Release of March 2012 MCAS Retest Items

April 2012
Massachusetts Department of Elementary and Secondary Education
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Commissioner’s Foreword

Dear Colleagues:

The Massachusetts Department of Elementary and Secondary Education is committed to working in partnership with policymakers, communities, parents, school districts, and students to build a system that will prepare all students to succeed as productive and contributing members of our democratic society and the global economy. To assist in achieving this goal, the Department regularly releases MCAS test items to provide information regarding the kinds of knowledge and skills that students are expected to demonstrate. I am pleased to announce that all questions from the March 2012 retests are included in this document.

The Release of March 2012 MCAS Retest Items is available only through the Department website at www.doe.mass.edu/mcas/testitems.html. The test items for both ELA and Mathematics can be printed from this site. I encourage educators to use the relevant sections of this document together with their test item analysis reports as guides for planning changes in curriculum and instruction that may be needed to support schools and districts in their efforts to improve student performance.

Thank you for your support as we work together to strengthen education for our students in Massachusetts.

Sincerely,

Mitchell D. Chester, Ed.D.
Commissioner of Elementary and Secondary Education
I. Document Purpose and Structure
Document Purpose and Structure

Purpose

The purpose of this document is to share with educators and the public all of the test items from the March 2012 MCAS English Language Arts and Mathematics Retests. Local educators will be able to use this information to identify strengths and weaknesses in their curriculum and to plan instruction to more effectively meet their students’ individual needs.

This document is also intended to be used by school and district personnel as a companion document to test item analysis reports. The reports list, for the school accessing the report, the names of all enrolled students who took the March 2012 Retest in that report’s content area, as well as information about how each student answered each test item in this document. The reports also label each item as multiple-choice, open-response, short-answer, or writing prompt and identify the item’s MCAS reporting category. Item numbers in this document correlate directly to the “Item Numbers” in the test item analysis reports.

Structure

Chapters II and III of this document contain, respectively, information for the March 2012 English Language Arts and Mathematics Retests. Each of these chapters has three main sections.

The first section introduces the chapter by listing the Massachusetts curriculum framework content strands assessed by MCAS in that chapter’s content area. These content strands are identical to the MCAS reporting categories under which retest results are reported to schools and districts. The first section also provides the Web address for the relevant framework and the page numbers on which the learning standards assessed by the test items in the chapter can be found. In addition, there is a brief overview of the retest (number of test sessions, types of items, reference materials allowed, and cross-referencing information).

The second section contains the test items used to generate March 2012 MCAS student results for that chapter’s content area. With the exception of the ELA Composition writing prompt, the test items in this document are shown in the same order and basic format in which they were presented in the test booklets. The Mathematics Reference Sheet used by students during MCAS Mathematics test sessions is inserted immediately following the last question in the Mathematics chapter.

Due to copyright restrictions, certain ELA reading passages are not available on the Department’s website. Copyright information for all reading passages is provided in the document. Note that the Department has obtained permission to post all ELA passages that appear on its website. While the Department grants permission to use the posted test items for educational purposes, it cannot grant or transfer permission to use the passages that accompany the items. Such permission must be obtained directly from the holder of the copyright. For further information, contact Student Assessment Services at 781-338-3625.

The final section of each chapter is a table that cross-references each item with its MCAS reporting category and with the framework standard it assesses. Correct answers to multiple-choice questions and Mathematics retest short-answer questions are also listed in the table.
Materials presented in this document are not formatted exactly as they appeared in student test booklets. For example, in order to present items most efficiently in this document, the following modifications have been made:

- Some fonts and/or font sizes may have been changed and/or reduced.

- Some graphics may have been reduced in size from their appearance in student test booklets; however, they maintain the same proportions in each case.

- All references to page numbers in answer booklets have been deleted from the directions that accompany test items.

- The four lined pages provided for students’ initial English Language Arts Composition retest drafts are omitted.
II. English Language Arts Retest

A. Composition
B. Reading Comprehension
English Language Arts Retest

Test Structure

The English Language Arts retest was presented in the following two parts:

- the ELA Composition retest, which used a writing prompt to assess learning standards from the Massachusetts English Language Arts Curriculum Framework's Composition strand

- the ELA Reading Comprehension retest, which used multiple-choice and open-response questions (items) to assess learning standards from the English Language Arts Curriculum Framework's Language and Reading and Literature strands

A. Composition

The English Language Arts (ELA) Composition retest was based on learning standards in the Composition strand of the Massachusetts English Language Arts Curriculum Framework (2001). The learning standards for the Composition strand appear on pages 72–83 of the Framework, which is available on the Department website at www.doe.mass.edu/frameworks/current.html.

ELA Composition retest results are reported under the reporting categories Composition: Topic Development and Composition: Standard English Conventions.

Test Sessions and Content Overview

The ELA Composition retest included two separate test sessions, administered on the same day with a short break between sessions. During the first session, each student wrote an initial draft of a composition in response to the writing prompt on the next page. During the second session, each student revised his or her draft and submitted a final composition, which was scored in the areas of Topic Development and Standard English Conventions. The Scoring Guides for the MCAS English Language Arts Composition are available at www.doe.mass.edu/mcas/student/elacomp_scoreguide.html.

Reference Materials

At least one English-language dictionary per classroom was provided for student use during ELA Composition retest sessions. The use of bilingual word-to-word dictionaries was allowed for current and former English language learner students only. No other reference materials were allowed during either ELA Composition retest session.

Cross-Reference Information

Framework general standards 19–22 are assessed by the ELA Composition.
WRITING PROMPT

Often in works of literature, a character earns the respect of his or her friends, family, or community.

From a work of literature you have read in or out of school, select a character who earns the respect of his or her friends, family, or community. In a well-developed composition, identify the character; describe how the character earns the respect of his or her friends, family, or community; and explain how the character’s experience is important to the work as a whole.
B. Reading Comprehension

The English Language Arts Reading Comprehension retest was based on learning standards in the two content strands of the Massachusetts English Language Arts Curriculum Framework (2001) listed below. Page numbers for the learning standards appear in parentheses.

- Language (Framework, pages 19–26)
- Reading and Literature (Framework, pages 35–64)

The English Language Arts Curriculum Framework is available on the Department website at www.doe.mass.edu/frameworks/current.html.

ELA Reading Comprehension retest results are reported under two MCAS reporting categories, Language and Reading and Literature, which are identical to the two framework content strands listed above.

Test Sessions

The ELA Reading Comprehension retest included three separate test sessions. Sessions 1 and 2 were both administered on the same day, and Session 3 was administered on the following day. Each session included reading passages, followed by multiple-choice and open-response questions. Reading passages and test items are shown on the following pages as they appeared in test booklets. Due to copyright restrictions, certain reading passages cannot be released to the public on the website. For further information, contact Student Assessment Services at 781-338-3625.

Reference Materials

The use of bilingual word-to-word dictionaries was allowed for current and former English language learner students only, during all three ELA Reading Comprehension sessions. No other reference materials were allowed during any ELA Reading Comprehension retest session.

Cross-Reference Information

The table at the conclusion of this chapter indicates each item’s reporting category and the framework general standard it assesses. The correct answers for multiple-choice questions are also displayed in the table.
DEATH VALLEY, California (CNN)—Today, you get a call from a friend. They need a favor.

