors, number/tally of yes/no observations) visually using a simple graph, table, or picture to show information on a topic. ☐Identify patterns by grouping information/data by similar observable properties. ☐Make predictions on a topic prior to collecting data/observations.
	Grades 3–5	☐Represent data (for example, counted observations, measurements) on a data display. ☐Answer questions based on a representation (for example, data display) of a data set. ☐Make predictions about an outcome in order to compare predictions to actual data and/or observations. ☐Compare predictions to actual data and/or observations from an investigation. ☐Use data and/or observations (for example, multiple-word descriptors, descriptions or drawings of observations, counted observations, measurements) to identify patterns about a topic. ☐Use data and/or observations to identify relationships between topics, ideas, or concepts. ☐From tests of an object or tool, evaluate data and/or observations (for example, multiple-word descriptors, descriptions or drawings of observations, counted observations, measurements) to determine if it works as intended. ☐Construct a conclusion based on evidence or observations (for example, from an investigation).
	Grades 6–8	☐Use data and/or observations (for example, descriptions or drawings of observations over time, measurements that may show a pattern) from an investigation to interpret features of the data or develop conclusions. ☐Describe one or more patterns (for example, using multiple-word descriptors) in a data set. ☐Analyze/interpret data (for example, descriptions or drawings of observations over time, measurements that may show a pattern) to make sense of a topic. ☐Compare and contrast two data sets. ☐Use observations and/or data (for example, descriptions or drawings of observations over time, measurements that may show a pattern) to evaluate and/or refine a design solution.
	Grades 9–12	☐Analyze/interpret data from a table or graph, citing details and/or evidence from the data display. ☐Create two or more appropriate visual representations of the same data set (for example, line graph, bar graph, circle graph, table, etc.).
More Complex ↓		☐My student cannot perform any of the skills in this science practice.

4. Using Mathematics and Computational Thinking		
Less Complex ↕ More Complex	PreK–Grade2	☐Use counting and numbers to show data on a topic (for example, count/tally the number of yes/no observations or responses from the class). ☐Identify qualitative (i.e., using words) information about objects or data. ☐Identify quantitative (i.e., using numbers) information about objects or data.
	Grades 3–5	☐Use counting and numbers to show data on a topic (for example, measurements). ☐Describe, measure, and/or compare quantitative (i.e., numerical) attributes of objects or data. ☐Identify patterns in quantitative (i.e., numerical) data about a topic.
	Grades 6–8	☐Organize simple data sets (for example, data table, chart, graph) to reveal patterns. ☐Evaluate whether qualitative (i.e., descriptive) or quantitative (i.e. numerical) data is best to collect as evidence in an investigation about a topic. ☐Use computations (for example, addition, subtraction, division, multiplication) to analyze data (for example, averages, totals, differences).
	Grades 9–12	☐Use given formulas to solve for relevant quantities (for example, speed, density). ☐Apply mathematical concepts and/or processes (for example, ratios, rates, percentages, proportions, and/or basic operations) to answer questions or solve problems.
		☐My student cannot perform any of the skills in this science practice.

5. Developing and Using Models		
Less Complex ↕ More Complex	PreK–Grade2	☐Label a model that shows or explains a topic. ☐Illustrate a model to show or explain a topic. ☐Compare a model of an object with the actual object and identify similarities and differences.
	Grades 3–5	☐Given directions, construct a model to show or explain a topic. ☐Develop or create a model to show/explain a topic. ☐Distinguish between a model and the actual object, process, or event. ☐Compare two (or more) models of the same topic (for example, compare models of human body systems to identify common features and differences).
	Grades 6–8	☐Revise a model to more clearly show or explain a topic. ☐Show or explain a topic using a model.
	Grades 9–12	☐Refine an existing model by suggesting revisions. ☐Evaluate a model citing details about clarity and accuracy of the model.
		☐My student cannot perform any of the skills in this science practice.

6. Constructing Explanations and Designing Solutions		
Less Complex ↕ More Complex	PreK–Grade2	☒Show/express one or more observations or characteristics of a familiar topic or object. ☐Show/express the relationship between two objects or topics.
	Grades 3–5	☐Describe one or more characteristics of a topic or object based on observations. ☐Identify a design problem and a potential solution using words, pictures, or drawings. ☐Draw and/or explain a design solution for a content-related problem.
	Grades 6–8	☐Explain how a familiar object, device, or machine works. ☐Construct conclusions based on evidence from an investigation of a topic. ☐Generate a solution to a design problem using pictures or drawings. ☐Use tools (for example, ruler/tape measure, scissors, hammer) and/or materials to build a prototype that solves a specific problem. ☐Use observations and data from investigations (for example, descriptions or drawings of observations over time, measurements that may show a pattern) to design a solution to a problem.
	Grades 9–12	☐Construct an explanation of how an object, prototype, or machine works based on information from a variety of sources (for example, model, research, investigation, simulation) ☐Generate multiple solutions to a design problem. ☐Compare multiple solutions to a design problem.
		☐My student cannot perform any of the skills in this science practice.

7. Engaging in Argument from Evidence		
Less Complex  More Complex	PreK–Grade2	☐Use scientific evidence (for example, data, observations from an investigation) to support an argument about a topic from the grades PreK-2 STE standards (see core ideas at each grade).
	Grades 3–5	☐Use scientific evidence to support a claim about a topic from the grades 3-5 STE standards (see core ideas at each grade). ☐Use scientific evidence to support a claim for or against a design solution.
	Grades 6–8	☐Use scientific evidence to support an argument about a topic from the grades 6-8 STE standards (see core ideas at each grade). ☐Compare and critique two arguments about a scientific topic or idea. ☐Defend a claim about the merits of a particular design solution, citing relevant evidence.
	Grades 9–12	☐Use scientific evidence and observations to construct an argument about a topic from the high school STE standards (see core ideas at each grade). ☐Make and defend a claim based on scientific evidence about a topic or idea. ☐Evaluate competing design solutions for a problem using evidence related to the criteria for success and the constraints of the resources.
		☐My student cannot perform any of the skills in this science practice.

8. Obtaining, Evaluating, and Communicating Information		
Less Complex ↑	PreK–Grade2	☐Research (for example, using media or informational text) and present information (for example, show or express) on a topic from the grades preK-2 STE standards (see core ideas at each grade). ☐Communicate information or ideas (orally, graphically, textually, and/or mathematically) on a topic from grades preK-2 STE standards (see core ideas at each grade). ☐Compare fictional and non-fictional resources on a topic. ☐Recall (retell) important information from a text or from observations.
	Grades 3–5	☐Research (for example, using media or informational text) and present information on a topic from the grades 3-5 STE standards (see core ideas at each grade). ☐Communicate information or ideas (for example, orally, graphically, textually, and/or mathematically) on a topic from grades 3-5 STE standards (see core ideas at each grade). ☐Compare two informational sources (for example, using media, informational text, data display) to determine similarities and differences in how information was presented.
	Grades 6–8	☐Research and present information on a topic from grades 6-8 STE standards (see core ideas at each grade). ☐Communicate information or ideas (for example, orally, graphically, textually, and/or mathematically) on a topic from grades 6-8 STE standards (see core ideas at each grade). ☐Combine scientific information from multiple sources (for example, media, informational text, data display, observations from an investigation) to explain scientific information or phenomena.
↓ More Complex	Grades 9–12	☐Research and present information on a topic from grades 9-12 STE standards (see core ideas at each grade). ☐Communicate information or ideas (orally, graphically, textually, and/or mathematically) on a topic from grades 9-12 STE standards (see core ideas at each grade span). ☐Evaluate the validity and reliability of information provided in multiple texts/media on the same topic.
		☐My student cannot perform any of the skills in this science practice.

Student's Name_____ Grade_____ Date of Survey_____

High School Science and Technology/Engineering (STE)

Chemistry (Legacy standards)

(Note: For this high school STE discipline, conduct the Skills Survey below.)

Illustrate, demonstrate, or respond verbally to:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Group objects by one similar observable property (e.g., size, shape, color, weight, or texture)					
2.	Identify three properties of three different objects/materials (e.g., the ball is round, smooth, and blue; water is cold, wet, and clear)					
3.	Identify up to 3 given materials/objects as either solid, liquid, or gas					
4.	Give examples of a physical versus chemical change (i.e., a physical change doesn't change the substance (melting an ice cube, tearing paper, mixing flour and an egg); in a chemical change (e.g., combustion), a new substance is formed and energy is either given off or absorbed) (e.g., rusting iron, baking a cake, burning wood)					
5.	Give examples of each basic form of energy (i.e., light, sound, heat, electrical, and/or magnetic)					
6.	Classify up to three substances as either a mixture (e.g., soil, sand, coffee with milk, sugar and water) or a pure substance (e.g., air, water, diamonds, table salt, sugar)					

Student's Name_____ Grade_____ Date of Survey_____

High School Science and Technology/Engineering (STE)

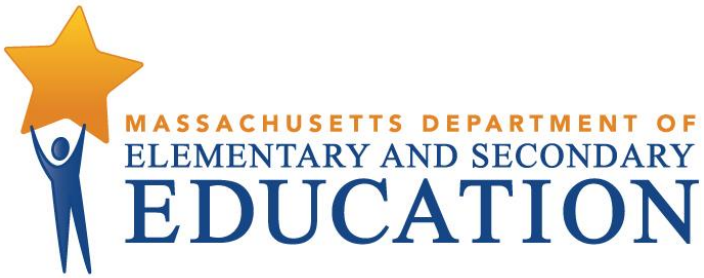
Technology/Engineering (Legacy standards)

(Note: For this high school STE discipline, conduct the Skills Survey below.)

Illustrate, demonstrate, or respond verbally to:		A 0% (unable)	B Up to 25% (rarely)	C Up to 50% (occasionally)	D Up to 75% (more often than not)	E Up to 100% (almost always)
1.	Name three tools and what they were designed to do.					
2.	Identify parts of the human body that act as tools (e.g., teeth for cutting, fingers for grasping).					
3.	Match various tools to their intended purpose.					
4.	Determine whether given objects are natural or human-made.					
5.	Identify different means of transportation.					
6.	Draw or describe a picture/diagram of a specific object you would like to construct.					
7.	Describe the materials you would use to build the object you would like to construct and why you chose those materials.					
8.	Name or describe at least one tool you would use to construct the object you chose and describe why you chose the tool.					
9.	Match a symbol (without text) used to communicate an idea to its message or meaning (e.g., symbols used for wheelchair access, danger, bicycle lane).					
10.	Calculate the actual length of an object from a scaled drawing.					

APPENDIX R

GUIDELINES FOR SCORING
2021 MCAS-ALT



Guidelines for Scoring 2021 MCAS-Alt

MCAS Alternate Assessment

Massachusetts Comprehensive Assessment System

This document was prepared by the
Massachusetts Department of Elementary and Secondary Education

Jeffrey C. Riley

Commissioner

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Massachusetts Department of Elementary and Secondary Education
75 Pleasant Street, Malden, MA 02148-4906
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www.doe.mass.edu

Purpose of the Scoring Guidelines

The purpose of the *Guidelines for Scoring 2021 MCAS-Alt* is to train scorers to evaluate the 2021 MCAS Alternate Assessment (MCAS-Alt). These guidelines provide important information so that scorers can give valid scores on statewide MCAS-Alt assessments and maintain consistency in applying the scoring rules during the scoring process. Massachusetts educators are also encouraged to use these guidelines to familiarize themselves with the process used to evaluate the MCAS-Alt assessments for their students.

MCAS-Alt is the state's alternate assessment for students with the most significant cognitive disabilities who cannot be assessed on standard MCAS tests, even with accommodations, due to the severity of their disabilities. It is important to assess the academic performance of all students in relation to the state's learning standards, and to include students with disabilities in MCAS reporting, so results provided to their schools can be used to improve instruction. The MCAS-Alt ensures that students with the most significant cognitive disabilities have an opportunity to show what they know academically and to receive instruction at a level that is challenging and attainable.

By participating in alternate assessments and including their scores in the results of their school and district, students have a greater chance of being considered when decisions are made to allocate staff and resources. Requirements for conducting the MCAS-Alt are provided in the *2021 Educator's Manual for MCAS-Alt*, available at www.doe.mass.edu/mcas/alt/resources.html.

Table of Contents

Introduction and Background

The MCAS Alternate Assessment (MCAS-Alt) has been administered annually in Massachusetts since 2001. According to state and federal laws, all students with disabilities are required to participate in statewide assessments, either by taking standard MCAS tests with or without accommodations, or by taking the MCAS-Alt. Decisions regarding how each student will participate in MCAS must be made by the student's IEP team and documented in the student's IEP; or listed in the student's 504 plan.

Contents and Structure of the MCAS-Alt

The MCAS-Alt consists of 1) the MCAS-Alt Skills Survey, which is a standardized, measurable, and scorable component that must be completed by teachers prior to selecting "entry points" for subsequent, deeper assessment in the required strand and subject; and 2) a collection of "primary evidence" consisting of data charts, work samples and descriptions based on the selected entry points or access skills in the specific areas identified for submission in the required subject. The collection of evidence is organized into "strands" according to the standards specified for assessment in each grade and content area**.** Each strand includes the following products and information:

- **MCAS-Alt Skills Survey** (see sample in Appendix D)
- **one data chart** showing the student's performance on at least eight different dates, based on a skill listed in the state's Resource Guide for students with disabilities in the learning standard and subject required for assessment
- at least **two pieces of evidence**, including work samples, video clips, and/or photographs, showing the student's performance based on the skill listed on the data chart, with a brief description of how the student demonstrated the skill
- examples of **supporting documentation**, including materials and tools used by the student, reflection sheets, and other supporting documentation at the discretion of the teacher

Exceptions to the above assessment requirements are described on pages 21-23 for ELA-Writing (all grades) and on page 24 for Science and Technology/Engineering (grades 5 and 8 and "next-generation" high school Biology and Introductory Physics). * Due to the 2020 pandemic, STE for grade 10 is not required this school year only.

Detailed instructions for conducting the MCAS-Alt are available in the Department's publication entitled the Educator's Manual for MCAS-Alt, which is updated annually. The Educator's Manual is posted on the Department's website at www.doe.mass.edu/mcas/alt/resources.html and is made available at Department-sponsored training events.

Scoring the MCAS-Alt

After the skills surveys and portfolios evidence collections are submitted to the Department on May 20, 2021, they are reviewed and scored at a scoring institute sponsored by the Department and Cognia, the state's alternate assessment contractor. The *Guidelines for Scoring 2021 MCAS-Alt* (this publication) provides detailed information on the process that will be used by scorers to review and rate each student's alternate assessment. This guidelines publication is also available at www.doe.mass.edu/mcas/alt/results.html.

General Guidelines for Scorers

Carefully review the following scoring guidelines and review each step of the scoring process included in this booklet, including all scoring rules and onscreen displays in the AltScore program.

