



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.

The more critical reason dominates, the more impoverished life becomes. When reason is overvalued, the individual suffers a loss. Relying more on facts and rationality than on imagination and theory detracts from the quality of a person's intellectual life.

Adapted from Carl Jung

Assignment: Is knowing facts as important as understanding ideas and concepts? Plan and write an essay in which you develop your point of view on this issue. Support your position with reasoning and examples taken from your reading, studies, experience, or observations.

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

24 Questions

Turn to Section 2 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. Nuclear power plants are some of the largest producers of ----- wastes, with each plant producing barrels of radioactive material that must be stored in special protective containers.
(A) biodegradable (B) artificial (C) reasonable
(D) durable (E) noxious
2. The scientific community was ----- when a living specimen of the coelacanth, thought to be no longer -----, was discovered by deep-sea fishermen.
(A) perplexed . . common
(B) overjoyed . . dangerous
(C) unconcerned . . local
(D) astounded . . extant
(E) dismayed . . alive
3. After the governor's third trip overseas, voters complained that he was paying too little attention to ----- affairs.
(A) intellectual (B) extraneous (C) specialized
(D) aesthetic (E) domestic
4. The Roman Emperor Claudius was viewed with ----- by generations of historians until newly discovered evidence showed him to be ----- administrator.
(A) suspicion . . a deficient
(B) reluctance . . an inept
(C) antagonism . . an eager
(D) indignation . . an incompetent
(E) disdain . . a capable
5. Communities in primitive areas where natural ----- is scarce must be resourceful in order to secure adequate nutrition.
(A) development (B) competition (C) sustenance
(D) augmentation (E) intervention
6. Morgan's interest was focused on ----- the division between theory and empiricism; she was convinced that a ----- of philosophy and applied science was possible and necessary.
(A) eradicating . . synthesis
(B) maintaining . . restoration
(C) crossing . . stabilization
(D) overlooking . . duplicity
(E) refuting . . delineation
7. His style is best described as -----: his signature vivid colors and mixture of bold patterns, combined with his dramatic bearing, always make him the center of attention.
(A) vehement (B) imperious (C) modest
(D) flamboyant (E) stoic
8. Although at times Nikolai could be disagreeable and even -----, more often than not he was the most ----- person you could hope to meet.
(A) contentious . . complaisant
(B) disgruntled . . befuddled
(C) contradictory . . disconcerted
(D) misguided . . solicitous
(E) curmudgeonly . . didactic

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.

Though today Zora Neale Hurston is best known as an author, many readers overlook Hurston's contributions as an anthropologist. Drawn by the Harlem Renaissance, Hurston crafted both fiction and nonfiction that deconstructed the African American experience. Hurston also worked with noted anthropologist Franz Boas to debunk the claims of racist scientists. Her desire to disprove these eugenicists' claims led her to measure the skulls of African Americans on the streets of New York. Her cultural studies of Eatonville, Florida, still remain some of the richest anthropological writing about the African American South.

9. The term “deconstructed” in line 4 implies that Hurston

- (A) participated fully in the Harlem Renaissance
- (B) engaged in scientific experiments
- (C) made a deliberate study of African American life
- (D) cut herself off from Harlem to write about it objectively
- (E) attempted to bring about sweeping changes to African-American communities

10. The passage LEAST supports which of the following statements about Zora Neale Hurston?

- (A) She was influenced by the blossoming of the arts in Harlem.
- (B) She was a widely recognized social anthropologist.
- (C) She attempted to measure the cranial capacity of African Americans.
- (D) She investigated the culture of a Southern town.
- (E) She was an author highly skilled in several genres.

Questions 11–12 are based on the following passage.

Many modern naval vessels are equipped with a sophisticated new sonar system called SURTASS LFA. Environmentalists argue that the intensity of the sound bursts emitted by the system, measured at 215 decibels, poses a serious threat to marine wildlife. (In contrast, a rock concert reaching only 150 decibels is considered a health risk to humans.) They claim that the alarming number of whale carcasses found on beaches near areas where vessels use SURTASS LFA are evidence of its impact. Proponents of SURTASS LFA argue that no causal link between the use of the system and these whale deaths has been established, and contend that the system is safe.