Would you mind spending your vacation time this summer in Death Valley, a desert where temperatures hover around 130 degrees?

Would you be OK with sleeping in a van, if you get to sleep at all, for three days, because you’ll be working your tail off spraying runners down with water, dunking them in ice and keeping track of everything that goes in (and—yes—out) of their body every 15 minutes so they don’t die running 135 miles in the hardest footrace on the planet?

“Yeah, man, it’s Badwater. You don’t turn down a chance to be at Badwater,” Mark Paterson said, adjusting his visor as sweat soaked his face.

He pulls at his shirt, trying to create some air, pointlessly. It was 4 p.m. and 126 degrees in a Death Valley village called Furnace Creek, what whoever coined the phrase, ‘Hell on earth’ had in mind.

“You get that call and you do what’s right,” Paterson said. “You make sure your runner gets the ultimate bragging right, maybe the biggest big deal of all, the event that makes everyone else go, ‘Badwater? Oh, no, man, you did not just do that!’”

Paterson was right. The Adventurecorps Badwater Ultramarathon is infamous in endurance sports circles. It is the running equivalent of summiting Everest, the ultimate test of mental fortitude, a hippy communion with the desert of epic highs and lows (literally—the race starts at 280 feet below sea level, the lowest point in the Western Hemisphere, covers
three mountain ranges for descents and ascents totaling 9,000 feet and ends halfway up Mount Whitney, the highest point in the contiguous United States).

8 For all the nonsweaters out there—consider how long it takes to drive from Baltimore to New York. Now imagine running that distance . . . without sleep . . . with 10,000 blow dryers pointed at you the entire time.

**All that for a belt buckle?**

9 You apply to Badwater the way you apply to Harvard. Runners from across the world try to wow a finicky race jury by submitting awesome scores (provable race finishing times from at least two 100-mile events) and an essay conveying they have the stamina to tackle such a gnarly challenge. Gnarly meaning blisters that turn feet into pizza; dehydration that can lead to organ and brain damage, heat stroke and hyponatremia; a salt imbalance that makes extremities swell like sausages. For good measure, let’s throw in heat and sleep-deprivation induced hallucinations.

10 The entry fee is $795 (steep, sure, but an eight-person medical team, insurance, supplies and logistics to stage a monster event in the middle of nowhere ain’t cheap). Crews aren’t paid.

11 The prize at the race often called Satan’s Fun Run, should one finish in less than 48 hours, is a thick silver belt buckle.

12 “To talk about the buckle is to miss the point,” said Marshall Ulrich, a 58-year-old endurance sensei\(^1\) who has done Badwater more than a dozen times and has summited Everest. Notorious for having his toenails surgically removed—toenails fall off anyway when you’re an endurance runner—Marshall is, contrary to what most people assume, not a machine.

13 He started running when he was 28, after his doctor told him to get off his butt and lower his blood pressure or expect an early grave.

14 “You run Badwater because there’s something in you that wants to get out there, in the middle of nowhere, and think about something. It’s a way of freeing yourself, getting back to what I really believe people are supposed to be doing instead of relying so much on a bunch of material crap that only makes us weaker. We are built to run, to cover great distance, for survival sake.”

15 Slightly less extreme, the women’s winner of Badwater, two years in a row, is Jamie Donaldson, a middle school math teacher from Colorado. A lawyer, politician, small business owner, real estate agent and a college student ran Badwater this year, and its

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\(^1\) *sensei* — teacher or master
overall winner, coming in at 23:39:18, was Marcos Farinazzo, a 40-year-old hospital worker from Brazil.

The oldest runner this year was 67-year-old Arthur Webb, who has finished 10 consecutive Badwaters. Race officials using walkie-talkies (there’s no cell service in Death Valley) counted him out at mile 17 where he cramped and jumped in a pool to cool down.

Time, ice and a few massages later, Webb was on the course again, not stopping until he crossed the finish line more than 40 hours later.

**Good crew, good race—probably**

“First, you gotta have your hydration log. How much has your runner had to drink, how much do they need,” Paterson said.

“Endurolytes,2 quarters of peanut butter sandwiches, something fizzy for when they start having digestion issues—cause they’re gonna have ’em—your various tapes and bandages for the feet, Neosporin, Preparation H, animal cookies,” he said. “We jump out of that van every quarter mile with two buckets. I got my bucket of water and ice with a straight block of ice and a bucket of ice and sports drink. The runner gets every other one, you rotate.”

The grossest but most necessary job?

“You have to check if their urine is clear, so you better be looking at that, and they better be going often,” Paterson said.

As the race wore on, its 60-hour course limit blurring the days, plastic cups labeled with runners’ names who’d suffered serious dehydration began dotting a hotel room that served as Badwater’s medical center. They looked filled with varying concentrations of apple juice, one redder than the next.

Paterson’s runner, Tim Kjenstad, a 51-year-old California firefighter, has run Badwater before, but this year, sacked by severe dehydration and bodily functions that don’t need to be mentioned, he had to DNF (the dreaded initials for Did Not Finish) at mile 44.

“Nobody can say that running 135 miles in the desert is healthy,” said Dr. Lisa Stranc Bliss, the head of the medical staff, who herself has run Badwater. “But I’m not going to say it isn’t one of the most incredible experiences of your life.”

Beyond the physical, there’s an emotional bond forged between crew members and runners that military types call “embracing the suck.”

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2 _endurolytes_ — mineral capsules used in endurance events
The wife of a Brazilian runner, Cas Camara, who came in dead last far past the 60-hour mark, screamed and cried and begged her husband, who had fallen to the ground, his body seemingly wasted, to get up, get up and finish.

Members of a Navajo tribe and an entire family, tiny kids included, packed into a van to follow one runner. When Arnold Begay reached his breaking point, two of the men lifted him to his feet and a woman cupped his face and sang to him. He went on.

Some crewers ran 80 kilometers, completely anonymously, just to keep their runner on a specific pace. Many were exhausted from running their own ultramarathons only weeks before. Badwater’s past champ, Hungarian Akos Konya, crewed for 19-year-old Arizona college student Nick Hollon, who made history as the event’s youngest ever competitor.

“Nick emailed me and said how would you like to help me,” explained Konya, hovering over his runner Nick Hollon at mile 72. Hollon was in pain. The teen’s feet were chewed and he was about to take a needle to his blisters.

Konya, skinny and fast as a Greyhound, put his hand on Hollon’s shoulder. He seemed shocked by the question—Why would you go through Badwater to help out a kid you barely know?

“Why would I not help him do this? He asked me. I don’t understand why you would say no.”

“Badwater Ultramarathon: 135 miles in 130-degree heat” by Ashley Fantz, from CNN. Reprinted by permission of Cable News Network.

1 What is the most likely reason the author addresses the reader in paragraphs 1–3?
A. to convince the reader of the desert’s beauty
B. to help the reader imagine the race experience
C. to persuade the reader to train for the marathon
D. to amuse the reader with a runner’s experiences

2 Read the quote from paragraph 4 in the box below.

“Yes, man, it’s Badwater. You don’t turn down a chance to be at Badwater,” . . .