Scorers must:

- **Score objectively and impartially.**
  Put aside opinions about the appropriateness of the student's placement, program, or services; opinions on why the student is participating in the alternate assessment; and personal feelings about statewide assessment in general.
- **Review all evidence in a strand before scoring the strand.**
- **Score only what is provided in each strand.**
  Do not make inferences or assumptions about what the student or teacher may have intended or should have included. Use *actual evidence*, rather than the description of the evidence provided by the teacher, as the basis for determining the score.
- **Avoid biases in reviewing the assessment based on overall presentation, neatness, and/or organization of the contents.**
- **Score each rubric area separately for each strand.**
- **Respect student and teacher confidentiality.**
  In accordance with the Family Educational Rights and Privacy Act (FERPA), do not discuss confidential student information with anyone. Do not use the names of teachers or students when discussing the contents of any assessment. Do not score any assessment if you are familiar with the student or teacher who submitted it.
- **Respect the contents of the assessments.**
  Student assessments must be returned in the same condition in which they were submitted. Maintain the order of all contents in the three-ring binder. Remove notes, flags, and placeholders you may have used during scoring.
- **Keep food and drinks away from the binders.** Store uncovered, sticky, or greasy edibles underneath the scoring table at all times.
- **Score at a reasonable pace, without rushing.**
  Read each question and answer it based on the evidence in front of you. Be methodical without taking too long. Each strand should take no more than about fifteen minutes to score. Ask for assistance only if you get stuck.

Content Areas Assessed by MCAS-Alt: Grades 3, 4, and 5

A student in this grade	Must be assessed in the following	
	Content areas	**Strands/Domains**
3	• English Language Arts	• One portfolio strand each in: ○ Reading (Literature or Informational Text) ○ Language (*Vocabulary Acquisition and Use*) ○ Writing (*Text Types and Purposes*)
	• Mathematics	• One portfolio strand each in: ○ Operations and Algebraic Thinking ○ Measurement and Data
4	• English Language Arts	• One portfolio strand each in: ○ Reading (Literature **or** Informational Text) ○ Language (*Vocabulary Acquisition and Use*) ○ Writing (*Text Types and Purposes*)
	• Mathematics	• One portfolio strand each in: ○ Operations and Algebraic Thinking ○ Number and Operations–Fractions
5	• English Language Arts	• One portfolio strand each in: ○ Reading (Literature **or** Informational Text) ○ Language (*Vocabulary Acquisition and Use*) ○ Writing (*Text Types and Purposes*)
	• Mathematics	• One portfolio strand each in: ○ Number and Operations in Base Ten ○ Number and Operations–Fractions
	• Science and Technology/Engineering (STE)*	• Three different STE disciplines, one core idea for each discipline

The content areas assessed by the 2021 MCAS-Alt for all grades are shown below.

***** STE assessments may include evidence collected during the current and one immediately preceding school year.

Content Areas Assessed by MCAS-Alt: Grades 6, 7, and 8

A student in this grade	Must be assessed in the following	
	Content areas	**Content areas**
6	• English Language Arts	• One portfolio strand each in: ○ Reading (Literature **or** Informational Text) ○ Language (*Vocabulary Acquisition and Use*) ○ Writing (*Text Types and Purposes)*
	• Mathematics	• One portfolio strand each in: ○ The Number System ○ Statistics and Probability
7	• English Language Arts	• One portfolio strand each in: ○ Reading (Literature **or** Informational Text) ○ Language (*Vocabulary Acquisition and Use*) ○ Writing (*Text Types and Purposes*)
	• Mathematics	• One portfolio strand each in: ○ Ratios and Proportional Relationships ○ Geometry
8	• English Language Arts	• One portfolio strand each in: ○ Reading (Literature **or** Informational Text) Language (*Vocabulary Acquisition and Use*) ○ Writing (*Text Types and Purposes*)
	• Mathematics	• One portfolio strand each in: ○ Expressions and Equations ○ Geometry
	• Science and Technology/Engineering *	• Three different STE disciplines, one core idea for each discipline

***** STE assessments may include evidence collected during the current and one immediately preceding school year.

Content Areas Assessed by MCAS-Alt: High School

A student in this grade	Must be assessed in the following	
	Content areas	**Content areas**
9 **or** 10	• Science and Technology/Engineering *	Next-Generation STE:[1] Choose one discipline: o Biology or o Introductory Physics Legacy STE:[2] Choose **three** standards in any **one** discipline: o Chemistry **or** o Technology/Engineering
10	• English Language Arts	• One portfolio strand each in: o Reading (Literature **or** Informational Text) o Language (*Vocabulary Acquisition and Use*) o Writing (*Text Types and Purposes*)
	• Mathematics	• One portfolio strand each in **any three** of the following strands: o Number and Quantity/The Number System o Statistics and Probability o Algebra/Expressions and Equations o Geometry o Functions/Ratios and Proportional Relationships

***** STE assessments may include evidence collected during the current and one immediately preceding school year. Review the STE assessment format on page 24.

[1] "Next generation" refers to standards in the 2016 Science and Technology/Engineering Curriculum Framework.

[2] "Legacy" refers to standards in the 2001/2006 Science and Technology/Engineering Curriculum Framework.

Required Assessment Contents

Assessment Overview

The MCAS-Alt consists of 1) a completed MCAS-Alt Skills Survey for each assessed strand; and 2) either two or three strands in each content area, depending on the subject and student's grade (see tables on pages 3–5) organized in a three-ring binder for each student. Guidelines for assembling the MCAS-Alt are provided in the 2021 Educator's Manual for MCAS-Alt, available at www.doe.mass.edu/mcas/alt/resources.

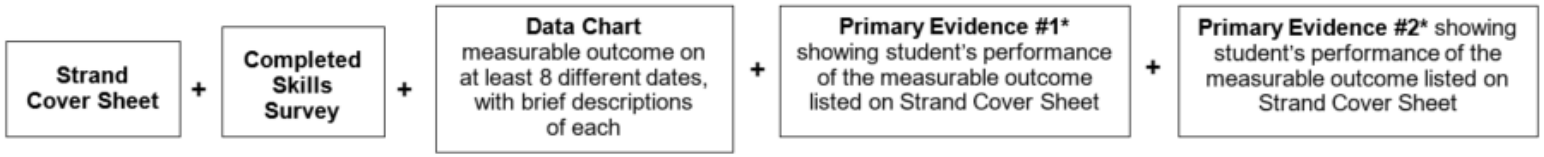
Required Forms

- Portfolio Cover Sheet
- Student's Weekly Schedule
- Student's Introduction
- Verification Form
- School Year Calendar

The overall score will not be affected if a required form is missing, but the scorer should provide comment 54 or 55 from the Comment Key (Appendix A), as appropriate.

Contents of Each Strand:

The "evidence" shown below must be included, at minimum, in each required strand (except ELA–Writing and next-generation STE). In addition, other supporting documentation may also be submitted at the teacher's discretion (see below). The measurable outcome being assessed must **remain the same** throughout each strand.



A complete strand includes the following components:

* Primary evidence may be a **work sample**, **video sample**, **photograph,** or **series of photos** clearly showing a final product. Video samples may be up to 3 minutes in duration. Evidence must be labeled with name, date, percent accuracy, percent independence, and must include a brief description of the activity(either on the evidence or on a Work Sample Description form).

<u>Supporting Documentation (Optional)</u>:

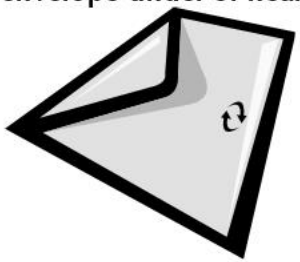
- Work Sample Description form(s)
- Tools, templates, organizers, reference sheets, computer screenshots, description, or sample screen of Augmentative and Alternative Communication (AAC) or another technology-based device used by the student
- Reflection sheets or other examples of self-evaluation

Summary of Scoring Process: Scorers

The Scorer:

1

- Receives a three-ring binder from the Table Leader
- Removes it from unsealed white envelope
- Stores the envelope under or near the binder



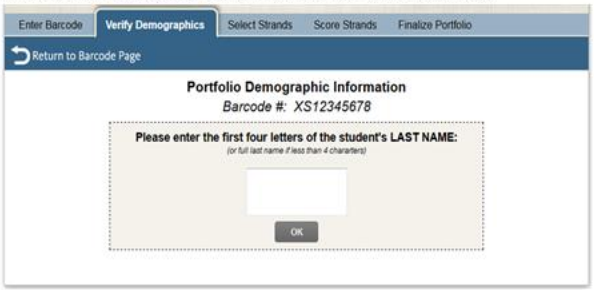
2

Enters the 10-digit barcode found on the white envelope (beneath the student name label) into the AltScore program

The barcode will always begin with 2364

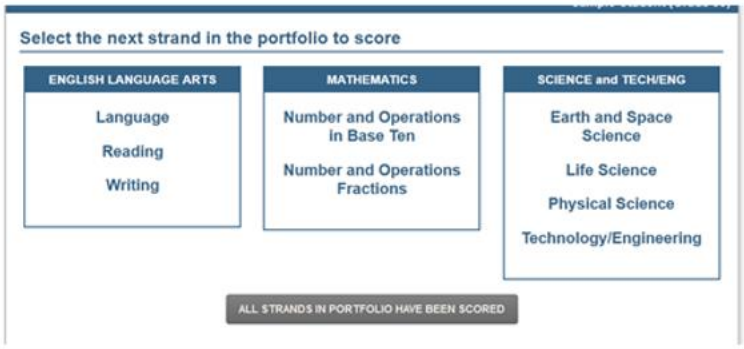
3

Confirms that demographic information in the AltScore program matches the Portfolio Cover Sheet of the assessment to be scored



4

Selects a strand to score



The Scorer:

5

- Scores each strand individually
- Answers each question in the AltScore program for each strand, in order to determine scores for:
  - Level of Complexity
  - Completeness
  - Demonstration of Skills and Concepts
  - Independence
  - Self-Evaluation
  - Generalized Performance

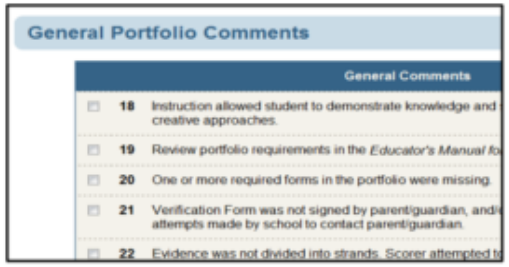
6

- Adds Strand Comments, as appropriate, for each strand
- Informs Table Leader of any scores of "M" or Level of Complexity (LOC)=1

(Note: A score of "M" means that strand evidence was either missing or insufficient to score. "M" comments will be generated automatically, as needed, according to scorers' responses to the AltScore "Completeness" questions.)

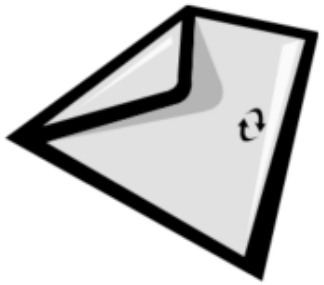
7

- Scores the remaining strands in each content area until all have been scored
- Adds General Portfolio Comment(s), as appropriate, for each content area



8

Places binder back in white envelope and returns it to the Table Leader



Summary of Scoring Process: Table Leaders

The Table Leader:

1

- Distributes binders to scorers at their table
- Answers questions from scorers at their table
- Uses AltScore "Arbitration" screen to complete steps 2, 3, and 4

2

- Double-scores each scorer every fifth binder (or at least once each morning and each afternoon), and as needed, at the Table Leader's discretion
- Determines whether a double or resolution score is needed
- Ensures that double scores are conducted by a scorer at another table.

3

- Tracks and maintains the flow of binders into and out of the double-score box.
- Follows procedure for "M" resolution and discrepancy resolution scores.

(Note: A score of "M" means that strand evidence was either missing or insufficient to score)

4

- Discusses any inaccurate scores with the scorer, based on resolution score
- Checks percent of inter-rater reliability (IRR) in AltScore for scorers based on their double-scored binders

5

- Returns binders to their original box when completely scored
- Confirms that all strands have been scored

6

- Returns completed boxes to the Quality Control room
- Retrieves a new box of binders from storage room

Scoring: *Complexity*

The following numbered questions appear in AltScore, the program that guides scorers through the scoring process. Many of the AltScore questions will be different for **ELA–Writing** and **Science and Technology/Engineering**.

1. DOES THE MEASURABLE OUTCOME CONTAIN AN ACCEPTABLE ENTRY POINT OR ACCESS SKILL FOUND IN RESOURCE GUIDE FOR THIS STRAND/DOMAIN?

Scorer must confirm that:

- The strand includes a measurable outcome (listed on line 5 on the Strand Cover Sheet).
- The entry point or access skill is in the Resource Guide. Line 4 of the Strand Cover Sheet lists the **page number** in the Resource Guide on which the entry point or access skill is listed (If page number is not listed, use **CTRL+F** and type in a key word to search.)
- The wording of the entry point or access skill has not been **excessively modified** in the measurable outcome (i.e., the original meaning and intent of the entry point or access skill has been maintained).
- If the measurable outcome is not based on an entry point or access skill found in the Resource Guide, scorer reports to table leader who will request **floor manager's approval** prior to answering NO.

***Examples* of entry points that were modified in the measurable outcome:**

1. Entry point (Mathematics-The Number System): Represent a real-life negative quantity using a vertical or horizontal number line.
   Modification of the measurable outcome (Acceptable):
   - Student will represent a real-life negative quantity using a number line with 80% accuracy and 100% independence (**Note**: "…vertical or horizontal" was deleted.)

2. Entry point (Mathematics–Number and Operations–Fractions):
   - *Solve a multiplication word problem involving fractions using manipulatives*

   Modification of the measurable outcome (Unacceptable):

   - *Student will solve a multiplication word problem using manipulatives with 80% accuracy and 100% independence*

(**NOTE:** Measurable outcome from the *Number and Operations–Fractions* domain must include "fractions.")

If the answer to question 1 is YES, scorer answers this follow-up question:

- **DOES THE MEASURABLE OUTCOME INCLUDE MULTIPLE SKILLS** (e.g., "addition and subtraction")?

Scoring: Complexity (Continued)

2. IS THE SKILL ADDRESSED DURING A STANDARDS-BASED ACTIVITY?

Scorers must confirm that:

- The student has addressed the skill in the context of an academic (i.e., standard-based) activity.
- If Level of Complexity is Access Skills, the student has addressed the skill in the context of an academic (i.e., standard-based) activity. (See line 4, Strand Cover Sheet).

Examples:

Academic activities expose the student to the tools, concepts, and materials of the **content area** required for assessment, such as:

- Student will *turn her device on/off* to participate in a counting sequence activity within 10 seconds of a directive.
- Student will *visually track materials* representing informational text within a specified amount of time.
- Student will *orient or manipulate materials* used to create possible solution(s) to a simple design problem model.

