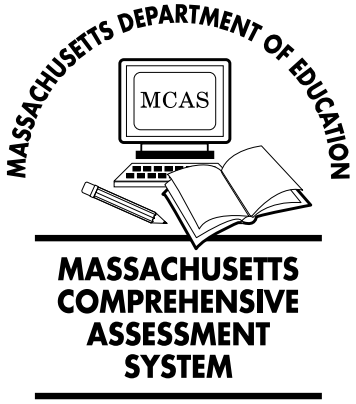
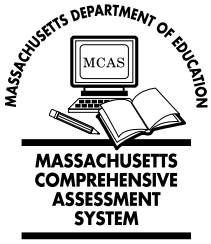


Release of March 2006 Retest Items

April 2006
Massachusetts Department of Education



Massachusetts Department of Education

This document was prepared by the Massachusetts Department of Education.
Dr. David P. Driscoll, Commissioner of Education

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Commissioner's Foreword

Dear Colleagues:

The Massachusetts Comprehensive Assessment System (MCAS) is the Commonwealth's statewide testing program for public school students. Designed to meet the provisions of the Education Reform Law of 1993, MCAS is based exclusively on the learning standards contained in the Massachusetts *Curriculum Frameworks*. The MCAS program was developed with the active involvement of educators from across the state and with the support of the Board of Education. Together, the *Frameworks* and MCAS are continuing to help schools raise the academic achievement of all students in the Commonwealth.

One of the goals of the Department of Education is to help schools acquire the capacity to plan for and meet the accountability requirements of both state and federal law. In keeping with 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 on the tests to earn a high school Competency Determination. This document contains all the test items from the March 2006 Retests in English Language Arts and Mathematics, and is also available on the Internet at **www.doe.mass.edu/mcas/testitems.html**. Local educators are encouraged to use this document together with their school's *Test Item Analysis Reports* as a guide for planning changes in curriculum and instruction that may be needed to ensure that schools and districts make regular progress in improving student performance.

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

Sincerely,

David P. Driscoll
Commissioner of Education

Table of Contents

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 2006 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 instruction, and to guide the changes necessary to more effectively meet their students' needs.

This document is also intended to be used by school and district personnel as a companion document to the *Test Item Analysis Reports*. Each school in which a retest was administered receives a March Retest *Test Item Analysis Report* for English Language Arts and Mathematics. These reports provide data generated from student responses. Each report lists, for the school receiving the report, the names of all enrolled students who took the March 2006 Retest in that report's content area, and shows how each student answered each test question (item). The report labels each item as multiple-choice, open-response, short-answer, or writing prompt and identifies 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 2006 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. 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 2006 MCAS student results for that chapter's content area. The test items in this document are shown in the same order 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 item in the Mathematics chapter.

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, for the 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. Language and Literature

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 Language and Literature Retest, which used multiple-choice and open-response items to assess learning standards from the *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). These learning standards appear on pages 72–83 of the *Framework*, which is available on the Department Web site at www.doe.mass.edu/frameworks/ela/0601.pdf.

In *Test Item Analysis Reports*, ELA Composition Retest results are reported under the **Composition** reporting category.

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/her draft and submitted a final composition, which was scored in the areas of Topic Development and Standard English Conventions. The MCAS Writing Scoring Guide (Composition Grade 10) is available at www.doe.mass.edu/mcas/student/2004/scoring10.doc.

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 limited English proficient 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 Retest.

March Retest Writing Prompt

WRITING PROMPT

Often in works of literature, characters experience conflicts with other characters, society, nature, or themselves.

From a work of literature you have read in or out of school, select a character who experiences a conflict. In a well-developed composition, identify the character, describe the conflict, and explain how the conflict is important to the work of literature.

B. Language and Literature

The English Language Arts Language and Literature 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 Web site at www.doe.mass.edu/frameworks/ela/0601.pdf.

In *Test Item Analysis Reports*, ELA Language and Literature 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 and Content Overview

The ELA Language and Literature 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 selected readings, followed by multiple-choice and open-response questions.

Reference Materials

The use of bilingual word-to-word dictionaries was allowed for current and former limited English proficient students only during all three ELA Language and Literature Retest sessions. No other reference materials were allowed during any ELA Language and Literature 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.

English Language Arts

Language and Literature: Session 1

DIRECTIONS

This session contains two reading selections with eleven multiple-choice questions and two open-response questions. Mark your answers to these questions in the spaces provided in your Student Answer Booklet.

In the 1800s it was unusual for a woman to be an astronomer, but that's exactly what Maria Mitchell was. She even won a prize from the King of Denmark for some of her work. Read about this Massachusetts woman in the article "Search the Night Sky" from Discover *magazine and answer the questions that follow.*

Search the Night Sky

How do you find a comet like Maria? A Quaker[1] education helps

by **Tim Folger**

1 Down a quiet lane leading off Nantucket's cobblestoned Main Street stands a two-story house covered with unpainted shingles weathered gray by rain and fog. Built in 1790, its clean lines and lack of ornamentation mark it as a Quaker home. Beyond the threshold is a world shaped by a culture that prized integrity, humility, and equality—Quaker values that nurtured Maria Mitchell, America's first female professional astronomer.

2 The furnishings are simple and spare, with one gleaming exception: Maria's precious brass telescope. On the night of October 1, 1847, Maria (pronounced Ma-RYE-uh), then 29, excused herself from a family party and climbed, lantern in hand, to the roof. Her nocturnal ascent surprised no one. Maria was a highly skilled amateur astronomer, tutored from childhood by her father, and had been using her 2.75-inch refracting telescope up on the roof walk for years. What did surprise her family was the proud announcement she made around 10:30 p.m.: She had spotted a comet. Prior to that night, all the first sightings of comets had been with the naked eye. Indeed, the King of Denmark had offered a gold medal for the first telescopic sighting of a new comet, and he gave it to Maria. The discovery of comet Mitchell 1847VI made her world famous and led to her appointment as a professor of astronomy at Vassar, soon after it was founded in Poughkeepsie, New York.

3 Maria's unusually bold career was a reflection of her unorthodox[2] upbringing. Her parents, William and Lydia, egalitarian[3] Quakers to the core, believed in educating all their children. The Mitchell family members were so principled that they refused to wear clothing made from cotton picked by slaves. Instead they wore silk in the summer and wool in the winter. But they were not so devout that they were beyond bending a few rules. William and Lydia even bought their children a piano, although Quakers often frowned upon music.

4 William Mitchell supported his family in a variety of ways, including servicing ships' chronometers. He taught all nine of his children, boys and girls alike, to help him, but Maria was his best student, and like him, she loved astronomy. By the time she was 12, she had helped her father record the exact time of a solar

[1] *Quaker* — a Christian denomination, known as the Society of Friends, that advocates a simple lifestyle and equality among its members
[2] *unorthodox* — not traditional
[3] *egalitarian* — promoting equal political, economic, social, and legal rights for all citizens

eclipse. By age 17 she had started her own school for girls, emphasizing the study of science and math. Upstairs from the parlor is a closet-size study that her father built for her with wood left over from the addition of a new kitchen downstairs. On the wall outside the room is a note in Maria's handwriting: "Miss Mitchell is busy. Do not knock."

5 For her part, Maria never shied from knocking on doors—or opening them. She traveled to Europe in 1858 and during her trip was eager to visit the Vatican's observatory. Officials there at first refused to grant a woman access, but they later relented, allowing Mitchell to look at the telescope during the day but not by night. She was also the first woman admitted—grudgingly—to the American Academy of Arts and Sciences. Hanging on the wall opposite her study is an invitation of membership, dated 1848. But the document is marred in several places by messy handwritten corrections. Asa Gray, the academy's secretary, did not think Maria deserved the title "Fellow" (the usual category of membership), so he crossed the word out and scrawled "Honorary member" above it. It would be 95 years before another woman joined the academy.

6 Maria never married or had children of her own, but she left a shining legacy[4] that still endures, long after her death in 1889 at age 70. At Vassar, where she studied sunspots, Jupiter, and Saturn, she mentored[5] several women who became astronomers and who helped make the astronomy department there among the best in the country. Not far from Maria's own Nantucket house, and within sight of her simple tombstone in the Prospect Hill Cemetery, are two small domed observatories. Inside them, on summer nights, children can still study a night sky that once so enchanted a determined young Quaker woman.