What does the quote emphasize about Badwater?
A. its financial costs
B. its legendary status
C. its impressive scenery
D. its relaxed atmosphere
3. What is the main purpose of the author’s comparisons in paragraph 8?
   A. to show how far the race is from urban areas
   B. to show how many people are in poor health
   C. to describe a personal adventure that people can relate to
   D. to provide a familiar reference for the difficulty of the race

4. What conclusion can be drawn from the fact that a belt buckle is awarded to those who complete the race?
   A. The race receives few donations from the public.
   B. The race has been losing popularity in recent years.
   C. Runners race for a personal challenge, not for prizes.
   D. Runners receive funding from businesses, not from race organizers.

5. According to Marshall Ulrich in paragraph 14, what is the main reason people run Badwater?
   A. to feel superior to other runners
   B. to connect with their fellow runners
   C. to connect with their primitive nature
   D. to prepare for a dangerous mountain climb

6. In paragraph 15, what is the most likely reason the author includes background information about some of the runners?
   A. to show that runners need to be employed
   B. to show that most runners lead ordinary lives
   C. to show that older runners have an advantage
   D. to show that most runners are highly educated
7 Based on paragraphs 29–31, why was Akos Konya eager to crew for Nick Hollon?
A. Badwater does not get a lot of attention from the press.
B. Badwater racers feel a special bond with one another.
C. Konya thought Hollon had a good chance of winning.
D. Konya felt Hollon was not ready for the race.

8 The article was most likely written as
A. a guide for coaches.
B. a manual for participants.
C. an introduction for a general audience.
D. an overview for medical professionals.
Question 9 is an open-response question.

- Read the question carefully.
- Explain your answer.
- Add supporting details.
- Double-check your work.

Write your answer to question 9 in the space provided in your Student Answer Booklet.

9 Based on the article, describe what a runner needs to do to be successful in the Badwater Ultramarathon. Support your answer with relevant and specific information from the article.
In this poem, the speaker explains how events in her childhood helped her to become a writer. Read the poem and answer the questions that follow.

**BY ACCIDENT**

Students read a poem titled “By Accident” and then answered questions 10 through 13 that follow on page 16 of this document.

Due to copyright restrictions, the selection cannot be released to the public over the Internet. For more information, see the copyright citation below.

Based on the first stanza in the poem, what is missing from the speaker’s childhood?
A. curiosity
B. discipline
C. imagination
D. encouragement

Read lines 17–19 in the box below.

She’s doing it again! Slap of slippers / in the hall, door clicks, and lights snapped on. / Why can’t you be considerate for once?

What is the main effect of the structure of the lines?
A. It suggests a quick succession of events.
B. It emphasizes the poem’s rhyme scheme.
C. It highlights a busy time in the speaker’s life.
D. It enables the speaker to express her emotions.

In line 24, to what does the phrase “paper solitude” refer?
A. writing poetry
B. reading books
C. teaching people to write
D. learning about other poets

In line 27, the phrase “many drafts” most likely represents
A. the various phases of the speaker’s life.
B. the types of literature the speaker enjoyed.
C. the level of education the speaker achieved.
D. the close relationships in the speaker’s life.
DIRECTIONS
This session contains two reading selections with twelve multiple-choice questions and two open-response questions. Mark your answers to these questions in the spaces provided in your Student Answer Booklet.

In this excerpt from Dennis Lehane’s novel The Given Day, set in 1919, Luther Laurence is a young African American man who recently moved from Ohio to Boston. Isaiah Giddreaux is helping him get a position as a household employee for police captain Thomas Coughlin. Read about Luther’s interview with the captain and answer the questions that follow.

from The Given Day
by Dennis Lehane

Students read an excerpt from The Given Day and then answered questions 14 through 22 that follow on pages 20 through 22 of this document.

Due to copyright restrictions, the selection cannot be released to the public over the Internet. For more information, see the copyright citation below.

Due to copyright restrictions, the selection that appeared on this page cannot be released to the public over the Internet. For more information, see the citation on the previous page.
Due to copyright restrictions, the selection that appeared on this page cannot be released to the public over the Internet. For more information, see the citation on page 17.
14. In paragraphs 1–7, what tone characterizes the dialogue among the three characters?  
A. weary  
B. polite  
C. playful  
D. suspicious

15. What is the **most likely** purpose of Captain Coughlin’s behavior in paragraphs 22–24?  
A. to suggest that Luther should relax  
B. to suggest that Luther should leave the room  
C. to show that Captain Coughlin is a generous boss  
D. to show that Captain Coughlin is in control of the meeting

16. What is the **main** effect of Captain Coughlin’s actions in paragraph 38?  
A. They make Luther feel sleepy.  
B. They make Luther feel less afraid.  
C. They make the interview pass quickly.  
D. They make the interview more intense.
17. Read the sentence from paragraph 56 in the box below.

He brought the drinks around the desk and handed one to Luther, the first time Luther’d ever been handed a glass by a white man.

What does the sentence mainly show about Captain Coughlin?
A. He is puzzled by social customs.
B. He is teaching Luther bad habits.
C. He is eager to finish the interview.
D. He is treating Luther with courtesy.

18. Based on the excerpt, what does Captain Coughlin recognize in Luther?
A. a version of himself
B. the need for a father figure
C. a person who lacks patience
D. the makings of a police officer

19. In paragraph 57, what is the most likely reason Captain Coughlin tells Luther the letter’s “seal has not been tampered with”?
A. to appear trustworthy
B. to show that he liked Avery Wallace
C. so the letter will be read by others
D. so Luther will read the letter immediately

20. What does the similarity of the sentences in paragraph 73 mainly emphasize?
A. Luther’s growing acceptance of his situation
B. how the past continues to haunt Luther
C. Luther’s appreciation of the scenery
D. how important the job is to Luther

21. Read the sentence from paragraph 71 in the box below.

The Captain is never to be trifled with but he will treat you fair if you don’t cross him.

What is the best replacement for the word trifled in the sentence?
A. dealt
B. fooled
C. spoken
D. bonded
Question 22 is an open-response question.

- Read the question carefully.
- Explain your answer.
- Add supporting details.
- Double-check your work.

Write your answer to question 22 in the space provided in your Student Answer Booklet.

Explain what the interaction between Luther and Captain Coughlin reveals about each of them. Support your answer with relevant and specific evidence from the excerpt.
The memoir All Over but the Shoutin’ is about Rick Bragg’s journey from a poor childhood in Alabama to a career as a famous journalist. In this excerpt, Bragg writes about his brother Sam. Read the excerpt and answer the questions that follow.

from All Over but the Shoutin’
by Rick Bragg

1 My brother Sam grew up to be a good man. He works at the cotton mill in Jacksonville, unloading the big trucks outside that massive old red-brick building. It’s a good job, compared to the work he has done before. The pay isn’t a whole lot but it allows his family to have decent health insurance, and that eases his mind. It’s hard to put a price tag on peace of mind, he says, and that’s all he’s really working for. So he always comes to work on time and works as long as they will let him, and like any man who works with his hands in America today, he wakes up wondering if this morning might be the last time they let him in the gate. Still, his loyalty to the people who give him his check, his livelihood, his life, is boundless. The plant awards hats, shirts and jackets for bonuses for perfect attendance. I have seen him when every single piece of clothing on his lanky body read “Fruit of the Loom.”