Non-academic activities might include:

- Carrying a jug of water
- Engaging in personal hygiene (e.g., bathroom routines)
- Choosing a motivational reward

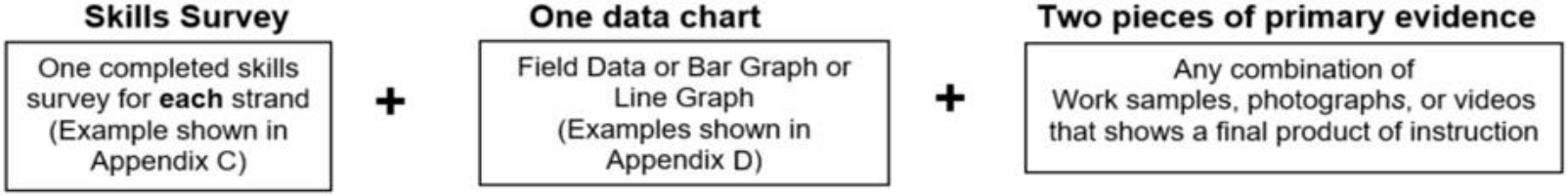
SCORING RUBRIC: Level of Complexity (LOC)				
1	**2**	**3**	**4**	**5**
Assessment reflects **little or no basis** in, or is **unmatched** to, *Curriculum Framework* learning standards required for assessment. **("NO" to *Complexity* questions 1 or 2)**	Student addresses social, motor, and communication **"access skills"** during instruction based on *Curriculum Framework* learning standards in this strand.	Student addresses *Curriculum Framework* learning standards that have been modified below grade-level expectations (i.e., **"entry points"**) in this strand.	Student addresses a narrow sample of *Curriculum Framework* learning standards **(1 or 2) at grade-level** expectations in this strand. **(Assessment must be reviewed by Content Experts)**	Student addresses a broad range of *Curriculum Framework* learning standards **(3 or more) at grade-level** expectations in this strand. **(Assessment must be reviewed by Content Experts)**

The scoring rubric below is the basis for the score in Level of Complexity. The AltScore program will score this area automatically, based on scorers' responses to the AltScore "Complexity" questions.

Scoring: *Completeness*

1. DOES THE STRAND INCLUDE A COMPLETED SKILLS SURVEY, A DATA CHART, AND AT LEAST TWO PIECES OF PRIMARY EVIDENCE?

For all strands (*except* ELA–Writing and "next-generation" STE), scorers must confirm that the strand includes at least:



If the answer to question 1 is YES, then scorer will review primary evidence and determine which, if any, of the following are included:

__ Photographs and/or videos __ Teacher-scribed work sample (see p.18) __ None of these

(If photographs and/or videos, or teacher-scribed work samples are checked above, **Questions 11 and 12** will be activated in AltScore.)

If a completed skills survey, plus one data chart and two pieces of evidence are **not** included in the strand, scorer answers NO. Scorer will be directed to **Scoring: Self-Evaluation**

2. IS THE STUDENT'S NAME, % OF ACCURACY, AND % INDEPENDENCE LISTED ON THE DATA CHART?

Scorers must confirm that the following information is listed:

- Student's correct name
- Percent (%) accuracy and percent (%) independence for at least 8 data points

3. IS THE FIRST DATA POINT ON THE DATA CHART BELOW 80 PERCENT FOR ACCURACY AND/OR INDEPENDENCE?

Scorer must confirm that:

- The earliest data point on the data chart is **below 80%** for *either* Accuracy *or* Independence, or both.

Scoring: *Completeness (Data Chart)*

4. DOES THE DATA CHART INCLUDE AT LEAST 8 DIFFERENT VALID DATES?

Scorer must confirm that:

- All dates for **English Language Arts** (**ELA)** and **Mathematics** occur in the current school year (i.e., between 7/1/20 and 5/20/21).
- All dates for **Science and Technology/Engineering (STE)** include the current and up to one previous school year (i.e., between 7/1/19 and 5/20/21).
- No data points are included that indicate 0% accuracy and 0% independence – these are not valid data points.

5. DO AT LEAST 8 BRIEF DESCRIPTIONS ADDRESS ONLY THE SKILL(S) IDENTIFIED IN THE MEASURABLE OUTCOME?

Scorer must confirm that:

- On at least 8 dates, the student was assessed on the same skill listed in the measurable outcome, as documented in the brief descriptions for each activity included at the bottom portion of the data chart.
- Scorer should not score any data point that assesses a skill that is different from the skill listed in the measurable outcome.

***For example*, in ELA–Literature**, if the measurable outcome is:

Student will compare and contrast characters in a story with 80% accuracy and 100% independence.

- **An acceptable brief description might be**: *After reading Cinderella, student created a Venn diagram to compare and contrast character traits of Cinderella and her stepsisters.*
- **An unacceptable brief description might be:** *Student answered questions about Cinderella and her stepsisters after reading two chapters and recorded her answers on a worksheet.* ("Answering questions" is **not** the same skill as "comparing and contrasting.")

If the answer to Question 5 is NO, question 6 will not appear.

6. DO AT LEAST 8 BRIEF DESCRIPTIONS ON THE DATA CHART LIST THE SKILL BEING ASSESSED (I.E., WHAT THE STUDENT WAS ASKED TO DO) AND EXPLAIN HOW THE STUDENT ADDRESSED THE SKILL (I.E., WHAT ACTIVITY, INSTRUCTIONAL APPROACH, AND/OR MATERIALS WERE USED)?

Scorer must confirm that:

A minimum of 8 brief descriptions were provided that indicate what the student did (skill) and how the student demonstrated the skill (e.g., activity, instructional approach, materials used).

It should be clear to the scorer how the activity was conducted. If not, the scorer should click NO.

- The skill listed in the measurable outcome **and** the method(s) or approach(es) used by the student to demonstrate the skill or respond to questions should BOTH be included in the brief description

For example, the following brief descriptions indicate **what** the student did and **how** they performed the activity:

In ELA–Reading, the measurable outcome is: Student will *answer simple comprehension questions about informational text.*

Acceptable brief descriptions:

- After reading *All about Penguins*, student **answered 5 questions** about penguins' habits (**SKILL** being assessed in the measurable outcome) on a **worksheet** (**HOW** the student demonstrated the skill).
- Student ***orally*** **answered 8 questions** about the possible reasons for extinction (**SKILL** being assessed in the measurable outcome), based on the class assignment to read *Gone but Not Forgotten* (**HOW** the activity was conducted).
- Student read *National Geographic for Kids* online and **answered 8 comprehension questions** (**SKILL** being assessed in the measurable outcome) on his ***computer*** (**HOW** the activity was conducted).

In ELA–Reading, the measurable outcome is: Student will *identify main idea* about literary text

Unacceptable brief description:

- Student identified the main idea in *Silly Penguins* (i.e., **HOW** was not addressed).

Scoring: *Completeness (Data Chart)* (Continued)

7. DO AT LEAST 8 BRIEF DESCRIPTIONS ADDRESS ALL OF THE SKILLS FOUND IN THE MEASURABLE OUTCOME, IN EACH BRIEF DESCRIPTION? (ONLY APPEARS IF SCORER ANSWERS **YES** TO MULTIPLE SKILLS)

Scorer must confirm that:

- If multiple skills are listed in the measurable outcome (e.g., addition and subtraction), then **all** the skills must be addressed on at least 8 different dates (e.g., were both addition *and* subtraction were included for at least 8 data points?)
- If multiple skills were **not** included, scorers will not see this question.

***For example,* in ELA-Reading**, the measurable outcome is: Student will *identify the main idea **and** key details in an informational text* with 80% accuracy and 100% independence.

Acceptable Brief Description: Student read *Martin Luther King, Jr., and wrote the main idea from the first two paragraphs* **and** *listed the key details*. (NOTE: The brief descriptions on the data chart must show that both skills were addressed on at least 8 dates.)

Unacceptable Brief Description: Student read Martin Luther King, Jr., and found the main idea for each paragraph.

(Note: Student did not perform both skills listed in the measurable outcome, since the teacher said the student would *identify the main idea **and** key details*

Note to Scorers:

A scorer's response of "NO" to any of the preceding questions will result in a score of "M" in both Demonstration of Skills and Concepts (i.e., accuracy) and Independence, which will result in an overall score of *Incomplete* in the content area.

A score of "M" means that the required information in the strand was either missing or insufficient to provide a score.

"M" comments will be generated automatically, based on the scorer's "NO" response(s).

For ELA–Reading: Informational or Literary Text

R1. DO AT LEAST 8 BRIEF DESCRIPTIONS INCLUDE TEXT TITLES? IF NOT, ARE COPIES OF THE ACTUAL TEXT INCLUDED ELSEWHERE IN THE STRAND?

Scorers must confirm that:

- A at least 8 brief descriptions for ELA–Reading include the **title of the text** used in each activity or include a **photocopy** of the text if it was teacher-created or taken from a website. If the titles of texts are not listed on the data chart, look for a list elsewhere in the strand.

  (In AltScore, refer to the list of web-based informational texts that require only the title of the article and that do not require a photocopy of the text.)

R2. DO ALL ACTIVITIES ON THE DATA CHART ASSESS EITHER INFORMATIONAL TEXT OR LITERARY TEXT?

After reviewing *Literature and Informational Text* hyperlink in AltScore (see Appendix H), scorers must confirm that:

- The activities listed on the data chart assessed **either *informational* or *literary* text**, but not both.

ELA–Reading: What Is "Text?"

For the ELA–Reading strand, "text" is considered to be at least one complete sentence (not phrases or isolated words). Isolated words or phrases may be assessed, but only if these have been extracted from the text listed in the brief description or from the photocopied text submitted in the strand.

The student may demonstrate **comprehension** of text either in writing (including scribed by the teacher), verbally, or through use of actions (e.g., pointing to one picture from an array that represents the text), symbols (e.g., selection of pictures, illustrations, or text), or technology (e.g., a computer or electronic communication system).

Scoring: Completeness (Primary Evidence)

8. Is the student's name, valid date, % accuracy, and % independence listed on at least two pieces of primary evidence, or listed on Work Sample Description labels?

Primary evidence includes any combination of work samples, videos, or photographs.

Scorers must confirm that:

- At least **two** pieces of evidence include the student's correct name, valid date, and percent (%) accuracy, and percent (%) independence, listed either directly on the piece or on a Work Sample Description form attached (or adjacent) to the evidence.

9. Do at least two pieces of primary evidence directly address the skill identified in the measurable outcome?

Scorers must confirm that:

- At least two pieces of primary evidence address the skill listed in the measurable outcome.

10. Do at least two pieces of evidence address ALL of the skills found in the measurable outcome (e.g., "addition *and* subtraction")?

Scorers must confirm that:

- If multiple skills are listed in the measurable outcome, then all skills listed are addressed in at least two pieces of primary evidence (work samples, videos, or photographs).

  This question only appears if scorer indicated that the measurable outcome included multiple skills

(See bottom of page 10)

Scoring: Completeness (Primary Evidence) (Continued)

11. DO THE PHOTOGRAPH(S) OR VIDEO(S) SHOW A FINAL PRODUCT AND IS EACH ONE CLEARLY LABELED?

If photographs or videos are **not** included, then scorers will not see this question. After reviewing the photographs or videos, scorers must confirm that:

- A final product from the activity is clearly visible.
- The photo or video documents the skill listed in the measurable outcome.
- Products are clearly labeled with name, valid date, % accuracy, and % independence.
- Video samples are no more than 3 minutes in length (i.e., scorers should view only the first 3 minutes of the video)

12. DOES THE "TEACHER-SCRIBED WORK SAMPLE" INCLUDED AS PRIMARY EVIDENCE PROVIDE SUFFICIENT INFORMATION TO DETERMINE WHAT THE STUDENT DID FOR EACH TASK AND HOW THE STUDENT ADDRESSED THE MEASURABLE OUTCOME?

A "**teacher-scribed work sample"** is a piece of primary evidence produced by the teacher on behalf of a student who is unable to generate his or her own written work samples. In the teacher-scribed work sample, a teacher may document one or more student responses on a single date that address the same measurable outcome.

If teacher-scribed work samples are **not** included, then scorers will not see this question.

Scorers must confirm that:

- The teacher-scribed work sample provides documentation of a series of trials conducted on the same date.
- The student's responses are recorded for each trial, task, or question, together with the % accuracy and % independence.
- The teacher-scribed work sample must include detailed information describing the context of each activity and how it was conducted.
- See a sample "teacher-scribed work sample" in Appendix G
- Click the hyperlink in the AltScore program for further information and an example,

For ELA—Reading

R3. Do at least two pieces of primary evidence include titles or photocopies of texts

Scorers must confirm that:

A minimum of two pieces of primary evidence, include the title of the text used during the activity or a photocopy of the text if it was teacher-created or taken from a website. See Appendix H for a list of web-based informational texts that require only the title of the website or program, rather than a photocopy of the text.

R4. Do at least two pieces of primary evidence document activities based solely on Informational OR Literary Text?

After reviewing the *Literature and Informational Text* handout, scorers must confirm that:

- Text titles (or copies of the text) are provided for at least two pieces of primary evidence that document the use of the same text type (i.e., either Literary **or** Informational text, but not both) listed in the measurable outcome.

Scoring: Demonstration of Skills & Concepts (DSC) and Independence (IND)

For all strands **except ELA**–**Writing** and **STE (**grades 5, 8, and High School Biology and Introductory Physics**)**, the scorer must determine the dates of the **final 1/3 time frame** of the data points on the data chart (or a minimum of the last 3 dates on the data chart).

Scorer performs the following steps in AltScore:

1. Enters the **date, % accuracy and % independence for each acceptable piece of primary evidence**.
2. Enters the **date, % accuracy** and **% independence** in the final 1/3 time frame on the data chart. (or last 3 data points)
3. AltScore will automatically calculate an average of all the scores in the final 1/3-time frame (*including primary evidence, when applicable*) for DSC and IND, based on the scoring rubric shown below.
4. Scorer reviews the averages calculated by AltScore and confirms that the scores "appear to be correct," based on the scoring rubrics shown below.

Demonstration of Skills and Concepts (Accuracy)				
M	**1**	**2**	**3**	**4**
The strand contains insufficient information to determine a score.	Primarily inaccurate and demonstrates minimal understanding in this strand (**0–25% accurate).**	Limited and inconsistent with regard to accuracy, and demonstrates limited understanding in this strand (**26–50% accurate**).	Mostly accurate and demonstrates some understanding in this strand **(51–75% accurate**).	Demonstrates consistent accuracy and understanding in this strand (**76–100% accurate**).
Independence				
M	**1**	**2**	**3**	**4**
The strand contains insufficient information to determine a score.	Student requires extensive verbal, visual, and physical assistance to demonstrate skills in this strand (**0–25% independent**).	Student requires frequent verbal, visual, and physical assistance to demonstrate skills in this strand (**26–50% independent**).	Student requires some verbal, visual, and physical assistance to demonstrate skills in this strand (**51–75% independent**).	Student requires minimal verbal, visual, and physical assistance to demonstrate skills in this strand (**76–100% independent**).

For ELA–Writing

W1. Is there a skills survey plus 3 different writing samples with corresponding pre-scored writing rubrics?