[4] *legacy* — heritage or gift
[5] *mentored* — advised or guided

1 Based on the article, which of the following motivated Maria the **most**?

A. a respect for learning

B. a desire for fame

C. a need for money

D. a wish for solitude

2 Based on paragraph 1, what does Maria's Nantucket home reflect?

A. the childhood values that influenced her

B. the sacrifices her family made for her career

C. the pride she took in her accomplishments

D. the way she retreated from society

3 Based on paragraph 2, what was important about Maria Mitchell's discovery of a comet?

A. It was the first comet discovered by a woman.

B. It was the first time a comet was discovered using a telescope.

C. The discovery was made from a rooftop.

D. The discovery was made by a professor of astronomy.

4 Based on the article, what is suggested by the fact that William and Lydia Mitchell bought a piano?

A. They thought most Quaker beliefs should be ignored.

B. They wanted the children to play music during family parties.

C. They wanted their children to be educated in many different areas.

D. They thought it was a good way to display the family's wealth.

5 According to the article, which of the following **best** describes Maria Mitchell's contribution?

A. She paved the way for other female astronomers.

B. She eliminated discrimination in the American Academy of Arts and Sciences.

C. She caused universities to pay more attention to astronomy.

D. She spread Quaker beliefs about education to people around the world.

6 Which of the following is a context clue for the word *nocturnal* as it is used in paragraph 2?

A. "the night of"

B. "excused herself"

C. "a family party"

D. "climbed . . . to the roof"

7 Which of the following is the **best** definition of the phrase "frowned upon" as it is used in paragraph 3?

A. left out

B. passed over

C. argued about

D. disapproved of

Write your answer to open-response question 8 in the space provided in your Student Answer Booklet.

8 Based on the article, describe Maria Mitchell's character. Use relevant and specific information from the article to support your answer.

Pulitzer Prize winner Gwendolyn Brooks is known primarily as a poet. However, she wrote one novel, Maud Martha. *Read the excerpt below entitled "Maud Martha Spares the Mouse" from the novel. Answer the questions that follow.*

Maud Martha Spares the Mouse

by Gwendolyn Brooks

1 There. She had it at last. The weeks it had devoted to eluding her, the tricks, the clever hide-and-go-seeks, the routes it had in all sobriety devised, together with the delicious moments it had, undoubtedly, laughed up its sleeve—all to no ultimate avail. She had that mouse.

2 It shook its little self, as best it could, in the trap. Its bright black eyes contained no appeal—the little creature seemed to understand that there was no hope of mercy from the eternal enemy, no hope of reprieve or postponement—but a fine small dignity. It waited. It looked at Maud Martha.

3 She wondered what else it was thinking. Perhaps that there was not enough food in its larder.* Perhaps that little Betty, a puny child from the start, would not, now, be getting fed. Perhaps that, now, the family's seasonal house-cleaning, for lack of expert direction, would be left undone. It might be regretting that young Bobby's education was now at an end. It might be nursing personal regrets. No more the mysterious shadows of the kitchenette, the uncharted twists, the unguessed halls. No more the sweet delights of the chase, the charms of being unsuccessfully hounded, thrown at.

4 Maud Martha could not bear the little look.

5 "Go home to your children," she urged. "To your wife or husband." She opened the trap. The mouse vanished.

6 Suddenly, she was conscious of a new cleanness in her. A wide air walked in her. A life had blundered its way into her power and it had been hers to preserve or destroy. She had not destroyed. In the center of that simple restraint was—creation. She had created a piece of life. It was wonderful.

7 "Why," she thought, as her height doubled, "why, I'm good! I am *good*."

8 She ironed her aprons. Her back was straight. Her eyes were mild, and soft with a godlike loving-kindness.

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* *larder* — a place to store food

9 Read the words from paragraph 2 in the box below.

> Its bright black eyes contained no appeal. . .

What do the words tell the reader about the mouse's eyes?

A. Its eyes do not move.

B. Its eyes have a sad look.

C. Its eyes are unattractive.

D. Its eyes do not ask for pity.

10 In paragraph 6, what does "A wide air walked in her" tell the reader about Maud Martha?

A. Maud Martha has many things to think about.

B. Maud Martha is filled with a feeling of joy.

C. Maud Martha feels the coolness of a strong breeze.

D. Maud Martha is nervous about her decision.

11 Based on the excerpt, why is it ironic that Maud Martha decides to let the mouse go?

A. She has named the mouse for one of her children.

B. She feels sorry for the little mouse and its family.

C. She has been trying to catch the mouse for weeks.

D. She enjoys playing games with the mouse.

12 Based on the excerpt, which of the following **best** describes Maud Martha?

A. lucky

B. honest

C. kindhearted

D. hard-working

Write your answer to open-response question 13 in the space provided in your Student Answer Booklet.

13 Based on the excerpt, explain why Maud Martha decides to spare the mouse. Use relevant and specific information from the excerpt to support your answer.

English Language Arts

Language and Literature: Session 2

DIRECTIONS

This session contains two reading selections with thirteen multiple-choice questions and one open-response question. Mark your answers to these questions in the spaces provided in your Student Answer Booklet.

The following excerpt describes the last race of the famous racehorse Seabiscuit. Red Pollard, the jockey, is riding with an injured right leg. The race has a crowd of supporters including Charles and Marcela Howard, Seabiscuit's owners; Tom Smith, his trainer; Agnes Pollard, Red's wife; and Yummy, a close friend of the jockeys. Read the excerpt from the book Seabiscuit *by Laura Hillenbrand for the exciting conclusion of Seabiscuit's career. Answer the questions that follow.*

SEABISCUIT

by LAURA HILLENBRAND

1 The bell rang in Pollard's ears, and he felt Seabiscuit drop and push beneath him, hammering the track and powering forward. There was the rushing sound of seventy-five thousand voices and the tumbling motion of horses and the flight of wind and dirt and the airy unreal feeling of mass and gravity slipping away.

2 They rolled down the homestretch for the first time, and Pollard felt the rightness of Seabiscuit's stride, the smooth strumming under him. Whichcee had the lead. Pollard let Seabiscuit hunt him. They bent through the first turn, Pollard holding his mount one path out from the rail, an open lane ahead. A splendid spot.

3 Pollard could sense the pace as they straightened down the backstretch: blistering fast. But he knew Whichcee had stamina, and he couldn't let him steal away. He had to drive Whichcee hard to break him. He held Seabiscuit a half length behind him, keeping just far enough out from the rail to give himself clear running room. Whichcee strained to stay ahead. The two horses blazed down the backstretch together, cutting six furlongs in 1:11⅘; though they were set to run a grueling mile and a quarter, the fastest sprinters on earth would have been drained to the bottom to beat such a time. Whichcee screamed along the rail, stretching out over the backstretch, trying to hold his head in front. Seabiscuit stalked him with predatory lunges. Wedding Call tracked them, just behind and outside of Seabiscuit as they pushed for the far turn. They clipped through a mile in 1:36, nearly a second faster than Seabiscuit and War Admiral's record-shattering split in their 1938 match race. Seabiscuit still pushed at Whichcee. Pollard, up in the saddle, was a lion poised for the kill.

4 They leaned around the final turn, and Seabiscuit pulled at Pollard's hands, telling him he was ready. The rail spun away to the left, and Whichcee's hindquarters rose and fell beside them. Wedding Call made his move, throwing his shadow over them from the right. Pollard stayed where he was, holding his lane one path out from the rail, leaving himself room to move around Whichcee when the time came.

5 The field was gathering, and the space around them compressed. Horses were all around, their bodies elongated in total effort. Then, in an instant, they came inward with the synchronicity of a flurry of birds pivoting in the air. Wedding Call clattered up against Seabiscuit, bumping him toward the rail behind Whichcee. The path ahead closed.

6 Seabiscuit felt the urgency and tugged at the reins. Pollard had nowhere to send him. He rose halfway up in the saddle, holding Seabiscuit back, his leg straining under his weight. Whichcee and Wedding Call formed a wall in front of him. A terrible thought came to Pollard: *There is no way out*.

7 A jockey in the pack heard a deep, plaintive sound rise up over the shouts from the crowd. It was Pollard, crying out a prayer. A moment later, Whichcee wavered and sagged a few inches to his left just as Wedding Call's momentum carried him slightly to the right. A slender hole opened before Seabiscuit. Pollard measured it in his mind. Maybe it was wide enough; maybe it was not. If Pollard tried to take it, it was highly likely that he would clip his right leg on Wedding Call. He knew what that would mean. He needed an explosion from Seabiscuit, every amp of his old speed and more. He leaned forward in the saddle and shouted, "*Now*, Pop!"

