



SECTION 1

ESSAY

Time — 25 minutes

Turn to Section 1 of your answer sheet to write your essay.

The essay gives you an opportunity to show how effectively you can develop and express ideas. You should, therefore, take care to develop your point of view, present your ideas logically and clearly, and use language precisely.

Your essay must be written on the lines provided on your answer sheet—you will receive no other paper on which to write. You will have enough space if you write on every line, avoid wide margins, and keep your handwriting to a reasonable size. Remember that people who are not familiar with your handwriting will read what you write. Try to write or print so that what you are writing is legible to those readers.

You have twenty-five minutes to write an essay on the topic assigned below. **DO NOT WRITE ON ANOTHER TOPIC. AN OFF-TOPIC ESSAY WILL RECEIVE A SCORE OF ZERO.**

Think carefully about the issue presented in the following excerpt and the assignment below.

Thomas Jefferson believed that the will of the majority is “the only legitimate foundation of any government,” and that the protection of the public’s right to free expression is of primary importance in a democracy. However, there are those who look back through the pages of history and note that when great changes have occurred in history—particularly when great principles are involved—as a rule the majority are wrong.

Assignment: What is your view of the claim that the opinion of the majority is not always right? In an essay, support your position by discussing an example (or examples) from literature, the arts, science and technology, history, current events, or your own experience or observation.

DO NOT WRITE YOUR ESSAY IN YOUR TEST BOOK. You will receive credit only for what you write on your answer sheet.

BEGIN WRITING YOUR ESSAY ON PAGE 3 OF THE ANSWER SHEET
(FOUND AT THE BACK OF THE BOOK).

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.



SECTION 2
Time — 25 minutes
18 Questions

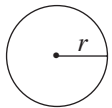
Turn to Section 2 of your answer sheet to answer the questions in this section.

Directions: For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork..

Notes

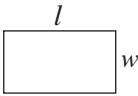
1. The use of a calculator is permitted.
2. All numbers used are real numbers.
3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
4. Unless otherwise specified, the domain of any function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.

Reference Information

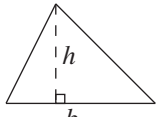


$$A = \pi r^2$$

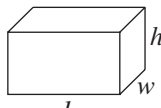
$$C = 2\pi r$$



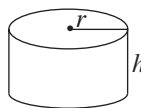
$$A = lw$$



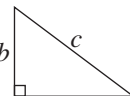
$$A = \frac{1}{2}bh$$



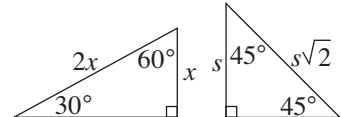
$$V = lwh$$



$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



Special Right Triangles

The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.

1. Which of the following is equal to $3x + 9y + 12$?
 - (A) $3(x + 3y + 9)$
 - (B) $3(x + 3y) + 12$
 - (C) $3(x + 3y) + 4$
 - (D) $3(x + 6y + 9)$
 - (E) $3x(3y + 4)$
2. To ship boxes of books, Luis charges \$4.95 per box plus a one-time service fee of \$7.00 per order. If he receives an order for 12 boxes of books, how much will Luis charge?
 - (A) \$11.95
 - (B) \$23.95
 - (C) \$66.40
 - (D) \$84.00
 - (E) \$143.40

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3. If $f(x) = \sqrt{3x-2}$, what is the smallest possible value of $f(x)$?
- (A) There is no such value.
 (B) 0
 (C) $\frac{2}{3}$
 (D) 1
 (E) 2

5. How many more cookies were sold by the 10th grade than were sold by the 12th grade?
- (A) 60
 (B) 90
 (C) 120
 (D) 150
 (E) 180

Questions 4–5 refer to the following chart.

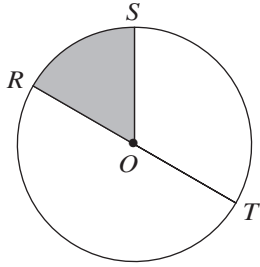
Grade	Activity	Price per item	Funds Raised from Activity
9th	Car Wash	\$5.00 per car	\$255.00
10th	Bake Sale	\$2.00 per cookie	\$360.00
11th	Magazine Sales	\$2.50 per magazine	\$337.50
12th	Bake Sale	\$1.50 per cookie	\$180.00

4. How many cars did the 9th grade class wash during the car wash?
- (A) 5
 (B) 51
 (C) 122
 (D) 180
 (E) 255

6. If C and D represent digits in the correctly worked multiplication problem above, then $C + D =$
- (A) 2
 (B) 7
 (C) 8
 (D) 13
 (E) 15

$$\begin{array}{r} 1D7C \\ \times 6 \\ \hline 94C8 \end{array}$$

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7. In the figure above, \overline{RT} is the diameter of the circle with center O . The shaded portion of the figure has an area of 25π and is $\frac{1}{9}$ the area of the entire circle. What is the length of arc RST ?

- (A) 15π
 (B) 25π
 (C) 30π
 (D) 112.5π
 (E) 125π

8. If $x^2 - |5x| = -6$, then what is one possible value of x ?

- (A) 5
 (B) 2
 (C) 0
 (D) 5
 (E) 6

GO ON TO THE NEXT PAGE



Directions: For Student-Produced Response questions 9–18, use the grids to the right of the answer document page on which you have answered questions 1–8.

Each of the remaining 10 questions requires you to solve the problem and enter your answer by marking the circles in the special grid, as shown in the examples below. You may use any available space for scratch work.

Answer: $\frac{7}{12}$

Write answer in boxes. →

7	/	1	2
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

← Fraction line

Grid in result. →

Answer: 2.5

2	.	5	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

← Decimal point

Answer: 201
Either position is correct.

2	0	1	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5

2	0	1	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5

Note: You may start your answers in any column, space permitting. Columns not needed should be left blank.

- Mark no more than one circle in any column.
- Because the answer document will be machine-scored, **you will receive credit only if the circles are filled in correctly.**
- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately.
- Some problems may have more than one correct answer. In such cases, grid only one answer.
- No question has a negative answer.
- **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If

3	1	/	2
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

 is gridded, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)

- **Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid. For example, if you obtain an answer such as 0.6666..., you should record your result as .666 or .667. **A less accurate value such as .66 or .67 will be scored as incorrect.**

Acceptable ways to grid $\frac{2}{3}$ are:

2	/	3	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	6
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	7
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

9. If $3(y - 2) = 24$, then what does $5(y - 2)$ equal?

10. Twelve tomatoes are checked, and four of them are found to be rotten. What is the probability that one tomato chosen at random will not be rotten?

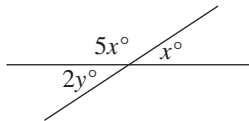
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$$n = 12 \times 2^{\frac{t}{3}}$$

11. The number of mice in a certain colony is shown by the formula above, such that n is the number of mice and t is the time, in months, since the start of the colony. If 2 years have passed since the start of the colony, how many mice does the colony contain now?

13. Squaring a certain number is equivalent to multiplying the number by 10 and then taking one-half the result. What is one possible value of the number?



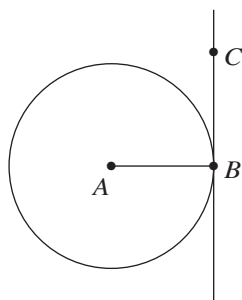
12. In the figure above, what is the value of y ?

14. If b is 9 more than c , c is 4 more than a , and d is 3 more than a , then what is the positive difference between b and d ?

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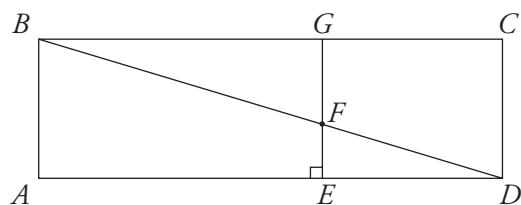
15. On Thursday, Jeanine drove 20 miles to work, at an average speed of 40 miles per hour. She then drove home along the same route at an average speed of 50 miles per hour. How many hours did she spend driving to and from work on Thursday?



Note: Figure not drawn to scale.

16. In the figure above, \overline{BC} is tangent to circle with center A at B . If the length of \overline{AC} (not shown) is $10\sqrt{3}$, and $AC = 2AB$, what is the length of \overline{BC} ?

17. Set X consists of 12 numbers. The average (arithmetic mean) of the first 6 numbers is 15. The sum of the last six numbers is 24. What is the average of all 12 numbers in set X ?



Note: Figure not drawn to scale.

18. In the figure above, the area of rectangle $ABCD$ is 120. If $\overline{AD} \perp \overline{EG}$, $CD = 6$, and $AE = 12$, what is the length of \overline{EF} ?

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.



SECTION 3

Time — 25 minutes

24 Questions

Turn to Section 3 of your answer sheet to answer the questions in this section.

Directions: For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

Example:

Desiring to ----- his taunting friends, Mitch gave them taffy in hopes it would keep their mouths shut.

- (A) eliminate (B) satisfy (C) overcome
(D) ridicule (E) silence

A B C D ●

- The fact that some fish ----- their offspring illustrates that these fish lack a ----- instinct.
 - spurn . . conditional
 - mesmerize . . visual
 - consume . . predatory
 - devour . . nurturing
 - protect . . maternal
- Because the company was forced to ----- the faulty product and stop distribution, it soon had ----- of useless inventory.
 - examine . . a market
 - challenge . . a mass
 - explain . . an oversupply
 - release . . a backlog
 - recall . . an abundance
- Every previous attempt to force the mayor from office had failed, yet his critics ----- in their impeachment efforts.
 - founded (B) persevered (C) lagged
(D) condensed (E) receded
- When Jerome awoke from the nightmare, he had difficulty ----- whether his memory was of an amorphous dream or of an actual reality.
 - ascertaining (B) exonerating (C) disputing
(D) concealing (E) importuning
- Even though his opponents vehemently ----- Senator Henry Cabot Lodge's antagonism toward the United States joining the League of Nations, they still ----- his eloquence and persuasiveness as a speaker.
 - deplored . . forbade
 - repudiated . . acknowledged
 - sustained . . admired
 - understood . . bewildered
 - slandered . . overlooked

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Directions: Each passage below is followed by questions based on its content. Answer the questions on the basis of what is stated or implied in each passage and in any introductory material that may be provided.

Questions 6–9 are based on the following passages.

The following paragraphs discuss the invention of the mechanized cotton gin by Eli Whitney in the eighteenth century.

Passage 1

Eli Whitney is generally credited with the invention of the cotton gin, which he patented in 1794, but some historians question the extent of Whitney’s authorship. Some studies
 Line 5 conclude that Georgia plantation owner Catharine Greene contributed key elements of the design. Another study shows that slaves working on Greene’s plantation devised the first cotton gins but were not allowed to register a patent. Still other theories maintain that primitive “roller gins” had been used for centuries before Whitney, who only mechanized and
 10 improved the process. It’s not hard to imagine that one or all of these parties made unacknowledged contributions, yet the United States Patent and Trademark Office will not issue a patent if the inventor concedes outside influences.

Passage 2

History books observe that Eli Whitney invented and
 15 patented the cotton gin in 1794, but most texts don’t give proper credit to Catharine Greene, who made significant contributions to Whitney’s original model. Greene hired Whitney to live on her plantation and tutor her, and it was there that Whitney heard planters complain about manually removing the seeds from the cotton. Whitney began to
 20 develop his cotton gin, while Greene provided food, shelter, and encouragement. Greene’s contribution was more than symbolic, however: when Whitney’s initial gins kept clogging, Greene suggested he use a comb-like device to separate the
 25 pulled cotton fibers from the machine. It was this device that elevated Whitney’s gin above the other primitive and inept tools already available.