Scorers must confirm that:

- A completed ELA–Writing Skills Survey is included.
- A minimum of **three different final writing samples** were submitted together with **three completed Writing scoring rubrics** attached or adjacent to each sample. If any are missing, the scorer clicks NO and follows prompts.
- If a student's writing sample contains personal bathroom-related activities, do not count the writing sample as one of the three required samples. Check with your table leader if you are uncertain.

Writing samples may be submitted using the student's primary mode of communication, including samples that are:

- handwritten or word-processed by the student
- dictated or signed to a scribe with the student's own words written verbatim. Scribes may assume correct capitalization and punctuation
- symbol-based communication system or icons

Writing samples may be submitted in any combination of the following **text types**:

1. **Opinion / Argument:** stating a claim, opinion, preference, or analysis based on a text or topic, citing reasons and evidence from a text, where possible;
2. **Informative / Explanatory text:** conveying or explaining facts, information, or ideas on a topic, including descriptions taken and/or adapted from a text;
3. **Narrative (including poetry):** telling a story based on real or imagined events from a text or from personal experience, including fiction, drama (script), a personal reflection, or an event sequence; using figurative language (e.g., similes, metaphors), imagery, sounds of words (e.g., rhyme), meter, and/or repetition to express emotion or tell a story.

Teachers are required to pre-score their students' final writing samples (not the baseline sample) by completing a separate writing scoring rubric for each sample.

W2. ARE THE STUDENT'S NAME, DATE, AND % INDEPENDENCE INCLUDED ON EACH OF THE THREE FINAL WRITING SAMPLES (EITHER ON THE SAMPLE OR THE WORK SAMPLE DESCRIPTION)?

Scorers must confirm that:

- Each final writing sample includes the student's name, a valid date, and percent (%) independence, listed either on the piece or on a Writing Work Sample Description attached (or adjacent) to the evidence.

W3. IS A BASELINE SAMPLE SUBMITTED?

Scorers must confirm that:

- A **baseline writing sample** was submitted that consists of either a draft, outline, notes, completed graphic organizer, or partially completed writing sample. Completed writing scoring rubrics are **not** required for baseline samples because these will not be scored. Check the Work Sample Description to determine whether the sample was considered a "final" or "baseline" sample.
- If a baseline sample was NOT included, then scorer clicks NO. (NOTE: This will not affect the final score in this strand)

W4. Is the Level of Complexity on the writing scoring rubrics entry points or access skills?

- Scorers review the pre-scored writing rubric to determine if the Level of Complexity=2 or 3.
- Scores will see questions 5 and 5A for entry points. (Level of Complexity=3)
- Scorers will see only question 5B for access skills. (Level of Complexity=2)

W5. DOES THE WRITING SAMPLE INCLUDE ONLY…?

- single pictures or symbols,
- single word or list of single words,
- fill-in-the-blank, matching, true/false, circling correct responses, selecting multiple-choice response(s), **or**
- text provided by the teacher, with **no** evidence of original text expressed by the student.

If yes to W5, then scorer clicks YES and proceeds to question W5A.

If not, Scorer clicks NO and enters the writing rubric scores provided by the teacher.

W5A. IF THE WRITING SAMPLE DOES INCLUDE ONE OR MORE OF THE EXAMPLES LISTED IN W5, DOES THE PRE-SCORED WRITING RUBRIC CONTAIN SCORES OF 3 OR 4 IN *EXPRESSION OF IDEAS AND CONTENT*, *KNOWLEDGE OF CONVENTIONS*, *TEXT STRUCTURE*, OR *USE OF VOCABULARY*?

Scorer must confirm that:

- A writing sample includes one or more of the examples listed above in W5, **and** that
    - **scores of 3 or 4** are provided by the teacher for *Expression of Ideas and Content, Knowledge of Conventions, Text Structure,* or *Use of Vocabulary.*
        - If so, scorer clicks YES. **Scorer must change the scores of 3 or 4 in those areas to scores of 1 or 2** (according to the rubric area descriptions) and must enter the revised scores onscreen, rather than the score provided by the teacher.
    - **scores of 1 or 2** are provided by teacher for *Expression of Ideas and Content, Knowledge of Conventions, Text Structure,* or *Use of Vocabulary.*
        - If so, scorer clicks NO to this question and enters the writing rubric scores provided by the teacher.

NOTE: The scores on the writing scoring rubric will be used to determine the score for Demonstration of Skills and Concepts

W5B. DOES THE WRITING SAMPLE DOCUMENT THE STUDENT'S PARTICIPATION IN THE CREATION OF A WRITTEN PRODUCT (FOR LEVEL OF COMPLEXITY = 2 ONLY)?

Scorer confirms that a written product is provided for a student who is working on "access skills" with a description of the student's participation.

For Science and Technology/Engineering (STE) in Grades 5, 8 and High School Biology and Introductory Physics

S1. Is there one completed Skills Survey for the entire STE discipline, and at least 6 STE Summary Sheets listing the student's name, valid dates, % accuracy, and % independence?

Scorers must confirm that:

- One Science Skills Survey is included for the entire STE discipline.
- There are a minimum of **six** STE Summary Sheets per strand.
- Each summary sheet includes the student's name, valid date, and percent (%) of accuracy and independence.
- If scorer answers NO, scorer will be redirected to **Scoring: Self-Evaluation**

S2. Do at least three STE Summary Sheets per strand have primary evidence attached?

Scorers must confirm that:

- Three of the STE summary sheets have primary evidence (e.g., work samples) attached.
- If scorer answers NO, scorer will be redirected to Scoring: Self-Evaluation

S3. Are three different science practices reflected on the STE Strand Cover Sheet?

Scorers must confirm that:

- Among the six summary sheets, three different science practice numbers are indicated. (See Sample STE Summary Sheet in Appendix F.)
- If scorer answers NO, scorer will be redirected to **Scoring: Self-Evaluation**

S4. Do activities on six STE Summary sheets assess the same core idea?

Scorers must confirm that:

- Each summary sheet reflects the meaning of the selected Core Idea.

NOTE TO SCORERS:

- If STE Summary Sheets were completed by hand rather than computer-generated, notify your table leader for review by a floor manager.
- Remember only one STE Skills Survey is required for the entire science and technology/engineering.

Scoring: Self-Evaluation (S-E)

Instructions to Scorers

The scorer should review the evidence in the strand for examples of self-evaluation. The following should be counted as one example of self-evaluation, if it is **performed by the student** (as indicated either by the evidence, in an attached note, or on a Work Sample Description label):

- Selecting student's own work for the assessment
- choosing materials/activities
- reflecting on performance
- goal setting
- graphing or monitoring own performance
- checking off or listing tasks as they are accomplished
- self-correcting errors in the work sample

The scorer will indicate in AltScore whether none, one, or multiple example(s) of self-evaluation were found in the strand.

Scoring Rules

1. If the same self-evaluation activity was used on multiple pieces of primary evidence, count each as an example of self-evaluation.
2. Do not count a stamp, sticker, or teacher 's expression of praise as an example of self-evaluation.
3. If a teacher scribes a student's responses to a self-evaluation question, count that as an example.
4. Count any example that uses pictorial symbols, rather than words, to self-evaluate, as shown below.

The score for *Self-Evaluation* will be determined by AltScore based on the scoring rubric below:

	SCORING RUBRIC: Self-Evaluation	
M	**1**	**2**
Evidence of self-correction, monitoring, goal setting, and reflection was **not found** in this strand.	Student self-corrects monitors, sets goals, and reflects on only **one piece of evidence** in this strand.	Student self-corrects monitors, sets goals, and reflects on **two or more pieces of evidence** in this strand.

Scoring: *Generalized Performance (GP)*

Instructions to Scorers

The scorer should review all evidence and brief descriptions for examples of "generalized performance." Generalized performance reflects the number of **instructional approaches** and **activity formats** through which the student acquires and demonstrates knowledge and skills, including any of the following variations:

- *Media and materials* (e.g., uses a variety of materials, such as print text, manipulatives, art materials, computers, etc.)
- *Activity formats* (e.g., classroom projects, research, experiments, worksheets, open/constructed responses)
- *Presentation formats* (e.g., oral, written, multimedia)
- *Methods of response* (e.g., handwritten, word-processed, oral, visual display or presentation)
- Application of skills and/or knowledge in a setting outside the school

The scorer should indicate in AltScore whether <u>one</u> or <u>multiple</u> example(s) of generalized performance were found in the strand.

Scoring Rules

a) Activities in **community settings** (i.e., outside the school) always count as one example of GP when this is indicated in the evidence or in the brief description.

b) **Use of age-inappropriate instructional materials** (e.g., dolls, nursery rhymes, etc.) by a student in grades 6–10 will result in a score of **GP=1**, regardless of other factors contributing to the GP score. In this case, add Comment G from the Comment Key. Check with your Table Leader if you are uncertain.

For ELA–Writing and "Next Gen" STE ONLY

The scorer does not need to indicate a score for Generalized Performance for strands in ELA–Writing and "Next Gen" STE. When the minimum requirements are met, a score of **GP=2** will be automatically generated for these strands.

The score for *Generalized Performance* will either be "**1" or "2**," based on the rubric below:

SCORING RUBRIC FOR EACH STRAND: Generalized Performance (GP)

1	2
Student demonstrates knowledge and skills in this strand using a **single** context or **one** instructional approach.	Student demonstrates knowledge and skills in this strand using **two or more** contexts or instructional approaches.

Scoring Rules in Special Cases

1) Can pieces of primary evidence also be included as points on the data chart? If so, is the strand complete?

Yes. At the teacher's discretion, the work samples, videos, and other primary evidence may be included as data points on a data chart, but it is *not* required. Regardless of whether primary evidence is also included as data points on the chart, scorers will count the evidence for determining completeness, provided the work reflects the skill listed in the measurable outcome. If a work sample is also included on the data chart, the percent accuracy and independence will only be counted once.

2) What if a required strand is not submitted?

When indicating the "strands to be scored" on the AltScore screens, scorers should not select a strand for scoring that was not submitted; nor should a scorer mark any scores for required strands that were not submitted. The scorer must indicate that the strand was not submitted by checking the box "strand required but not submitted" on the final AltScore screen.

3) What if a strand was submitted that was not required for a student in that grade?

If a strand was submitted that was **not** required, scorers should not score the strand.

4) Can primary evidence be submitted from previous school years?

Only **Science and Technology/Engineering (STE)** assessments in grades 5, 8, and high school may contain evidence accumulated over two consecutive school years, the current and one previous year (i.e., beginning July 1, 2019).

5) What is a "legacy" alternate assessment?

The term "legacy" refers to the high school STE disciplines of Chemistry and Technology/Engineering (based on 2001/2006 STE curriculum frameworks) for which three entry points (or access skills) are required in the selected discipline, with one data chart and two pieces of primary evidence for each entry point.

6) Can photographs (or a series of photographs) and video samples be submitted as primary evidence?

Products submitted in a strand will be counted and scored as primary evidence if the final product of instruction is clearly visible and photo(s) or video(s) clearly describe how the student demonstrated the measurable outcome. Each product must be labeled with all required information. Video samples must be intelligible (or transcribed in writing), sufficiently clear for a scorer to see the final product, and no longer than three (3) minutes in duration.

Maintaining Validity and Reliability

Training and Qualification of Scorers

Prior to the first day of actual scoring, prospective scorers receive intensive training supervised by Department staff. After training is completed, each prospective scorer, Table Leader, scoring specialist, and floor manager must pass a qualifying test before scoring student assessments.

Qualifying Test

In order to qualify, prospective scorers must individually score several pre-calibrated, simulated MCAS-Alt strands which cover a range of scenarios scorers are likely to encounter in the actual scoring of student assessments using the AltScore onscreen scoring program. Prospective scorers are permitted to refer to the following publications while taking the qualifying test:

- *2021 Guidelines for Scoring the MCAS-Alt* (this publication)
- *Resource Guide to the Massachusetts Curriculum Frameworks for Students with Disabilities* (Fall 2021 edition) (digital version)
- *Training for MCAS-Alt Scorers* – PowerPoint presentation handout
- Sample strands used during scorer training

The passing scores for the qualifying test are as follows:

- Scorers must achieve a score of at least **85 percent** correct
- Table Leaders, Floor Managers, and MCAS-Alt scoring specialists must achieve a score of at least **90 percent** correct.

Prospective scorers, Table Leaders, scoring specialists, and floor managers who do *not* qualify on the first attempt are given an opportunity to review their tests and receive additional training, after which a second qualifying test is administered. Those who do not qualify on the second attempt will be excused from scoring. Table Leaders and scoring specialists who score 85–89 percent will be invited to participate as scorers, but not as Table Leaders or scoring specialists.

Maintaining the Accuracy and Consistency of Scores

Table Leaders and Department staff will track each scorer's inter-rater reliability (IRR) when scoring. For assessments in grades 3–10, this is accomplished by double-scoring at least one student's entire assessment (i.e., skills surveys and strands) each morning and afternoon for each scorer (or at least one entire assessment out of every five scored). All scoring discrepancies and scores of "M" for DSC and IND are resolved by a scoring specialist. Table Leaders and scoring specialists will be double-scored on at least two complete assessments each week, with discrepancies resolved by a floor manager. Each scorer's rate of agreement with an expert scorer (i.e., inter-rater reliability) must be maintained at a level of 80 percent or higher for all rubric areas in the double-scored assessments. When the rate of agreement falls below 80 percent, scorers are retrained and subsequently double-scored for the remainder of that day and may be released from scoring at the discretion of the Department if their rate of agreement falls below 80 percent two or more subsequent times.

2021 MCAS-Alt COMMENT KEY

STRAND COMMENTS	
A	Level of Complexity indicated on Strand Cover Sheet (access skills, entry points, or grade level) was changed to match the evidence submitted.
B	Brief descriptions or evidence contained additional skills not listed in the measurable outcome and could not be scored.
C	Data points or evidence with 0% accuracy and 0% Independence are not valid and could not be scored.
D	Date(s) listed on primary evidence occurred on a non-school day.
E	Date(s) listed on data chart occurred on non-school day.
F	Some evidence was difficult or impossible to read or interpret and could not be scored.
G	Score for generalized performance was lowered because some activities did not use age-appropriate materials and/or activities.
H	Some photograph(s) could not be scored as primary evidence, because either the final product was not evident or the percent of accuracy and/or independence could not be verified.
I	The percent of independence was unclear or unmatched to the evidence submitted.
J	Strand showed evidence of open-ended, creative approaches that allowed student to demonstrate knowledge and skills.
K	Evidence of self-evaluation did not demonstrate choices or reflection by the student.
L	Audio/video sample could not be scored due to poor quality or inability to open one or more recorded segments.
M	Review the differences between Literature and Informational text for the ELA–Reading strand at www.mcas-alt.org/materials.
N	Two data charts are not acceptable as a core set of evidence.
O	At least 8 brief descriptions on the data chart did not clearly explain how the student addressed the measurable outcome.
P	This strand was reviewed by an expert scorer to confirm the score.
Q	Skills Survey was submitted, but was not complete.

LEVEL OF COMPLEXITY = 1 COMMENTS	
X	Skill was not addressed in the context of a standards-based activity.
Y	Entry point was not aligned with the required strand/domain because it was either excessively modified or was not found in the Resource Guide.
Z	Standard and/or entry point was not selected from the Vocabulary Acquisition and Use cluster, as required for the ELA–Language strand.

