
IX. Mathematics, Grade 3

Grade 3 Mathematics Test

The spring 2009 grade 3 MCAS Mathematics test was based on learning standards in the Massachusetts *Mathematics Curriculum Framework* (2000). The *Framework* identifies five major content strands, listed below. Specific learning standards for grade 3 are found in the *Supplement to the Massachusetts Mathematics Curriculum Framework* (2004). Page numbers for the grades 3–4 *Framework* learning standards and for the grade 3 *Supplement* standards appear in parentheses.

- Number Sense and Operations (*Framework*, pages 22–23; *Supplement*, pages 3–4)
- Patterns, Relations, and Algebra (*Framework*, page 32; *Supplement*, page 4)
- Geometry (*Framework*, page 40; *Supplement*, pages 4–5)
- Measurement (*Framework*, page 48; *Supplement*, page 5)
- Data Analysis, Statistics, and Probability (*Framework*, page 56; *Supplement*, pages 5–6)

The *Mathematics Curriculum Framework* and *Supplement* are available on the Department website at www.doe.mass.edu/frameworks/current.html.

In test item analysis reports and on the Subject Area Subscore pages of the MCAS *School Reports* and *District Reports*, Mathematics test results are reported under five MCAS reporting categories, which are identical to the five *Framework* content strands listed above.

Test Sessions

The MCAS grade 3 Mathematics test included two separate test sessions. Each session included multiple-choice, short-answer, and open-response questions. Approximately half of the common test items are shown on the following pages as they appeared in grade 3 test & answer booklets.

Reference Materials and Tools

Each student taking the grade 3 Mathematics test was provided with a plastic ruler and a grade 3 Mathematics Tool Kit. A copy of the tool kit pieces used by students to answer question 12 immediately follows the last question in this chapter. An image of the ruler is not reproduced in this publication.

The use of bilingual word-to-word dictionaries was allowed for current and former limited English proficient students only, during both Mathematics test sessions. No calculators, other reference tools, or materials were allowed.

Cross-Reference Information

The table at the conclusion of this chapter indicates each released item's reporting category and the *Framework* learning standard it assesses. The correct answers for released multiple-choice and short-answer questions are also displayed in the table.

Mathematics

SESSION 1

You may use your tool kit and MCAS ruler during this session.

You may **not** use a calculator during this session.



DIRECTIONS

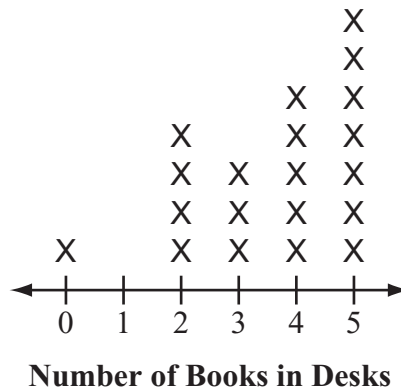
This session contains seven multiple-choice questions. Mark your answers to these questions by filling in the circle next to the best answer.

- 1 Which symbol belongs in the \bigcirc below to make a true number sentence?