6. The author of Passage 1 mentions the detail about the United States Patent and Trademark Office in the last sentence in order to
- (A) condemn Whitney for his decision to seek a patent
 - (B) further clarify why slaves could not seek a patent
 - (C) deny that others made unacknowledged contributions
 - (D) demonstrate how Whitney inadvertently ignored outside contributions
 - (E) offer a possible reason why Whitney claimed sole authorship
7. The author of the Passage 1 would most likely consider “Greene’s contribution” (line 22) as
- (A) evidence that the patent process is flawed
 - (B) support for a thesis about Eli Whitney
 - (C) inconsistent with the historical record
 - (D) less important than the contribution of slaves
 - (E) an anomalous finding in the context of known facts about the cotton gin
8. The author of Passage 2 would most likely characterize the “roller gins” (line 8) as
- (A) largely identical to Eli Whitney’s cotton gin
 - (B) superior to their primitive predecessors
 - (C) useful only in smaller plantations
 - (D) improperly awarded a patent
 - (E) meaningfully inferior to Whitney’s gin
9. Which of the following can be inferred from BOTH passages?
- (A) Catharine Greene used “roller gins” on her plantation.
 - (B) The contributions of slaves were instrumental in the original design of the cotton gin.
 - (C) Certain design features of Whitney’s gin may have been suggested by outside influences.
 - (D) The United States Patent Office refused to issue patents for all gins before Whitney’s.
 - (E) The most popular tool to prepare cotton before Whitney’s gin was the “roller gin.”

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Questions 10–18 are based on the following passage.

The following passage was taken from the autobiography of Helen Keller, who was stricken with an illness that left her deaf and blind as a young child.

I guessed vaguely from my mother's signs and from the hurrying to and fro in the house that something unusual was about to happen, so I went to the door and waited on the steps. The afternoon sun penetrated the mass of honeysuckle that covered the porch, and fell on my upturned face. My fingers lingered almost unconsciously on the familiar leaves and blossoms which had just come forth to greet the sweet southern spring. I did not know what the future held of marvel or surprise for me. Anger and bitterness had preyed upon me continually for weeks and a deep languor had succeeded this passionate struggle.

Have you ever been at sea in a dense fog, when it seemed as if a tangible white darkness shut you in, and the great ship, tense and anxious, groped her way toward the shore with plummet and sounding-line, and you waited with beating heart for something to happen? I was like that ship before my education began, only I was without compass or sounding-line, and had no way of knowing how near the harbour was. "Light! Give me light!" was the wordless cry of my soul, and the light of love shone on me in that very hour.

I felt approaching footsteps, I stretched out my hand as I supposed to my mother. Someone took it, and I was caught up and held close in the arms of her who had come to reveal all things to me, and, more than all things else, to love me.

The morning after my teacher came she led me into her room and gave me a doll. When I had played with it a little while, Miss Sullivan slowly spelled into my hand the word "d-o-l-l." I was at once interested in this finger play and tried to imitate it. When I finally succeeded in making the letters correctly I was flushed with childish pleasure and pride. Running downstairs to my mother I held up my hand and made the letters for doll. I did not know that I was spelling a word or even that words existed; I was simply making my fingers go in monkey-like imitation. But my teacher had been with me several weeks before I understood that everything has a name.

One day, while I was playing with my new doll, Miss Sullivan put my big rag doll into my lap also, spelled "d-o-l-l" and tried to make me understand that "d-o-l-l" applied to both. Earlier in the day we had had a tussle over the words "m-u-g" and "w-a-t-e-r." Miss Sullivan had tried to impress it upon me that "m-u-g" is mug and that "w-a-t-e-r" is water, but I persisted in confounding the two. In despair she had dropped the subject for the time, only to renew it at the first opportunity. I became impatient at her repeated attempts and, seizing the new doll, I dashed it upon the floor. I was keenly delighted when I felt the fragments of the broken doll at my feet. Neither sorrow nor regret followed my passionate outburst. I had not loved the doll. In the still, dark world in which I lived there was no strong sentiment or tenderness.

We walked down the path to the well-house, attracted by the fragrance of the honeysuckle with which it was covered. Someone was drawing water and my teacher placed my hand under the spout. As the cool stream gushed over one hand she spelled into the other the word water, first slowly, then rapidly. I stood still, my whole attention fixed upon the motions of her fingers. Suddenly I felt a misty consciousness as of something forgotten—a thrill of returning thought; and somehow the mystery of language was revealed to me. I knew then that "w-a-t-e-r" meant the wonderful cool something that was flowing over my hand. That living word awakened my soul, gave it light, hope, joy, set it free! There were barriers still, it is true, but barriers that could in time be swept away.

I left the well-house eager to learn. Everything had a name, and each name gave birth to a new thought. As we returned to the house every object which I touched seemed to quiver with life. That was because I saw everything with the strange, new sight that had come to me. On entering the door I remembered the doll I had broken. I felt my way to the hearth and picked up the pieces. I tried vainly to put them together. Then my eyes filled with tears; for I realized what I had done, and for the first time I felt repentance and sorrow.

10. The author implies in the first paragraph that, prior to the arrival of her teacher, she
- (A) experienced feelings of resentment and a time of inactivity
 - (B) had never felt loved before
 - (C) did not expect anything good to happen in her future
 - (D) was eager to learn about the world but lacked the means to
 - (E) was not dominated by sentimentalism and tenderness
11. The word "succeeded" in line 10 most nearly means
- (A) accomplished
 - (B) split
 - (C) followed
 - (D) broken
 - (E) performed
12. The analogy to "being at sea in a dense fog" (lines 12–18) is used to show that the author felt
- (A) scared, because she felt like she was sinking in her dark, still life
 - (B) angry, because she could not control her life
 - (C) adventurous, because she knew that learning could be like a journey
 - (D) lost, because she had difficulty communicating with the world
 - (E) confused, because her new teacher was trying to accomplish too much

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13. The author's reference to "finger play" in line 28 emphasizes her
- (A) childish need to learn by playing games with dolls and toys
 - (B) teacher's technique for teaching her grammar
 - (C) initial inability to understand that she was spelling words with her hands
 - (D) opinion that learning sign language was as easy as a child's game
 - (E) mother's helplessness in teaching her to communicate with her teacher
14. The passage suggests that the author broke the doll (line 46) in order to
- (A) express her frustration at her inability to understand her teacher's lesson
 - (B) lash out at her teacher for her teacher's failure to instruct her properly
 - (C) reveal the extent to which she felt enraged by her situation
 - (D) see if her teacher would become angry at her childish actions
 - (E) compare her teacher's reaction to her behavior to her mother's reaction
15. Which of the following best exemplifies the author's understanding of the significance of "w-a-t-e-r" (line 60)?
- (A) "I had not loved the doll" (line 49)
 - (B) "the fragrance of honeysuckle" (line 52)
 - (C) "a misty consciousness as of something forgotten" (line 57–58)
 - (D) "the wonderful cool" (line 60)
 - (E) "picked up the pieces" (line 70)
16. The difference between the author's experience in lines 29–34 ("When I...imitation") and in lines 59–63 ("I knew...away") can best be characterized as the difference between
- (A) pride and humility
 - (B) physical sensation and mental facility
 - (C) memorization and comprehension
 - (D) truth and mystery
 - (E) childishness and maturity
17. The narrator's attitude toward breaking the doll changes from
- (A) sorrow to understanding
 - (B) excitement to disgust
 - (C) anger to joy
 - (D) pleasure to regret
 - (E) indifference to enjoyment
18. According to the passage, the narrator views language as
- (A) a necessary but impractical part of life
 - (B) the key to her appreciation of the world around her
 - (C) a phenomenon that remains shrouded in mystery
 - (D) the only method that she can use to express her feelings
 - (E) a barrier to understanding her own thoughts

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Questions 19–24 are based on the following passage.

Discovering a previously unknown plant or animal is not an unusual occurrence in the scientific community. Biologists are constantly in the process of identifying and classifying new species. The following passage describes one recently discovered animal, *Nanalaricus mysticus*, which lives in the sand on the ocean floor.

In 1983, a previously unknown creature, *Nanalaricus mysticus*, which vaguely resembles an ambulatory pineapple, was described as a new species, new genus, new family, new order, and new phylum of animals. Barrel-shaped, a quarter of a millimeter long (one-hundredth of an inch), sheathed in neat rows of scales and spines, it possesses a snout up front and, when young, a pair of flippers like penguin wings at the rear. Almost nothing is known about its ecology and behavior, but we can guess from its body shape and armament that it burrows like a mole in search of microscopic prey.

To place a species in its own phylum, the decision made in this case by the Danish zoologist Reinhardt Kristensen, is a bold step. He said—and other zoologists agreed—that *Nanalaricus mysticus* is anatomically distinct enough to deserve placement alongside major groups such as the phylum Mollusca, comprising all the snails and other mollusks, and phylum Chordata, consisting of all the vertebrates and their close relatives. Kristensen named the new phylum Loricifera, from the Latin *lorica* (corset) and *ferre* (to bear). The “corset” in this case is the cuticular sheath that encases most of the body.

The Loriciferans—now a larger group, since about thirty other species have been discovered in the past decade—live among a host of other tiny, bizarre animals found in the spaces between grains of sand and gravel on the ocean bottom. This Lilliputian fauna is so poorly known that most of the species lack a scientific name. They are nevertheless cosmopolitan and extremely abundant. And they are almost certainly vital to the healthy functioning of the ocean’s environment.

The existence of Loriciferans and their submicroscopic associates is emblematic of how little we know of the living world, even that part necessary for our existence. We dwell on a largely unexplored planet. Large numbers of new species continue to be discovered every year. And of those already discovered, more than 99 percent are known only by a scientific name, a handful of specimens in a museum, and a few scraps of anatomical description in scientific journals. It is a myth that scientists break out champagne when a new species is discovered. Our museums are glutted with new species. We don’t have time to describe more than a small fraction of those pouring in each year. How many more unknown pieces of the ecological puzzle remain to be found? No one has the faintest idea; it is one of the great unsolved problems of science.

19. The passage serves primarily to
- (A) describe one of the ways in which scientists categorize formerly undiscovered species
 - (B) encourage zoologists to be bolder when making classifications
 - (C) reveal the extent of scientific ignorance concerning the life forms that inhabit the ocean floor
 - (D) point out the abundance of undiscovered life forms through the discussion of a new phylum
 - (E) express approval for the scientists who discovered *Nanalaricus mysticus*
20. The author most likely uses the words “ambulatory pineapple” because *Nanalaricus mysticus*
- (A) subsists on fruits and grains
 - (B) is smaller than a penguin
 - (C) is a mobile lifeform with scales and spines
 - (D) was unknown to science before 1983
 - (E) moves using a pair of flippers
21. The passage suggests that new species are classified according to their
- (A) position in the food chain
 - (B) reproductive behavior
 - (C) geographical location
 - (D) relationships to other animals
 - (E) physical characteristics
22. Lines 22–26 (“The Loriciferans...bottom”) suggest that
- (A) scientists cannot understand the behavior of bottom-dwelling creatures
 - (B) *Nanalaricus mysticus* was not the last animal to be included in its phylum
 - (C) *Nanalaricus mysticus* is less strange than dwellers found between grains of sand
 - (D) the Loriciferans can survive only at the ocean’s bottom
 - (E) some members of the group act as host to others

GO ON TO THE NEXT PAGE



-
23. It can be inferred that the author states “It is a myth... discovered” (lines 39–40) because
- (A) scientists no longer care about the discovery of new species
 - (B) new species are evolving at a faster rate than that at which scientists can discover them
 - (C) each new species discovered represents new knowledge about the world
 - (D) it is true that scientists view the discovery of a new species as a significant event
 - (E) the number of species that remain unstudied is staggering
24. The question posed in lines 42–43 (How many...found) serves to
- (A) illustrate the pace of new discovery
 - (B) provide an answer in the form of a rhetorical question
 - (C) highlight the limitless scope of a realm of knowledge
 - (D) criticize scientists for insufficient attention to species
 - (E) question the benefit of focusing on bottom-dwelling species

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.