11. The purpose of this passage is primarily to

- (A) demonstrate that the claims of environmentalists are unfounded
- (B) argue against further use of SURTASS LFA
- (C) outline a controversy regarding the use of a new technology
- (D) emphasize the danger humans pose to wildlife
- (E) summarize the arguments of environmentalists who oppose SURTASS LFA

12. The example of the rock concert serves to

- (A) compare the way humans and whales are affected by sound
- (B) bolster the author's overall argument in favor of banning SURTASS LFA
- (C) refute environmentalists' claims about sonar's dangers
- (D) provide a context from which to judge the intensity of SURTASS LFA emissions
- (E) foreshadow an argument the author will soon present

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Questions 13–24 are based on the following passage.

The following passage was excerpted from a book called *The Extraordinary Origins of Everyday Things*, which was published in 1987.

Because early man viewed illness as divine punishment and healing as purification, medicine and religion were inextricably linked for centuries. This notion is apparent in the origin of our word “pharmacy,” which comes from the

5 Greek *pharmakon*, meaning “purification through purging.”

By 3500 B.C., the Sumerians in the Tigris-Euphrates Valley had developed virtually all of our modern methods of administering drugs. They used gargles, inhalations, pills, lotions, ointments, and plasters. The first drug catalog, or

10 pharmacopoeia, was written at that time by an unknown Sumerian physician. Preserved in cuneiform script on a single clay tablet are the names of dozens of drugs to treat ailments that still afflict us today.

The Egyptians added to the ancient medicine chest. The

15 Ebers Papyrus, a scroll dating from 1900 B.C. and named after the German egyptologist George Ebers, reveals the trial-and-error know-how acquired by early Egyptian physicians. To relieve indigestion, a chew of peppermint leaves and carbonates (known today as antacids) was prescribed, and

20 to numb the pain of tooth extraction, Egyptian doctors temporarily stupefied a patient with ethyl alcohol.

The scroll also provides a rare glimpse into the hierarchy of ancient drug preparation. The “chief of the preparers of drugs” was the equivalent of a head pharmacist, who

25 supervised the “collectors of drugs,” field workers who gathered essential minerals and herbs. The “preparers’ aides” (technicians) dried and pulverized ingredients, which were blended according to certain formulas by the “preparers.” And the “conservator of drugs” oversaw the storehouse

30 where local and imported mineral, herb, and animal-organ ingredients were kept.

By the seventh century B.C., the Greeks had adopted a sophisticated mind-body view of medicine. They believed that a physician must pursue the diagnosis and treatment

35 of the physical (body) causes of disease within a scientific framework, as well as cure the supernatural (mind) components involved. Thus, the early Greek physician emphasized something of a holistic approach to health, even if the suspected “mental” causes of disease were not recognized

40 as stress and depression but interpreted as curses from displeased deities.

The modern era of pharmacology began in the sixteenth century, ushered in by the first major discoveries in chemistry. The understanding of how chemicals interact to produce

45 certain effects within the body would eventually remove much of the guesswork and magic from medicine.

Drugs had been launched on a scientific course, but centuries would pass before superstition was displaced by scientific fact. One major reason was that physicians,

50 unaware of the existence of disease-causing pathogens such as bacteria and viruses, continued to dream up imaginary causative evils. And though new chemical compounds

emerged, their effectiveness in treating disease was still based largely on trial and error.

55 Many standard, common drugs in the medicine chest developed in this trial-and-error environment. Such is the complexity of disease and human biochemistry that even today, despite enormous strides in medical science, many of the latest sophisticated additions to our medicine chest shelves

60 were accidental finds.

13. The author cites the literal definition of the Greek word *pharmakon* in line 5 in order to

- (A) show that ancient civilizations had an advanced form of medical science
- (B) point out that many of the beliefs of ancient civilizations are still held today
- (C) illustrate that early man thought recovery from illness was linked to internal cleansing
- (D) stress the mental and physical causes of disease
- (E) emphasize the primitive nature of Greek medical science

14. The second paragraph indicates that it was possible to identify a number of early Sumerian drugs because

- (A) traces of these drugs were discovered during archaeological excavations
- (B) the ancient Egyptians later adopted the same medications
- (C) Sumerian religious texts explained many drug-making techniques
- (D) a pharmacopoeia in Europe contained detailed recipes for ancient drugs
- (E) a list of drugs and preparations was compiled by an ancient Sumerian

15. The passage suggests that which of the following is a similarity between ancient Sumerian drugs and modern drugs?

- (A) Ancient Sumerian drugs were made of the same chemicals as modern drugs.
- (B) Like modern drugs, ancient Sumerian drugs were used for both mental and physical disorders.
- (C) The different ways patients could take ancient Sumerian drugs are similar to the ways modern drugs are taken.
- (D) Both ancient Sumerian drugs and modern drugs are products of sophisticated chemical research.
- (E) Hierarchically organized groups of laborers are responsible for the preparation of both ancient Sumerian and modern drugs.