2 In the slow times—no one likes to say the word layoff—he cuts firewood and loads it on his old ’63 Chevy pickup to sell to people in town. He will work on your car for five dollars and sometimes for nothing, but somehow he always manages to keep just a little ahead of the bank on his little wood-frame house with the rose garden in back and the state flower of Alabama, the satellite dish, off to one side, even if that means working with a drop-cord light and a fistful of tools until 1 A.M. under a broken-down tractor, and getting up just a few hours later to pull a twelve-hour shift.

3 Teresa, his wife, works at the Food Outlet: we still just have two supermarkets. She has been good to him, and good for him.

4 The education he didn’t get so many years ago, as he fed that school’s coal furnace and plunged the toilets to earn his free lunch, doomed him to manual labor. When he was thirteen he was working full-time for my uncle Ed, pick-and-shovel work, loading those boxcars with fifty-pound bags of clay and lime that left fat blisters on his shoulders and arms.

5 He is not ashamed of work. If he is bitter about it, about any of it, he has never said. He built a decent life from absolute nothing and is content, and does his dreaming in a healthy way, forward. He rarely drinks and only cusses in moderation. (I respect him, in case I haven’t made that clear. I always have.)

6 Much of my young life he spent coming to rescue me, with his fists—on the playground—or just his hands. He is one of those men who can fix anything. I would break down on the side of the road and sooner or later there he would come, shaking his head, calling me a “chucklehead,” but he always got me running again, or pulled me out of the ditch, or at least wrapped a chain around my bumper and towed me out of the embarrassment of the middle of the road.
Fishing is what Sam does if he is not working. He has the patience of Job and I like to watch him play his lure across the pond, so easy, smooth, peaceful, waiting for the tug on the line and an explosion of water as the fat bass climbs into the air, mad, shaking its head left and right, its jaw big enough to stick your fist in. “Son!” he always hollers, then pulls him in, slow and steady. He looks the fish over a little, not gloating, but admiring, and eases him back into the murky water, free. He is damn near a genius at fishing. When I was a little boy he would hook a fish, then hand the pole to me so I could pretend I caught it.

He watches over my mother, giving me opportunities to roam, to discover things. He cuts her firewood, and patches her water pipes when they freeze. He is the one who always comes to see her on her birthday.

All he demands is that once in a blue moon I will sit with him in the barn where he stores his pickup and bass boat and tell him about where I’ve been, what I’ve seen. In return, he brings me home, all the way home, telling about layoffs at the mill, about who died and where the funeral was. He tells me about babies born, about how his new saw can cut through a green pine in nothing flat, and how ol’ Chuckle Head in Websters Chapel got locked out of his trailer again. He is a grand storyteller, much, much better than me. Sometimes I laugh so hard I have to go lie down.

We plan, every time we talk, to go fishing. Me, him, Mark, if he will. We plan it and I always ruin it, because of work. He never gets mad at me, he just nods his head.

Work. He understands.

Funny, where boys find their heroes. We find them in wars, on football fields in Tuscaloosa and Auburn, on the hot asphalt at Alabama International Motor Speedway. I wanted to gallop with the football like Johnny Musso; I wanted to crash and live, like Jimmy “Smut” Means.

But the one I wanted to be just like for the longest time was the one who beat me up every other Thursday, who chased me around and around the house with a slingshot loaded with chinaberries, who lied and told me that a sunk-in septic tank outside the house was really an unmarked grave, who rigged up a trapeze in the barn and let me go first, to test the ropes, and who hid with me under that bed in that big, hateful house, and, as the tears rolled down my face, put his arm around my shoulders.

I wonder a lot if Mark would have been different, if he had just had me, like I had Sam. Maybe not. Probably not. I guess we’ll never know, and in a sad way, that will be my salvation.
We finally got to go fishing, Sam and Me. Mark was nowhere around.

We fished in Paul Williams’s pond, about a mile from home, using bright-colored worms to compensate for the murk of the water. “Look,” he told me, pointing to where a water moccasin, thick as my arm, moved in slow undulations across the still water. “There’s fish in here,” he said, “that can eat that ol’ boy.”

But as usual, he was catching them and I wasn’t. I cranked the bait too fast, he told me, but I’ve never had any patience for anything. Any bass chasing my bait would have had to have been on roller skates. The hours slipped by and he caught six. I lost half a rubber worm.

I told him I reckoned I needed to be getting home. We fished the next few minutes side by side. One of his casts hooked a fat, four-pound bass, in the shallows near the bank. I could see its gills expand as the huge mouth, like a bucket, scooped up the lure.

Then he handed the rod to me, so I could reel it in.
23 Based on paragraph 1, with which of the following statements would Sam most likely agree?
A. Family interactions can cause conflict.
B. People should always try different professions.
C. There are more important things than money.
D. Employees should be involved in company decisions.

25 What does paragraph 8 suggest about the author?
A. He feels less content than Sam.
B. He feels less responsible than Sam.
C. He feels he is more energetic than Sam.
D. He feels he is more ambitious than Sam.

24 Read the sentence from paragraph 4 in the box below.
The education he didn’t get so many years ago . . . doomed him to manual labor.

Now read the following list of Sam’s abilities.

- He is one of those men who can fix anything.
- He is damn near a genius at fishing.
- He is a grand storyteller, . . .

Which of the following statements best expresses the connection between the sentence and the list of abilities?
A. A man needs hobbies to keep him occupied.
B. A man’s mistakes will come back to haunt him.
C. A man’s value is not determined by his level of schooling.
D. A man who does not finish school will live an unhappy life.

26 Read paragraph 12 in the box below.

Work. He understands.

What does the paragraph emphasize about the author and Sam?
A. Both resent their bosses.
B. Both make work a priority.
C. Both need more income to survive.
D. Both enjoy the same types of work.
Question 27 is an open-response question.

- Read the question carefully.
- Explain your answer.
- Add supporting details.
- Double-check your work.

Write your answer to question 27 in the space provided in your Student Answer Booklet.

27 Based on the excerpt, explain how both the author and Sam benefit from their relationship. Support your answer with relevant and specific information from the excerpt.
LIKE climbing Mount Everest, swimming the English Channel has attracted people who wish to test the limits of their endurance. Read this passage about how to plan for this 21-mile swim between England and France. Then answer the questions that follow.

**SWIM THE ENGLISH CHANNEL**

by Hunter S. Fulghum

### What You Will Need

- Swim goggles (bring spares)
- Swim cap
- Swimming garment—the Channel Swimming Association (CSA) rules allow for a garment, noting that it may not be neoprene or any material that might assist the swimmer in floating.
- Feeding stick with basket for passing food and liquids
- Food and liquids—carried on the pilot boat
- Grease—any type of protective grease is allowed under CSA rules. A mixture of lanolin and petroleum jelly provided by Boots Chemists, Ltd., in Dover, is highly recommended and perhaps just a bit traditional.
- Glow sticks
- One pilot boat, suitable for a Channel crossing, with observer from the CSA and boat crew (captain and deck hand minimum)—arrangements for the pilot boat will be made through the CSA.
- Support team—include your coach, trainer, and a medical technician at minimum.
- Dry clothing
- Towel
- Passport

### Time Required

Aside from training and preparation time, which depend on the individual, allow approximately 16 hours to make the crossing. Please note that the weather on the English Channel can change dramatically, and you should time your swim around periods of good weather, typically in late spring or summer.
Background

2 It’s not entirely certain when the English Channel was first crossed by a swimmer, but it has certainly been going on for well over 125 years. Dozens of people have made the swim, some of them completing it multiple times. At last check, the reigning champion had completed the crossing 32 times.