SECTION 4
Time — 25 minutes
35 Questions

Turn to Section 4 of your answer sheet to answer the questions in this section.

Directions: For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

The following sentences test correctness and effectiveness of expression. Part of each sentence or the entire sentence is underlined; beneath each sentence are five ways of phrasing the underlined material. Choice A repeats the original phrasing; the other four choices are different. If you think the original phrasing produces a better sentence than any of the alternatives, select choice A; if not, select one of the other choices.

In making your selection, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, sentence construction, and punctuation. Your selection should result in the most effective sentence—clear and precise, without awkwardness or ambiguity.

EXAMPLE:

Bobby Flay baked his first cake and he was thirteen years old then.

- (A) and he was thirteen years old then
- (B) when he was thirteen
- (C) at age thirteen years old
- (D) upon the reaching of thirteen years
- (E) at the time when he was thirteen

A ● C D E

1. The tornado, a great swirling mass of violently rotating air, causes tremendous destruction whether it touches down on the earth.
 - (A) The tornado, a great swirling mass of violently rotating air, causes tremendous destruction whether it touches down on the earth.
 - (B) The tornado, a great mass of violently rotating air, causes tremendous destruction when it touches down on the earth.
 - (C) A great swirling mass of violently rotating air, the tornado causes tremendous destruction because of its touching down on the earth.
 - (D) When it touches down the earth, the tornado, a great swirling mass of violently rotating air, tremendous destruction is caused.
 - (E) Causing tremendous destruction when touching down to the earth, a great swirling mass of violently rotating air is a tornado.

2. *Abe Lincoln in Illinois* is a historical film about Abraham Lincoln's where his life as a shopkeeper, suitor, lawyer, legislator, and president.
 - (A) Lincoln's where his life
 - (B) Lincoln where he lives his life
 - (C) Lincoln in which he lives
 - (D) Lincoln's life
 - (E) Lincoln about his life
3. Some argue that talking on a cell phone while driving is no more distracting than eating a sandwich or looking at a map.
 - (A) eating a sandwich or looking at a map
 - (B) sandwich eating or looking at a map
 - (C) when compared to eating or looking at a sandwich or a map
 - (D) when you eat a sandwich or look at a map
 - (E) the acts of eating a sandwich or looking at a map
4. Vanessa took a leisurely lunch on Friday; walking through the park, the grass tickling her feet.
 - (A) walking through the park, the grass tickling her feet
 - (B) the grass tickled her feet while walking through the park
 - (C) finding the grass tickled her feet, walking through the park
 - (D) finding that walking through the park, made the grass tickle her feet
 - (E) the grass tickled her feet as she walked through the park

GO ON TO THE NEXT PAGE



5. As soon as the minister declared Anders and Siri husband and wife, the seven bells in the church tower ringing, and the spectators waiting outside the church sent up a rousing cheer.
- (A) Anders and Siri husband and wife, the seven bells in the church tower ringing
 (B) Anders and Siri to be husband and wife, the seven bells in the church tower ring
 (C) Anders and Siri being husband and wife, the seven bells in the church tower rang
 (D) that since Anders and Siri husband and wife, the seven bells in the church tower had rung
 (E) Anders and Siri husband and wife, the seven bells in the church tower rang
6. After his election to the town council, Randy announced that, clearly, there were many promises that he would be unable to keep.
- (A) Randy announced that, clearly, there were many promises that he would be unable to keep
 (B) Randy announced that there was many promises that he would be unable to keep clearly
 (C) Randy announced that there were many promises that he would clearly be unable to keep
 (D) clearly, Randy would be unable to keep his many promises
 (E) Randy clearly announced that there is many promises that he would be unable to keep
7. It is often assumed that women do not care for “violent” sports, such as football or boxing; however, this assumption overlooks the fact that many women are not only fans of these sports, but also participants in them.
- (A) such as football or boxing; however, this assumption overlooks the fact that many women are not only fans of these sports, but also participants in them
 (B) like football or boxing; it overlooks the women who are not only fans but will be participating in them
 (C) such as football or boxing, whereas this assumption, which overlooks the facts, misses that many women are not only fans of these sports, but also participants in them
 (D) like football or boxing; however, the fact that many women are not only fans of these sports, but also participants in them is overlooked through this assumption
 (E) such as football or boxing, assuming wrongly that many women are not only fans of these sports, but also participants in them
8. Never before in the course of human conflict has so much been owed by so many to so few.
- (A) has so much been owed
 (B) have we been so deeply in debt
 (C) has a large quantity been owed
 (D) is so much being owed
 (E) in which so much was owed
9. Many people assume that all aspiring singers strive to work on Broadway, in opera, or in the popular music industry, though many vocalists building successful careers at theme parks, performing on cruise ships, or working as backup singers.
- (A) though many vocalists building successful careers at theme parks, performing on cruise ships, or working as backup singers
 (B) still many vocalists are building successful careers at theme parks, performing on cruise ships, or working as backup singers
 (C) but in truth many vocalists build successful careers singing at theme parks, performing on cruise ships, or working as backup singers
 (D) despite the fact that many vocalists build successful careers at theme parks, or on cruise ships, or working as backup singers
 (E) even though many vocalists, building successful careers, sing at theme parks, performing on cruise ships, or backup singers
10. The Maginot Line proved itself to be worthless at defending France in wartime furthermore its construction cost drained French resources.
- (A) wartime furthermore its
 (B) wartime; furthermore, it’s
 (C) wartime, furthermore, it’s
 (D) wartime; furthermore, its
 (E) wartime, furthermore its
11. In the story *Peter Pan*, Wendy, along with John and Michael, fly to Never-Neverland beside Peter Pan to confront the dread Captain Hook.
- (A) along with John and Michael, fly to Never-Neverland beside Peter Pan
 (B) along with John and Michael, flies to Never-Neverland beside Peter Pan
 (C) along with John and Michael, is about to fly to Never-Neverland beside Peter Pan
 (D) besides John, Michael, and Peter Pan flying to Never-Neverland
 (E) John, and Michael flies to Never-Neverland, while beside Peter Pan

GO ON TO THE NEXT PAGE 



The following sentences test your ability to recognize grammar and usage errors. Each sentence contains either a single error or no error at all. No sentence contains more than one error. The error, if there is one, is underlined and lettered. If the sentence contains an error, select the one underlined part that must be changed to make the sentence correct. If the sentence is correct, select choice E. In choosing answers, follow the requirements of standard written English.

EXAMPLE:

The other players and her significantly improved
A B C

the game plan created by the coaches. No error
D E

A B C D E

12. Martha's high SAT score caused many of her classmates

to feel jealous for her, but they should have
A B

prepared themselves for the test as thoroughly as she
C

had . No error
D E

13. Despite their urban upbringing, the campers wanted
A

to have the most natural experience possible, and
B

therefore did not pack any utensils, sleeping bags, or no
C D

prepackaged food. No error
E

14. Kimberly had mixed success in her attempt to grow
A B

cacti and geraniums; while some died, the other thrived
C

because she failed to water them regularly. No error
D E

15. Throughout the fashion industry, both designers of
A

shoes and purse designers often choose to expand their
B C D

brands into other accessories. No error
E

16. One of the most amusing aspects of *The Iliad* is that,
A B

despite the immense size of the two clashing armies,

everyone knew everyone else's name . No error
C D E

17. It is common knowledge that adding spices to tofu
A B

always make it taste better . No error
C D E

18. Bats, much like honeybees, sometimes have specific
A B

roles in the cave, such as guarding the entrance and

scouting for new caves. No error
D E

19. Alan should of known that his sister would try to
A B C

blame the damaged headlight on him . No error
D E

20. Susie, despite having dated John for only one month,
A

was convinced that she and him were the perfect
B C D

couple. No error
E

GO ON TO THE NEXT PAGE 



21. While it was different from all of the other classes
A B
he had ever taken, Erik was still unhappy with his
C D
psychology class. No error
E
22. By the time she finishes her last final exam next
A B
week, Jen has spent eighteen hours consolidating,
C
outlining, and studying her class notes. No error
D E
23. The success of a new computer company lies in its
A
ingenuity; the machines must have a clever design, be
efficient in a unique way, and generally they provide
B
the consumer with previously unknown but now vital
C D
features. No error
E
24. Nothing prepared the country for the brutal civil war
A
it faced at the end of the century , even though they saw
B C D
several wars previously. No error
E
25. To talk with one's grandparents about their lives
A B C
when they were young is having a real understanding of
D
history. No error
E
26. Most of the exchange students which were working
A
in the shore area could barely make enough money
B
to support themselves during the summer months.
C D
No error
E
27. Either Jack or Ashlee are volunteering at the shelter this
A
weekend , but she won't go if he is going . No error
B C D E
28. As its popularity has grown , the Weimaraner, like other
A
popular breeds, have run the increasing risk of over-
B C D
breeding. No error
E
29. There was a time where it was common practice for men
A
to surrender their seats to women, but that era seems to
B C D
have passed. No error
E

GO ON TO THE NEXT PAGE 



Directions: The following passage is an early draft of an essay. Some parts of the passage need to be rewritten.

Read the passage and select the best answers for the questions that follow. Some questions are about particular sentences or parts of sentences and ask you to improve sentence structure or word choice. Other questions ask you to consider organization and development. In choosing answers, follow the requirements of standard written English.

Questions 30–35 are based on the following student essay.

(1) Last month I visited a sanctuary for birds of prey. (2) There were 30 outdoor cages, they were all large. (3) Each cage held between one and four birds of prey: hawks, eagles, owls, or vultures. (4) Besides each cage was information on the species of bird in the cage: range, habitat, size, rarity, and other interesting information. (5) The bird sanctuary takes birds which have been injured. (6) It tries to heal the birds. (7) The birds which are fully healed are released back into the wild. (8) Sadly, about half of the birds which arrive at the sanctuary can not be fully healed. (9) This was necessary, as birds of prey, which are unable to fly or see well, would not survive in the wild. (10) These birds are the ones in the cages. (11) I felt sad for the birds: their cages were large and they had good food, but it was clear that they wanted to fly free. (12) They would never be able to fly free again.

(13) The birds, which came from all over the United States, had been injured many ways, but there were two which were by far the most common. (14) Many birds had been hit by cars, and many others had been shot. (15) It is illegal to shoot birds of prey in the United States. (16) Seeing these hawks and even bald eagles which would never fly again made me angry. (17) It also convinced me to drive at a reasonable speed and watch out for animals. (18) On a happier note, I now feel a special thrill whenever I look up and see a bird of prey flying free.