GO ON TO THE NEXT PAGE



16. The “hierarchy” referred to in line 22 is an example of
- a superstitious practice
 - the relative severity of ancient diseases
 - the role of physicians in Egyptian society
 - a complex division of labor
 - a recipe for ancient drugs
17. Which of the following is NOT cited in lines 14–31 as a characteristic of ancient Egyptian medicine?
- Anesthesia
 - Ointments
 - Ingredients derived from animals
 - Use of trial and error
 - A workplace hierarchy
18. In line 38, the word “holistic” most nearly means
- psychological
 - modern
 - physiological
 - comprehensive
 - partial
19. Which of the following documents from seventh-century Greece, if discovered, would most support the author’s characterization of ancient Greek medicine (lines 32–42)?
- A sophisticated formula for an antacid
 - A scientific paper theorizing that stress causes disease
 - A doctor’s prescription that included instructions to pray to Asclepius, the Greek god of healing
 - An essay that details the ancient Egyptian influence upon Greek medicine
 - A book in which the word “pharmacology” was used repeatedly
20. According to the passage, the seventh-century Greeks’ view of medicine differed from that of the Sumerians in that the Greeks
- discovered more advanced chemical applications of drugs
 - acknowledged both the mental and physical roots of illness
 - attributed disease to psychological, rather than physical, causes
 - established a rigid hierarchy for the preparation of drugs
 - developed most of the precursors of modern drugs
21. The passage implies that
- ancient Greek medicine was superior to ancient Egyptian medicine
 - science has proven that some maladies have supernatural causes
 - a modern head pharmacist is analogous to an ancient Egyptian conservator of drugs
 - most ailments that afflicted the ancient Sumerians still afflict modern human beings
 - the ancient Egyptians lacked the knowledge to make major discoveries in chemistry
22. Lines 47–54 indicate that advances in medical science during the modern era of pharmacology may have been delayed by
- the lack of a clear understanding of the origins of disease
 - primitive surgical methods
 - a shortage of chemical treatments for disease
 - an inaccuracy in pharmaceutical preparation
 - an overemphasis on the psychological causes of disease
23. In the final paragraph, the author makes which of the following observations about scientific discovery?
- Human biochemistry is such a complex science that important discoveries are uncommon.
 - Chance events have led to the discovery of many modern drugs.
 - Many cures for common diseases have yet to be discovered.
 - Trial and error is the best avenue to scientific discovery.
 - Most of the important discoveries made in the scientific community have been inadvertent.
24. It can be inferred from the passage that some drugs commonly used in modern times
- were fortunate and unanticipated discoveries
 - caused the very diseases that they were designed to combat
 - were meant to treat imaginary causative evils
 - were created in the sixteenth century
 - are now known to be ineffective

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.

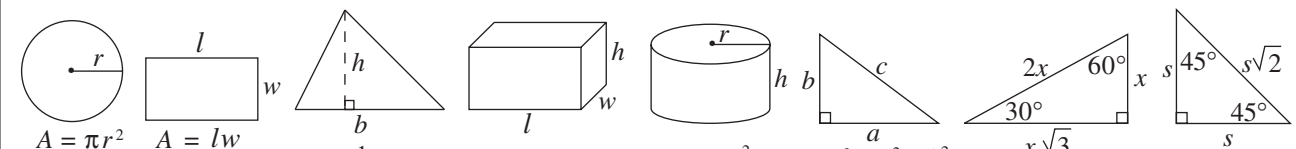
SECTION 3
Time — 25 minutes
20 Questions

Turn to Section 3 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**
- 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