8 Carrying 130 pounds, 22 more than Wedding Call and 16 more than Whichcee, Seabiscuit delivered a tremendous surge. He slashed into the hole, disappeared between his two large opponents, then burst into the lead. Pollard's leg cleared Whichcee by no more than an inch. Whichcee tried to go with Seabiscuit. Pollard let his mount dog him, mocking him, and Whichcee broke. Seabiscuit shook free and hurtled into the homestretch alone as the field fell away behind him. Pollard dropped his head and rode for all he was worth. Joe Hernandez's voice cut over the crowd, calling out Seabiscuit's name, and was instantly swallowed in the uproar from the grandstand. One of the stable hands yelled to Marcela that Seabiscuit had the lead. She shrieked.

9 In the midst of all the whirling noise of that supreme moment, Pollard felt peaceful. Seabiscuit reached and pushed and Pollard folded and unfolded over his shoulders and they breathed together. A thought pressed into Pollard's mind: *We are alone*.

10 Twelve straining Thoroughbreds; Howard and Smith in the grandstand; Agnes in the surging crowd; Woolf behind Pollard, on Heelfly; Marcela up on the water wagon with her eyes squeezed shut; the leaping, shouting reporters in the press box; Pollard's family crowded around the radio in a neighbor's house in Edmonton; tens of thousands of roaring spectators and millions of radio listeners painting this race in their imaginations. All this fell away. The world narrowed to a man and his horse, running.

11 In the center of the track, a closer broke from the pack and rolled into Seabiscuit's lead, a ghost from his past. It was Kayak, charging at him with a fury. Pollard never looked back. He knew who it was.

12 Pollard felt a pause. For the last time in his life, Seabiscuit eased up to tease an opponent. Kayak came to him and drew even. Up on Kayak, Buddy Haas had never heard such thunder as was pouring from the grandstand and infield. He drilled everything he had, he said later, at Seabiscuit.

13 Pollard let Seabiscuit savor this last rival, then asked him again. He felt the sweet press of sudden acceleration. A moment later, Pollard and Seabiscuit were alone again, burning over the track, Kayak spinning off behind, the wire crossing overhead.

14 The world broke over Santa Anita. Howard ran from his box with his fist in the air. Smith went with him. Yummy banged around the winner's circle, jumping up and down. Agnes stood in the throng, sobbing. All around them, men and women hurled their hats in the air, poured onto the track, drummed on the rails, and slapped one another on the back. Hundreds of spectators were weeping with joy. "Listen to this crowd roar!" shouted Hernandez. "Seventy-eight thousand fans going absolutely crazy, including this announcer!" Virtually every journalist reported that he had never heard shouting so loud and sustained.

15 Sun Beau's money-winning record had finally fallen. Seabiscuit had clocked a new track record that would stand untouched for a decade: a mile and a quarter in 2:01⅕. It was the second-fastest ten furlongs ever run in American racing history.

16 Galloping out in the backstretch, Pollard lingered over the last few moments of solitude with Seabiscuit. Then he turned him and quietly cantered him back. He rode back into the world sitting tall and regal in the saddle, his back straight, his head up, his face gravely dignified. Tears were cutting down his face and streaming to his chin. He looked, someone said, like "a man who temporarily had visited Olympus and still was no longer for this world."

17 He walked Seabiscuit through the masses of shouting fans to the winner's circle. The horse was strutting like a prizefighter. "Don't think," Pollard said later, "he didn't know he was a hero."

. . .

14 Which of the following is **best** suggested by the imagery in paragraph 1?

A. uniformity

B. energy

C. beauty

D. peacefulness

15 Read the sentence from paragraph 3 in the box below.

> Pollard, up in the saddle, was a lion poised for the kill.

What does the phrase "a lion poised for the kill" tell the reader about Pollard?

A. He was waiting for the precise moment to make a move.

B. He disliked the other jockeys and horses in the race.

C. He took great risks when riding Seabiscuit.

D. He was overconfident about taking home the prize.

16 In paragraph 7, why was Pollard praying?

A. He wanted Seabiscuit to lengthen his stride.

B. He wanted a space to open in front of him.

C. He wanted Wedding Call to fall behind.

D. He wanted the other horses to move to the rail.

17 According to the excerpt, why was Seabiscuit at a disadvantage in the race compared to Whichcee and Wedding Call?

A. He had a jockey who was less experienced.

B. He needed practice running long-distance races.

C. He had to carry more weight.

D. He was a less-experienced horse.

18 What is the **main** contrast in paragraph 10?

A. Some people were listening to the race while other people watched it.

B. Pollard felt alone despite the huge crowds.

C. Pollard heard nothing despite the noise of the spectators.

D. The horses were racing hard while the crowd was relaxing.

19 In paragraph 11, what does the phrase "a ghost from his past" tell the reader about Kayak?

A. He was a light-colored horse.

B. He had been in many races.

C. He was raised with Seabiscuit.

D. He had challenged Seabiscuit before.

20 Based on the excerpt, why did Seabiscuit allow Kayak to catch up with him toward the end of the race?

A. He wanted to scare Kayak.

B. He wanted Kayak to win.

C. He wanted to taunt Kayak.

D. He wanted Kayak to set the pace.

21 The word *synchronicity*, used in paragraph 5, comes from the Greek *syn*, meaning "together," and *chronos*, meaning "time." Based on these meanings, which of the following is the **best** definition of the word *synchronicity*?

A. objects that are similar

B. multiple events or objects

C. frequently occurring events

D. actions that happen in unison

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

22 Based on the excerpt, describe the relationship between Pollard and Seabiscuit. Use relevant and specific information from the excerpt to support your answer.

Walt Whitman was deeply affected by the Civil War and wrote many poems about it. This poem, "As Toilsome I Wander'd Virginia's Woods," deals with events that occurred during and after the war. Read to find out what the speaker discovered one day in the woods and answer the questions that follow.

As Toilsome
I Wander'd Virginia's Woods

As toilsome I wander'd Virginia's woods,
To the music of rustling leaves kick'd by my feet, (for 'twas autumn,)
I mark'd at the foot of a tree the grave of a soldier;
Mortally wounded he and buried on the retreat, (easily all could I understand,)
The halt of a mid-day hour, when up! no time to lose—yet this sign left,
On a tablet scrawl'd and nail'd on the tree by the grave,
Bold, cautious, true, and my loving comrade.

Long, long I muse, then on my way go wandering,
Many a changeful season to follow, and many a scene of life,
Yet at times through changeful season and scene, abrupt, alone, or in the crowded street,
Comes before me the unknown soldier's grave, comes the inscription rude in Virginia's woods,
Bold, cautious, true, and my loving comrade.

—Walt Whitman

23 Which of the following is a theme of the poem?

A. We honor others by remembering them.

B. There is seldom a good reason for war.

C. The beauty of nature can take away sadness.

D. True friendship is rare.

24 Read the phrase from line 6 in the box below.

> The halt of a mid-day hour,
> when up! no time to lose—

What does this phrase **most likely** suggest?

A. The action happened a long time ago.

B. The speaker is surprised by the grave.

C. The soldiers were in a hurry.

D. The woods are full of steep hills.

25 What is the effect of repeating the line "*Bold, cautious, true, and my loving comrade*" at the end of the poem?

A. It shows that the soldier in the grave deserves to be honored for bravery.

B. It shows that the speaker finally understands the meaning of the inscription.

C. It shows that the speaker was the one who wrote the soldier's inscription.

D. It shows that the inscription has had a long-term impact on the speaker.

26 Which of the following **best** describes the tone of the poem?

A. reflective

B. objective

C. confident

D. indifferent

27 What is the **most likely** reason line 8 is in italics?

A. to show that the speaker is imagining these words

B. to show that the words are difficult to read

C. to show that the words also describe the speaker

D. to show that these are the actual words on the grave marker

English Language Arts

Language and Literature: Session 3

DIRECTIONS

This session contains two reading selections with twelve multiple-choice questions and one open-response question. Mark your answers to these questions in the spaces provided in your Student Answer Booklet.

In the past several years, California has suffered devastating wildland fires that have destroyed homes and lives. Several solutions to the fire problem have been suggested, but each has its downside. Now a new solution is being tried. Read "Getting Their Goats" to find out about this new solution. Answer the questions that follow.

Getting Their Goats

COMMUNITIES WORRIED ABOUT THE RAVAGES OF WILDFIRES
ARE EMBRACING A FOUR-LEGGED SOLUTION

by EDWIN KIESTER, JR.