STRAND COMMENTS — WRITING	
WH	Unclear whether the text in the sample was generated by the student or was the result of teacher's edits.
WI	One or more Writing rubric scores were changed to reflect the evidence submitted.
WJ	Use of the student's primary mode of communication may allow the student to better express his or her knowledge and ideas.
WK	The score for Demonstration of Skills and Concepts was changed because the pre-scored rubric did not reflect the use of single pictures, single words, multiple-choice responses, or text provided by the teacher.
WL	A baseline writing sample was required, but was not submitted.
WM	A completed Writing rubric was not submitted for each writing sample, as required.
WN	Supporting documentation in the strand described how the learning occurred and was helpful in determining the score.
WO	Unclear how the percent of independence was calculated on one or more writing samples.

STRAND COMMENTS — NEXT-GEN SCIENCE	
SJ	Consult with a science content specialist to ensure that evidence aligns with the core idea and/or science practice.
SK	Unclear how the percent of accuracy and/or independence were determined on one or more STE Summary Sheets.
SL	STE Summary Sheet description(s) lacked clarity and/or specificity.
SM	Activities on a STE Summary Sheet did not demonstrate a single science practice.
SN	Supporting documentation in the strand described how the learning occurred and was helpful in determining the score.
SO	Evidence demonstrated creative application of science practices.

GENERAL PORTFOLIO COMMENTS	
50	Portfolio showed evidence of a range of open-ended, creative approaches that allowed the student to demonstrate knowledge and skills.
51	Supporting documentation was helpful to the scorer in understanding instructional strategies and/or context.
52	Please review portfolio requirements in the Educator's Manual for MCAS-Alt and consider attending additional Department-sponsored training sessions.
53	Review guidelines for selecting a measurable outcome in the Educator's Manual for MCAS-Alt.
54	One or more required forms were missing in the portfolio, but this did not affect the overall score.
55	Verification Form was not signed by parent/guardian and no information was provided of attempts by school to contact parent/guardian.
56	Evidence was not included in the portfolio for three learning standards in a single discipline of high school Science and Technology/Engineering.
57	Consider showing evidence of varied instructional approaches used with the student (Generalized Performance).
58	Confidential information about the student should not be included in the portfolio.
59	Consider using the online Forms and Graphs program to compile portfolio materials.

Appendix B: MCAS-Alt Glossary

The following terms are used in describing and scoring the MCAS-Alt:

Access Skills: Student outcomes that address a social, motor, or communication skill during a standards-based (i.e., academic) activity in the required strand

Conceptual Category: The high school Mathematics standards are clustered in "conceptual categories:" Number and Quantity (N), Algebra (A), Functions (F), Modeling, Geometry, and Statistics and Probability (S) which together present a coherent view of high school mathematics.

Content Area: The subject in which an MCAS-Alt is submitted, including English Language Arts and Literacy (ELA), Mathematics, and Science and Technology/Engineering (STE)

Core set of evidence: The minimum amount of evidence required for a strand to receive a score. For most subjects, except ELA–Writing and next-generation STE, this includes

- **One data chart** showing a student's progress over time in learning the measurable outcome

  PLUS

- **Two additional pieces of primary evidence** showing student's performance of the same measurable outcome shown on the data chart

Domain: A topic or cluster of related Mathematics standards in grades preK–8, according to the Massachusetts Curriculum Framework.

Entry Point: An academic outcome based on a learning standard that has been modified below grade-level expectations. Entry points are listed at progressively lower levels of complexity in the Fall 2020 *Resource Guide* to the Massachusetts Curriculum Frameworks for Students with Disabilities (the "Resource Guide").

Learning Standard: Specific statement of what *all* students should know and be able to do by the end of each grade.

Measurable Outcome: A specific goal for a student taking the MCAS-Alt on which his or her data charts and/or primary evidence is based. Measurable outcomes are based on entry points and access skills listed in the Resource Guide that identify the specific skill to be assessed in the strand/domain required for the assessment of a student in that grade.

Primary evidence: A work sample, photograph, video sample, or teacher-scribed work sample that documents the student's knowledge or demonstration of a skill.

***Resource Guide to the Massachusetts Curriculum Frameworks for Students with Disabilities*:** The Resource Guides list the Massachusetts learning standards in each subject and grade and identifies student outcomes based on each standard at successively lower levels of complexity (i.e., from more-to-less complex).

Strand: A unit of scorable evidence in the alternate assessment; a cluster of related standards in the Massachusetts Curriculum Framework.

Supporting documentation: Products that show the context of an instructional activity but not the final product or the results of the activity; i.e., how did the instruction occur? For example, a blank graphic organizer, computer screenshot of a program or application used with the student, a reflection sheet, or work description.

Appendix C: Sample MCAS-Alt Skills Survey

Student's Name: **Sample Student** Grade: **08** Date of Survey: **10/2/20**

ELA - All Grades

Language (Vocabulary Acquisition and Use)

	Based on exposure to vocabulary during academic activities, student can:	**A** 0% (unable)	**B** Up to 25% (rarely)	**C** Up to 50% (occasionally)	**D** Up to 75% (more often than not)	**E** Up to 100% (almost always)
1.	Communicate answers to simple questions about familiar objects.	○	○	○	◉	○
2.	Identify familiar objects/actions by name.	○	○	○	◉	○
3.	Match given words or symbols to pictures that mean the same or similar thing.	○	○	○	◉	○
4.	Answer questions about the meaning of words found in stories, poems, or during other academic activities.	○	○	◉	○	○
5.	Identify words/symbols/pictures that are opposite in meaning.	○	○	◉	○	○
6.	Identify words/symbols/pictures that are similar in meaning.	○	○	○	◉	○
7.	Use phrases to express a need, request, idea, or response during an academic activity.	○	○	◉	○	○
8.	Describe key attributes of different objects (e.g., the flower is colorful).	○	◉	○	○	○
9.	Communicate using common temporal words (e.g., before, after, now, later, first, next).	○	◉	○	○	○
10.	Identify examples of figurative language (e.g., idiom, metaphor, simile, hyperbole, or personification) used in a text.	◉	○	○	○	○

MCAS-Alt SKILLS SURVEY

Appendix D: Data Chart–Sample Field Data Chart

DATA METHOD 1: FIELD DATA CHART

COMPLETE ALL INFORMATION BELOW.

Student Name: Rosie Riverter

Content Area/Strand: English Language Arts - Language

Learning Standard: L.8.4a Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

Measurable Outcome: will attend visually, aurally, or tactilely to materials related to vocabulary acquisition within 15 seconds with 80% accuracy and 60% independence.

KEY	
Accurate (+ or -) / (I or P) Independence	
+	Accurate
-	Incorrect
I	Independent
P	Prompt Used

At least eight (8) different dates are required.

Date (mo/day/yr):	10/7/20	11/12/20	11/19/20	11/20/20	11/23/20	12/1/20	12/2/20	12/3/20	12/4/20	12/9/20
Accuracy and Independence for each trial (see KEY):	+ / P	+ / P	+ / I	- / P	- / P	- / P	+ / P	- / P	+ / P	- / P
	- / P	- / P	+ / I	- / P	+ / P	+ / P	+ / I	+ / P	+ / I	+ / P
	+ / I	+ / P	+ / I	- / P	- / P	+ / I	+ / I	+ / I	- / P	+ / I
	+ / I	- / P	+ / I	- / P	- / P	+ / I	- / P	+ / I	+ / I	+ / I
	- / P	+ / I	+ / P	- / P	+ / P	+ / I		+ / P	+ / P	+ / I
	- / P	- / P	- / P	- / P	+ / P	- / P		+ / P	+ / I	- / P
	+ / I	+ / I	- / P	- / P	+ / P	- / P		+ / P	+ / I	- / P
	- / P	+ / I	+ / I	- / P	- / P	- / P		+ / P	+ / I	+ / I
		- / P	- / P	+ / I	+ / P			+ / I	+ / I	- / P
		+ / P	+ / P	+ / I	- / P			+ / I	+ / P	+ / I
% Accuracy: SUMMARY for this date	50	60	70	20	50	50	75	90	90	60
% Independence: SUMMARY for this date	38	30	50	20	0	38	50	40	60	50
Brief Description (What was student asked to do and how did he/she do it?)	During a literacy group, was read chapter 8 (Margalo) in Stuart Little. A story box of objects was used to represent vocabulary from the text.	During a literacy group, was read chapter 10 (Springtime) in Stuart Little. A story box of objects was used to represent vocabulary from the text.	During a literacy group, was read chapter 11 (The Automobile) in Stuart Little. A story box of objects was used to represent vocabulary from the text.	During a literacy group, was read chapter 13 (Ames' Crossing) in Stuart Little. A story box of objects was used to represent vocabulary from the text.	During a literacy group, was read chapter 15 (Heading North) in Stuart Little. A story box of objects was used to represent vocabulary from the text.	During literacy group, was read a poem about snow. During the reading, a story box of objects was used to represent vocabulary from the poem.	During morning meeting, the class discussed the topics of attendance, the calendar (month and day of the week), and the weather. Tactile objects and images were used to represent the vocabulary	During literacy group, was read chapter 1 (Peter Breaks Through) in Peter Pan. A story box of objects was used to represent vocabulary from the text.	During a literacy group, was read chapter 2 (The Shadow) in Peter Pan. A story box of objects was used to represent vocabulary from the text.	During a literacy group, was read chapter 3 (Come Away, Come Away) in Peter Pan. A story box of objects was used to represent vocabulary from the text.

Data was taken on whether the student attended within 15 seconds of being shown the object.

Appendix D: Data Chart–Sample Bar Graph

DATA METHOD 2: BAR GRAPH *(instructional data summarizing the student's performance on each date)*

Accuracy: **Independence:**

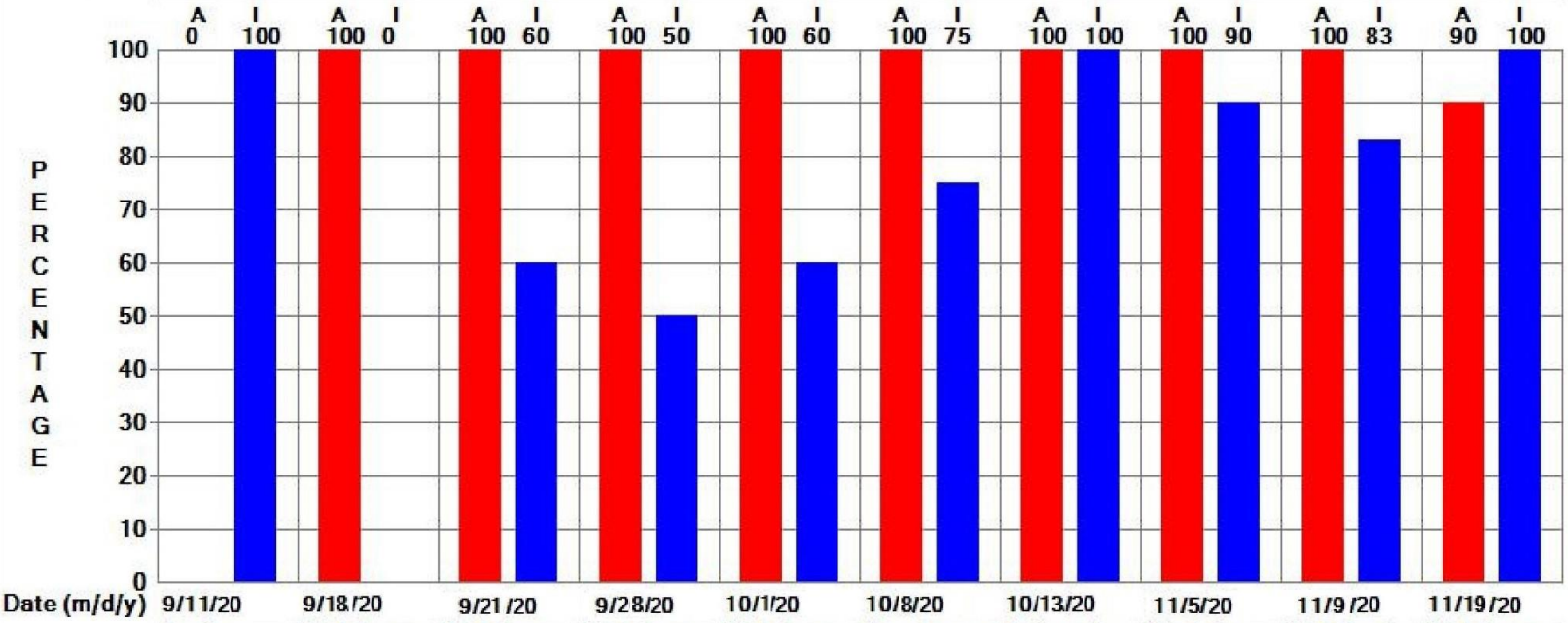
COMPLETE ALL INFORMATION BELOW. AT LEAST EIGHT (8) DIFFERENT DATES ARE REQUIRED.

Student Name: Amy Farrah Fowler

Learning Standard: L.4.5b Recognize and explain the meaning of common idioms, adages, and proverbs.

Content Area/Strand: English Language Arts/English Language Arts - Language

Measurable Outcome: Amy will show/express the meaning of common idioms with 80% accuracy and 100% independence.