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

$A = lw$

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

$V = lwh$

$V = \pi r^2h$

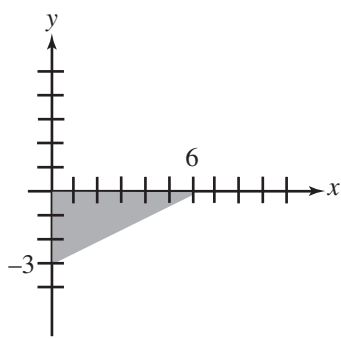
$c^2 = a^2 + b^2$

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. If $\frac{12}{4} = x$, what is the value of $4x + 2$?
- (A) 2
 (B) 3
 (C) 4
 (D) 12
 (E) 14

- 
2. In the figure above, which of the following points lies within the shaded region?
- (A) (-1, 1)
 (B) (1, -2)
 (C) (4, 3)
 (D) (5, -4)
 (E) (7, 0)

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3. Six cups of flour are required to make a batch of cookies. How many cups of flour are required to make enough cookies to fill 12 cookie jars, if each cookie jar holds 1.5 batches?
- (A) 108
(B) 90
(C) 81
(D) 78
(E) 72
-
4. If n is an even integer, which of the following must be an odd integer?
- (A) $3n - 2$
(B) $3(n + 1)$
(C) $n - 2$
(D) $\frac{n}{3}$
(E) n^2
5. In the coordinate plane, what is the midpoint of the line segment with endpoints at $(3, 4)$ and $(0, 0)$?
- (A) $(1.5, 2)$
(B) $(5, 0)$
(C) $(2.5, 0)$
(D) $(3.5, 3.5)$
(E) $(1.75, 1.75)$
-
6. $x\sqrt{4} - x\sqrt{9} =$
- (A) $-5x$
(B) $-x\sqrt{5}$
(C) $-x$
(D) x
(E) $3x$

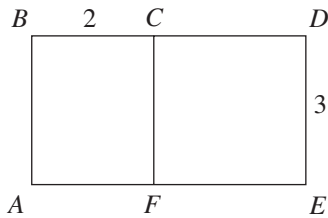


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	Number Sold	Average Weight per Parrot (in pounds)
Red Parrots	5	2
Blue Parrots	4	3

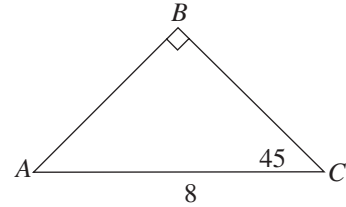
7. The chart above shows the number of red and blue parrots Toby sold in May and the average weight of each type of bird sold. If Toby sold no other parrots, what was the average (arithmetic mean) weight, in pounds, of the parrots that Toby sold in May?

- (A) 2
- (B) $2\frac{4}{9}$
- (C) $2\frac{1}{2}$
- (D) 5
- (E) 9



8. In the figure above, the perimeter of square $FCDE$ is how much smaller than the perimeter of rectangle $ABDE$?

- (A) 2
- (B) 3
- (C) 4
- (D) 7
- (E) 16



9. In $\triangle ABC$ above, if $AC = 8$, what is the length of \overline{BC} ?

- (A) $8\sqrt{2}$
- (B) 8
- (C) 6
- (D) $4\sqrt{2}$
- (E) $3\sqrt{2}$

10. If $\frac{\sqrt{x}}{2} = 2\sqrt{2}$, what is the value of x ?

- (A) 4
- (B) 16
- (C) $16\sqrt{2}$
- (D) 32
- (E) 64

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11. If b equals 40% of a , then in terms of b , 40% of $4a$ is equal to which of the following?

- (A) $\frac{b}{40}$
(B) $\frac{b}{4}$
(C) b
(D) $4b$
(E) $16b$

Questions 12–13 refer to the following definition.

For all real numbers x , let $f(x) = 2x^2 + 4$.

12. What is the value of $f(4)$?

- (A) 16
(B) 18
(C) 20
(D) 36
(E) 72

13. Which of the following is equal to $f(3) + f(5)$?

- (A) $f(4)$
(B) $f(6)$
(C) $f(8)$
(D) $f(10)$
(E) $f(15)$

14. If the circle with center O has a diameter of 9, then what is the area of the circle with center O ?

- (A) 81π
(B) $\frac{9}{2}\pi$
(C) $\frac{81}{4}\pi$
(D) 18π
(E) 9π

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15. The graph of which of the following equations is parallel to the line with equation $y = -3x - 6$?