30. The first paragraph is to be split into two smaller paragraphs. The most appropriate place to begin a new paragraph would be between
- (A) sentences 3 and 4
 - (B) sentences 4 and 5
 - (C) sentences 7 and 8
 - (D) sentences 8 and 9
 - (E) sentences 10 and 11
31. In context, which revision to sentence 4 is most needed?
- (A) Change “Besides” to “Beside”
 - (B) Eliminate “species of”
 - (C) Change “cage” to “cages”
 - (D) Replace the colon with a comma
 - (E) Change “and other interesting information” to “and so forth”
32. Which of the following, in context, is the best way to combine sentences 5 and 6, reproduced below?
- The bird sanctuary takes birds which have been injured. It tries to heal the birds.*
- (A) The sanctuary takes birds which have suffered an injury and tries to heal it.
 - (B) The sanctuary takes injured birds, and yet it tries to heal them.
 - (C) Birds are tried to be healed when injured at the sanctuary.
 - (D) Injured birds are healed when the sanctuary takes them.
 - (E) The sanctuary takes injured birds and tries to heal them.
33. Which of the following pairs of sentences should be switched with each other in order to improve the flow of the passage?
- (A) Sentences 2 and 3
 - (B) Sentences 9 and 10
 - (C) Sentences 11 and 12
 - (D) Sentences 13 and 14
 - (E) Sentences 16 and 17

GO ON TO THE NEXT PAGE



34. Sentences 14 and 15, reproduced below, can best be combined in which of the following ways?

Many birds had been hit by cars, and many others had been shot. It is illegal to shoot birds of prey in the United States.

- (A) Many birds had been hit by cars despite the fact that many others in the United States had been illegally shot.
- (B) Many birds had been hit and shot by cars in the United States; it is not legal.
- (C) Many birds had been hit by cars, and many others had been shot, even though it is illegal in the United States to shoot birds of prey.
- (D) Many birds had been hit by cars, and many others had been shot; while it is illegal to shoot birds of prey in the United States.
- (E) Many birds had been hit by cars, and many others had been shot; it is illegal in the United States.

35. Which of the following sentences can be eliminated without harming the meaning or flow of the passage?

- (A) Sentence 10
- (B) Sentence 15
- (C) Sentence 6
- (D) Sentence 4
- (E) Sentence 18

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.



SECTION 5

Time — 25 minutes

18 Questions

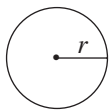
Turn to Section 5 of your answer sheet to answer the questions in this section.

Directions: This section contains two types of questions. You have 25 minutes to complete both types. For questions 1-8, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork.

Notes

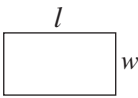
- The use of a calculator is permitted.
- All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
- Unless otherwise specified, the domain of any function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.

Reference Information

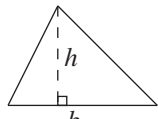


$$A = \pi r^2$$

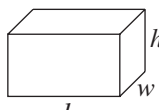
$$C = 2\pi r$$



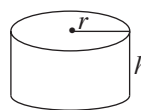
$$A = lw$$



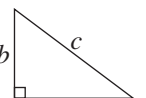
$$A = \frac{1}{2}bh$$



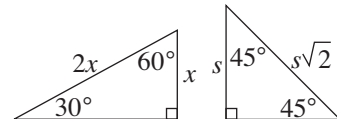
$$V = lwh$$



$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



Special Right Triangles

The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.

- If 7 times a number is 84, what is 4 times the number?
 - 16
 - 28
 - 48
 - 52
 - 56
- A painter drains 4 gallons of turpentine from a full 16-gallon jug. What percent of the turpentine remains in the jug?
 - 33%
 - 45%
 - 50%
 - 67%
 - 75%

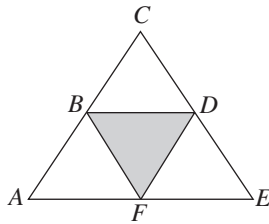
GO ON TO THE NEXT PAGE



3. If each number in the following sum were increased by t , the new sum would be 4.22. What is the value of t ?

$$\begin{array}{r} 0.65 \\ 0.85 \\ 0.38 \\ + 0.86 \\ \hline 2.74 \end{array}$$

- (A) 0.24
(B) 0.29
(C) 0.33
(D) 0.37
(E) 0.43



4. In the figure above, $\triangle ACE$ is equilateral, and B , D , and F are the midpoints of \overline{AC} , \overline{CE} , and \overline{AE} , respectively. If the area of $\triangle ACE$ is 24, what is the area of the shaded region?
- (A) 4
(B) 6
(C) 8
(D) 12
(E) 16

5. If $p = -\frac{1}{q}$, $q = -\frac{1}{r}$, $r = -\frac{1}{s}$, and $s = -\frac{1}{4}$, what is the value of p ?

- (A) -4
(B) $-\frac{1}{4}$
(C) 0
(D) $\frac{1}{4}$
(E) 4

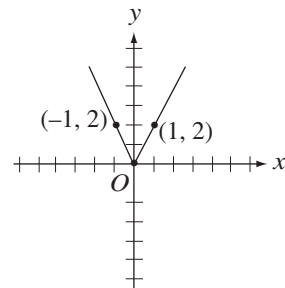
6. When 23 is divided by 3, the remainder is x . What is the remainder when 23 is divided by $2x$?
- (A) 1
(B) 2
(C) 3
(D) 4
(E) 5

GO ON TO THE NEXT PAGE



7. A monthly Internet service costs d dollars for the first 10 hours, and e dollars per hour for each hour after the first 10. Which of the following could represent the cost of the service, if h represents the total number of hours the service was used this month?

- (A) $d + e(h - 10)$
 (B) $d + 10eh$
 (C) $eh + 10d$
 (D) $eh(d - 10)$
 (E) $h(d + 10e)$



8. The graph of $y = f(x)$ is shown above. Which of the following could be the equation for $f(x)$?

- (A) $f(x) = 2x$
 (B) $f(x) = x^2$
 (C) $f(x) = 2x^2$
 (D) $f(x) = x - 2$
 (E) $f(x) = |2x|$

GO ON TO THE NEXT PAGE



Directions: For Student-Produced Response questions 9–18, use the grids to the right of the answer document page on which you have answered questions 1–8.

Each of the remaining 10 questions requires you to solve the problem and enter your answer by marking the circles in the special grid, as shown in the examples below. You may use any available space for scratch work.

Answer: $\frac{7}{12}$

Write answer in boxes. →

7	/	1	2
●	●	●	●
0	0	0	0
1	1	1	1
2	2	2	●
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
●	7	7	7
8	8	8	8
9	9	9	9

← Fraction line

Grid in result. →

Answer: 2.5

	2	.	5
●	●	●	●
0	0	0	0
1	1	1	1
2	●	2	2
3	3	3	3
4	4	4	4
5	5	5	●
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

← Decimal point

Answer: 201
Either position is correct.

	2	0	1
●	●	●	●
0	0	0	0
1	1	1	1
2	●	2	2
3	3	3	3
4	4	4	4
5	5	5	5

	2	0	1	
●	●	●	●	●
0	0	0	0	0
1	1	1	1	1
2	●	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5

Note: You may start your answers in any column, space permitting. Columns not needed should be left blank.

- Mark no more than one circle in any column.
- Because the answer document will be machine-scored, **you will receive credit only if the circles are filled in correctly.**
- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately.
- Some problems may have more than one correct answer. In such cases, grid only one answer.
- No question has a negative answer.
- **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as

3.5 or 7/2. (If

3	1	/	2
●	●	●	●

 is gridded, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)

- **Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid. For example, if you obtain an answer such as 0.6666..., you should record your result as .666 or .667. **A less accurate value such as .66 or .67 will be scored as incorrect.**

Acceptable ways to grid $\frac{2}{3}$ are:

	2	/	3
●	●	●	●
0	0	0	0
1	1	1	1
2	●	2	2
3	3	3	●
4	4	4	4
5	5	5	5
6	6	6	6

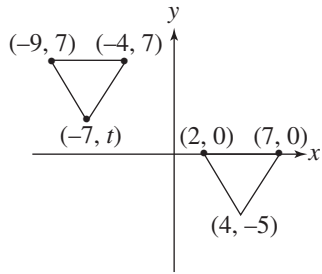
.	6	6	6
●	●	●	●
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	●	6	6

.	6	6	7
●	●	●	●
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	●	6	6

9. If $\sqrt{x} + 22 = 38$, $x =$

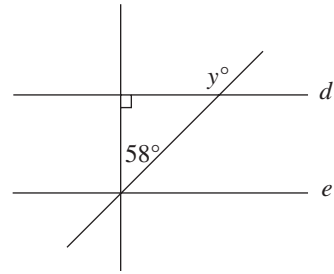
10. Set A contains all odd integers from 0 to 10 that are not prime. If y is a member of set A, what is one possible value of y ?

GO ON TO THE NEXT PAGE



11. In the figure above, the two triangles have the same area. What is the value of t ?

12. If q is an integer between 50 and 70 and can be expressed as $7j + 3$ where j is an integer, what is one possible value of q ?



13. In the figure above, if d is parallel to e , what is the value of y ?

14. Nine people in an investment club purchased \$114 worth of stock x . Each of five people bought a share of stock x . Each of three people bought $\frac{4}{5}$ of a share. One person bought $\frac{1}{5}$ of a share. How much did a share of stock x cost?

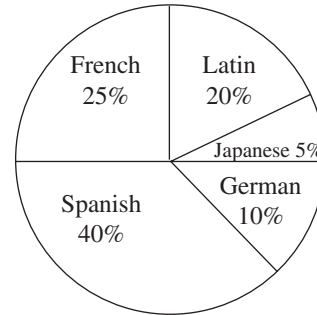
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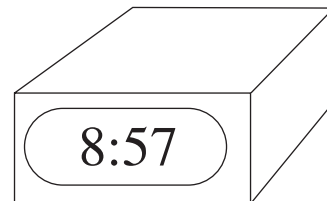
15. If $4^x \cdot n^2 = 4^{x+1} \cdot n$ and x and n are both positive integers, what is the value of n ?

16. If $f(x) = \frac{x^2 + 108}{9}$ and $f(3a) = -7a$, then what is the product of all possible real values of a ?

FOREIGN LANGUAGES STUDIED BY STUDENTS
AT LAWRENCE HIGH SCHOOL



17. The graph above shows the foreign languages studied by 500 students during the 1996–1997 academic year. At the beginning of the 1997–1998 academic year, the number of students studying a foreign language increased by 20, and the same number of students studied Spanish, Latin, and German as did during the previous year. If the percentage of students who studied Japanese increased to 10% during the 1997–1998 academic year, how many students studied French that year? (Assume that no student studied more than one foreign language at a time.)



18. The 12-hour digital clock above shows one example of a time at which the sum of the digits representing the time is equal to 20. During a 12-hour period, starting at noon, for how many minutes would the sum of the digits displayed be greater than or equal to 20?

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.



SECTION 6
Time — 25 minutes
20 Questions

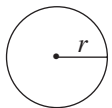
Turn to Section 6 of your answer sheet to answer the questions in this section.

Directions: For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork.

Notes

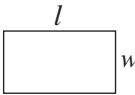
1. The use of a calculator is permitted.
2. All numbers used are real numbers.
3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
4. Unless otherwise specified, the domain of any function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.

Reference Information

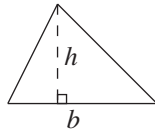


$$A = \pi r^2$$

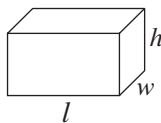
$$C = 2\pi r$$



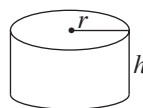
$$A = lw$$



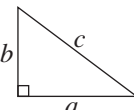
$$A = \frac{1}{2}bh$$



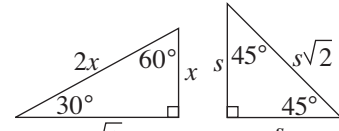
$$V = lwh$$



$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



Special Right Triangles

The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.