Date (m/d/y)	9/11/20	9/18/20	9/21/20	9/28/20	10/1/20	10/8/20	10/13/20	11/5/20	11/9/20	11/19/20
Brief Description (What was student asked to do and how did he/she do it?)	Baseline: Student was given 10 idioms and asked to express their meaning either aloud or by drawing.	Student was given 4 idioms and asked to express their meanings aloud.	Student was given 5 idioms after reading Amelia Bedelia book. She was asked to express the meaning of the idioms on a worksheet.	Student was given 10 silly sayings and 10 idioms. She was asked to express the meaning of the idioms by matching the silly sayings to the idioms.	Student was given 10 silly sayings and 10 idioms and she was asked to express the meaning of the idioms by matching the silly sayings to the idioms.	Played a game about idioms with peers. Data is on ind/acc of expressing meanings on her turn only. 8 opportunities were given	During partner work, each student was given idioms and asked to express the silly and real meaning in pictures, drawings and words on a template, individual data taken.	After being read the idiom, student would express the meaning on the whiteboard. Small group activity, individual acc/ind taken by paraprofessional.	Student went through 12 flash cards that had idioms written on them. She had to express their meaning out loud.	Student was given a quiz on idioms. She had to match the "silly statement" with the actual meaning of the idioms by drawing a line between two columns. (10 idioms)

Appendix D: Data Chart–Sample Line Graph

LINE GRAPH *(instructional data summarizing the student's performance on each date)*

Accuracy: ——— Independence: - - -

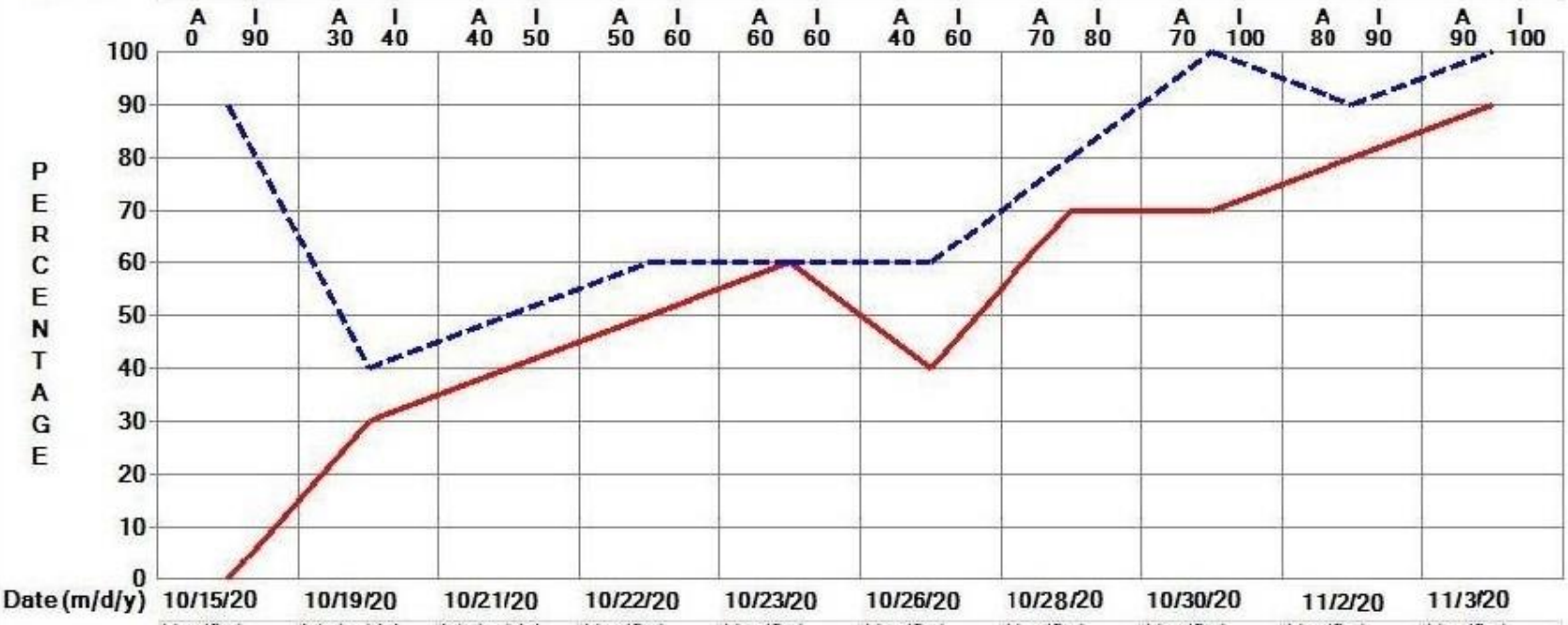
COMPLETE ALL INFORMATION BELOW. AT LEAST EIGHT (8) DIFFERENT DATES ARE REQUIRED.

Student Name: Sample Student

Content Area/Strand: English Language Arts/Language

Learning Standard: L.8.4 Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.

Measurable Outcome: Student will identify words/pictures/symbols that have the opposite meaning as a given word (antonym) with 80% accuracy and 80% independence.



Date (m/d/y)	10/15/20	10/19/20	10/21/20	10/22/20	10/23/20	10/26/20	10/28/20	10/30/20	11/2/20	11/3/20
Brief Description (What was student asked to do and how did he/she do it?)	Identified words that have the opposite meaning as a given word by completing a worksheet where he had to cut/paste text/pictures and match to antonym.	Worked 1:1 w/the teacher to identify words that have the opposite meaning as a given word by matching word/picture cards to antonym word/picture cards.	Worked 1:1 w/staff on a file folder to identify words that have the opposite meaning as a given word by matching pictures/text with their antonym picture/text.	Identified words that have opposite meanings as a given word, doing a worksheet where he drew a line, connecting pictures/text with opposite meanings.	Identified words that have the opposite meaning as a given word by matching puzzle pieces together that have antonyms on each puzzle piece.	Identified words that have the opposite meaning as a given word by doing a file folder, matching pictures/text to an antonym picture/text.	Identified words that have the opposite meaning as a given word in a group lesson where he had to stick a picture/text to an antonym picture/text on the front board.	Identified words that have the opposite meaning as a given word by working 1:1 w/staff to do an iPad activity where he had to match antonym pictures.	Identified pictures/words that have the opposite meanings as a given picture/word by doing a worksheet, circling the correct antonym from a field of three.	Identified words that have the opposite meaning as a given word in a lesson where he had to stick a picture/text to an antonym picture/text on the front board.

Appendix E: Rubric for Scoring Each Strand

MCAS-Alt RUBRIC for Scoring Strands

	1	2	3	4	5
Level of Complexity	Strand reflects little or no basis in, or is unmatched to, curriculum framework learning standard(s) required for assessment.	Student primarily addresses motor and communication "access skills" during instruction based on curriculum framework standards in this strand.	Student addresses curriculum framework standards that have been modified below grade-level expectations in this strand.	Student addresses a narrow sample of curriculum framework standards (1 or 2) at grade-level expectations in this strand.	Student addresses a broad range of curriculum framework standards (3 or more) at grade-level expectations in this strand.

	M	1	2	3	4
Demonstration of Skills and Concepts (Accuracy)	The strand contains insufficient information to determine a score.	Student's performance is primarily inaccurate and demonstrates minimal understanding in this strand (0–25% accurate).	Student's performance is limited and inconsistent with regard to accuracy and demonstrates limited understanding in this strand (26–50% accurate).	Student's performance is mostly accurate and demonstrates some understanding in this strand (51–75% accurate).	Student's performance is accurate and is of consistently high quality in this strand (76–100% accurate).
Independence	The strand contains insufficient information to determine a score.	Student requires extensive verbal, visual, and physical assistance to demonstrate skills and concepts in this strand (0–25% independent).	Student requires frequent verbal, visual, and physical assistance to demonstrate skills and concepts in this strand (26–50% independent).	Student requires some verbal, visual, and physical assistance to demonstrate skills and concepts in this strand (51–75% independent).	Student requires minimal verbal, visual, and physical assistance to demonstrate skills and concepts in this strand (76–100% independent).
Self-Evaluation	Evidence of planning, self-correction, task-monitoring, goal-setting, and reflection was not found in this content area.	Student infrequently plans, self-corrects monitors, sets goals, and reflects in this content area — only one example of self-evaluation was found in this strand.	Student plans, self-corrects monitors, sets goals, and reflects in this content area — multiple examples of self-evaluation were found in this strand.		
Generalized Performance		Student demonstrates knowledge and skills in one context or uses one approach and/or method of response and participation in this strand.	Student demonstrates knowledge and skills in multiple contexts or uses multiple approaches and/or methods of response and participation in this strand.		

Appendix E: Rubric for Scoring ELA–Writing

		M	1	2	3	4
Level of Complexity			Writing sample not submitted or unmatched to requirement.	Student addressed Writing through "access skills."	Student addressed Writing through "entry points."	Student addressed Writing at "grade-level."
Demonstration of Skills and Concepts	**Expression of Ideas and Content**	Writing sample not submitted; or contained insufficient information to determine a score; or written in a language other than English; or could not be read or understood	No main idea (informative), point of view (opinion), event sequence (narrative), or focus (poetry); or was unclear or off-topic; or used single word, picture, or symbol to express ideas; or all text provided by teacher	Writing sample related to assignment only minimally; included no or only one detail or description; or used picture sequence to express ideas; or used no figurative language or poetry form (poetry)	Main idea (informative), point of view (opinion), or event sequence (narrative) was evident; limited use of facts, details, and/or descriptions; sometimes repetitive and/or off-topic; limited use of figurative language (poetry);	Main idea (informative), point of view (opinion), or event sequence (narrative) was clearly expressed; three or more accurate and relevant facts, details, or descriptions included; used vivid imagery and figurative language appropriately (poetry)
	Knowledge of Conventions		Little or no original text; or used pictures or isolated words; or could not be understood due to errors in grammar and/or usage	General meaning could be understood, though use of grammar was limited and/or contained errors or run-on sentences; or lacked poetry form (poetry)	Complete sentences with some errors; grammar was effective; correct noun-verb agreement; some evidence of poetry form (poetry)	Meaning was clear, with rare or no errors in grammar and overall usage; poetry form used appropriately (poetry)
	Text Structure		Used single words, pictures, symbols without text; or all text provided by teacher	Sentence fragments (phrases) or one complete sentence used to express ideas; produced two related lines (poetry)	At least two complete sentences were used to express ideas; produced up to four related lines (poetry)	A paragraph of at least three related, well-constructed sentences was used to express ideas; more than four related lines (poetry)
	Use of Vocabulary		Vocabulary was unrelated to assignment; or all text was provided by teacher	Vocabulary was related to assignment, but word choice was limited and/or sometimes inappropriate	Vocabulary was functional and relevant; used basic common words, with some descriptive language	Vocabulary was clear and precise; used descriptive language, modifiers, connecting words and/or phrases

Appendix F: STE Cover Sheet for Grades 5, 8, and High School Biology and Introductory Physics

Science and Technology/Engineering
STRAND COVER SHEET

(A completed Strand Cover Sheet must be included at the beginning of each discipline being submitted.)

1) Student's Name: _____

2) Student's grade as reported in the Student Information Management System (SIMS): _____

3) a. Discipline: _____

b. Core Idea: _____

c. Learning Standard: _____

Practice # (1–8)	Evidence Attached (Y/N)	STE Summary Sheet Description	Self-Eval (Y/N)

Science and Technology/Engineering (STE)
STE SUMMARY SHEET

Directions: Complete and submit **one summary sheet for each selected entry point or access skill** in the core idea (total of 6 summary sheets for each core idea). Document at least **three different science practices** among the six summary sheets. Select and attach **three pieces of primary evidence** to its corresponding STE Summary Sheet.

Student's Name: _____ **Date (m/d/y):**_____

Grade: _____ **Discipline (Strand):** _____

Core Idea: _____**Science Practice (#1–8):** _____

☐ Entry Point ☐ Access Skill Resource Guide, Page: _____ Grade Span: _____	**List the Entry Point or Access Skill here:**

Brief Description of Activity (including materials, instructional approach, and how the student addressed the entry point or access skill):

Self-Evaluation:

SUMMARY for this activity: **Accuracy:** _____% **Independence:** _____%

☐ **EVIDENCE IS ATTACHED (Check if YES)**
(NOTE: Evidence must be attached to at least three of the six STE Summary Sheets.)

If evidence is NOT ATTACHED, complete the section below.

Question/Task/Item	Expected Student Response	Actual Student Response	Acc. (+/-)	Ind. (I/P)

(Continue on additional page, if necessary)

Example of a Teacher-Scribed Work Sample

Grade Level: 7th Grade
Content Area (Subject): Math
Strand: Ratios and Proportional Relationships
Learning Standards: 7.RP.A.2 Recognize and represent proportional relationships between quantities.
Measureable Outcome: will turn on technology used to demonstrate ratios and proportional relationships by pressing an access switch to turn the page of a teacher made story on the computer about ratios and proportions with 80% accuracy and 100%independence. will turn on the technology within 15 seconds of a directive.

Brief Description: During a math work session, turned on technology by pressing an access switch to turn the page of a teacher made book on the computer within 15 seconds of a directive. The book taught about ratios and proportional relationships by showing her a series of farm animals using the phrase "for every" to talk about how many of each appendage each animal had. (ex: for every cow there are 4 legs)

Trial Number	Page Number	Did she turn on technology by pressing her switch to activate the reading?	Latency In seconds	What was the ratio on the page?	+/-	I/P
1	1	No	15+ seconds	For every pig there is one tail	-	I
2	1	Yes	4 seconds	For every pig there is one tail	+	I
3	2	Yes	14 seconds	For every sheep there are 2 ears	+	I
4	3	No	15+ seconds	For every cow there are 4 legs	-	I
5	3	No	15+ seconds	For every cow there are 4 legs	-	I
6	3	Yes	10 seconds	For every cow there are 4 legs	+	P
7	4	Yes	3 seconds	For every duck there is 1 beak	+	I
8	5	Yes	1 second	For every goat there are 2 horns	+	I
9	6	Yes	11 seconds	For every horse there are 4 legs	+	I
10						

Accuracy	Independence
67%	89%

Appendix H: Informational Text – Supplemental List

Teachers are directed to include a photocopy of any Internet-based or teacher-created texts being submitted in the student's ELA-Reading assessment. **The following *informational* texts do not require a photocopy for the ELA–Reading–Informational Text strand:**

- ***News-2-You*** (symbol and text-based)
- ***Scholastic for Kids***
- ***Weekly Reader***
- ***Time for Kids***
- ***Newsweek for Kids***
- ***National Geographic for Kids***
- ***Newsela*** (daily online news articles at five different reading levels from grades 3–12)
- ***Unique Learning Systems*** (symbol and text-based)
- ***Wonderopolis*** or ***Camp Wonderopolis***
- **Digital Textbooks (provide name of textbook)**

Teachers may simply list the title and topic of articles, plus the name of the publication, from the sources listed above either in the brief description or directly on the evidence. For example:

"(Student) read an article about goats from National Geographic for Kids

and answered five comprehension questions on a worksheet."