- (A) $x - 3y = 3$
- (B) $x - \frac{1}{3}y = 2$
- (C) $x + \frac{1}{6}y = 4$
- (D) $x + \frac{1}{3}y = 5$
- (E) $x + 3y = 6$

16. How many solutions exist to the equation $|x| = |2x - 1|$?

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

17. There are k gallons of gasoline available to fill a tank. After d gallons have been pumped, in terms of k and d , what percent of the gasoline has been pumped?

- (A) $\frac{100d}{k}\%$
- (B) $\frac{k}{100d}\%$
- (C) $\frac{100k}{d}\%$
- (D) $\frac{k}{100(k-d)}\%$
- (E) $\frac{100(k-d)}{k}\%$

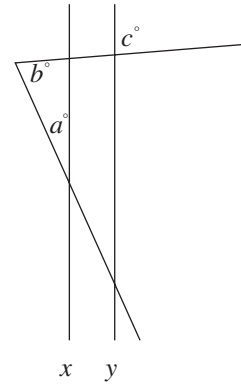
18. Ray and Jane live 150 miles apart. Each drives toward the other's house along a straight road connecting the two, Ray at a constant rate of 30 miles per hour and Jane at a constant rate of 50 miles per hour. If Ray and Jane leave their houses at the same time, how many miles are they from Ray's house when they meet?

- (A) 40
- (B) $51\frac{1}{2}$
- (C) $56\frac{1}{4}$
- (D) 75
- (E) $93\frac{1}{4}$

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19. A bag contains 4 red hammers, 10 blue hammers, and 6 yellow hammers. If three hammers are removed from the bag at random and no hammer is returned to the bag after removal, what is the probability that all three hammers will be blue?

- (A) $\frac{1}{2}$
- (B) $\frac{1}{8}$
- (C) $\frac{3}{20}$
- (D) $\frac{2}{19}$
- (E) $\frac{3}{18}$



20. In the figure above, $x \parallel y$. What is the value of a in terms of b and c ?

- (A) $b + c$
- (B) $2b - c$
- (C) $180 - b + c$
- (D) $180 - b - c$
- (E) $360 - b - c$

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

24 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.

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

- Plants that grow in the desert or on high rocky ledges can survive long periods of ----- because they hoard water in their leaves, stems, and root systems.
(A) darkness (B) inactivity (C) dormancy
(D) warmth (E) aridity
- Thanks to his eloquence and logic, Liam spoke ----- and made it difficult for even his most bitter opponents to ----- his opinions.
(A) monotonously . . . clash with
(B) charmingly . . . yield to
(C) tediously . . . contend with
(D) abhorrently . . . concede to
(E) cogently . . . disagree with
- Some subatomic particles, ----- only through their effects on other bodies, have been compared to outer planets whose ----- was first deduced from eccentricities in other planets' orbits.
(A) feasible . . . irregularity
(B) palpable . . . creation
(C) perceptible . . . fallacy
(D) discernable . . . existence
(E) verifiable . . . proximity
- Miranda, in her desire to foster -----, often felt compelled to ----- readily to others in tense situations.
(A) cooperation . . . object
(B) fortitude . . . defer
(C) dissension . . . surrender
(D) harmony . . . acquiesce
(E) discourse . . . appeal
- Although detractors labeled Margaret Thatcher's policies -----, she asserted that her ideas ultimately helped bring about a period of prosperity in the United Kingdom.
(A) premature (B) autocratic (C) regressive
(D) ingenious (E) seditious

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The passages below are followed by questions based on their content; questions following a pair of related passages may also be based on the relationship between the paired passages. Answer the questions on the basis of what is stated or implied in the passage and in any introductory material that may be provided.

Questions 6–9 are based on the following passages.

Passage 1

The War of 1812 between the United States and England is one of the least-known in American history. Ironically, this war cemented America’s independence in Europe’s eyes. *Line* Although lacking a clear winner, it proved to the Old World
5 that the United States could hold its own against the mighty British navy, then in the heyday of its impressive power. The war was fought for several reasons. The declaration of war by the United States was ostensibly in response to British actions against American goods and sailors. Also, many Americans
10 had their eyes on the rich Spanish territory of Florida and the vast land of Canada.