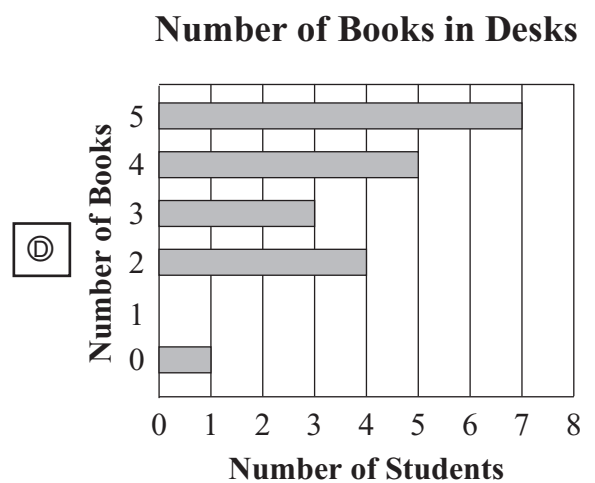
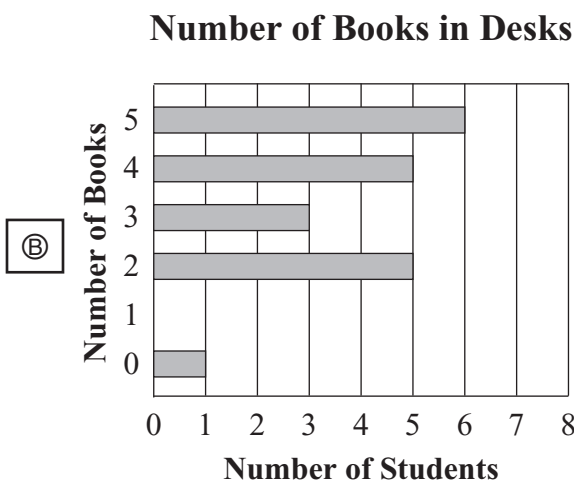
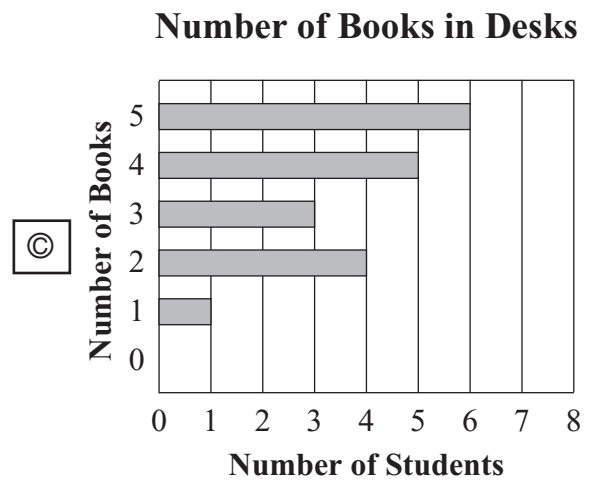
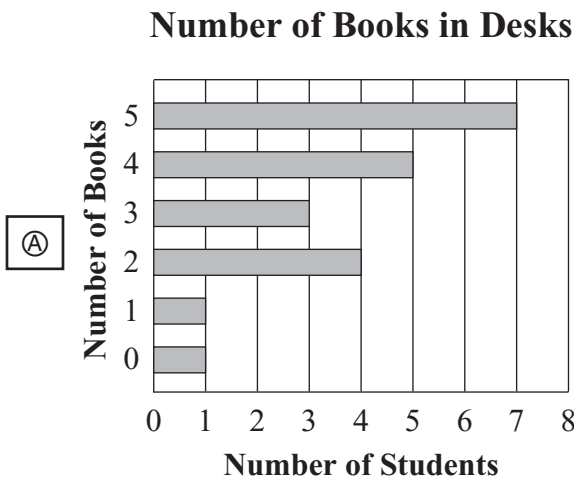
$$85 - 0 \bigcirc 75 + 10$$

- | | |
|-----|----------|
| (A) | \times |
| (B) | $>$ |
| (C) | $=$ |
| (D) | $<$ |

2 The line plot below shows the number of books in each student's desk in Ms. Chase's classroom.



Which bar graph shows the same data as the line plot?



- 3 Ms. Taylor made the chart below to show the numbers of four kinds of books in the school library.

Books in the School Library

Kind of Book	Number of Books
mystery	237
poetry	223
animal	232
sports	241

The library has **more** than 235 but **less** than 240 of which kind of book?

- (A) mystery
- (B) poetry
- (C) animal
- (D) sports

- 4 Mr. Jones used the three coupons shown below.



What is the total amount of money that Mr. Jones saved by using the three coupons?

- (A) \$0.15
- (B) \$1.50
- (C) \$15.00
- (D) \$150.00

- 5 Mr. Flagg's class has 24 students.
Ms. Dickson's class has 23 students.
Which of these correctly compares the number of students in each class?

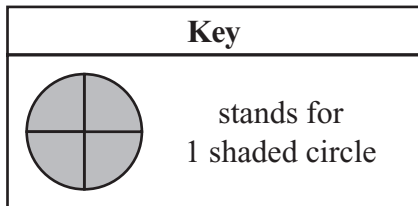
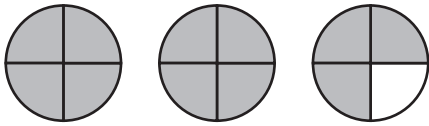
- (A) $24 < 23$
- (B) $24 > 23$
- (C) $23 = 24$
- (D) $23 + 24$

- 6 An art teacher has 18 pictures to hang on the wall.

Which of these is one way she can hang **all** of the pictures with none left over?