Appendix H: Literature and Informational Text Types

READING: LITERATURE VS. INFORMATIONAL TEXT

(Adapted from engageny.org)

- Examples of literary text:
  - A. adventure stories
  - B. nursery rhymes
  - C. poems
  - D. fables and folktales
  - E. legends
  - F. myths
  - G. fantasy
  - H. plays
  - I. historical fiction
  - J. mysteries
  - K. science fiction
  - L. realistic fiction
  - M. allegories
  - N. parodies
  - O. satire
  - P. graphic novels

- Examples of Informational text:
  - A. literary nonfiction
  - B. biographies and autobiographies
  - C. exposition, argument, and functional text, including:
    - personal essays and speeches
    - opinion pieces
    - essays about art or literature
    - biographies and memoirs
    - journalism (articles)
    - historical, scientific, technical, or economic accounts
  - D. historical, scientific, and technical texts, including:
    - texts about history, social studies, science, and the arts
    - directions, forms, and digital sources on a range of topics
    - historical, scientific, technical, or economic accounts

APPENDIX S
SCORING RUBRIC FOR MCAS-ALT ELA—WRITING

Student's Name: **SCORING RUBRIC for ELA–Writing** **(Check one)** ____**Narrative** ____**Opinion/Argument**

Date: ____**Informative/Explanatory** ____**Poetry**

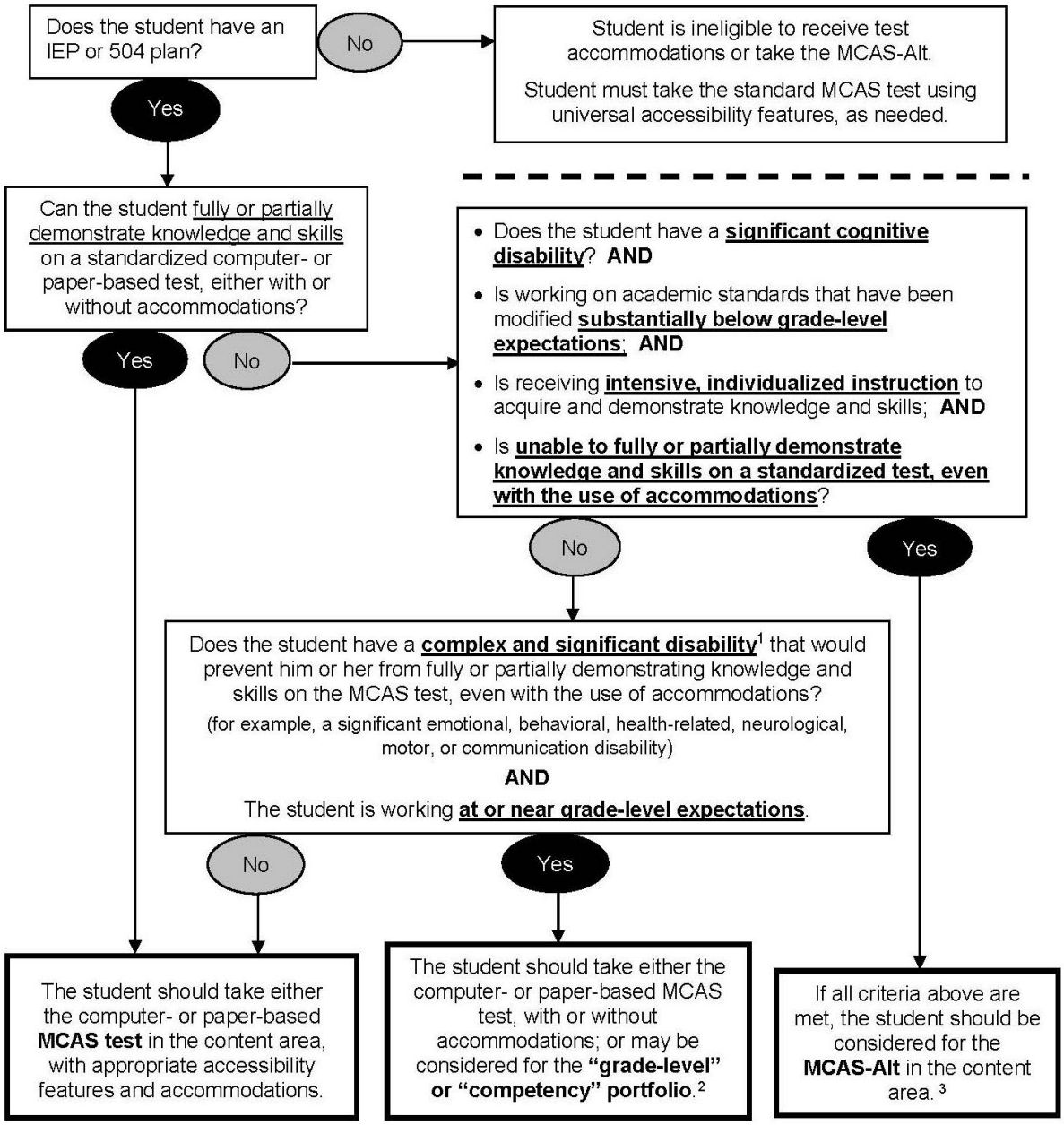
		M	1	2	3	4
Level of Complexity			Writing sample not submitted or unmatched to requirement.	Student addressed Writing through "access skills."	Student addressed Writing through "entry points."	Student addressed Writing at "grade-level."
Demonstration of Skills and Concepts	**Expression of Ideas and Content**	Writing sample not submitted; or contained insufficient information to determine a score; or written in a language other than English; or could not be read or understood	No main idea (informative), point of view (opinion), event sequence (narrative), or focus (poetry); or was unclear or off-topic; or used single word, picture, or symbol to express ideas; or all text provided by teacher	Writing sample related to assignment only minimally; included no or only one detail or description; or used picture sequence to express ideas; or used no figurative language or poetry form (poetry)	Main idea (informative), point of view (opinion), or event sequence (narrative) was evident; limited use of facts, details, and/or descriptions; sometimes repetitive and/or off-topic; limited use of figurative language (poetry);	Main idea (informative), point of view (opinion), or event sequence (narrative) was clearly expressed; three or more accurate and relevant facts, details, or descriptions included; used vivid imagery and figurative language appropriately (poetry)
	Knowledge of Conventions		Little or no original text; or used pictures or isolated words; or could not be understood due to errors in grammar and/or usage	General meaning could be understood, though use of grammar was limited and/or contained errors or run-on sentences; or lacked poetry form (poetry)	Complete sentences with some errors; grammar was effective; correct noun-verb agreement; some evidence of poetry form (poetry)	Meaning was clear, with rare or no errors in grammar and overall usage; poetry form used appropriately (poetry)
	Text Structure		Used single words, pictures, symbols without text; or all text provided by teacher	Sentence fragments (phrases) or one complete sentence used to express ideas; produced two related lines (poetry)	At least two complete sentences were used to express ideas; produced up to four related lines (poetry)	A paragraph of at least three related, well-constructed sentences was used to express ideas; more than four related lines (poetry)
	Use of Vocabulary		Vocabulary was unrelated to assignment; or all text was provided by teacher	Vocabulary was related to assignment, but word choice was limited and/or sometimes inappropriate	Vocabulary was functional and relevant; used basic common words, with some descriptive language	Vocabulary was clear and precise; used descriptive language, modifiers, connecting words and/or phrases
Independence		Writing sample not submitted; or contained insufficient information to determine a score; or written in a language other than English; or could not be read or understood	Student required extensive, almost continuous prompts to complete writing sample (0-25% independent) _____%	Student required frequent prompts to complete writing assignment (26-50% independent) _____%	Student required some prompts to complete writing assignment (51-75% independent) _____%	Student required no, or very few, prompts to complete writing assignment (76-100% independent) _____%

APPENDIX T

MCAS-ALT DECISION-MAKING TOOL FOR PARTICIPATION

Decision-Making Tool for MCAS Participation by Students with Disabilities

The decision flowchart shown below may be useful to IEP teams and individuals responsible for developing 504 plans to make *annual* decisions regarding appropriate student participation in MCAS. Separate decisions must be made in each content area being assessed: ELA, mathematics, and science and technology/engineering.



1. See the *2022 Educator's Manual for MCAS-Alt* for additional details on and examples of "complex and significant disabilities."
2. See the *MCAS Grade-level and Competency Portfolio Manual* for details on submission of "grade-level" and "competency" portfolios.
3. Students who take the MCAS-Alt in high school will not earn a Competency Determination in the assessed subject and therefore will not be eligible to receive a high school diploma.

APPENDIX U
CRITERIA FOR PARTICIPATION—MCAS ALT

Guidance on Designating Students for the MCAS-Alt

Decisions regarding participation in statewide assessments by students with disabilities must be discussed at the student's annual IEP team meeting and be documented in the IEP.

IEP team members should familiarize themselves with the criteria used to designate students for alternate assessments. The criteria listed below together with the Decision-Making Tool for MCAS-Alt Participation should be used by teams as the basis for making ***annual*** **assessment decisions for *each* student in *each* subject required for academic assessment.**

Criteria for Designating a Student for an Alternate Assessment

A student with the *most significant cognitive disability* should take the **MCAS-Alt** if he or she

- is working on *learning standards* in the content area that have been *substantially modified* due to the severity of the disability; **and**
- is receiving *intensive, individualized instruction* in order to acquire, generalize, and demonstrate knowledge and skills; **and**
- is *unable to demonstrate knowledge and skills on a standardized paper or online test*, even with accommodations.

Teams should **not** assume that a student should take an alternate assessment based on the fact that he or she

- has not been provided instruction in the general curriculum;
- has a specific disability (e.g., all students with intellectual disabilities should not automatically be designated for the MCAS-Alt);
- is placed in a program or classroom where it is expected that students will take the MCAS-Alt;
- has taken an alternate assessment previously (since this is an annual decision);
- has previously failed the MCAS test;
- is an English learner;
- is from a low-income family or is a child in foster care;

- requires the use of assistive technology or an alternative augmentative communication system; or
- attends a school in which the IEP team may have been influenced to designate the student for an alternate assessment in order for the school to receive disproportionate credit toward the school's accountability rating.

Other Considerations

When an IEP team (or 504 plan coordinator) is *undecided* as to which assessment format is most appropriate for a particular student, the Department recommends that the ***standard test*, either with or without accommodations, be assigned as the default assessment format for the student**.

When assigning the standard test, teams should also deliberate as to whether it would be more appropriate for a student to take the computer-based next-generation MCAS test (for which universally designed accessibility features, tools, and accommodations are available) or a paper-based MCAS test (offered as an accommodation instead of the computer-based test).

When the decision is made to administer a standard MCAS test, with or without accommodations, the IEP team should evaluate after administration whether useful information was provided by the test results. If so, it may be preferable to have the student continue taking the standard MCAS test in that subject because of the broad range of standards that are assessed and reported on MCAS tests compared to the limited standards assessed in an MCAS-Alt portfolio. Students who take the MCAS-Alt will not be eligible to earn a Competency Determination and receive a high school diploma.

Questions on alternate assessment may be addressed to mcas@doe.mass.edu . Thank you for your attention to this important information.

APPENDIX V
SUMMARY OF ALT SCORE FREQUENCIES

Table V-1. Frequency of Scores by Grade by Strand by Rubric Area—Alt/ELA

Grade	Strand	Rubric Area	Score			
			1	2	3	4
3	1	Complexity	1	44	863	0
		Skills	2	7	62	756
		Independence	1	44	863	0
	2	Complexity	1	57	856	0
		Skills	0	10	78	672
		Independence	1	57	856	0
	3	Complexity	0	88	823	2
		Skills	309	252	202	9
		Independence	0	88	823	2
4	1	Complexity	1	49	794	3
		Skills	1	7	76	697
		Independence	1	49	794	3
	2	Complexity	1	58	790	2
		Skills	2	10	86	622
		Independence	1	58	790	2
	3	Complexity	0	96	750	2
		Skills	245	223	249	9
		Independence	0	96	750	2
5	1	Complexity	6	41	794	1
		Skills	0	11	66	696
		Independence	6	41	794	1
	2	Complexity	3	51	784	1
		Skills	0	10	82	628
		Independence	3	51	784	1
	3	Complexity	0	76	761	1
		Skills	218	211	252	25
		Independence	0	76	761	1
6	1	Complexity	1	39	811	0
		Skills	1	9	84	679
		Independence	1	39	811	0
	2	Complexity	1	36	818	0
		Skills	2	14	95	595
		Independence	1	36	818	0
	3	Complexity	0	66	783	0
		Skills	216	218	260	15
		Independence	0	66	783	0
7	1	Complexity	4	49	809	2
		Skills	3	9	97	647
		Independence	4	49	809	2
	2	Complexity	3	46	819	1
		Skills	1	11	97	571
		Independence	3	46	819	1
	3	Complexity	0	82	777	3
		Skills	232	172	291	16
		Independence	0	82	777	3
8	1	Complexity	1	28	751	1
		Skills	2	9	71	585
		Independence	1	28	751	1
	2	Complexity	3	28	756	2
		Skills	0	7	70	538
		Independence	3	28	756	2
	3	Complexity	0	51	724	1
		Skills	162	215	246	18
		Independence	0	51	724	1
HS	1	Complexity	0	42	806	5
		Skills	0	5	90	692
		Independence	0	42	806	5
	2	Complexity	3	45	823	1
		Skills	0	7	100	585
		Independence	3	45	823	1
	3	Complexity	0	63	799	4
		Skills	164	217	263	47
		Independence	0	63	799	4

Table V-2. Frequency of Scores by Grade by Strand by Rubric Area—Alt/Mathematics

Grade	Strand	Rubric Area	Score			
			1	2	3	4
3	1	Complexity	5	57	852	0
		Skills	2	5	65	720
		Independence	5	57	852	0
	5	Complexity	2	51	857	0
		Skills	0	6	67	728
		Independence	2	51	857	0
4	1	Complexity	2	70	769	2
		Skills	1	9	64	689
		Independence	2	70	769	2
	3	Complexity	0	70	763	0
		Skills	0	6	81	673
		Independence	0	70	763	0
5	2	Complexity	4	67	787	0
		Skills	0	15	72	677
		Independence	4	67	787	0
	3	Complexity	0	63	794	1
		Skills	0	7	72	691
		Independence	0	63	794	1
6	2	Complexity	1	61	793	0
		Skills	0	9	75	673
		Independence	1	61	793	0
	5	Complexity	1	66	786	0
		Skills	2	12	71	678
		Independence	1	66	786	0
7	1	Complexity	5	87	793	3
		Skills	2	14	67	667
		Independence	5	87	793	3
	4	Complexity	4	47	834	2
		Skills	2	10	87	649
		Independence	4	47	834	2
8	2	Complexity	2	64	718	3
		Skills	1	11	69	577
		Independence	2	64	718	3
	4	Complexity	1	28	758	4
		Skills	2	6	59	600
		Independence	1	28	758	4
HS	1	Complexity	2	7	190	4
		Skills	1	1	8	163
		Independence	2	7	190	4
	2	Complexity	2	39	609	2
		Skills	0	8	77	483
		Independence	2	39	609	2
	3	Complexity	0	24	505	2
		Skills	5	4	57	397
		Independence	0	24	505	2
	4	Complexity	1	69	621	4
		Skills	2	5	66	522
		Independence	1	69	621	4
	5	Complexity	2	42	466	2
		Skills	2	7	51	374
		Independence	2	42	466	2

Table V-3. Frequency of Scores by Grade by Strand by Rubric Area—Alt/Biology

Grade	Strand	Rubric Area	Score			
			1	2	3	4
HS	1	Complexity	0	5	57	5
		Skills	0	0	10	40
		Independence	0	5	57	5
	2	Complexity	0	4	55	5
		Skills	0	0	5	46
		Independence	0	4	55	5
	3	Complexity	0	5	51	5
		Skills	0	0	11	41
		Independence	0	5	51	5

Table V-4. Frequency of Scores by Grade by Strand by Rubric Area—Alt/Chemistry

Grade	Strand	Rubric Area	Score			
			1	2	3	4
HS	1	Complexity	0	0	18	0
		Skills	0	0	3	15
		Independence	0	0	18	0
	2	Complexity	0	0	14	0
		Skills	0	0	2	12
		Independence	0	0	14	0
	3	Complexity	0	0	15	0
		Skills	0	0	1	14
		Independence	0	0	15	0

Table V-5. Frequency of Scores by Grade by Strand by Rubric Area—Alt/ Introductory Physics

Grade	Strand	Rubric Area	Score			
			1	2	3	4
HS	1	Complexity	0	0	6	9
		Skills	0	0	4	8
		Independence	0	0	6	9
	2	Complexity	0	0	4	7
		Skills	0	0	2	8
		Independence	0	0	4	7
	3	Complexity	0	0	3	4
		Skills	0	0	0	6
		Independence	0	0	3	4

Table V-6. Frequency of Scores by Grade by Strand by Rubric Area -- Alt/Technology/Engineering

Grade	Strand	Rubric Area	Score			
			1	2	3	4
HS	1	Complexity	0	2	40	0
		Skills	1	1	7	28
		Independence	0	2	40	0
	2	Complexity	0	2	39	0
		Skills	0	1	4	31
		Independence	0	2	39	0
	3	Complexity	0	5	36	0
		Skills	0	6	1	26
		Independence	0	5	36	0

APPENDIX W
MCAS-ALT ACHIEVEMENT STANDARDS AND DESCRIPTORS

Grade-Level and Alternate Academic Achievement Standards and Descriptors

For each student who takes the standard MCAS tests, one of the following *grade-level academic achievement standards (levels)* will be reported in each content area.