1. A bookcase with 6 shelves has 20 books on the top shelf and 30 books on each of the remaining shelves. How many books are there on all 6 shelves of the bookcase?
 - (A) 120
 - (B) 130
 - (C) 150
 - (D) 160
 - (E) 170
2. If $a + b = 14$, $b = \frac{c}{4}$, and $c = 24$, then $a =$
 - (A) 4
 - (B) 6
 - (C) 8
 - (D) 10
 - (E) 12

GO ON TO THE NEXT PAGE



3. A pack of 10 baseball cards costs \$3. A pack of 12 basketball cards costs \$3. If Karim spends \$15 on packs of one type of card, then at most how many more basketball cards than baseball cards could he purchase?
- (A) 5
(B) 10
(C) 12
(D) 15
(E) 18
-
4. A fleet of 5 trucks must make deliveries. Each truck is loaded with k cartons. Each carton contains 60 boxes. If there are a total of 900 boxes, what is the value of k ?
- (A) 3
(B) 5
(C) 7
(D) 9
(E) 10
-
5. If 35% of p is equal to 700, what is 40% of p ?
- (A) 98
(B) 245
(C) 280
(D) 800
(E) 2,000
-
6. The total cost to hold a party at a banquet hall is the result when the product of the number of guests and the cost of food per person is added to the product of the hourly cost to rent the hall and the number of hours the party will last. One hundred guests have been invited, the food costs a total of \$200, and the hall charges \$50 per hour. To save money, the organizers would like to reduce the length of the party from 4 hours to 2 hours. How much money would the organizers save by reducing the length of the party?
- (A) \$400
(B) \$300
(C) \$200
(D) \$100
(E) The price will not change.



GO ON TO THE NEXT PAGE



7. If $a - b = 119$ and $a - b = 7$, what is the value of a ?

- (A) 5
- (B) 12
- (C) 14
- (D) 17
- (E) 21

8. $\left[-\frac{1}{3}a^5b^2c^7\right]^3 =$

- (A) $-\frac{1}{9}a^8b^5c^{10}$
- (B) $-\frac{1}{9}a^{15}b^6c^{21}$
- (C) $\frac{1}{9}a^{15}b^5c^{21}$
- (D) $-\frac{1}{27}a^{15}b^6c^{21}$
- (E) $\frac{1}{27}a^8b^5c^{10}$

9. At a track meet, Brian jumped a distance of 14 feet, 9 inches. If Mike jumped exactly $2\frac{1}{2}$ feet farther than Brian, how far did Mike jump?

(1 foot = 12 inches.)

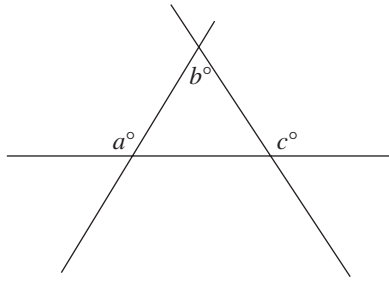
- (A) 17 feet, 6 inches
- (B) 17 feet, 5 inches
- (C) 17 feet, 3 inches
- (D) 17 feet, 2 inches
- (E) 17 feet, 1 inch

x	y
-3	-7
-1	-3
2	3

10. Based on the chart above, which of the following could express the relationship between x and y ?

- (A) $y = x - 4$
- (B) $y = x - 2$
- (C) $y = 2x - 1$
- (D) $y = 2x + 2$
- (E) $y = 3x - 3$

GO ON TO THE NEXT PAGE



11. Based on the figure above, which of the following expressions is equal to b ?

(A) $a - c$
 (B) $180 - (a + c)$
 (C) $(a + c) - 90$
 (D) $(a + c) - 180$
 (E) $360 - (a + c)$

12. If $12(10m + 8)(6m + 4)(2m) = 0$, then how many different possible values of m exist?

(A) One
 (B) Two
 (C) Three
 (D) Four
 (E) Five

1	2	3	4	5
---	---	---	---	---

13. In a certain game, a red marble and a blue marble are dropped into a box with five equally-sized sections, as shown above. If each marble lands in a different section of the box, how many different arrangements of the two marbles are possible?

(A) 5
 (B) 20
 (C) 25
 (D) 40
 (E) 100

14. If a square lies completely within a circle, which of the following must be true?

I. The radius of the circle is equal in length to one side of the square.
 II. The area of the square is less than the area of the circle.
 III. All four corners of the square touch the circle.

(A) I only
 (B) II only
 (C) I and II only
 (D) II and III only
 (E) I, II, and III

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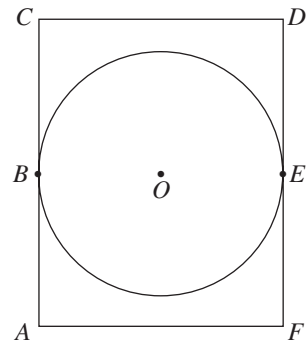


15. Which of the following could be the units digit of the cube of an integer?

- I. 2
 - II. 6
 - III. 8
- (A) I only
 (B) II only
 (C) I and II only
 (D) I and III only
 (E) I, II, and III

16. What is the remainder when the sum of three consecutive even integers is divided by 6?

- (A) 0
 (B) 1
 (C) 2
 (D) 3
 (E) 4



Note: Figure not drawn to scale.

17. In the figure above, $ACDF$ is a rectangle and the circle with center O has a radius of r . \overline{AC} is tangent to the circle at point B , \overline{DF} is tangent to the circle at point E , and $\angle COE$ measures 120° . If \overline{CF} (not shown) passes through O , then what is the length of \overline{CF} in terms of r ?

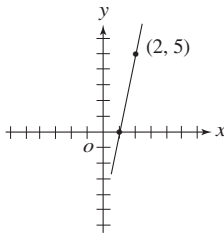
- (A) $2\pi r$
 (B) $2r\sqrt{2}$
 (C) $2r\sqrt{3}$
 (D) $4\pi r$
 (E) $4r$

GO ON TO THE NEXT PAGE

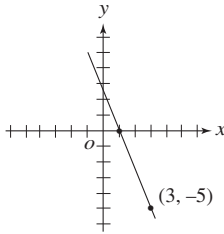


18. Which of the following is the graph of a line perpendicular to the line defined by the equation $2x + 5y = 10$?

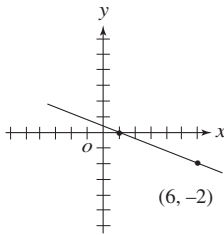
(A)



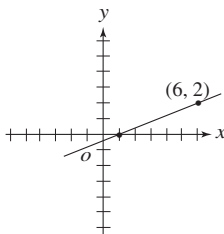
(B)



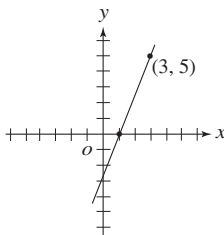
(C)



(D)



(E)



19. If y is directly proportional to the square of x , then which of the following tables could represent values of x and y ?

(A)

x	y
2	4
3	6
4	8

(B)

x	y
1	2
4	8
9	18

(C)

x	y
2	3
4	9
16	27

(D)

x	y
1	3
2	12
3	27

(E)

x	y
1	4
2	5
3	6

20. In a group of 300 mice, 75% are male and 20% are albino. What is the greatest number of mice in the group that could be both female and not albino?

- (A) 45
 (B) 60
 (C) 75
 (D) 225
 (E) 240

STOP

If you finish before time is called, you may check your work on this section only.
 Do not turn to any other section in the test.



SECTION 7

Time — 25 minutes

24 Questions

Turn to Section 7 of your answer sheet to answer the questions in this section.

Directions: For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

Example:

Desiring to ----- his taunting friends, Mitch gave them taffy in hopes it would keep their mouths shut.

- (A) eliminate (B) satisfy (C) overcome
(D) ridicule (E) silence

A B C D E

- As a person who would never ----- animals, Amelia takes extra care to avoid hitting squirrels while driving.
(A) maltreat (B) accept (C) placate
(D) discern (E) entreat
- Bacteria that cause illness in patients can be ----- by antibiotics, but these drugs can be made less ----- by prescribing them in excessive amounts.
(A) combated . . effective
(B) cultivated . . available
(C) diminished . . profitable
(D) repelled . . weak
(E) digested . . preventative
- Once rumors of Amy's lack of propriety were substantiated, the bookstore ----- its job offer to her.
(A) fortified (B) cogitated (C) tempered
(D) rescinded (E) regulated
- Although Mr. Skillman had surreptitiously embezzled a considerable sum of money during his career, he was surprisingly ----- when he ultimately professed his guilt to his superiors.
(A) conspiratorial (B) dull (C) forthright
(D) horrified (E) evasive
- The supervisor's questionable tactics provoked ----- among the workers that did not ----- until he stepped down.
(A) tranquility . . appear
(B) devotion . . vanish
(C) conflict . . emerge
(D) revolution . . develop
(E) dissent . . subside
- Just as Higgins is respected for her -----, she is also recognized for her ability to know when to ----- her responsibilities.
(A) lethargy . . transfer
(B) productivity . . hoard
(C) initiative . . delegate
(D) integrity . . overlook
(E) impartiality . . ignore
- Many people are under the impression that vitamin supplements are -----; however, doses that are not carefully regulated can be lethal.
(A) innocuous (B) virulent (C) efficacious
(D) capricious (E) artificial
- The architect, whose work has been described as functional but lacking elegance, has been criticized for paying too much attention to ----- concerns and not enough to ----- detail.
(A) financial . . decorative
(B) utilitarian . . aesthetic
(C) decisive . . pragmatic
(D) pedestrian . . opulent
(E) practical . . lucrative

GO ON TO THE NEXT PAGE 



Directions: Each passage below is followed by questions based on its content. Answer the questions on the basis of what is stated or implied in each passage and in any introductory material that may be provided.

Questions 9–10 are based on the following passage.

Line An excess of carbon dioxide—a chemical produced in
great quantities by automobiles, manufacturing, and human
beings—is thought to cause global warming and a host
of other environmental problems. To combat the effects
5 of this compound, some scientists have suggested that the
government simply plant more trees. Because trees and other
green plants consume carbon dioxide and produce oxygen, a
greater number of trees could reduce the amount of carbon
dioxide in the air, thus decreasing the negative impact on
10 the environment. Unfortunately, trees cannot lessen the
concentration of other harmful pollutants such as carbon
monoxide. Therefore, planting more trees is not by itself an
effective solution to air pollution.

9. The author's tone can best be described as
- (A) derisive
 - (B) admiring
 - (C) dismissive
 - (D) objective
 - (E) sentimental
10. Lines 10–12 (unfortunately...monoxide) serve primarily to
- (A) provide an explanation for a proposed course of action
 - (B) explain that an endeavor may not solve all aspects of a problem
 - (C) question those who worry more about carbon dioxide
 - (D) establish that a course of action will be entirely futile
 - (E) offers a restatement of a previous point

Questions 11–12 are based on the following passage.

Line When the United States entered World War II, thousands
of women filled professional positions that had long been
held almost exclusively by men. One of these women was
Gertrude Elion, who would become one of America's
5 foremost medical researchers. While a few women had
become notable scientists prior to Elion, she was one of the
first to gain widespread recognition during her lifetime.
Although Elion never completed a doctoral degree, she
developed treatments for several types of cancer and other
10 diseases. In 1957, Elion invented a drug that made the first
organ transplants possible. In her lifetime, Elion acquired,
among other honors, 45 patents, 23 honorary degrees, and a
Nobel Prize for medicine in 1988.

11. It can be reasonably inferred that Gertrude Elion
- (A) was one of the first American women to receive a doctoral degree
 - (B) was instrumental to the success of the first organ transplants
 - (C) is considered the greatest female scientist of the twentieth century
 - (D) would not have entered the medical field had it not been for World War II
 - (E) was the first woman in a male-dominated field
12. According to the passage, all of the following are true statements EXCEPT
- (A) Elion invented treatments for a variety of diseases
 - (B) Elion was active in her field during the 1950s
 - (C) because of her gender, Elion's efforts were not recognized by her peers
 - (D) women had been engaged in scientific research fields prior to Elion
 - (E) a doctoral degree was not then a prerequisite to becoming a successful scientist

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**Questions 13–24 are based on the following passage.**

Lyndon Johnson served as President of the United States from 1963 to 1968. In this passage, a noted historian presents one analysis of his administration.