- (A) 5 rows of 3 pictures
- (B) 6 rows of 3 pictures
- (C) 8 rows of 2 pictures
- (D) 10 rows of 8 pictures

7 Hazel shaded the circles shown below.



Which of these shows how many circles Hazel shaded?

- (A) $1\frac{3}{4}$
- (B) $2\frac{1}{3}$
- (C) $2\frac{3}{4}$
- (D) $3\frac{1}{3}$

Mathematics

SESSION 2

You may use your tool kit and MCAS ruler during this session.

You may **not** use a calculator during this session.



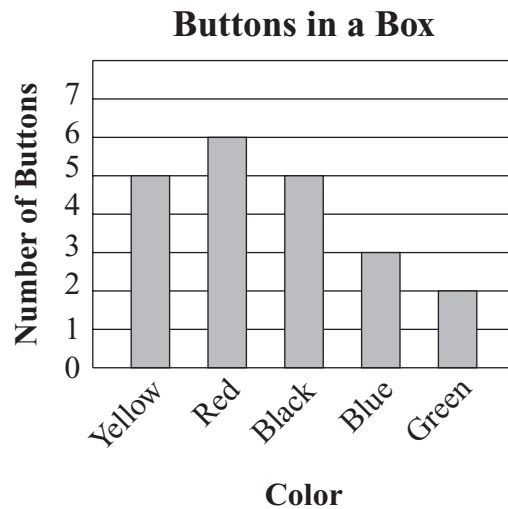
DIRECTIONS

This session contains five multiple-choice questions, two short-answer questions, and two open-response questions. For multiple-choice questions, mark your answers by filling in the circle next to the best answer. For the short-answer and open-response questions, write your answer in the space provided below the question.

- 8 What is 154 rounded to the nearest ten?

- (A) 100
- (B) 150
- (C) 160
- (D) 200

- 9 The graph below shows how many buttons of each color are in a box.



How many **fewer** green buttons than red buttons are in the box?

- (A) 2
- (B) 3
- (C) 4
- (D) 6

- 10 The X on the calendar below shows the date Julie planted her garden.

May						
Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
	1	2	3	4	5	6
7	8	9	10	11	X ¹²	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

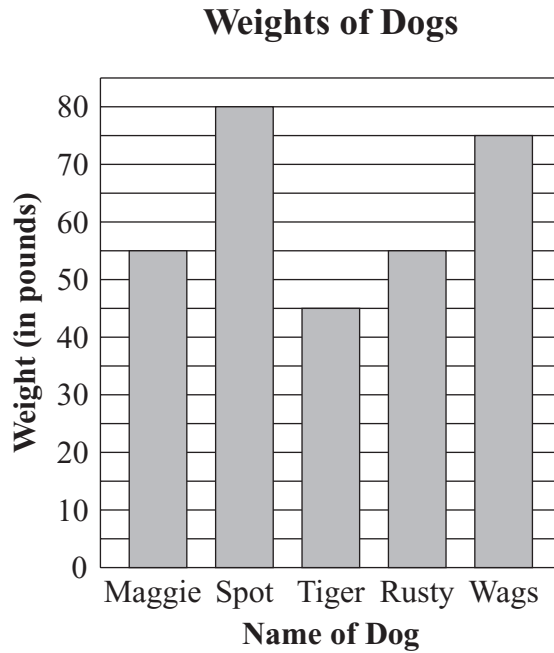
The first seedling started to grow exactly 3 weeks after Julie planted her garden.

On what date did the first seedling start to grow?

- (A) May 26
- (B) May 31
- (C) June 2
- (D) June 3

Question 11 is a short-answer question. Write your answer to this question in the Answer Box provided.

- 11 The bar graph below shows the weights of five dogs.



Buster weighs 60 pounds. In the Answer Box below, write the names of the dogs from the graph that weigh more than Buster.

Answer Box

11

Write your answers to parts (a) and (b) of open-response question 12 in the spaces provided.

Use the one shape labeled Y and the two shapes labeled Z from your tool kit to answer question 12.

- 12 For all parts of this question, the shapes should be lying flat on your desk. The sides of the shapes should touch but not overlap.

- a. In the space below, put all the shapes together to make a rectangle. Trace each shape to show how the shapes go together to make a rectangle.

- b. In the space below, put all the shapes together to make a quadrilateral that is **not** a rectangle. Trace each shape to show how the shapes go together to make a quadrilateral.

Mark your choice for multiple-choice question 13 by filling in the circle next to the best answer.