Grades 3–10 (MCAS "Next-Generation" Grade-Level Academic Achievement Standards for ELA, Mathematics, and High School Biology and Introductory Physics):

- ***Not Meeting Expectations*—**Students performing at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.
- ***Partially Meets Expectations***—Students performing at this level partially meet grade-level expectations for knowledge, skills, and understanding. These students may need coordinated assistance and/or additional instruction to succeed at the next grade level.
- ***Meeting Expectations***—Students performing at this level meet grade-level expectations for knowledge, skills, and understanding, and are academically prepared to succeed at the next grade level.
- ***Exceeding Expectations***—Students performing at this level exceed grade-level expectations for knowledge, skills, and understanding, and are academically well prepared to succeed at the next grade level.

High School Chemistry and Technology/Engineering (MCAS "Legacy" Grade-Level Academic Achievement Standards):

- ***Needs Improvement***—Students demonstrate a **partial understanding of grade-level subject matter** and solve some simple problems.
- *Proficient*—Students demonstrate a solid understanding of challenging grade-level subject matter and solve a wide variety of problems.
- ***Advanced***—Students demonstrate a **comprehensive understanding of challenging grade-level subject matter** and provide sophisticated solutions to complex problems.

For each student who takes the MCAS-Alt, one of the following *alternate academic achievement standards (levels)* will be reported in each content area.

Grades 3–10 (Alternate Assessments Based on Alternate Achievement Standards)

- ***Awareness***—Students demonstrate **very little understanding** of standards and core knowledge topics contained in the Massachusetts curriculum framework for the content area. Students require extensive prompting and assistance, and their performance is mostly inaccurate.
- ***Emerging***—Students demonstrate a **simple understanding that is below grade-level expectations** of a limited number of standards and core knowledge topics contained in the Massachusetts curriculum framework for the content area. Students require frequent prompting and assistance, and their performance is limited and inconsistent.
- ***Progressing***—Students demonstrate a **partial understanding that is below grade-level expectations** of selected standards and core knowledge topics contained in the Massachusetts curriculum framework for the content area. Students are steadily learning new knowledge, skills, and concepts. Students require minimal prompting and assistance, and their performance is basically accurate.
- While not technically an achievement level, a score of ***Incomplete*** will be given if **insufficient evidence and information was included** to allow an achievement level to be determined.

Alternate Academic Achievement Standards

The state's alternate academic achievement standards (*Awareness, Emerging, Progressing*) and their descriptors reflect the collaboration, input, and professional judgment of numerous stakeholders who have affirmed that these achievement levels represent the highest possible standards achievable by students taking the MCAS-Alt; and that these standards are appropriate and aligned to ensure that a student who meets those standards is on track to pursue productive post-secondary education, vocational training, and/or competitive integrated employment.

APPENDIX X
SAMPLE REPORTS—MCAS-ALT

Who must take MCAS?

All students in grades 3-8 and 10 who attend publicly funded school programs are required to participate in the MCAS statewide assessment. A relatively small number of students with disabilities take the MCAS-Alt if they are unable to take regular MCAS tests, even with accommodations.

The decision to participate in an alternate assessment is made each year in each subject by the student's IEP team, which includes parents/guardians. Most students who take the alternate assessment receive individualized instruction that has been substantially modified from the instruction other students receive. Please be aware that participation in the MCAS-Alt may eventually delay, or otherwise affect, your child's ability to earn a high school diploma.

Why include students with disabilities in the MCAS and MCAS-Alt?

It's the law.
State and federal laws require the participation of all students in statewide assessments. The alternate assessment allows students with significant cognitive disabilities who cannot take regular MCAS tests to "show what they know" and to receive instruction at a level that is challenging and attainable for them.

MCAS helps to determine how much a student is learning.
An MCAS-Alt shows what the student has learned during the school year. Scores provide accurate and detailed feedback that can be used to identify challenging goals and instruction for the future.

Including all students in a school's or district's test results ensures that all students will be taught.
Counting the results of students who take the MCAS-Alt means that those students are more likely to be considered when resource decisions are made.

As learning improves, expectations are raised.
Evidence indicates that students learn more when they are engaged in instruction based on the state's learning standards and when they participate in assessments based on those learning standards.

How are the MCAS-Alt results used?

MCAS-Alt results should be used by the school and the IEP team to:

- identify challenging academic goals and plan instruction for the student
- measure the student's progress in achieving the academic standards in the Massachusetts curriculum frameworks
- allocate sufficient school resources for the student's education
- establish whether schools and districts are making progress in educating students with disabilities

Can students meet the state's graduation requirement and earn a diploma if they participate in the MCAS-Alt?

We want you to be aware that participation in an alternate assessment may eventually delay or affect your child's ability to complete the state's requirements to receive a high school diploma because the MCAS-Alt assesses learning standards that are **below** the expectations needed to meet the state's graduation requirement. Therefore, most students who participate in the MCAS-Alt will not be able to meet the state's graduation requirement.

The purpose of the state's graduation requirement is to ensure that a student earning a Massachusetts diploma can demonstrate basic competencies in English language arts, mathematics, and science and technology/ engineering before entering post-secondary education or the workplace. This requirement has been in place for all students beginning with the graduating class of 2003. You can learn more about graduation requirements on the Internet at www.doe.mass.edu/mcas/graduation.html.

To meet the state's graduation requirement, a student must do one of the following:

- take and pass the required MCAS tests;
- submit a "competency portfolio" that demonstrates the student's knowledge and skills at a grade 10 level of achievement; or
- be granted an MCAS Performance Appeal that documents his or her grade point average compared with other students who take grade-level courses. Information on MCAS appeals is available at https://www.doe.mass.edu/mcasappeals/.

For more information

Massachusetts Comprehensive Assessment System (MCAS)	www.doe.mass.edu/mcas
MCAS Alternate Assessment (MCAS-Alt)	www.doe.mass.edu/mcas/alt
MCAS participation requirements for students with disabilities	www.doe.mass.edu/mcas/accessibility
Graduation requirements and MCAS performance appeals	www.doe.mass.edu/mcas/graduation.html
If you have questions	Email: mcas@doe.mass.edu

Spring 2021 MCAS Alternate Assessment (MCAS-Alt) Parent/Guardian Report

MASSACHUSETTS DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION

Name:	**SASID:**
School:	**Grade:** 03
District:	**Date of Birth:**

Enclosed are your child's results from the 2021 MCAS Alternate Assessment (MCAS-Alt). All students are required to participate in MCAS, either by taking the standard MCAS tests or by participating in the MCAS Alternate Assessment (MCAS-Alt) for students with disabilities who meet certain requirements. Your child's school submitted his or her MCAS-Alt last spring, as indicated in his or her IEP or 504 plan. The MCAS-Alt is a record of your child's accomplishments, including a collection of his or her academic work. Before it was submitted, your child's school was required to invite you to review the assessment and review your child's progress.

Please meet with your child's teacher(s) to discuss the meaning of these results and talk about your child's goals for the coming school year. Your support is extremely important. The Department of Elementary and Secondary Education would like to acknowledge the hard work of your child's teachers in compiling the MCAS-Alt and contributing to this important and worthwhile effort.

Your Child's Overall Results

English Language Arts	Mathematics	Science and Technology/Engineering
Achievement Level	Achievement Level	Achievement Level
Progressing	**Incomplete**	

Purposes of the MCAS-Alt

The MCAS-Alt is an assessment designed to measure the achievement of students with significant cognitive disabilities in selected areas of English Language Arts, Mathematics, and Science and Technology/Engineering. Your child is expected to demonstrate knowledge of the state's learning standards at a level that is challenging and appropriate.

The purpose of the MCAS-Alt is to make sure schools are teaching the standards to all students, regardless of their disability and even when they cannot show what they know on a standard test.

What is the MCAS-Alt?

Your child's MCAS-Alt includes samples of his or her schoolwork and a record of his or her progress in the subject(s) being assessed. Each includes work samples and charts of progress in the same subjects that are assessed on the standard MCAS tests for a student in that grade. Students taking the MCAS-Alt are working on knowledge and skills at lower levels of difficulty than their peers who take the MCAS tests. More details about the MCAS-Alt are provided in the *Educator's Manual for MCAS-Alt*, which is available at http://www.doe.mass.edu/mcas/alt/edmanual.docx.

Name:
SASID:

Grade: 03
Spring 2021

Achievement Level Descriptors		Your Child's Achievement Level ( )		
		English Language Arts	Mathematics	Science and Technology/ Engineering
Exceeding Expectations	A student who performed at this level **exceeded grade-level expectations** by demonstrating mastery of the subject matter.			
Meeting Expectations	A student who performed at this level **met grade-level expectations** and is academically on track to succeed in the current grade in this subject.			
Partially Meeting Expectations	A student who performed at this level **partially met grade-level expectations** in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.			
Not Meeting Expectations	A student who performed at this level **did not meet grade-level expectations** in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.			
Progressing	A student at this level demonstrated a **partial understanding below grade-level expectations** of selected learning standards and core knowledge topics contained in the Massachusetts curriculum framework for the subject. Students at this level are steadily learning new knowledge, skills, and concepts. Students require minimal prompting and assistance, and their performance is basically accurate.	■		
Emerging	A student at this level demonstrated a **simple understanding below grade-level expectations** of a limited number of learning standards and core knowledge topics contained in the Massachusetts curriculum framework for the subject. Students at this level require frequent prompting and assistance, and their performance is limited and inconsistent.			
Awareness	A student at this level demonstrated **very little understanding** of learning standards and core knowledge topics contained in the Massachusetts curriculum framework for the subject. Students at this level require extensive prompting and assistance, and their performance is mostly inaccurate.			
Incomplete	**Insufficient evidence and information** was included in the assessment to allow an achievement level to be determined in the subject.		■	

NOT REQUIRED FOR ASSESSMENT IN THIS GRADE

The section above shows your child's overall achievement level in each subject of the alternate assessment.
The MCAS-Alt was scored in each area shown below. Scores for *Level of Complexity*, *Demonstration of Skills and Concepts (accuracy)*, and *Independence* were combined to give the overall achievement level.

MCAS-Alt Scoring Areas and Your Child's Scores

ENGLISH LANGUAGE ARTS

	Level of Complexity	Demonstration of Skills and Concepts	Independence	Self-Evaluation	Generalized Performance
	1 2 3 4 5	M 1 2 3 4	M 1 2 3 4	M 1 2	1 2
Language	□□■□□	□□□□■	□□□□■	□□■	■□
Reading	□□■□□	□□□□■	□□□□■	□□■	■□
Writing	□□■□□	□□■□□	□□□■□	□□■	■□

MATHEMATICS

	Level of Complexity	Demonstration of Skills and Concepts	Independence	Self-Evaluation	Generalized Performance
	1 2 3 4 5	M 1 2 3 4	M 1 2 3 4	M 1 2	1 2
Operations and Algebraic Thinking	□□■□□	■□□□□	■□□□□	□□■	■□
Measurement and Data	□□■□□	□□■□□	□□□□■	□□■	■□
Number and Operations in Base Ten	*Not required for assessment in this grade*				
Number and Operations - Fractions	*Not required for assessment in this grade*				
Geometry	*Not required for assessment in this grade*				

SCIENCE and TECHNOLOGY/ENGINEERING

	Level of Complexity	Demonstration of Skills and Concepts	Independence	Self-Evaluation	Generalized Performance
	1 2 3 4 5	M 1 2 3 4	M 1 2 3 4	M 1 2	1 2
Earth and Space Sciences	*Not required for assessment in this grade*				
Life Science	*Not required for assessment in this grade*				
Physical Sciences	*Not required for assessment in this grade*				
Technology/ Engineering	*Not required for assessment in this grade*				

Your child's MCAS-Alt was scored in the following Scoring Areas:

Level of Complexity — How your child addressed the learning standards in each subject (strand)
5 - Student addresses a broad range of curriculum framework learning standards (three or more) at grade-level expectations in this strand.
4 - Student addresses a narrow sample of curriculum framework learning standards (one or two) at grade-level expectations in this strand.
3 - Student addresses curriculum framework learning standards that have been modified below grade-level expectations in this strand.
2 - Student primarily addresses social, motor, and communication "access skills" during instruction based on curriculum framework learning standards in this strand.
1 - Strand reflects little or no basis in, or is unmatched to, curriculum framework learning standard(s) required for assessment.

Demonstration of Skills and Concepts — The percentage of accurate (correct) responses
4 - Student's performance is accurate and is of consistently high quality in this strand (76-100% accurate).
3 - Student's performance is mostly accurate and demonstrates some understanding in this strand (51-75% accurate).
2 - Student's performance is limited and inconsistent with regard to accuracy and demonstrates limited understanding in this strand (26-50% accurate).
1 - Student's performance is primarily inaccurate and demonstrates minimal understanding in this strand (0-25% accurate).
M - Strand contains insufficient information to determine a score.

Independence — The amount of assistance your child received
4 - Student requires minimal verbal, visual, and physical assistance to demonstrate skills and concepts in this strand (76-100% independent).
3 - Student requires some verbal, visual, and physical assistance to demonstrate skills and concepts in this strand (51-75% independent).
2 - Student requires frequent verbal, visual, and physical assistance to demonstrate skills and concepts in this strand (26-50% independent).
1 - Student requires extensive verbal, visual, and physical assistance to demonstrate skills and concepts in this strand (0-25% independent).
M - Strand contains insufficient information to determine a score.

Self-Evaluation — Your child's awareness of his or her performance
2 - Student self-corrects, monitors, sets goals, and reflects in this subject; multiple examples of self-evaluation were found in this strand.
1 - Student infrequently self-corrects, monitors, sets goals, and reflects in this subject; only one example of self-evaluation was found in this strand.
M - Evidence of self-correction, task-monitoring, goal-setting, and reflection was not found in this strand.

Generalized Performance — The number of approaches used by your child to demonstrate knowledge and skills
2 - Student demonstrates knowledge and skills in multiple contexts or uses multiple approaches and/or methods of response and participation in this strand.
1 - Student demonstrates knowledge and skills in one context or uses one approach and/or method of response and participation in this strand.