1 THE NEW KIDS ON THE BLOCK were at dinner, several hundred of them, chomping, chomping, punctuated by an occasional bleat. The arid hillside in our suburban neighborhood park had been suddenly populated by goats, shaggy white Angoras, deep-chested beige Spaniards, New Zealand Kikos, all methodically munching their way across the rapidly browning landscape. In the process, they were protecting me and my neighbors from that California dry-season nightmare, the blazing, fast-spreading wildland fire.

2 About 6,000 wildland fires sweep California annually; in the awful 1999 fire season—roughly from April to November—fires consumed 273,000 acres, destroyed 300 homes and other buildings, and caused $500 million worth of damage. The number of fires has quadrupled in 30 years, as population growth relentlessly pushes human habitation ever deeper into fire-vulnerable areas.

3 When the rains stop in April, vegetation turns crisp and brown; the tiniest spark can set off a major conflagration. Yet there are few weapons against the threat. A prescribed burn, deliberately set to burn the hazardous dry fuel, can too easily get out of hand, as happened at Los Alamos in 2000. "You can't use chemicals," because they leach[1] into the water supply and the areas in danger are far too large, says Mike Phillips, who works in fire prevention for Laguna Beach, where a 1993 fire destroyed more than 400 houses. Fire-prone terrain is often too rugged for mechanized equipment; ferrying in crews by helicopter is far too expensive. "Anyway," says Walt Fujii, former supervisor of parks and trees for Menlo Park, "bring in a hand crew for a day and they're out two weeks with poison oak. And when they cut the stuff down, what do you do with it?"

4 Send in the goats.

5 Just who first drafted the genus *Capra* for environmentally friendly fire safety duty is not clear. But certainly among the pioneers were Brea McGrew, a veterinarian, and her husband, Bob, a fireman, whose four-footed weed eaters have been at it since 1991. During the six-month fire season, the McGrews' hardworking goats can be found lunching in the hills above Oakland and Berkeley, in the coastal slopes behind Monterey and in back of the beachfront

[1] *leach* — drain

mansions in Malibu. Brea McGrew won't even estimate the number of goats in their herd but acknowledges it's in the thousands.

6 Earlier in the spring, after the winter rains subsided, I drove up to Dixon, a town near Sacramento, to see the goats prepare for their summer job.

7 "Goats are good for this sort of fuel management because they are primarily browsers," said Brea, explaining that brush, once ignited, acts like a ladder carrying the fire to the treetops. "Goats would rather eat brush than grass," she added. "They like their food right at eye level. At home, the goats ignore the wonderful green grass and look longingly at the scruffy taller stuff beyond the fence."

8 After the disastrous Oakland Hills fire destroyed more than 2,400 houses in 1991, local governments with vulnerable open space began to seek ways to prevent a recurrence. Fires in the area have been better contained in places where goats have browsed.

9 Five years ago Walt Fujii began bringing in the McGrews' goats for two weeks at $15,000 per stint[2] to reduce the fire hazard. Not only has the brush been kept under control, but there's been an added benefit. "You wouldn't believe what we took out of there the first year," says Fujii. "One and a half truckloads of junk, bottles, cans, paper—you name it. It was like the snow country after the snow melts. The goats really opened it up."

10 Now, each April, when the rain stops and temperatures rise, a small caravan sets out from Dixon. Bob McGrew pilots the livestock trailer-truck carrying 450 yearlings and a half dozen mothers with kids. Next comes a small house trailer, to serve as the on-site home for the two goatherds, brothers from the Peruvian uplands, Jose and Ricardo Surichaqui. With them ride two Great Pyrenees guard dogs and two Border collie herding dogs. Brea's pickup follows, carrying water troughs, electric fencing to confine the animals, and food for the men.

11 With staff from Menlo Park, the McGrews tramp through the terrain, fencing small trees and sensitive native plants to protect them from ravenous appetites. Then the hungry weed eaters themselves arrive. The Surichaqui brothers lead them into a fenced-off area of yellowing wild oats. The goats begin work immediately. Three hundred and fifty of them can denude an acre a day, consuming low branches and foliage, stripping bark from French and Scotch broom and other shrubs, eating grass down to putting-green height. After such a meal, they are moved to another acre.

12 Brea McGrew stepped back and watched them admiringly. "You know, goats are very intelligent," she said. "They're trainable, like dogs. And they work together. They think. One will get up on her hind legs and pull a branch down for the others, and they'll all browse together."

13 Throughout California, goats were dining out. Above the championship golf course at Pebble Beach, a herd was systematically carving a 35-acre firebreak. In the East Bay parks, goats were eating their way across 400 acres of buffer area. "What I like about goats," Ed Leong, a park supervisor in the East Bay Regional Park District, told me, "is they do their work so quietly. People who come to our parks don't like the noise of brush-clearing machinery."

14 Laguna's Mike Phillips said that just three things contribute to wildland fires. "Fuel loads, topography and weather." He paused, then smiled. "We can't change the topography, and we can't do anything about the weather. The only variable to reduce is the fuel load. That's what goats do for us."

[2] *stint* — job

28 Based on the selection, why do the goats usually begin their work in April?

A. Few wildfires occur in April.

B. Goatherds become available in April.

C. The goats finish their winter grazing in April.

D. The brush tends to dry out in April.

29 What is the **main** purpose of paragraph 2?

A. to explain how fires get started in California

B. to emphasize the seriousness of fires in California

C. to show the population growth that has occurred in California

D. to point out where most fires occur in California

30 According to the selection, what is one disadvantage of a prescribed burn?

A. A prescribed burn is difficult for people to start.

B. Firefighters can lose control of a prescribed burn.

C. The landscape is too rocky for a prescribed burn.

D. Most areas have too little dry fuel to feed a prescribed burn.

31 Reread paragraph 5. In what way are the McGrews "pioneers"?

A. They are particularly hardworking people.

B. They raise unusual animals for practical purposes.

C. They have moved to the area where their goats graze.

D. They are among the first to use goats in fire prevention.

32 In paragraph 7, Brea McGrew says, "They like their food right at eye level." Which of the following does that statement support?

A. The vegetation on the hill is low.

B. The McGrews often feed their goats.

C. Brush is an appealing food for goats.

D. Goats look at each other while eating.

33 In which of the following sentences from the selection does the author speak of goats as if they were human?

A. "Goats would rather eat brush than grass." (paragraph 7)

B. "Then the hungry weed eaters themselves arrive." (paragraph 11)

C. "You know, goats are very intelligent." (paragraph 12)

D. "Throughout California, goats were dining out." (paragraph 13)

34 This selection is **best** described as

A. an informational article.

B. an autobiography.

C. a personal narrative.

D. an editorial.

35 Read the sentence from paragraph 3 in the box below.

> When the rains stop in April, vegetation turns crisp and brown; the tiniest spark can set off a major conflagration.

Which of the following is the **best** clue to the meaning of the word *conflagration*?

A. "rains stop"

B. "vegetation"

C. "brown"

D. "tiniest spark"

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

36 Based on the selection, explain how the habits and characteristics of goats make these animals particularly effective at fighting the threat of wildfire. Use relevant and specific information from the selection to support your answer.

Author Virginia Driving Hawk Sneve shares a myth from her American Indian heritage. Read the myth below to learn what the Great Spirit does and answer the questions that follow.

The Flower Nation

by Virginia Driving Hawk Sneve

1 The Great Spirit rested after he created the earth's mountains, waters, rocks, and trees. He gazed over his creation and thought, "It is good."

2 But then he looked more closely. "Something more needs to be done," he mused, as he looked at the green of the trees and grass, the blue of the waters, and the brown and gray cragginess of the mountains.

3 Slowly the Great Spirit reached out a finger and gently touched the base of a tree and then a sunny spot of grass. Here and there he touched, up the mountain slopes to the peaks and down to the curve of the water's edge.

4 At his gentle touch, his finger left a spot of color. He had created flowers, each different according to its place and all lovely to see.

5 Pleased, the Great Spirit went on to create animals, birds, fish, and people. He was so busy that he forgot about the flowers.

6 Soon the first autumn arrived. The animals' fur grew thicker, birds flew to warmer climes, and the people fashioned warm clothing from deerskins and tipis and robes from buffalo hides. The waters formed ice along their edges as the days turned cold. The trees' leaves shivered but were still green.

7 The earth was preparing for winter—all but the flowers whose blossoms withered in the chill, their leaves curling and shivering in the cold.