Passage 2

Curiously, one of the most important battles of the War of 1812 actually took place after the war was over. For three years, the United States and Britain were locked in a
15 stalemate, with neither side emerging as a clear victor. While the Americans forced the British into Canada and defeated them at the Battle of the Thames, the British succeeded in burning Washington. Less than three weeks after signing the Treaty of Ghent on December 24, 1814, General Andrew
20 Jackson defeated the British in a decisive battle at New Orleans, a victory that contributed greatly to the development of American confidence and nationalism.

6. According to Passage 1, which of the following contributed to the decision of the United States to declare war on England in 1812 ?
- I. Expansionist tendencies among citizens and leaders of the United States
 - II. British actions taken against the interests of the United States
 - III. A desire to show the independence of the United States from England
- (A) I only
(B) II only
(C) I and II
(D) I and III
(E) I, II, and III

7. Both passages support which of the following statements about the War of 1812 ?
- (A) Neither side was able to score a decisive victory in the war.
 - (B) The war was important not just for the results of the battles but for its effect on the American psyche.
 - (C) It is likely that the United States would have won the war if it had continued on.
 - (D) The war was the most significant international engagement of the nineteenth century.
 - (E) The war was justified due to British injustices against the United States.
8. The authors of both passages would likely agree that
- (A) from a military standpoint, neither the United States nor Britain could claim to have won the War of 1812
 - (B) the War of 1812 had a much greater impact on American citizens than it did on British citizens
 - (C) the British forces would most likely have won the War of 1812 if they had not lost the Battle of the Thames
 - (D) Andrew Jackson’s victory at New Orleans was the most important battle of the War of 1812
 - (E) the War of 1812 is not well known among people in the United States and Britain
9. In Passage 2, the author most likely considers Andrew Jackson’s one of the “most important” battles because
- (A) it proved to the British that the American army was a force to be reckoned with
 - (B) the American forces had not won a battle since the burning of Washington
 - (C) without Jackson’s victory, the British would have been less willing to sign a peace treaty
 - (D) it was the only battle in which the American forces had been able to defeat the British
 - (E) the victory at New Orleans carried a great symbolic value to the people of America

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Questions 10–15 are based on the following passage.

A parable is a symbolic story that, like a fable, teaches a moral lesson. The parable below was written by the Czech author Franz Kafka and was published in 1935.

Poseidon sat at his desk, doing figures. The administration of all the waters gave him endless work. He could have had assistants, as many as he wanted—and he did have very many—but since he took his job very seriously, he would in the end go over all the figures and calculations himself, and thus his assistants were of little help to him. It cannot be said that he enjoyed his work; he did it only because it had been assigned to him; in fact, he had already filed petitions for—as he put it—more cheerful work, but every time the offer of something different was made to him it would turn out that nothing suited him quite as well as his present position. And anyhow, it was quite difficult to find something different for him. After all, it was impossible to assign him to a particular sea; aside from the fact that even then the work with figures would not become less but only more petty, the great Poseidon could in any case occupy only an executive position. And when a job away from the water was offered to him he would get sick at the very prospect; his divine breathing would become troubled, and his brazen chest would begin to tremble. Besides, his complaints were not really taken seriously; when one of the mighty is vexatious, the appearance of an effort must be made to placate him, even when the case is most hopeless. In actuality, a shift of posts was unthinkable for Poseidon—he had been appointed God of the Sea in the beginning, and that he had to remain.

What irritated him most—and it was this that was chiefly responsible for his dissatisfaction with his job—was to hear of the conceptions formed about him: how he was always riding about through the tides with his trident when all the while he sat here in the depths of the world-ocean, doing figures uninterruptedly, with now and then a trip to Jupiter as the only break in the monotony—a trip, moreover, from which he usually returned in a rage. Thus he had hardly seen the sea—had seen it fleetingly in the course of hurried ascents to Olympus, and he had never actually traveled around it. He was in the habit of saying that what he was waiting for was the fall of the world; then, probably, a quiet moment would yet be granted in which, just before the end and after having checked the last row of figures, he would be able to make a quick little tour.

Poseidon became bored with the sea. He let fall his trident. Silently he sat on the rocky coast and a gull, dazed by his presence, described wavering circles around his head.