3 You can swim the Channel at your own risk if you like, but to be officially recognized for doing it, you must apply to the CSA, which is the official body responsible for documenting all swims. . . . You’ll need to be able to prove that you are healthy, capable of the swim, and between the ages of 16 and 55. The details of proof required are provided by the CSA, but in general you’ll need a doctor to sign an affidavit certifying your health and condition.

4 The majority of England-to-France swims start immediately before or after high water at Shakespeare Beach, particularly during the spring tides. The weather is better this time of year, and the periods of slack water* are longer. You will get minimal help from the tide, since it runs parallel to the coast and you’ll be swimming across it, but with proper planning, a good pilot, and some luck, you won’t be hindered by it.

5 Aside from the dangers of hypothermia, cramps, and drowning, the biggest risk in the Channel is ship traffic. On a typical day, there are over 600 vessels moving through the shipping lanes, plus assorted ferries, hovercraft, and small boats crossing. You will cross a five-nautical mile (nm)–wide channel on the English side for English inshore traffic, followed by a four-nm–wide lane for traffic heading out into the Atlantic. Then there is a one-nm–wide zone that separates the major shipping lanes. After that will be two lanes on the French side, one five-nm–wide for ships headed for the North Sea, and the other a three-nm–wide channel for French inshore traffic. In other words, for 17 of the 18.2 nautical miles of the swim, you’ll be swimming against the light.

6 You need to be aware of this, but do not worry. Your pilot boat carries the responsibility to monitor shipping traffic with radar and bulletins transmitted by the French and English coast guards. The pilot boat may reroute you or have you tread water in the event of oncoming shipping. In a crisis situation, the pilot boat will remove you from the water.

Instructions

I. PLAN THE SWIM AND TRAIN

7 Before you begin your attack on the Channel, you must train for the effort. Not only are you taking on a significant distance (from Shakespeare Beach, Dover, to Cap Gris Nez near Calais is 18.2 nm, or approximately 21 standard miles), you

*slack water* — the period at high or low tide when there is no visible flow of water
will be doing so in very cold water for an extended period of time. At its warmest, Channel water temperatures may hit 65 degrees Fahrenheit (toward the end of August).

To deal with the distance and the temperatures, set up a training regimen of both distance swimming and cold-water swimming. Your preparation should focus on endurance and the cold. Do not train in warm waters. This will not teach your body to withstand the cold, and your performance will be severely degraded by the Channel’s temperatures, impairing your speed and increasing your risk of hypothermia and death.

Gain a modest amount of weight in the form of fat to provide a quick reserve of energy. Eight to ten pounds is a good target. With good training—swimming on an empty stomach—you will teach your body to prey on the fat reserves quickly and efficiently. The added fat will help with buoyancy and heat retention, too.

2. LUBE UP

Before you enter the water, put on your swim garment and apply a coat of grease to your body. The benefit of this includes a small measure of insulation against the cold and a barrier between your skin and the salt water, preventing excess fluid loss from your body and over-absorption of saltwater. It will also prevent stings from jellyfish.

Some portion of your crossing will probably take place in the dark or twilight hours. When this happens, or if the visibility is poor due to fog or rain, attach a glow stick to your suit. These are waterproof and provide good light for several hours. This will make it easier for the pilot boat to keep track of you.

3. SWIM

Proceed to Shakespeare Beach. Get in the water. A CSA representative will note your time of entry. Point yourself in the proper direction (east, and slightly south). Swim.

Individual swimming style is not dictated. Use the stroke or combination of strokes that are most efficient for you. Keep a steady pace and keep moving—this will help you keep warm. Each stroke brings you that much closer to France.

Throughout the swim, pay attention to how you are feeling and your body temperature. If you begin to get too cold, you’ll exhibit it in a number of ways, including blue lips or extremities, a lack of feeling in your fingers and toes, and dizziness or disorientation. If this occurs, throw in the towel and climb into the boat. You can try again another time.

4. CARBO-LOAD AND HYDRATE

Given your lack of insulation, it is essential to keep warm. The Channel waters can and will cause hypothermia in the inexperienced swimmer in 30 to 60 minutes. To prevent this, you must keep swimming. Movement keeps your blood flowing and burns calories, helping to maintain core body temperature.
Take regular breaks to eat and drink, once every 30 to 60 minutes. Foods should be high in energy and easily digested. Try plain tofu, which is high in protein, and foods high in carbohydrates, but particularly eat those containing natural sugars, such as apples, bananas, or dried fruits. Be careful, overindulgence will cause gastrointestinal distress. Cornbread or corn muffins are also good. Drink plenty of water and hot liquids (try warmed, diluted Gatorade, for example) to avoid dehydration. Warming the liquids will assist in keeping your body’s core temperature up where it needs to be.

**IMPORTANT NOTE**

By the CSA rules, you may not use any sort of aid in flotation during the swim. This means that while you are allowed to accept food and drink from the pilot boat, you may not touch the boat or any person on it. The standard method of getting your food or liquids is to have it handed over with the feeding stick.

![Feeding Stick Image]

At no time are you allowed to touch the boat or anyone in it. Have the boat crew hand you food and liquids, using a feeding stick.

5. **BONJOUR, MON AMI**

Under your own power, stagger, crawl, or walk up the beach. Once you touch dry ground above the high-water mark, you’ve completed the swim and will go into the books. Your only concern at this stage, beyond warming up and toweling off, is to present your passport to the waiting French immigration officials.

“Swim the English Channel” by Hunter S. Fulghum, from *Don’t Try This at Home: How to Win a Sumo Match, Catch a Great White Shark, Start an Independent Nation, and Other Extraordinary Feats (for Ordinary People)*. Copyright © 2002 by Hunter S. Fulghum. Reprinted by permission of Broadway Books, a division of Random House, Inc.
28. What is the **main** purpose of the passage?
   A. to describe the history of swimming the English Channel
   B. to describe the best route to navigate the English Channel
   C. to provide a general guide to swimming the English Channel
   D. to provide a description of the weather at the English Channel

29. Based on the section “What You Will Need,” what is the **most likely** reason an observer from the CSA must be present on the pilot boat?
   A. to help with medical emergencies
   B. to monitor the condition of the boat
   C. to make sure the boat is allowed to dock
   D. to ensure that the rules are being followed

30. Based on paragraph 3, what are the CSA restrictions designed to do?
   A. ensure that only accomplished swimmers attempt the crossing
   B. ensure that only swimmers with sufficient funds attempt the crossing
   C. ensure that French officials are aware of swimmers who are crossing
   D. ensure that European swimmers get priority treatment during the crossing

31. What does paragraph 5 show about the swim?
   A. The swimmer will be fighting the current most of the time.
   B. The light will be in the swimmer’s eyes most of the time.
   C. Most of the swim will take place in the shipping lanes.
   D. Most of the swim will take place in polluted areas.
**Reading Comprehension**

32. What is suggested by the subtitle “Instructions”?
   A. The author thinks the swim is boring.
   B. The swim is not as risky as most people think.
   C. The challenges of the swim are primarily mental.
   D. The swim can be broken down into a series of steps.