8 The Great Spirit looked again upon his creation, nodding his approval, but his eyes moved restlessly. Something was not right.

9 Then he saw the faded flowers, their blossoms wilted. "Oh, my children, what is wrong?"

10 "Father," quavered the flowers, "we are cold, and we are afraid."

11 The Great Spirit's heart was saddened at the flowers' plight and he pondered what to do for these most beautiful of his creations. His eyes rested upon a tree with shimmering green leaves.

12 Gently the Great Spirit blew over the leaves on the trees that shook and danced in his wind, and their green turned to vivid red, orange, and gold. "Oh," cried the trees, "how beautiful we are!"

13 The Great Spirit blew fierce gusts, and the leaves snapped and broke away from the trees. Wildly, the leaves swirled in the wind. "We are flying!" they cried.

14 Gradually the Great Spirit ceased blowing and the leaves fluttered down to cover the flowers.

15 The Great Spirit rested again, content. He had created more beauty for the trees, and given the leaves beautiful colors and the joy of flying before they became a blanket for the flowers.

16 That first winter passed into the first spring. Animals shed their heavy, matted fur; people aired their buffalo robes and lodges. Soon there was new life in nests and tipis as mothers gave birth. The trees' bare branches lifted to the sun; green buds swelled on their limbs and burst into new leaves.

17 Below the trees, under the dry, dusty blanket, the flowers stirred, poking new growth through the leaves toward the sun and soon blooming.

18 The Great Spirit walked through the newly awakened earth. "Good," he nodded, but as he looked he saw that during the winter death had claimed some of his creatures.

19 "Ah," he sighed in sorrow as the spirits of the dead wandered through the spring, confused and homeless. "I could restore life," the Great Spirit thought, "but then the newly born might not have room to grow or enough to eat. I must create another world for the spirits of the dead."

20 And so he did. A world apart and unseen from the earth. The Great Spirit looked at this world and saw that something was missing. There were trees, mountains, animals, and people but no flowers. He looked back to earth just as the flowers burst into bloom, more plentiful than before.

21 He gently blew and some of the flowers withered and died. Their fragile, colorful spirits rose into the air. His breath caused clouds to form and rain to fall, and somehow the flowers' dying spirits caught in the raindrops. When the Great Spirit stopped blowing and the sun shone, the yellow flower spirits banded together in an arch over the earth. Soon other flower spirits—reds, blues, and others—followed the golden trail, a glorious glowing rainbow.

22 The Great Spirit sighed and rested.

37 Based on the myth, which of the following **best** describes a character trait of the Great Spirit?

A. He tires very easily from the work he does.

B. He feels compassion for his creations.

C. He expects his living creations to be grateful.

D. He enjoys ruling over several kinds of worlds.

38 In paragraph 19, what problem does the Great Spirit face?

A. There is not enough color in the world.

B. The spirits of the dead have nowhere to go.

C. The winter is too cold.

D. The flowers wither and die.

39 According to the myth, how was a rainbow made?

A. Flower spirits formed an arch after the rain.

B. The Great Spirit created it as a world for flower spirits.

C. Rain clouds gathered over the earth.

D. The colorful flower spirits burst into bloom.

40 Which of the following is the **best** definition for the word *plight* as it is used in paragraph 11?

A. unhappy situation

B. confused state

C. incorrect action

D. awkward crisis

English Language Arts
Language and Literature Retest
March 2006 Released Items:
Reporting Categories, Standards, and Correct Answers*

Item No.	Page No.	Reporting Category	Standard	Correct Answer (MC)*
1	11	*Reading and Literature*	13	A
2	11	*Reading and Literature*	13	A
3	11	*Reading and Literature*	13	B
4	11	*Reading and Literature*	13	C
5	12	*Reading and Literature*	8	A
6	12	*Language*	4	A
7	12	*Language*	4	D
8	13	*Reading and Literature*	13	
9	15	*Reading and Literature*	12	D
10	15	*Reading and Literature*	12	B
11	15	*Reading and Literature*	12	C
12	15	*Reading and Literature*	12	C
13	16	*Reading and Literature*	12	
14	20	*Reading and Literature*	15	B
15	20	*Reading and Literature*	15	A
16	20	*Reading and Literature*	8	B
17	20	*Reading and Literature*	8	C
18	21	*Reading and Literature*	15	B
19	21	*Reading and Literature*	8	D
20	21	*Reading and Literature*	8	C
21	21	*Language*	4	D
22	22	*Reading and Literature*	13	
23	24	*Reading and Literature*	11	A
24	24	*Reading and Literature*	14	C
25	24	*Reading and Literature*	14	D
26	24	*Reading and Literature*	15	A
27	24	*Language*	5	D
28	27	*Reading and Literature*	13	D
29	27	*Reading and Literature*	13	B
30	27	*Reading and Literature*	8	B
31	27	*Reading and Literature*	13	D
32	28	*Reading and Literature*	13	C
33	28	*Reading and Literature*	13	D
34	28	*Reading and Literature*	10	A
35	28	*Language*	4	D
36	29	*Reading and Literature*	13	
37	32	*Reading and Literature*	16	B
38	32	*Reading and Literature*	16	B
39	32	*Reading and Literature*	16	A
40	32	*Language*	4	A

* 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 Web site at www.doe.mass.edu/frameworks/math/2000/final.pdf.

In *Test Item Analysis Reports,* 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 and Content Overview

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 item 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 limited English proficient 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 What is the value of the expression shown below?

$$3(2^5 - 5^2)$$

A. -9

B. 0

C. 21

D. 27

2 Cynthia gathered temperature data for her social studies report. In the table below, she listed the normal daily maximum temperatures for January in several different cities.

Normal Daily Maximum Temperatures for January

City	Temperature (°F)
Albany, NY	31.1
Boston, MA	36.5
Bridgeport, CT	36.9
Buffalo, NY	31.1
Burlington, VT	26.7
Concord, NH	30.6
Harrisburg, PA	37.5
Hartford, CT	34.1
Newark, NJ	38.1
Worcester, MA	31.4

What is the range of the normal daily maximum temperatures listed in the table?

A. 0.3

B. 11.4

C. 31.1

D. 32.8

3 Which of the following is closest to the value of $\sqrt{23}$?

A. 3.9

B. 4.2

C. 4.8

D. 5.2

4 What is the factored form of the expression below?

$$x^2 - 16$$

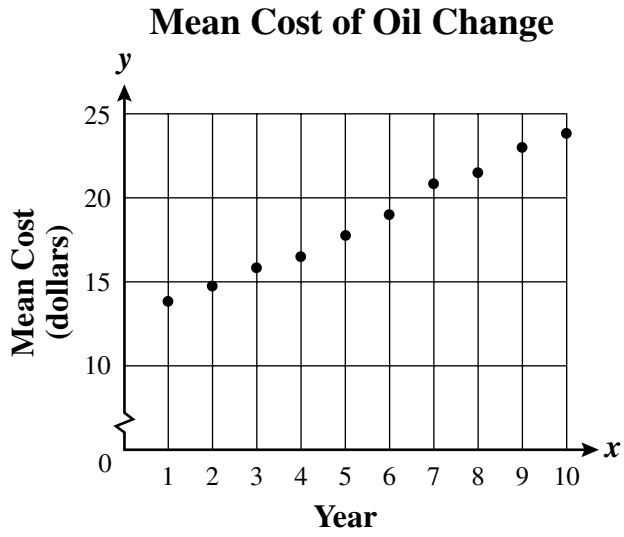
A. $(x - 4)(x + 4)$

B. $(x - 8)(x + 8)$

C. $(x - 4)(x - 4)$

D. $(x - 8)(x - 8)$

5 The scatterplot below shows the mean cost of an oil change for Sadie's car during each of the last 10 years.



Which of the following most closely approximates the equation of the line of best fit for the data in the scatterplot?

A. $y = 1.1x + 12.5$

B. $y = 0.2x + 12.5$

C. $y = -1.1x + 12.5$

D. $y = -0.2x + 12.5$

6 Which of the following is equivalent to the expression below?

$$(3ab^2)^3$$

A. $3a^3b^5$

B. $3a^3b^6$

C. $9a^3b^6$

D. $27a^3b^6$

7 The label on Patricia's vitamin supplement bottle shows that each vitamin tablet contains 162 milligrams of calcium, which is 16% of the recommended daily value of calcium.

According to this information, which of the following estimates is closest to the recommended daily value, in milligrams, of calcium?