Line 5 Robert McNamara once said to a friend that he would “never work with a more complicated man than Lyndon Johnson.” McNamara’s words appropriately described both the man and the administration he presided over. Rarely had any one individual, or any single administration aspired to so much, generated so many expectations, raised so many hopes, and ultimately suffered so many setbacks. Like the state he came from, Texas, Johnson represented a giant presence in American society. He brought the “liberal consensus” to its fullest expression in post–World War II history. Yet simultaneously, and through it all, he also exhibited the limitations, the tragic flaws, and the inherent contradictions of all that he embodied.

Line 15 No one could gainsay Johnson’s achievement. He wanted to be “the greatest of them all, the whole bunch of them,” and in many ways, he succeeded. In the areas of education, Medicare, urban development, social welfare, and above all, civil rights, he had achieved what few could even envision. As one civil rights leader noted at the time of Johnson’s death, “When the forces demanded and the mood permitted, for once an activist, human-hearted man had his hands on the levers of power ... [Lyndon Johnson] was there when we and the nation needed him, and oh my God, do I wish he was there now.”

Line 25 Yet in the very course of attempting to realize his dreams, Johnson exhibited fatal flaws of personality and political philosophy that contributed to his undoing. If egomania is an occupational disease of most politicians and virtually all presidents, Johnson carried the illness to its most extreme form. He personally was going to save the nation, right all the wrongs, emulate and then eclipse his mentors. He alone would make it all happen, rising above the conflicts he had been seeking to escape since childhood and imprinting, through personal will, his own brand of dominance on the entire nation. Fantasizing about his role as president, he told Doris Kearns, “If only I could take the next step and become dictator of the whole world, then I could really make things happen. Every hungry person would be fed, every ignorant child educated, every jobless man employed.”

Line 40 In retrospect, it is difficult to separate Johnson’s quest for dominance from his desire to correct injustice. Indeed, helping others often seemed to be the instrument by which he could most directly satisfy his own ego. Johnson desperately wanted to overshadow his political father, F.D.R.*; and the way to do that was to even more effectively uplift the downtrodden. If Johnson could achieve what had eluded F.D.R., then he would occupy the place in history reserved for the noblest and best leaders. Significantly, his moment of greatest triumph came after his landslide victory in 1964 when, he told Doris Kearns, “for the first time in all my life I truly felt loved by the American people.”

The tragedy of Lyndon Johnson was that both his personality and his political assumptions proved inadequate to the dimensions of the foreign policy and domestic tensions that would emerge during his presidency. This final irony, perhaps, was that the man who did more than anyone else to bring to perfection the politics of the liberal consensus ended up presiding over a fragmented nation. At the height of his success, his own commitment to aggressive anticommunism abroad —while seeking to maintain unity at home —would lead to the most severe division in American society since the Civil War.

*Franklin Delano Roosevelt, president of the United States from 1933–1945.

13. The main purpose of this passage is to
- (A) link Johnson’s personality with his presidential performance
 - (B) provide a history of Johnson’s administration
 - (C) prove that Johnson was our noblest and best leader
 - (D) celebrate Johnson’s civil rights achievements
 - (E) document Johnson’s dangerous mental instability
14. The author included the quote from Robert McNamara most probably to
- (A) support his argument with testimony from a close friend of Johnson
 - (B) introduce the coming discussion of Johnson’s presidency and character
 - (C) demonstrate that his view of Johnson is shared by many of Johnson’s contemporaries
 - (D) forestall an objection to his argument by providing documentary evidence
 - (E) lend an air of authority to his argument by quoting an appropriate expert
15. Lines 4–7 (“Rarely...setbacks”) suggest that Johnson was viewed as
- (A) complicated and simple
 - (B) large and impulsive
 - (C) successful and imperfect
 - (D) individual and cooperative
 - (E) arrogant and reflective

GO ON TO THE NEXT PAGE



16. The author quotes the civil rights leader (lines 20–24) in order to
- (A) provide an example of one of Johnson’s many character flaws
 - (B) strengthen his contention that Johnson was successful in the area of civil rights
 - (C) prove that Johnson was considered a leader of the civil rights movement
 - (D) demonstrate how Johnson abused the power of his office
 - (E) show that whatever his failings, Johnson was a kind man
17. The author suggests that Johnson achieved his most remarkable success in the area of
- (A) education
 - (B) health care
 - (C) urban development
 - (D) fighting communism
 - (E) civil rights
18. The author implies that Johnson’s failures as a President could primarily be attributed to
- (A) the complications that arose after America’s involvement in the Vietnam War
 - (B) Johnson’s failure to emulate the governing style of Franklin Delano Roosevelt
 - (C) the fragmented state of the nation that existed during Johnson’s presidency
 - (D) Johnson’s tendency to believe that he could single handedly right all the wrongs of society
 - (E) a combination of Johnson’s character and his myopic beliefs about politics
19. Johnson’s “illness,” mentioned in line 29, refers to
- (A) his fantasies of himself as world dictator
 - (B) his debilitating and ultimately fatal heart disease
 - (C) the self-centeredness common to politicians
 - (D) the inner conflicts that had haunted him since childhood
 - (E) the societal racism that he was never able to eliminate
20. As used in line 31, the word “eclipse” most nearly means
- (A) block
 - (B) surpass
 - (C) darken
 - (D) dominate
 - (E) personify
21. According to the author, Johnson’s desire for helping others (line 42)
- (A) served to bolster his self-esteem
 - (B) led to his foreign policy failures
 - (C) was distinct from his desire for dominance
 - (D) grew from his involvement in the civil rights movement
 - (E) resulted in his landslide victory in 1964
22. It can be inferred from the passage that Doris Kearns (lines 36 and 50)
- (A) was privy to Johnson’s most personal thoughts and moments
 - (B) served as a member of Johnson’s presidential cabinet
 - (C) was at times a confidante of Johnson
 - (D) was romantically involved with Johnson
 - (E) recorded Johnson’s words for later use in a biography
23. According to the author, what is ironic about Johnson’s legacy?
- (A) Though a humble man, his administration is renowned for its arrogance.
 - (B) The policies of a consensus builder proved to be politically divisive.
 - (C) It has never been acknowledged that he accomplished more than F.D.R.
 - (D) Despite his personal failings, as President he was unusually successful.
 - (E) Although he was physically large, Johnson was quite frail.
24. The author’s attitude toward Johnson is one of
- (A) scholarly detachment
 - (B) mild disappointment
 - (C) intense regret
 - (D) measured sympathy
 - (E) tragic realization

STOP

**If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.**



SECTION 8
Time — 20 minutes
19 Questions

Turn to Section 8 of your answer sheet to answer the questions in this section.

Directions: For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

Example:

Desiring to ----- his taunting friends, Mitch gave them taffy in hopes it would keep their mouths shut.

- (A) eliminate (B) satisfy (C) overcome
 (D) ridicule (E) silence

(A) (B) (C) (D) ●

1. Jamal's efforts to ----- his spending habits hit a snag every time he walked by a used bookstore because it seemed that he could always ----- buying more books.
 - (A) emphasize . . understand
 - (B) exaggerate . . mandate
 - (C) curb . . justify
 - (D) control . . reject
 - (E) undermine . . imagine

2. To the theater critic, having a CD player on stage during a play about the 1950s was as ridiculously ----- as featuring a cellular phone in a performance set in ancient Rome.
 - (A) anachronistic (B) antiquated (C) naive
 - (D) timorous (E) muddled

3. Detectives often solve crimes not through sudden dramatic inspiration, but rather through a gradual investigative approach that ----- all possibilities until only one explanation remains.
 - (A) foretells (B) redistributes (C) exhausts
 - (D) entraps (E) disrupts

4. The students in the ballroom dancing class stood in awe of their teachers, a ----- pair that twirled with effortless grace around the dance floor.
 - (A) menacing (B) fractious (C) lithe
 - (D) contemptuous (E) deceptive

5. After a sudden ----- in popularity, the director's unique compositional method is now experiencing a mild renaissance among fans of experimental film.
 - (A) blandishment (B) disparity (C) transgression
 - (D) ebb (E) elevation

6. It was clear from the ----- in his voice that the contractor was truly sorry for the massive delays in the project and was hoping for ----- for causing the couple such inconvenience.
 - (A) strain . . adulation
 - (B) contrition . . clemency
 - (C) remorse . . justification
 - (D) gratification . . remediation
 - (E) jubilation . . amelioration

GO ON TO THE NEXT PAGE



Directions: Each passage below is followed by questions based on its content. Answer the questions on the basis of what is stated or implied in each passage and in any introductory material that may be provided.

Questions 7–19 are based on the following passages.

In the 1940s, a musical form called “bop” or “be-bop” evolved out of traditional jazz music. Some of its great proponents were Dizzy Gillespie, Charlie Parker, and Thelonius Monk. The first passage was written in 1987 by a contemporary of Dizzy Gillespie’s, and the second is an analysis of be-bop written in 1991.

Passage 1

In Philadelphia in 1940 or 1941—just before I got drafted, anyway—I had a concert going on in the Academy of Music. I don’t remember who was playing, but it must have been an authentic New Orleans jazz band, with maybe a Chicagoan
 5 or two thrown in. I’m sure Joe Sullivan was on piano. A local entrepreneur named Nat Segal, who owned a club called the Downbeat in South Philadelphia, asked me if I would, as a favor to him, permit a young trumpet player and a girl singer to participate. In those days there weren’t any major music controversies going on in the business. We were still saying, in our sublime ignorance, “It’s all jazz.” So I agreed to have Nat’s people on stage briefly, to give them an opportunity to be exposed to a concert audience. The skinny little girl singer, whom I judged to be about sixteen, told me her name
 10 was Sarah Vaughan. And the trumpeter, whom I had met before in Minton’s in New York where he had seemed to be only fooling around with the other musicians on the stand, Thelonious Monk and Charlie Parker and, I think, Slim Gaillard (it’s hard to remember for sure—after all, it was
 15 more than forty years ago), was Dizzy Gillespie.

So, anyway, he played in one or two sets at the Academy, and he still seemed to be just fooling around. I talked to him for a while backstage, and it struck me that he was far more personable and intelligent than most of the musicians I
 25 had been associated with in the world of authentic jazz. On reflection, I admitted to myself that most of these younger musicians playing that strange music they were calling “be-bop” were superior folks, generally better educated, more civilized. Their manners were better, they were more
 30 polite, more considerate of each other. I found what they were playing to be very boring, and the more I heard it and understood it, the less I liked it. I said all that to young Dizzy, and he said, “Everything moves along, man. It’s not a question of whether it’s better or worse, it just keeps movin’.”
 35 There’s no reason musicians, especially young ones, shouldn’t experiment with the instruments—find out how far they can go.”

Passage 2

In the early 1940s, an alternative direction in jazz was congealing in the styles of altoist Charlie “Bird” Parker
 40 and trumpeter John “Dizzy” Gillespie with more than a little assistance from pianist/composer/arranger Thelonius

Monk. Parker, an alumnus of the Kansas City–styled big band of Jay McShann, had been “goofing around” with upper harmonics—ninth, eleventh, and thirteenth—since about
 45 1939. At a Harlem club called Minton’s Playhouse, Gillespie and Monk were also looking for something. When they all came together in 1944 and 1945, be-bop was born.