33. According to the passage, all of the following can combat the effects of the cold **except**
   A. grease.
   B. warm liquids.
   C. constant movement.
   D. large amounts of food.

34. What is the meaning of the word *degraded* as it is used in paragraph 8?
   A. measured
   B. criticized
   C. worsened
   D. surprised

35. Read the sentences from paragraph 9 in the box below.

   Gain a modest amount of weight in the form of fat to provide a quick reserve of energy. Eight to ten pounds is a good target.

   Based on paragraph 9, what does the word *modest* mean?
   A. limited in size
   B. attractive in appearance
   C. difficult for a person to lose
   D. dangerous to a person’s health
Question 36 is an open-response question.

- Read the question carefully.
- Explain your answer.
- Add supporting details.
- Double-check your work.

Write your answer to question 36 in the space provided in your Student Answer Booklet.

36 Based on the passage, explain what a swimmer should not do when attempting to cross the English Channel. Support your answer with relevant and specific information from the passage.
In this verse fable, the hound attempts to convince the wolf of the advantages of being a household pet. Read the fable and answer the questions that follow.

THE WOLF AND THE HOUND

Students read a fable titled “The Wolf and the Hound” and then answered questions 37 through 40 that follow on page 37 of this document.

Due to copyright restrictions, the selection cannot be released to the public over the Internet. For more information, see the copyright citation below.

Due to copyright restrictions, the selection that appeared on this page cannot be released to the public over the Internet. For more information, see the citation on the previous page.
37. What does the author **mainly** establish in lines 1–6?
   A. the moral of the fable  
   B. the setting of the fable  
   C. the contrast between the wolf and the hound  
   D. the reason the wolf and the hound fear each other

38. What is the **main** way the wolf is affected by the hound’s speech in lines 26–35?
   A. He is discouraged by the hound’s boasting.  
   B. He is tempted by the hound’s descriptions.  
   C. He is skeptical of the hound’s intentions.  
   D. He is grateful for the hound’s honesty.

39. Based on the fable, why does the wolf decide not to join the hound?
   A. The wolf thinks the hound is planning to harm him.  
   B. The wolf will not exchange freedom for luxury.  
   C. The wolf does not like people very much.  
   D. The wolf prefers activity to relaxation.

40. Based on lines 24 and 25, what does the word *queries* mean?
   A. asks  
   B. jokes  
   C. warns  
   D. apologizes
### English Language Arts

**Reading Comprehension Retest**  
**March 2012 Released Items:**  
**Reporting Categories, Standards, and Correct Answers***

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<th>Item No.</th>
<th>Page No.</th>
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<th>Correct Answer (MC)</th>
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*Answers are provided here for multiple-choice items only.*
III. Mathematics Retest
Mathematics Retest

The Mathematics retest was based on learning standards in the Massachusetts Mathematics Curriculum Framework (2000). The Framework identifies five major content strands, listed below.

- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

The grades 9–10 learning standards for these strands appear on pages 72–75 of the Mathematics Curriculum Framework, which is available on the Department website at www.doe.mass.edu/frameworks/current.html.

Mathematics retest results are reported under five MCAS reporting categories, which are identical to the five Mathematics Curriculum Framework content strands listed above.

Test Sessions

The Mathematics retest included two separate test sessions, which were administered on consecutive days. Each session included multiple-choice and open-response items. Session 1 also included short-answer questions.

Reference Materials and Tools

Each student taking the Mathematics retest was provided with a Grade 10 Mathematics Reference Sheet and was allowed to refer to it at any time during testing. A copy of the reference sheet follows the final question in this chapter.

During session 2, each student had sole access to a calculator with at least four functions and a square-root key. Calculator use was not allowed during session 1.

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

Cross-Reference Information

The table at the conclusion of this chapter indicates each item’s reporting category and the framework learning standard it assesses. The correct answers for multiple-choice and short-answer items are also displayed in the table.
Mathematics

SESSION 1

You may use your reference sheet during this session.
You may not use a calculator during this session.

DIRECTIONS
This session contains fourteen multiple-choice questions, four short-answer questions, and three open-response questions. Mark your answers to these questions in the spaces provided in your Student Answer Booklet.

1. A rug in the shape of a square has an area of 150 square feet. Which of the following is closest to the length of each side of the rug?
   A. 12 feet
   B. 13 feet
   C. 14 feet
   D. 15 feet

2. The stem-and-leaf plot below shows the number of miles a person rode a bicycle each weekday last month.

<table>
<thead>
<tr>
<th>Miles Ridden</th>
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</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

   What is the range of the numbers of miles ridden?
   A. 4.0
   B. 3.6
   C. 3.4
   D. 1.5
3. What is the value of the expression below?

\[5(9 - 3)^2 / 3\]

A. 20  
B. 60  
C. 120  
D. 300

4. A line passes through points (-3, 0) and (0, -2), as shown on the coordinate grid below.

What is the slope of the line?

A. \(\frac{3}{2}\)  
B. \(\frac{2}{3}\)  
C. \(-\frac{2}{3}\)  
D. \(-\frac{3}{2}\)

5. If \(x \neq 0\), which of the following is equivalent to the expression below?

\[\frac{8x^3 - 6x}{2x}\]

A. \(8x^3 - 4x\)  
B. \(8x^3 - 3\)  
C. \(4x^2 - 6x\)  
D. \(4x^2 - 3\)

6. The first six terms in a quadratic pattern are shown below.

3, 11, 23, 39, 59, 83, . . .

What is the value of the next term in the pattern?

A. 101  
B. 107  
C. 111  
D. 142
7. The scatterplot below shows the relationship between the number of minutes available for a cell phone plan and the monthly cost, in dollars, of different cell phone plans.

Based on the line of best fit for the scatterplot, what is the expected number of minutes available for a cell phone plan that has a monthly cost of $40?

A. 150  
B. 250  
C. 350  
D. 450

8. In the equation below, \( t \) represents the time, in hours, it will take a delivery driver to complete a 350-mile trip.

\[ 150 + 50t = 350 \]

What is \( t \), the time in hours it will take the delivery driver to complete the trip?

A. 3  
B. 4  
C. 7  
D. 10

9. Which of the following is equivalent to the expression below?

\[ 6y^5 - 24y^2 - 18y \]

A. \( 6y(y^4 - 4y - 3) \)  
B. \( 6y(y^4 - 24y - 18) \)  
C. \( 6y^5(1 - 24y^2 - 18y) \)  
D. \( 6y^5(1 - 4y^3 - 3y^4) \)
10. Which of the following is one of the solutions of the equation below?

\[ m^2 - 3m - 28 = 0 \]

A. 14  
B. 7  
C. 4  
D. −2

11. A cube has a volume of 27 cubic inches. What is the total surface area of the cube?

A. 18 square inches  
B. 36 square inches  
C. 54 square inches  
D. 72 square inches

12. What are the solutions of the equation below?

\[ |x + 6| = 10 \]

A. \( x = 4; \ x = 16 \)  
B. \( x = −4; \ x = 16 \)  
C. \( x = 4; \ x = −16 \)  
D. \( x = −4; \ x = −16 \)

13. The expenses for each person going on a travel tour are shown in the table below.

**Expenses for Travel Tour**

<table>
<thead>
<tr>
<th>Expense</th>
<th>Cost (per person)</th>
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<tr>
<td>airfare</td>
<td>$327</td>
</tr>
<tr>
<td>food and lodging</td>
<td>$472</td>
</tr>
<tr>
<td>taxi</td>
<td>$9</td>
</tr>
<tr>
<td>tips</td>
<td>$6</td>
</tr>
</tbody>
</table>

Which of the following estimates is closest to the total cost of the expenses for 39 people to go on the travel tour?