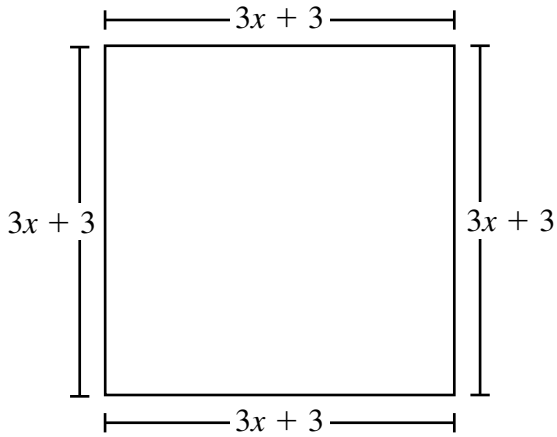
A. 10

B. 26

C. 1000

D. 2600

8 A square and its dimensions are shown below.



What is the perimeter of the square?

A. $24x$

B. $12x + 3$

C. $12x + 12$

D. $12x^4 + 12$

9 What is the value of the expression below?

$$-\left|2^2(-3)^2\right|$$

A. -36

B. -5

C. 5

D. 36

10 Which of the following is closest to the value of $10\sqrt{45}$?

A. 21

B. 67

C. 225

D. 450

11 What is the solution of the inequality shown below?

$$2x + 3 \leq x - 1$$

A. $x \leq -2$

B. $x \geq -2$

C. $x \leq -4$

D. $x \geq -4$

12 Mr. Johnson plans to build a fence along the back of his property. At a home improvement store, he saw the table below listing the least number of fence posts he will need for different fence lengths.

Fence Posts Needed

Fence Length (in feet)	Least Number of Fence Posts Needed
50	6
100	11
150	16
200	21

According to the linear pattern in the table, what is the least number of fence posts Mr. Johnson will need to build a fence that is 80 feet long?

A. 7

B. 8

C. 9

D. 10

13 Which of the following is equivalent to the expression below?

$$2x^2 (x^3 + x^2 + 4x)$$

A. $2x^6 + 2x^4 + 8x^2$

B. $3x^6 + 3x^4 + 6x^2$

C. $3x^5 + 3x^4 + 6x^3$

D. $2x^5 + 2x^4 + 8x^3$

14 If a cube has a volume of 27 cubic centimeters, what is the total surface area of the cube?

A. 9 cm^2

B. 36 cm^2

C. 54 cm^2

D. 81 cm^2

Question 15 is a short-answer question. Write your answer to this question in the box provided in your Student Answer Booklet. Do not write your answer in this test booklet. You may do your figuring in the test booklet.

15 The table below shows the test scores for Mr. Becerra's history class and the number of students who received each test score.

History Class Test Scores

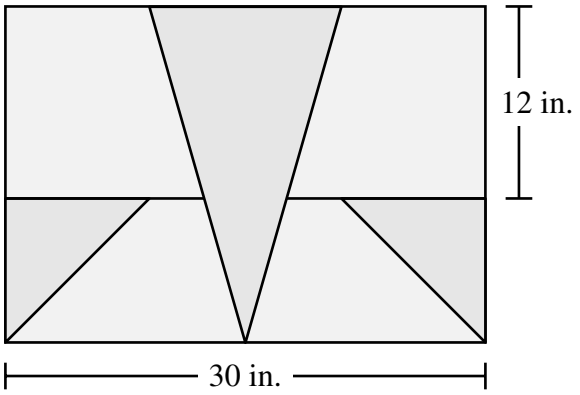
Test Score	Number of Students
95	2
90	1
85	7
80	5
75	4
70	4

What is the median test score in Mr. Becerra's history class?

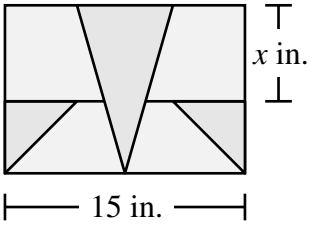
Question 16 is a short-answer question. Write your answer to this question in the box provided in your Student Answer Booklet. Do not write your answer in this test booklet. You may do your figuring in the test booklet.

16 Leonie wants to build a reduced copy of a stained-glass window. She wants the shapes in her reduced copy to be similar to the shapes in the original window. Selected dimensions of each window are shown below.

Original Window



Reduced Copy



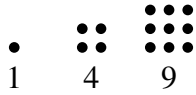
What value of x, in inches, should Leonie use for her reduced copy?

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.**

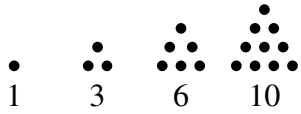
Write your answer to question 17 in the space provided in your Student Answer Booklet.

17 A number is called a **square number** if the amount of dots required to represent the number can be placed in a square array. The first three square numbers and their arrays are shown below.



a. Use dots to draw the square arrays for the next two square numbers, and write each number under its array.

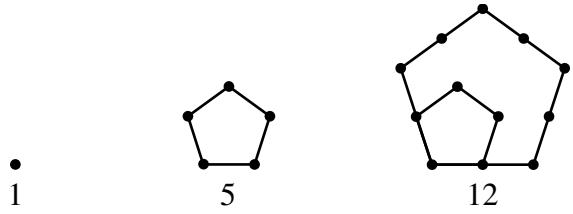
A number is called a **triangular number** if the amount of dots required to represent the number can be placed in a triangular array. The first four triangular numbers and their arrays are shown below.



b. Use dots to draw the triangular array for the next triangular number, and write the number under its array.

c. The first five triangular numbers form a pattern. Based on the pattern, determine the sixth, seventh, and eighth triangular numbers **without** drawing their arrays. Show or explain how you got each of your answers.

A number is called a **pentagonal number** if the amount of dots required to represent the number can be placed in a pentagonal array. The first three pentagonal numbers and their arrays are shown below.



d. The expression below can be used to obtain the nth pentagonal number.

$$\frac{n(3n-1)}{2}$$

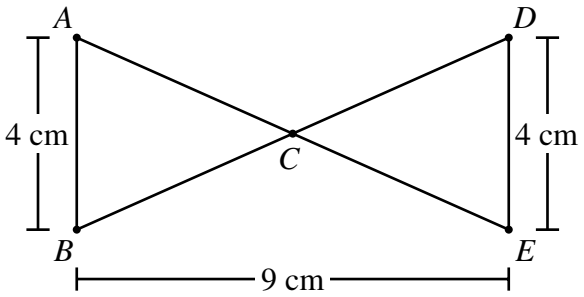
- Show that by substituting $n = 1$, 2, and 3 into the expression, the first three pentagonal numbers are obtained.
- Use the expression to obtain the fourth pentagonal number. Show how you got your answer.

Questions 18 and 19 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.

18 What is the value of the expression below?

$$\left(\sqrt{5}\right)^2$$

19 In the figure below, $\overline{AB}$ is parallel to $\overline{DE}$, and $\overline{AE}$ intersects $\overline{BD}$ at point C.



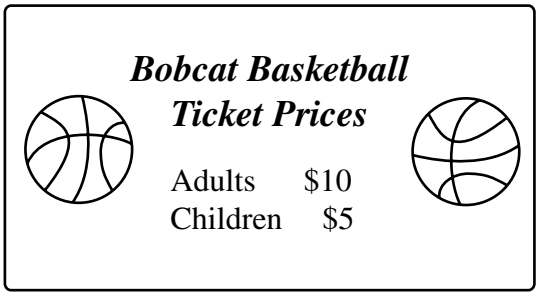
What is the **sum**, in square centimeters, of the areas of triangle ABC and triangle EDC?

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 prices of tickets to Bobcat basketball games are shown on the sign below.



a. At the first game, 360 children's tickets were sold. The total income from ticket sales was $5800. How many adult tickets were sold at the first game? Show or explain how you got your answer.

For parts (b), (c), and (d), define x and y as follows:

- x = the number of adult tickets sold
- y = the number of children's tickets sold

b. At the second game, a total of 900 tickets was sold. Write an equation that expresses the total number of tickets sold at the second game in terms of x and y.

c. At the second game, the total income from ticket sales was $6850. Write an equation in terms of x and y that expresses the total income at the second game from the sale of adult tickets at $10 each and children's tickets at $5 each.

d. Using your two equations from parts (b) and (c) as a system of equations, solve for x and y. Show or explain how you got your answer.

Write your answer to question 21 in the space provided in your Student Answer Booklet.