Put as simply as possible, be-bop was swing music turned inside out. If a swing drummer played beats one and three, the
 50 bop drummer would emphasize two and four—or any beats that took his fancy, if that’s what he felt like. Since swing drummers laid heavy emphasis on the bass drum and tomtoms, the bop drummer played mostly high up, on the snares and cymbals. Because swing bands usually played reeds
 55 versus brass, the bop bands mixed sections. Solos tended to be more frantic, with plenty of sixteenth and thirty-second notes, exploring variations on the harmony rather than the melody. At such high speeds they also altered the concept of rhythm, moving away from uneven (“swinging”) pairs
 60 of notes to even (“bopping”) figures. And last, the boppers tried to reject or at least alter the regular Tin Pan Alley tunes that swing musicians played. Their compositions, though based on changes of some early songs, had more unusual
 65 chording, and melodies that were in themselves authentic jazz compositions (for instance, Dizzy Gillespie’s “Groovin’ High” as an improvisation on the chord pattern of “Whispering”). I am not altogether convinced that bop was a better or more creative way of playing jazz—it was simply different, more harmonically advanced, and inevitably more difficult to do
 70 well. This is one reason why the great interpreters of bop during the period from 1945 to 1955 amount to fewer than two dozen, whereas there were scores of excellent jazz musicians working in older idioms.

In 1945, a small label called Musicraft became the first to
 75 record and issue the “new music” commercially. Gillespie’s quintet made “Groovin’ High,” included on *Jazz Vol. 11*, and others that first confused and then influenced many others. The first Gillespie group wasn’t all bop; the band had a somewhat mixed style. Nevertheless, the 1945 Musicrafts are
 80 the first bop records.

After this initial stage of togetherness, however, the bop pioneers went essentially different ways. Gillespie formed the first bop big band, one that enjoyed unusual popular success for so experimental a group (possibly due to a general public
 85 interest in “new” things, as well as the pioneering of Kenton). Despite the fact that Monk was an arranger for a time, both he and Parker tended to prefer the intimacy of small groups.

GO ON TO THE NEXT PAGE



7. It can be most reasonably inferred from the author's reference to "music controversies" (lines 9–10) that
- (A) the jazz industry would not always remain free of controversy
 - (B) jazz had been divided by fierce disagreements amongst musicians since its inception
 - (C) the narrator is ignorant of the wild popularity of be-bop
 - (D) rock-and-roll musicians often sparked controversies in the media
 - (E) music was undergoing a radical change in the early 1940s
8. In Passage 1, the author uses the expression "It's all jazz" (line 11) to mean that
- (A) different types of jazz were musically identical to non-musicians
 - (B) the jazz music business was crippled by controversy
 - (C) all music was derived from a form of jazz
 - (D) any type of jazz music was worthy of attention
 - (E) the jazz community was ignorant of other musical styles
9. According to the final paragraph of Passage 1, bop musicians tended to differ from other jazz musicians in that
- (A) they were better educated and more polite
 - (B) they were less concerned with making their music popular
 - (C) their music was more refined
 - (D) they were strongly influenced by swing music
 - (E) they had a better understanding of different types of music
10. Which of the following best describes the attitude toward be-bop music expressed by the author of Passage 1?
- (A) He considered it an inferior imitation of traditional jazz forms.
 - (B) He found it intriguing but extremely difficult to understand.
 - (C) Although he came to understand the form, he found it uninteresting.
 - (D) He disliked it initially but grew to appreciate it.
 - (E) He considered it an important and inevitable link in the evolution of jazz.
11. Which of the following best expresses the idea conveyed by Dizzy Gillespie in lines 33–34 ?
- (A) Musicians must experiment with different instruments to perfect jazz.
 - (B) Musicians most easily achieve fame by developing new types of music.
 - (C) The evolution of musical forms inevitably leads to richer, more complex musical styles.
 - (D) Music, including jazz, is in a constant state of evolution.
 - (E) The future of jazz lies in the hands of young musicians.
12. In Passage 2, the phrase "be-bop was swing music turned inside out" (lines 48–49) serves to
- (A) highlight the interchangeable roles of pianist, composer, and arranger
 - (B) accord bop musicians greater respect than swing musicians
 - (C) contrast the rhythmic, instrumental, and harmonic elements of swing and bop
 - (D) compare the work of Charlie "Bird" Parker to that of Jay McShann
 - (E) contrast the uses of upper and lower harmonic scales
13. The author of Passage 2 uses "Groovin' High" (line 65) as an example of which of the following?
- (A) A swing piece upon which bop musicians improvised
 - (B) One of Dizzy Gillespie's early solo works
 - (C) A Tin Pan Alley piece rejected by bop musicians
 - (D) A swing piece written by a musician who later became involved in bop
 - (E) A bop piece based in part upon an earlier swing piece
14. The author of Passage 1 would most likely respond to lines 67–70 ("I am...well") with
- (A) complete agreement
 - (B) veiled amusement
 - (C) understated resentment
 - (D) partial disagreement
 - (E) marked ambivalence
15. In line 70, the word "interpreters" is closest in meaning to
- (A) composers
 - (B) performers
 - (C) translators
 - (D) critics
 - (E) inventors

GO ON TO THE NEXT PAGE 



16. According to lines 67–70, which of the following is true of bop music?
- (A) It is a more creative form than swing music.
 (B) It emphasizes uneven note pairing.
 (C) It was first recorded by Jay McShann’s big band.
 (D) It was a more harmonically sophisticated form of jazz music than swing was.
 (E) It was the earliest form of jazz music.
17. The author of Passage 2 states that “there were scores of excellent jazz musicians working in older idioms” (lines 72–73) to emphasize that
- (A) the public did not come to appreciate and support bop music until the 1950s
 (B) fewer performers were able to master the demanding form of bop
 (C) traditional forms could be appreciated by a larger group
 (D) most jazz musicians preferred the greater discipline and complexity of traditional forms
 (E) bop was a style that major record labels were initially reluctant to carry
18. In discussing Dizzy Gillespie, both the author of Passage 1 and the author of Passage 2
- (A) express personal affection for him
 (B) state that he was the most influential bop musician
 (C) explore the significance of his compositions
 (D) argue his importance to the evolution of jazz
 (E) refer to his music in a discussion of be-bop
19. Which of the following best summarizes the difference in perspective between the two passages?
- (A) Passage 1 considers the origins of a musical form, while Passage 2 is concerned with the future of the form.
 (B) Passage 1 expresses ambivalence, while Passage 2 expresses a strong opinion.
 (C) Passage 1 presents a specific incident, while Passage 2 offers a historical overview.
 (D) Passage 1 discusses the evolution of jazz, while Passage 2 focuses on musical theory.
 (E) Passage 1 presents an emotional argument, while Passage 2 is primarily factual.

STOP

If you finish before time is called, you may check your work on this section only.
 Do not turn to any other section in the test.



SECTION 9
Time — 20 minutes
16 Questions

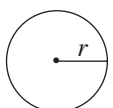
Turn to Section 9 of your answer sheet to answer the questions in this section.

Directions: For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork.

Notes

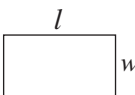
1. The use of a calculator is permitted.
2. All numbers used are real numbers.
3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
4. Unless otherwise specified, the domain of any function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.

Reference Information

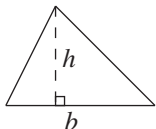


$$A = \pi r^2$$

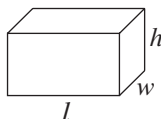
$$C = 2\pi r$$



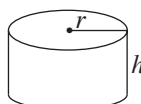
$$A = lw$$



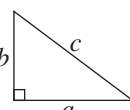
$$A = \frac{1}{2}bh$$



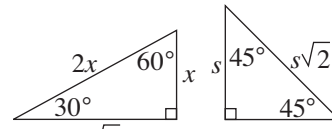
$$V = lwh$$



$$V = \pi r^2 h$$



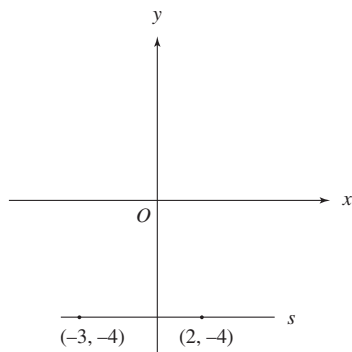
$$c^2 = a^2 + b^2$$



Special Right Triangles

The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.



1. In the figure above, what is the slope of line s ?

- (A) -1
 (B) $-\frac{1}{2}$
 (C) 0
 (D) $\frac{1}{2}$
 (E) 2

2. A local theater group sold tickets to a performance. The group sold 100 adult tickets and 50 child tickets. If the group made exactly \$800 in ticket sales, which of the following pairs (a, c) could represent the price of an adult ticket, a , and the price of a child ticket, c ?

- (A) $(9, 1)$
 (B) $(8, 2)$
 (C) $(7, 3)$
 (D) $(6, 4)$
 (E) $(5, 5)$

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3. Out of 10,000 computer chips, 38 are found to be defective. At this rate, how many chips would be defective out of a million?

(A) 380
(B) 3,800
(C) 38,000
(D) 380,000
(E) 3,800,000

$$\frac{1}{8} + \frac{1}{10} = \frac{a}{b}$$

4. In the equation above, if a and b are positive integers and $\frac{a}{b}$ is in its simplest reduced form, what is the value of a ?

(A) 2
(B) 9
(C) 18
(D) 36
(E) 40

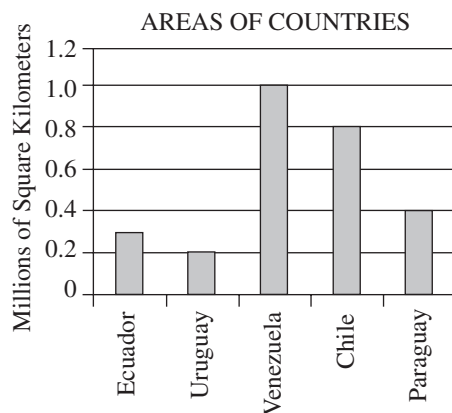
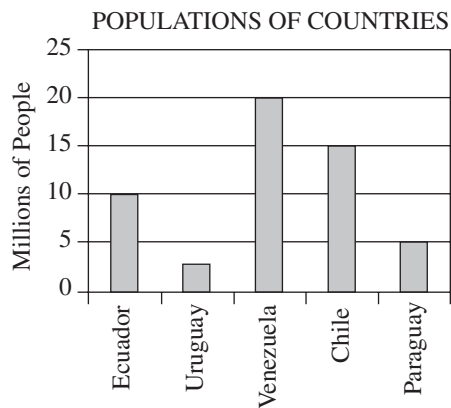
5. Juanita bought five items at the store. The prices of the first four items were \$6, \$11, \$14, and \$19. All five items were taxed at a rate of 5%, and the total cost of all five items, including tax, was \$63. What was the price of the fifth item?