10. It can be inferred from line 6 (“his assistants...him”) that Poseidon
- (A) lacked enough assistants to do his work
 - (B) had been promoted to his job from the position of assistant
 - (C) believed that his job required his personal attention to detail
 - (D) feared Zeus’s anger if he let others help him at work
 - (E) threatened to quit his job unless he could hire more workers
11. According to lines 13–25 of the passage, Poseidon is unable to change occupations for all of the following reasons EXCEPT
- (A) his appointment as God of the Sea is inherently unchangeable
 - (B) he has fallen into disfavor with the gods on Mount Olympus
 - (C) he cannot imagine a life away from the water
 - (D) nothing else suits him as well as his present position
 - (E) his job must be appropriate to his elevated status
12. It can be inferred from the author’s description of Poseidon’s routine (lines 27–35) that
- (A) Poseidon prefers performing his duties to visiting Jupiter
 - (B) Poseidon is too busy to familiarize himself with his kingdom
 - (C) Poseidon requires silence for the performance of his duties
 - (D) if the world falls, Poseidon will no longer be able to travel
 - (E) Poseidon’s dissatisfaction with his job detracts from his efficiency

GO ON TO THE NEXT PAGE



13. According to the passage, Poseidon's dissatisfaction with his job primarily stems from
- (A) the constant travel that is required of him
 - (B) the lack of seriousness with which his complaints are received
 - (C) the constantly changing nature of his duties
 - (D) others' mistaken notions of his routine
 - (E) his assistants' inability to perform simple bookkeeping tasks
14. In line 43 of the passage, the word "described" most nearly means
- (A) soared
 - (B) conveyed
 - (C) imagined
 - (D) followed
 - (E) traced
15. The author of the passage portrays the god Poseidon as
- (A) a dissatisfied manager
 - (B) a powerful deity
 - (C) a disgruntled vagabond
 - (D) a capable accountant
 - (E) a ruthless tyrant

GO ON TO THE NEXT PAGE 



Questions 16–24 are based on the following passage.

The role of women has historically been different in different cultures. The following passage presents an analysis of women in Frankish society by Suzanne Fonay Wemple.

Although the laws and customs in lands under Frankish domination emphasized the biological function and sexual nature of women, they did not deprive women of opportunities to find personal fulfillment in a variety of roles. Frankish women could sublimate their sexual drives and motherly instincts in ways not available to women in ancient societies. Their labor, moreover, was not as exploited as it had been in primitive tribal societies. Queens had access to power not only through their husbands but also through churchmen and secular officials whom they patronized. As widows, acting as regents for their sons, they could exercise political power directly. The wives of magnates issued donations jointly with their husbands, founded monasteries, endowed churches, cultivated interfamilial ties, transmitted clan ideology to their children, supervised the household, and administered the family's estates when their husbands were away. Whether they contracted a formal union or entered into a quasi-marriage, their children could inherit. As widows, they acted as guardians of their minor children, arranged their marriages, and in the absence of sons, wielded economic power as well. In the dependent classes, women shared their husbands' work, produced textiles and articles of clothing both for their family's and the lords' use, and were instrumental in bringing about the merger of the free and slave elements in society.

For those who wished to free their bodies, souls, and brains from male domination and devote their lives to the service of God, Christianity provided an alternative way of life. Although, in relation to the total population, women in religious life remained a small minority even in the seventh and eighth centuries, when many female communities were founded, their roles, social functions, and cultural contributions have an importance for the history of women that outweighs their numbers. This alternative way of life was available not only to the unmarried but also to widows. Monasteries served as places of refuge for married women as well. The rich and the poor, at least until the late eighth century, were accepted as members. Women from all walks of life, as well as relatives, friends, and dependents of the foundresses and abbesses, were invited to join the new congregations. Freed from the need to compete for the attention of men, women in these communities sustained each other in spiritual, intellectual, scholarly, artistic, and charitable pursuits. Writings by early medieval nuns reveal that female ideals and modes of conduct were upheld as the way to salvation and as models of sanctity in the monasteries led by women. By facilitating the escape of women from the male-dominated society to congregations where they could give expression to their own emotions, ascetic ideals, and spiritual strivings, Christianity became a liberating force in the lives of women. Historians have often overlooked these positive effects and concentrated instead on the misogynistic sentiments perpetuated by the male hierarchy.