A. $28,000  
B. $32,000  
C. $39,000  
D. $40,000

14. What is the value of the expression below?

\[ (\sqrt{6})^6 \]

A. 6  
B. 18  
C. 36  
D. 216
Questions 15 and 16 are short-answer questions. Write your answers to these questions in the boxes provided in your Student Answer Booklet. Do not write your answers in this test booklet. You may do your figuring in the test booklet.

15  Write an expression without parentheses that is equivalent to the expression below.

\[ 5(y + 3) \]

16  The number of hours a teacher tutored each week for 8 weeks is listed below.

\[
10, 5, 6, 8, 0, 10, 10, 7
\]

What is the mean number of hours the teacher tutored for the 8 weeks?
Question 17 is an open-response question.

- BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.
- Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.
- If you do the work in your head, explain in writing how you did the work.

Write your answer to question 17 in the space provided in your Student Answer Booklet.

17 Line \( k \) passes through the points (4, 2) and (6, 5), as shown on the grid below.

\[ \text{y-axis, x-axis, grid with points (4, 2) and (6, 5) marked.} \]

a. What is the slope of line \( k \)? Show or explain how you got your answer.

b. What is the \( y \)-intercept of line \( k \)? Use the slope of line \( k \) to justify that your answer is correct.

c. Write an equation that represents line \( k \). Show or explain how you got your equation.

Line \( j \) has the following properties:

- Line \( j \) is parallel to line \( k \).
- Line \( j \) passes through the point (2, 6).

d. What is the slope of line \( j \)? Show or explain how you got your answer.

e. Write an equation that represents line \( j \). Show or explain how you got your equation.
A student has money in a lunch account at school. She uses the money in the account only for buying lunch. Each lunch costs the same amount of money. The table below shows the relationship between the number of lunches she has bought and the amount of money left in the lunch account.

<table>
<thead>
<tr>
<th>Number of Lunches Bought</th>
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<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Amount of Money Left in Lunch Account</td>
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<td>$44.50</td>
<td>$42.75</td>
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</table>

Based on the table, what is the amount of money, in dollars, left in the lunch account after the student has bought a total of 12 lunches?

What is the value of the expression below?

\[-8 + (6 - 2)^3\]
Questions 20 and 21 are open-response questions.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF EACH QUESTION.**
- Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.
- If you do the work in your head, explain in writing how you did the work.

Write your answer to question 20 in the space provided in your Student Answer Booklet.

20. The line plot below shows the weights, in pounds, of 18 different astronauts.

![Weight of Astronauts Line Plot](image)

Weight of Astronauts (in pounds)

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a. What is the mode of the weights, in pounds, of the astronauts? Show or explain how you got your answer.

b. What is the range of the weights, in pounds, of the astronauts? Show or explain how you got your answer.

c. What is the median weight, in pounds, of the astronauts? Show or explain how you got your answer.

The weight of an astronaut’s spacesuit is 110 pounds.

d. Describe how the median will change when the weight of a spacesuit is added to each of the astronaut’s weights. Show or explain how you got your answer.
Seung is saving money to buy a television. He starts saving by putting $40 in an envelope. Each week Seung adds the same amount of money to the envelope. He does not take any money out of the envelope. The table below shows the amount of money in the envelope at the end of each week for Seung’s first four weeks of saving.

<table>
<thead>
<tr>
<th>Week</th>
<th>Amount of Money</th>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>$60</td>
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<tr>
<td>3</td>
<td>$70</td>
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<tr>
<td>4</td>
<td>$80</td>
</tr>
</tbody>
</table>

a. What is the amount of money, in dollars, in the envelope at the end of week 8? Show or explain how you got your answer.

b. Write an algebraic expression that could be used to find the amount of money in the envelope at the end of \( n \) weeks.

c. What is the amount of money, in dollars, in the envelope at the end of week 28? Show or explain how you got your answer.

d. Determine the number of weeks it will take for the amount of money in the envelope to be exactly $500. Show or explain how you got your answer.
22. The diagram below shows a right circular cone and its measurements.

The diagram shows a right circular cone with a height of 8 ft., a slant height of 10 ft., and a base radius of 6 ft.

Which of the following is closest to the lateral surface area of the cone?

A. 151 sq. ft.
B. 188 sq. ft.
C. 377 sq. ft.
D. 480 sq. ft.


Which system of equations can be used to find $s$, the cost in dollars of each standard photo, and $w$, the cost in dollars of each wallet photo?

A. $40s + 12w = 6.96$
   $25s + 30w = 6.15$

B. $40s + 25w = 6.96$
   $12s + 30w = 6.15$

C. $40s + 12s = 6.96$
   $25w + 30w = 6.15$

D. $40s + 25s = 6.96$
   $12w + 30w = 6.15$
Two properties of a quadrilateral are listed below.

- The quadrilateral always has 4 congruent angles.
- The quadrilateral does not always have 4 congruent sides.

Which of the following quadrilaterals has both properties?

A. square
B. rhombus
C. rectangle
D. trapezoid

A 52-week subscription to a newspaper costs $182.

At this rate, what is the cost of a 12-week subscription to the newspaper?

A. $4
B. $15
C. $36
D. $42

The bar graph below shows the number of items returned to a clothing store each day for 5 days.

**Number of Items Returned to a Store Each Day**

**Day of the Week**

Based on the graph, what is the mean number of items returned to the store for the 5 days?

A. 7
B. 11
C. 13
D. 14
27. In \( \triangle PQR \) shown below, \( PR \cong PQ \) and \( m\angle P = 50^\circ \).

What is \( m\angle Q \)?
A. 25°
B. 50°
C. 65°
D. 80°

28. Which of the following graphs represents the solution of the inequality below?
\[ x - 5 \leq 4 \]
A. 
B. 
C. 
D. 

29. The area of a right triangle is 24 square units. Which of the following sets of numbers could represent the side lengths, in units, of the right triangle?
A. 3, 8, and 9
B. 4, 6, and 8
C. 6, 8, and 10
D. 4, 12, and 15

30. In the diagram below, \( m \parallel q \). Line \( w \) intersects lines \( m \) and \( q \).

Which of the following are corresponding angles?
A. \( \angle 2 \) and \( \angle 5 \)
B. \( \angle 5 \) and \( \angle 7 \)
C. \( \angle 7 \) and \( \angle 1 \)
D. \( \angle 1 \) and \( \angle 2 \)
Question 31 is an open-response question.

- BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.
- Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.
- If you do the work in your head, explain in writing how you did the work.

Write your answer to question 31 in the space provided in your Student Answer Booklet.

A house painter uses both paint and primer to complete a job. On Monday, the house painter bought 3 cans of paint that each cost the same amount of money. He also bought 2 cans of primer that each cost the same amount of money. The total cost of the purchase was $90.

a. Write an equation that can be used to find \( x \), the cost in dollars of each can of paint bought on Monday, and \( y \), the cost in dollars of each can of primer bought on Monday.