- 13** Lucy put 27 stickers in her notebook.
She put 3 stickers on each page.

Which number sentence can be used
to find how many pages Lucy put
stickers on?

- | | |
|-----|-------------------------|
| (A) | $27 \div 3 = \square$ |
| (B) | $27 \times \square = 3$ |
| (C) | $\square \div 27 = 3$ |
| (D) | $27 \times 3 = \square$ |

Write your answers to parts (a) and (b) of open-response question 14 in the spaces provided.

14 Tom, Nuno, and Paul each made a pizza. All the pizzas were the same size and shape.

- Tom cut his pizza into 2 equal pieces.
- Nuno cut his pizza into 3 equal pieces.
- Paul cut his pizza into 4 equal pieces.

a. Which boy has the smallest size pieces of pizza? Show or explain how you got your answer.

b. Each boy ate some of the pizza he made.

- Tom ate 1 piece of his pizza.
- Nuno ate 1 piece of his pizza.
- Paul ate 2 pieces of his pizza.

Which boys ate the same amount of pizza? Show or explain how you got your answer.

Mark your choice for multiple-choice question 15 by filling in the circle next to the best answer.

- 15 Ben wrote the number pattern shown below.

114, 219, 324, 429, 534

Which of these is a rule for Ben's pattern?

- | | |
|---|---------|
| Ⓐ | add 5 |
| Ⓑ | add 15 |
| Ⓒ | add 100 |
| Ⓓ | add 105 |

Question 16 is a short-answer question. Write your answer to this question in the Answer Box provided.

16 Compute:

$$\begin{array}{r} 4692 \\ + 2187 \\ \hline \end{array}$$

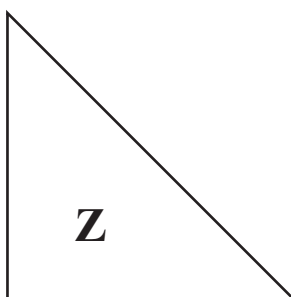
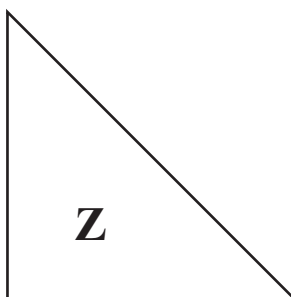
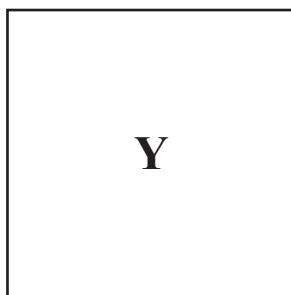
Write your answer in the Answer Box below.

Answer Box

16



Massachusetts Comprehensive Assessment System Grade 3 Mathematics Tool Kit



During testing, students were provided an additional tool kit piece to answer a test item that is not released.

Grade 3 Mathematics
Spring 2009 Released Items:
Reporting Categories, Standards, and Correct Answers*

Item No.	Page No.	Reporting Category	Standard	Correct Answer (MC/SA)*
1	128	<i>Patterns, Relations, and Algebra</i>	3.P.2	C
2	129	<i>Data Analysis, Statistics, and Probability</i>	3.D.2	D
3	130	<i>Data Analysis, Statistics, and Probability</i>	3.D.3	A
4	130	<i>Measurement</i>	3.M.2	B
5	131	<i>Patterns, Relations, and Algebra</i>	3.P.4	B
6	131	<i>Number Sense and Operations</i>	3.N.9	B
7	132	<i>Number Sense and Operations</i>	3.N.3	C
8	133	<i>Number Sense and Operations</i>	3.N.11	B
9	133	<i>Data Analysis, Statistics, and Probability</i>	3.D.3	C
10	134	<i>Measurement</i>	3.M.3	C
11	135	<i>Data Analysis, Statistics, and Probability</i>	3.D.3	Spot and Wags
12	136	<i>Geometry</i>	3.G.7	
13	137	<i>Patterns, Relations, and Algebra</i>	3.P.4	A
14	138	<i>Number Sense and Operations</i>	3.N.4	
15	139	<i>Patterns, Relations, and Algebra</i>	3.P.1	D
16	140	<i>Number Sense and Operations</i>	3.N.10	6879

* Answers are provided here for multiple-choice items and short-answer items only. Sample responses and scoring guidelines for open-response items, which are indicated by shaded cells, will be posted to the Department's website later this year.