21 Jordan is learning about multiples and powers of positive whole numbers. He wrote the two true statements shown below.

- 9 is a multiple of 3 **and** a power of 3
- 12 is a multiple of 3 but **not** a power of 3

a. Write a positive number, other than 14, that is a multiple of 14. Show or explain how you got your answer.

b. The expression, 5^n, represents the nth power of 5. What is the value of the 3rd power of 5? Show or explain how you got your answer.

c. Are there any nth powers of 4, where n is an integer, whose values are also multiples of 6? Explain your reasoning.

d. If $x^n = 64$, determine x for each value of n given below. In each case, show or explain how you got your answer.

- $n = 2$
- $n = 3$
- $n = 6$

Mathematics

SESSION 2

You may use your reference sheet during this session.
You may use a calculator during this session.

DIRECTIONS

This session contains eighteen multiple-choice questions and three open-response questions. Mark your answers to these questions in the spaces provided in your Student Answer Booklet.

22 Martin chose 1 and 4 as the first two terms in a sequence. Each term after the first term is obtained by multiplying the term immediately before it by 3 and then adding 1, as shown below.

1, 4, 13, 40, . . .

What is the sixth term in Martin's sequence?

A. 120

B. 121

C. 363

D. 364

23 The stem-and-leaf plot below shows the recorded speeds, in miles per hour, of the first 15 cars that passed a police officer on a Friday.

Recorded Car Speeds

4	9
5	1 2 5 7 7 7 8
6	0 1 8 9
7	2 4 5

Key
5 | 3 represents 53

The police officer issued a ticket to the driver of each car whose recorded speed was greater than 65 miles per hour. Based on the data in the stem-and-leaf plot, what was the total number of tickets the police officer issued?

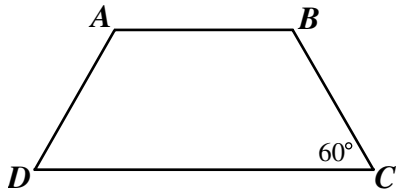
A. 3

B. 5

C. 8

D. 10

24 The figure shown below is an isosceles trapezoid. The measure of $\angle BCD$ is 60°.



What is the measure of $\angle DAB$?

A. 60°

B. 110°

C. 120°

D. 150°

25 The mean of 7 test scores is 85. Of the 7 test scores, 6 are shown below.

75, 82, 82, 83, 90, 95

What is the 7th test score?

A. 82

B. 83

C. 85

D. 88

26 The cost of a taxi ride from the airport to a downtown hotel is $13 if either 1 or 2 passengers are in the taxi. If there are more than 2 passengers in the taxi, the cost of the ride increases by $5 for each additional passenger.

To save money, 4 people shared a taxi. If they split the total cost of the taxi ride equally, how much was each person's share of the cost?

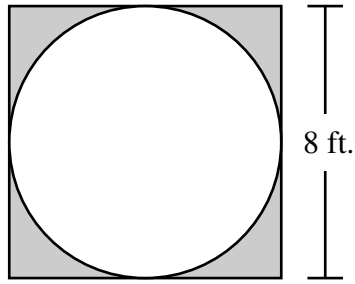
A. $3.25

B. $4.50

C. $5.75

D. $8.25

27 The figure below shows a circle inscribed in a square. Each side of the square has a length of 8 feet.



Which of the following is closest to the area of the shaded part of the square?

A. 7 sq. ft.

B. 14 sq. ft.

C. 39 sq. ft.

D. 50 sq. ft.

28 At a sports drink bottling plant, 1 machine on the production line can fill drink bottles at the rate of 16 bottles per minute.

At this rate, what is the total number of drink bottles that 15 of these machines can fill working continuously for 8 **hours**?

A. 1,920
B. 7,680
C. 14,400
D. 115,200

29 An equilateral triangle has which of the following types of symmetry?

A. line symmetry only
B. rotational symmetry only
C. both rotational symmetry and line symmetry
D. neither rotational symmetry nor line symmetry

30 Juan surveyed 30 students at his high school and asked them how many hours of television they watched each night. The results of his survey are recorded in the tally chart below.

Television Watched Each Night

Number of Hours	Number of Students
1	𝍸 𝍸
2	𝍸 //
3	///
4	//
5	𝍸 ///

What was the median number of hours of television watched each night?

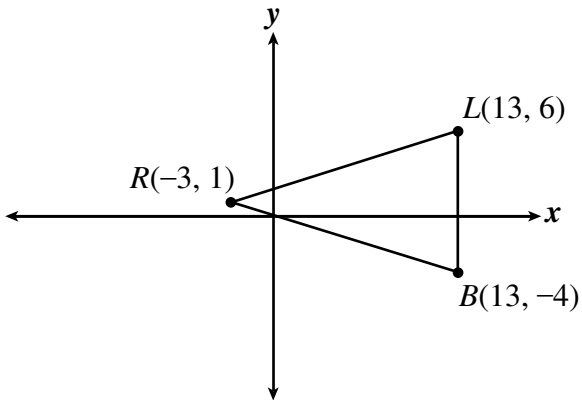
A. 1
B. 2
C. 3
D. 4

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.

31 The locations of an oil rig *(R)*, a lighthouse *(L)*, and a buoy *(B)* are shown on the coordinate plane below. Triangle *RLB* is an isosceles triangle whose vertices represent the three locations.



Scale
1 unit : 1 mile

a. What is the distance, in miles, from the buoy *(B)* to the lighthouse *(L)*? Show or explain how you got your answer.

b. Let *M* be the midpoint of $\overline{LB}$. What are the coordinates of *M*? Show or explain how you got your answer.

c. What is the distance, in miles, from the oil rig *(R)* to *M*, the midpoint of $\overline{LB}$? Show or explain how you got your answer.

d. What is the distance, to the nearest mile, from the oil rig *(R)* to the lighthouse *(L)*? 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 Tona is training her dog, Daisy, to walk around a circle with a radius of 4 feet.

If Daisy walks 1 time around the circle, which of the following is closest to the distance she will walk?

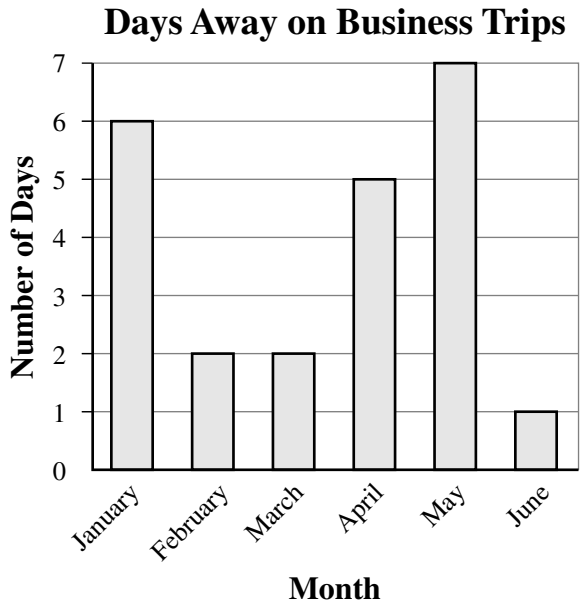
A. 6 ft.

B. 12 ft.

C. 24 ft.

D. 48 ft.

33 The bar graph below shows the number of days each month that Linda was away on business trips during the first 6 months of the year.



Which of the following is closest to the mean number of days per month that Linda was away on business trips during these 6 months?

A. 1.0

B. 2.0

C. 3.5

D. 3.8

34 Which of the following is equivalent to the expression below?

$$(x + 2)(x - 3)$$

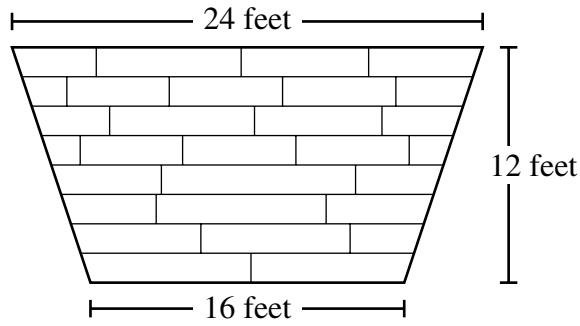
A. $x^2 - x - 6$

B. $x^2 + 5x - 6$

C. $x^2 - x - 5$

D. $x^2 + 5x - 5$

35 Jeff helped his uncle build a backyard deck. The top of the deck is shaped like a trapezoid. The dimensions of the top of the deck are shown in the diagram below.