(A) \$3
(B) \$5
(C) \$6
(D) \$8
(E) \$10

6. If $a = -2$, then $a + a^2 - a^3 + a^4 - a^5 =$

(A) -32
(B) -18
(C) 0
(D) 32
(E) 58

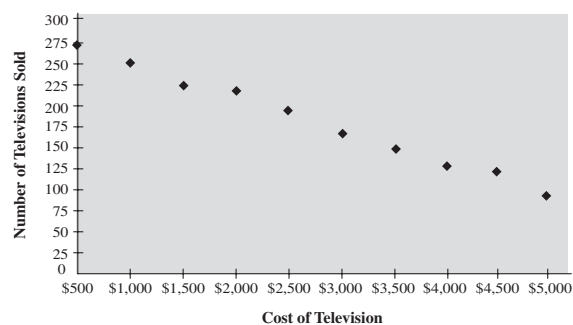
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7. The populations and areas of five countries are shown in the graphs above. If population density is defined as $\frac{\text{population}}{\text{area}}$, which of the five countries has the highest population density?
- (A) Ecuador
 (B) Uruguay
 (C) Venezuela
 (D) Chile
 (E) Paraguay

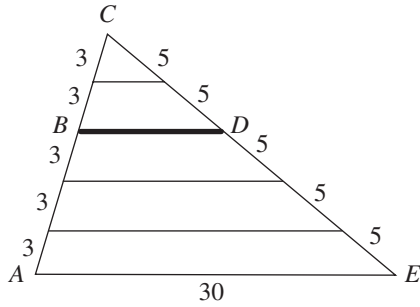
$$n = \frac{12}{p}$$

8. The number of bananas a fruit stand sells per day, n , varies inversely as the dollar price per banana that day, p , as shown in the formula above. On Tuesday, the stand sold 60 bananas. What was the price per banana on Tuesday?
- (A) \$0.20
 (B) \$0.25
 (C) \$0.50
 (D) \$2.00
 (E) \$5.00



9. A certain store sells televisions ranging in price from \$500 to \$5,000 in increments of \$500. The graph above shows the total number of televisions sold at each price during the last 12 months. Approximately how much more revenue did the store collect from the televisions it sold priced at \$3,500 than it did from the televisions it sold priced at \$1,000?
- (A) \$175,000
 (B) \$250,000
 (C) \$275,000
 (D) \$350,000
 (E) \$525,000

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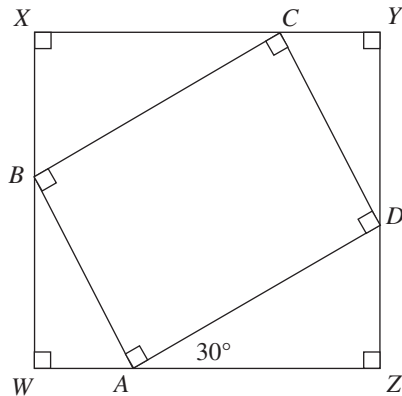


10. In the figure above, what is the length of \overline{BD} ?

- (A) 8
- (B) 9
- (C) 12
- (D) 15
- (E) 16

12. Amy, Ben, and Dave are each flying to different cities. One of them is flying to Seattle, one of them is flying to London, and one of them is flying to St. Louis. Each flight is next week on one of three different days—Wednesday, Thursday, or Friday. Amy's flight is before Dave's, but after the flight to London. Dave is not flying to Seattle. For what day and to which city is Amy's flight?

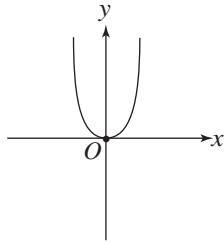
	<u>Day</u>	<u>City</u>
(A)	Thursday	Seattle
(B)	Thursday	St. Louis
(C)	Wednesday	London
(D)	Wednesday	Seattle
(E)	Tuesday	St. Louis



11. In the figure above, $ABCD$ is a rectangle. If $YD = 4$ and $DZ = 3$, what is the area of $ABCD$?

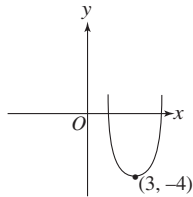
- (A) $3\sqrt{3}$
- (B) 7
- (C) $8\sqrt{3}$
- (D) $16\sqrt{3}$
- (E) 49

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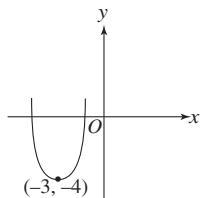


13. The graph of $y = x^2$ is shown in the figure above. Which of the following is the graph of $y = -(x + 3)^2 - 4$?

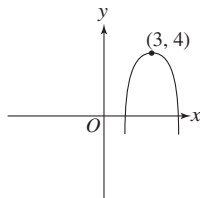
(A)



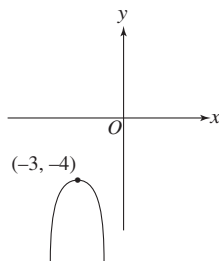
(B)



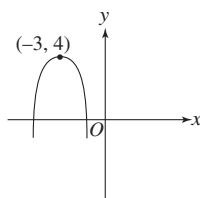
(C)



(D)



(E)



14. If $\left(\frac{xy}{2}\right)^2 = 1$ and $x^y = 1$, where x and y are greater than zero, what is the value of y ?

- (A) 2
 (B) 3
 (C) 4
 (D) 5
 (E) 6

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-
15. In a list of seven integers, 13 is the smallest member, 37 is the largest member, the mean is 23, the median is 24, and the mode is 18. If the numbers 8 and 43 are then added to the list, which of the following will change?
- I. The mean
 - II. The median
 - III. The mode
- (A) I only
(B) I and II only
(C) I and III only
(D) II and III only
(E) I, II, and III
16. What is the area of a circle centered at $(4, 3)$ that passes through the origin?
- (A) 9π
 - (B) 12π
 - (C) 16π
 - (D) 25π
 - (E) 49π

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.



SECTION 10
Time — 10 minutes
14 Questions

Turn to Section 10 of your answer sheet to answer the questions in this section.

Directions: For each question in this section, select the best answer from among the choices given and fill in the corresponding circle on the answer sheet.

The following sentences test correctness and effectiveness of expression. Part of each sentence or the entire sentence is underlined; beneath each sentence are five ways of phrasing the underlined material. Choice A repeats the original phrasing; the other four choices are different. If you think the original phrasing produces a better sentence than any of the alternatives, select choice A; if not, select one of the other choices.

In making your selection, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, sentence construction, and punctuation. Your selection should result in the most effective sentence—clear and precise, without awkwardness or ambiguity.

EXAMPLE:

Bobby Flay baked his first cake and he was thirteen years old then.

- (A) and he was thirteen years old then
- (B) when he was thirteen
- (C) at age thirteen years old
- (D) upon the reaching of thirteen years
- (E) at the time when he was thirteen

A ● C D E

1. Having made significant contributions to the field of nursing Clara Barton.
- (A) Having made significant contributions to the field of nursing Clara Barton.
 - (B) Significant contributions to the field of nursing were made by Clara Barton.
 - (C) Clara Barton made significant contributions to the field of nursing.
 - (D) Clara Barton having made significant contributions to the field of nursing.
 - (E) Clara Barton contributed significantly to nursing, her field.

2. Allergy season begins with the release of pollen spores in the spring and ends with the first frost in the late fall.
- (A) begins with the release of pollen spores in the spring and ends
 - (B) that begins with the release of pollen spores in the spring and ends
 - (C) have begun with the release of pollen spores in the spring and ending
 - (D) beginning with the release of pollen spores in the spring and ending
 - (E) are begun with the release of pollen spores in the spring and ended
3. Millions of silkworms to produce the raw material needed to meet the worldwide demand for high-quality silk, over half of which is manufactured in just two countries.
- (A) to produce the raw material
 - (B) produce the raw material
 - (C) would have produced what raw material was
 - (D) for producing the raw material was
 - (E) producing the raw material
4. My best friend, who moved to the United States from Guatemala at the age of ten, has, in recent years, spoken English fluently but still encounters seemingly basic words he does not know the meaning of.
- (A) who moved to the United States from Guatemala at the age of ten, has, in recent years, spoken English fluently
 - (B) who moved to the United States from Guatemala while being ten years old, has spoken English fluently
 - (C) moving to the United States from Guatemala when he was ten years old, now is speaking English fluently
 - (D) who moved to the United States from Guatemala at the age of ten years, now speaking English fluently in recent years
 - (E) who moved to the United States from Guatemala at the age of ten, now speaks English fluently

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5. Believe it or not, although he is only 15, Sanjay is considered as one of the best soccer players in the entire league.
- (A) considered as
 (B) considered to be
 (C) regarded to be
 (D) regarded as being
 (E) regarded as having been
6. Although he is fond of the music of both composers, Mr. Gomez prefers the compositions of Mozart to Beethoven.
- (A) the compositions of Mozart to Beethoven
 (B) the compositions of Mozart to Beethoven's compositions
 (C) Mozart's compositions to Beethoven
 (D) compositions by Mozart to compositions by Beethoven
 (E) Mozart's compositions to Beethoven's
7. In the stage adaptation of *The Three Musketeers*, D'Artagnan asks Constance to flee the country with Artemis and he after their escapades are discovered.
- (A) D'Artagnan asks Constance to flee the country with Artemis and he after their escapades are discovered
 (B) D'Artagnan asks Constance to flee the country with he and Artemis after their escapades are discovered
 (C) Constance is being asked by D'Artagnan and he to flee the country before Artemis discovers their escapades
 (D) D'Artagnan asks Constance to flee the country with Artemis and him after their escapades are discovered
 (E) their escapades being discovered and Constance having been invited by Artemis and him to flee the country
8. I am one of the few whom can rub my belly and pat my head at the same time.
- (A) I am one of the few whom can
 (B) I am one of the few who can
 (C) I am one of the few that can
 (D) I am one of the few people whom can
 (E) I was one of the few that can
9. The number of players injured during football games could be minimized if coaches made sure their players always wear protective gear, maintain hydration, and learn proper technique for tackling other players.
- (A) learn proper technique
 (B) they learned proper technique
 (C) by learning proper technique
 (D) if proper technique is learned
 (E) if there was proper technique learned
10. Despite its primitive technology, the mill runs this way for over 100 years.
- (A) the mill runs this way for over 100 years
 (B) the mill has ran this way for over 100 years
 (C) for over 100 years, the mill runs this way
 (D) the mill has run this way for over 100 years
 (E) for over 100 years, the mill was to run this way

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11. The Franklin Institute of Philadelphia, opened in 1824 and named after Benjamin Franklin, remains a popular destination for school children on class trips.
- (A) The Franklin Institute of Philadelphia, opened in 1824 and named after Benjamin Franklin, remains a popular destination for school children on class trips.
- (B) Remaining a popular destination for school children on class trips, the Franklin Institute of Philadelphia opened in 1824 and named after Benjamin Franklin.
- (C) The Franklin Institute of Philadelphia, a popular destination for children on school trips opened in 1824 and named after Benjamin Franklin.
- (D) A popular destination for school children on class trips, the Franklin Institute of Philadelphia was opened and had been named after Benjamin Franklin in 1824.
- (E) A popular destination for school children on class trips, in 1824 the Franklin Institute was opened and named after Benjamin Franklin.
12. Only after significant debate did the board of trustees adopt the new resolution, the changes to the university's structure would have a major impact on nearly every aspect of its budget.
- (A) Only after significant debate did the board of trustees adopt the new resolution,
- (B) Only after significant debate did the board of trustees adopt the new resolution, nevertheless
- (C) Although only after significant debate did the board of trustees adopt the new resolution,
- (D) Only after significant debate did the board of trustees adopt the new resolution, since
- (E) Since only after significant debate did the board of trustees adopt the new resolution,
13. My friend ran a farm but refused to kill the animals he raised nor otherwise selling them for food.
- (A) raised nor otherwise selling
- (B) had raised nor otherwise did they sell
- (C) have raised or otherwise to have sold
- (D) raised or otherwise sold
- (E) had raised or otherwise to sell
14. The selection of gifts at Joanne's Flower Shop, including vases, balloons, and cards, is far superior to Brian.
- (A) is far superior to Brian
- (B) are far superior to Brian
- (C) is far superior to Brian's shop
- (D) are far superior to Brian's shop
- (E) is far superior to that of Brian's shop

STOP

**If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.**