On Tuesday, the house painter bought more of the same types of paint and primer that he bought on Monday. This time he bought 4 cans of paint and 3 cans of primer, which cost $125 altogether.

b. Write a second equation that can be used to find \( x \), the cost in dollars of each can of paint bought on Tuesday, and \( y \), the cost in dollars of each can of primer bought on Tuesday.

c. Use the equations you wrote in parts (a) and (b) to find the cost of each can of paint and each can of primer. Show or explain how you got your answer.
Mark your answers to multiple-choice questions 32 through 40 in the spaces provided in your Student Answer Booklet. Do not write your answers in this test booklet. You may do your figuring in the test booklet.

32. A data set has 6 different numbers. A student calculated the mean, median, and mode of the data set. The student then removed the lowest number from the data set and calculated the mean, median, and mode again.

What measures of central tendency must change when the lowest number is removed from the data set?

A. mean only
B. median only
C. median and mode
D. median and mean

33. Which of the following is closest to the circumference of a circle that has a diameter of 8 inches?

A. 13 inches
B. 25 inches
C. 50 inches
D. 64 inches
The bar graph below shows the daily high temperatures, in degrees Fahrenheit, in Windham for 14 days.

Based on the bar graph, what was the mode of the daily high temperatures for the 14 days?

A. 49°F
B. 52°F
C. 55°F
D. 59°F
The diagram below shows a triangle.

Based on the measurements in the diagram, what is $k$?

A. 8 ft.
B. 11 ft.
C. 12 ft.
D. 18 ft.

Two different-sized right square pyramids have bases of equal area.

- The altitude of the smaller pyramid is $h$.
- The altitude of the larger pyramid is $2h$.

The volume of the larger pyramid is how many times the volume of the smaller pyramid?

A. 8
B. 4
C. 3
D. 2
37. The stem-and-leaf plot below shows the age, in years, of each runner in a road race.

**Ages of Runners (in years)**

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<th>5</th>
<th>6</th>
<th>8</th>
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</tbody>
</table>

**Key**

2 | 5 represents 25

What is the total number of runners between the ages of 35 and 55 years?

A. 12  
B. 17  
C. 19  
D. 20

38. In the past ten years, the price of popcorn at a movie theater increased from $2.00 to $4.50.

By what percent did the price increase?

A. 56%  
B. 80%  
C. 125%  
D. 250%
39. Rectangular $GHIJ \sim$ rectangle $KLMN$, as shown in the diagram below.

![Diagram of rectangles GHIJ and KLMN]

The area of rectangle $KLMN$ is 12 square centimeters. Based on the dimensions in the diagram, what is the length of $JI$?

A. 9 cm  
B. 10 cm  
C. 15 cm  
D. 24 cm

40. A farmer has three cats named Elmer, Max, and Whiskers.

- Elmer weighs 18 pounds.
- Max’s weight is the same as Whiskers’s weight.
- The mean weight of the three cats is 14 pounds.

What is the weight, in pounds, of Whiskers?

A. 24  
B. 22  
C. 20  
D. 12
Questions 41 and 42 are open-response questions.

- BE SURE TO ANSWER AND LABEL ALL PARTS OF EACH QUESTION.
- Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.
- If you do the work in your head, explain in writing how you did the work.

Write your answer to question 41 in the space provided in your Student Answer Booklet.

41 A map of the town of Canterbury has the scale shown below.

<table>
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<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 inch : 3/4 mile</td>
</tr>
</tbody>
</table>

a. What is the distance, in miles, represented by 1 inch on the map?

The distance on the map from the north end to the south end of Canterbury is 9 inches.

b. What is the actual distance, in miles, from the north end to the south end of Canterbury? Show or explain how you got your answer.

The back side of the map shows an enlargement of a park in Canterbury. The enlarged map has the scale shown below.

<table>
<thead>
<tr>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 1/2 inches : 3/4 mile</td>
</tr>
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</table>

The distance on the enlarged map from the west end to the east end of the park is 6 inches.

c. What is the actual distance, in miles, from the west end to the east end of the park? Show or explain how you got your answer.

d. The actual distance from the north end to the south end of the park is 2 4/5 miles. What is the distance on the enlarged map, in inches, from the north end to the south end of the park? Show or explain how you got your answer.
Terrell designed the original external fuel tank for a spacecraft. The tank is in the shape of a right circular cylinder. The diagram below shows the tank’s dimensions.

![Diagram of a right circular cylinder with dimensions 100 ft. height and 30 ft. radius.]

a. What is the radius, in feet, of the tank? Show or explain how you got your answer.

b. What is the total amount of fuel, in cubic feet, that the tank holds when it is full? Show or explain how you got your answer.

Terrell is planning the design for a new tank that will also be in the shape of a right circular cylinder. When the new tank is full, it must hold 2 times the amount of fuel that the original tank held. Terrell is investigating two design options, which he calls Design P and Design Q.

c. For Design P, the radius of the new tank would be the same as the radius of the original tank. What should be the height, in feet, of the new tank in Design P? Show or explain how you got your answer.

d. For Design Q, the height of the new tank would be the same as the height of the original tank. What should be the radius, in feet, of the new tank in Design Q? Show or explain how you got your answer.
AREA FORMULAS
square $A = s^2$
rectangle $A = bh$
parallelogram $A = bh$
triangle $A = \frac{1}{2}bh$
trapezoid $A = \frac{1}{2}h(b_1 + b_2)$
circle $A = \pi r^2$

VOLUME FORMULAS
cube $V = s^3$  ($s$ = length of an edge)
right rectangular prism $V = lwh$
right circular prism $V = Bh$  ($B$ = area of a base)
sphere $V = \frac{4}{3}\pi r^3$
right circular cylinder $V = \pi r^2h$
right circular cone $V = \frac{1}{3}\pi r^2h$
right square pyramid $V = \frac{1}{3}s^2h$

LATERAL SURFACE AREA FORMULAS
right rectangular prism $LA = 2(hw) + 2(lh)$
right circular cylinder $LA = 2\pi rh$
right circular cone $LA = \pi rl$  ($\ell$ = slant height)
right square pyramid $LA = 2s\ell$  ($\ell$ = slant height)

TOTAL SURFACE AREA FORMULAS
cube $SA = 6s^2$
right rectangular prism $SA = 2(hw) + 2(hw) + 2(lh)$
sphere $SA = 4\pi r^2$
right circular cylinder $SA = 2\pi r^2 + 2\pi rh$
right circular cone $SA = \pi r^2 + \pi rl$  ($\ell$ = slant height)
right square pyramid $SA = s^2 + 2s\ell$  ($\ell$ = slant height)

CIRCLE FORMULAS
$C = 2\pi r$
$A = \pi r^2$

SPECIAL RIGHT TRIANGLES
45°-45°-90°
$x \sqrt{2}$

60°-30°-90°
$2y \sqrt{3}$
### Mathematics Retest

**March 2012 Released Items:**  
**Reporting Categories, Standards, and Correct Answers**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Page No.</th>
<th>Reporting Category</th>
<th>Standard</th>
<th>Correct Answer (MC)</th>
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* Answers are provided here for multiple-choice items and short-answer items only. Each open-response item has its own set of scoring guidelines, which allow for valid alternate interpretations and responses.*