What is the area of the top of the deck?

A. 96 square feet

B. 240 square feet

C. 288 square feet

D. 480 square feet

36 Which of the following is an example of the identity property of multiplication?

A. $7 \cdot 0 = 0$

B. $7 \cdot \frac{1}{7} = 1$

C. $7 \cdot 1 = 7$

D. $7 + 0 = 7$

37 Which of the following is closest to the total surface area of a sphere with a radius of 6 centimeters?

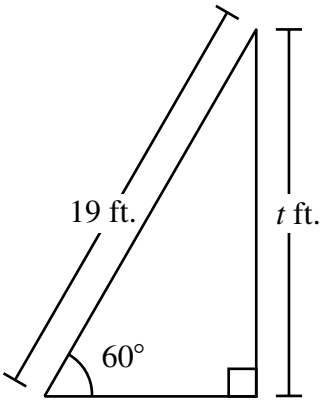
A. 113 cm^2

B. 151 cm^2

C. 301 cm^2

D. 452 cm^2

38 Which of the following is closest to the value of t for the triangle with the dimensions shown below?



A. 9.5

B. 13.4

C. 15.2

D. 16.5

39 In an experiment, the temperature of a room was lowered 6° every hour. The original temperature of the room was 72°.

Which of the following equations correctly expresses T, the temperature, in degrees, of the room, as a function of h, the number of hours that have passed?

A. $T = -6h - 72$

B. $T = -12h - 72$

C. $T = -6h + 72$

D. $T = -12h + 72$

40 If $x \neq 0$, which of the following is equivalent to the expression below?

$$\frac{15x^2 + 6x}{3x}$$

A. $7x$

B. $11x$

C. $5x + 2$

D. $15x^2 + 2$

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 Just before the bell rang at the end of class, Faith measured the following two dimensions of a right rectangular prism.

- length: 9 centimeters
- width: 6 centimeters

She did not have time to measure the height of the prism, but she knew that the volume of the prism was 162 cubic centimeters.

a. Based on Faith's information about the prism, what is the height, in centimeters, of the prism? Show or explain how you got your answer.

b. What is the total surface area, in square centimeters, of the prism? Show or explain how you got your answer.

c. If the length, the width, and the height of the original prism are all doubled, the resulting prism has a total surface area that is m times greater than the total surface area of the original prism. What is the value of m? Show or explain how you got your answer.

d. If the length and the width of the original prism are both doubled, the resulting prism has a **volume** that is n times greater than the volume of the original prism. What is the value of n? Show or explain how you got your answer.

Write your answer to question 42 in the space provided in your Student Answer Booklet.

42 The table below shows the number of points scored by the Patriots football team in each of its regular season games during the 2001–2002 season.

Points Scored in Regular Season Games

Game	Number of Points Scored	Game	Number of Points Scored
1st	17	9th	21
2nd	3	10th	17
3rd	44	11th	34
4th	10	12th	17
5th	29	13th	27
6th	38	14th	12
7th	20	15th	20
8th	24	16th	38

a. Use the data from the table to determine each of the following measures. In each case, show or explain how you got your answer.

- mean of the number of points scored
- median of the number of points scored
- range of the number of points scored

After the regular season, the Patriots played games in the postseason. During the postseason, the Patriots won three games, including the national championship. The number of points that the team scored in those three games were 16, 24, and 20.

b. When the number of points scored in the three postseason games are included with the number of points scored in the regular season games, and the mean, median, and range are calculated again, which measure does **not** change? Show or explain how you got your answer.

Massachusetts Comprehensive Assessment System
Grade 10 Mathematics Reference Sheet

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 ..... $A = \pi r^2$

LATERAL SURFACE AREA FORMULAS

right rectangular prism ..... $LA = 2(hw) + 2(lh)$
right circular cylinder ..... $LA = 2\pi rh$
right circular cone ..... $LA = \pi r\ell$
(ℓ = slant height)
right square pyramid ..... $LA = 2s\ell$
(ℓ = slant height)

TOTAL SURFACE AREA FORMULAS

cube ..... $SA = 6s^2$
right rectangular prism ..... $SA = 2(lw) + 2(hw) + 2(lh)$
sphere ..... $SA = 4\pi r^2$
right circular cylinder ..... $SA = 2\pi r^2 + 2\pi rh$
right circular cone ..... $SA = \pi r^2 + \pi r\ell$
(ℓ = slant height)
right square pyramid ..... $SA = s^2 + 2s\ell$
(ℓ = slant height)

VOLUME FORMULAS

cube ..... $V = s^3$
(s = length of an edge)

right rectangular prism ..... $V = lwh$

OR

$V = Bh$
(B = area of a base)

sphere ..... $V = \frac{4}{3}\pi r^3$

right circular cylinder ..... $V = \pi r^2 h$

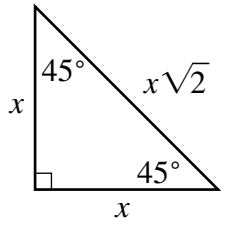
right circular cone ..... $V = \frac{1}{3}\pi r^2 h$

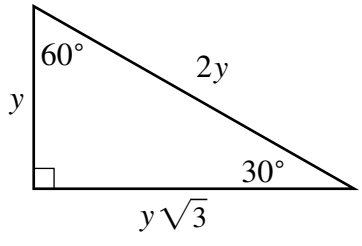
right square pyramid ..... $V = \frac{1}{3}s^2 h$

CIRCLE FORMULAS

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

SPECIAL RIGHT TRIANGLES





Mathematics Retest
March 2006 Released Items:
Reporting Categories, Standards, and Correct Answers*

Item No.	Page No.	Reporting Category	Standard	Correct Answer (MC/SA)*
1	37	*Number Sense and Operations*	10.N.2	C
2	37	*Data Analysis, Statistics, and Probability*	10.D.1	B
3	38	*Number Sense and Operations*	10.N.3	C
4	38	*Patterns, Relations, and Algebra*	10.P.4	A
5	38	*Data Analysis, Statistics, and Probability*	10.D.2	A
6	39	*Patterns, Relations, and Algebra*	10.P.4	D
7	39	*Number Sense and Operations*	10.N.4	C
8	40	*Patterns, Relations, and Algebra*	10.P.3	C
9	40	*Number Sense and Operations*	10.N.2	A
10	40	*Number Sense and Operations*	10.N.3	B
11	41	*Patterns, Relations, and Algebra*	10.P.6	C
12	41	*Patterns, Relations, and Algebra*	10.P.1	C
13	41	*Patterns, Relations, and Algebra*	10.P.3	D
14	41	*Measurement*	10.M.2	C
15	42	*Data Analysis, Statistics, and Probability*	10.D.1	80
16	43	*Geometry*	10.G.4	6 inches
17	44	*Patterns, Relations, and Algebra*	10.P.1	
18	45	*Number Sense and Operations*	10.N.1	5
19	45	*Measurement*	10.M.1	18 cm^2
20	46	*Patterns, Relations, and Algebra*	10.P.8	
21	47	*Number Sense and Operations*	10.N.1	
22	48	*Patterns, Relations, and Algebra*	10.P.1	D
23	48	*Data Analysis, Statistics, and Probability*	10.D.1	B
24	49	*Geometry*	10.G.3	C
25	49	*Data Analysis, Statistics, and Probability*	10.D.1	D
26	50	*Patterns, Relations, and Algebra*	10.P.7	C
27	50	*Measurement*	10.M.1	B
28	51	*Number Sense and Operations*	8.N.12	D
29	51	*Geometry*	10.G.1	C
30	51	*Data Analysis, Statistics, and Probability*	10.D.1	B
31	52	*Geometry*	10.G.7	
32	53	*Measurement*	10.M.1	C
33	53	*Data Analysis, Statistics, and Probability*	10.D.1	D
34	54	*Patterns, Relations, and Algebra*	10.P.3	A
35	54	*Measurement*	10.M.1	B
36	55	*Number Sense and Operations*	10.N.1	C
37	55	*Measurement*	10.M.2	D
38	55	*Geometry*	10.G.6	D
39	56	*Patterns, Relations, and Algebra*	10.P.7	C
40	56	*Patterns, Relations, and Algebra*	10.P.3	C
41	57	*Measurement*	10.M.2	
42	58	*Data Analysis, Statistics, and Probability*	10.D.1	

*Answers are provided here for multiple-choice and short-answer items only. Each open-response item has its own set of scoring guidelines, which allow for valid alternate interpretations and responses.