16. The primary purpose of the passage is to
- settle a dispute regarding the importance of religious communities in Frankish societies
 - evaluate the position of women in Frankish society relative to that of women in other societies
 - argue that Frankish women had more rights than women in any other society
 - provide an example from the field of women's history
 - detail the different roles and lifestyles of women of varying social position in Frankish society
17. The passage suggests that women under Frankish law were
- confined to narrow social roles
 - cut off from religious communities
 - exploited as slaves and servants
 - defined in physical or biological terms
 - valued but essentially powerless
18. It can be inferred from line 17 of the passage that marriage in Frankish society
- was the only means of exchanging wealth
 - could be entered into formally or informally
 - always raised women to positions of greater influence
 - held greater importance than in primitive societies
 - was generally arranged by the bride's mother
19. The word "instrumental" as used in line 23 most nearly means
- profitable
 - skilled
 - harmonious
 - resistant
 - vital

GO ON TO THE NEXT PAGE 



20. Lines 25–33 (“for those...numbers”) suggest which of the following about women in religious life?
- (A) Only unmarried women could participate in the religious lifestyle.
 (B) Many women turned to the religious life to escape difficulties with their husbands.
 (C) Writing by these women became the model for life in a monastery.
 (D) The impact on society they had was not proportionate to the actual number of women engaged in religious life.
 (E) Women in religious lifestyles were able to overcome the misogynistic tendencies of the male hierarchy.
21. The passage attributes women’s ability to engage in “spiritual, intellectual, scholarly, artistic, and charitable pursuits” (lines 42–43) to
- (A) the monastic lifestyle present in religious communities
 (B) their embrace of the traditional duties ascribed to women
 (C) the women’s freedom from having to seek the attention of men
 (D) the overthrow of the male dominated social hierarchy
 (E) the sense of salvation the women experienced upon joining a religious community
22. The passage implies that Frankish women outside religious communities
- (A) felt obliged to compete to make men interested in them
 (B) were not inclined to religious feeling
 (C) had greatly diminished economic power
 (D) did not contribute to Frankish culture
 (E) relied on males for emotional support
23. According to the passage, Christianity facilitated the “escape of women from the male-dominated society” (lines 46–47) by doing all of the following EXCEPT
- (A) permitting women self-expression
 (B) providing education for widows
 (C) putting pressure on women to study
 (D) removing child-rearing obligations
 (E) diversifying women’s poetic impulses
24. The status of women in Frankish society can best be described as
- (A) accorded different rights and responsibilities based on their social class and marital status
 (B) able to exercise political power by acting in place of their sons
 (C) having their marriages arranged for them by a widow
 (D) necessary in order to bring about the peaceful merger of slaves and freemen
 (E) free to divorce their husbands in order to enter into religious life

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

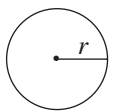
Turn to Section 3 of your answer sheet to answer the questions in this section.

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

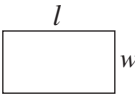
1. The use of a calculator is permitted.
2. All numbers used are real numbers.
3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is 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

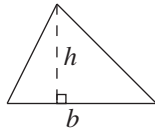


$$A = \pi r^2$$

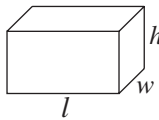
$$C = 2\pi r$$



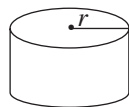
$$A = lw$$



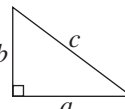
$$A = \frac{1}{2}bh$$



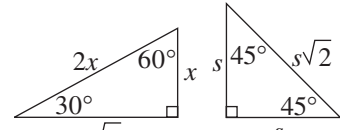
$$V = lwh$$



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



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



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. If $2x + 10 = 16$, what is the value of $2x - 10$?
 - (A) -4
 - (B) -3
 - (C) 3
 - (D) 4
 - (E) 6
2. The only way to purchase Brand X muffins is to buy one or more boxes that each contain 6 muffins. Each box costs \$1.50. If Alejandro needs at least 20 muffins, what is the least amount of money he could spend?
 - (A) \$3.00
 - (B) \$4.50
 - (C) \$6.00
 - (D) \$7.50
 - (E) \$30.00

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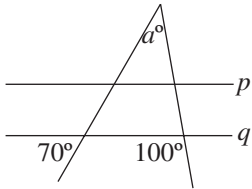


3. How many even integers are there between 2 and 100, not including 2 and 100 ?

- (A) 98
- (B) 97
- (C) 50
- (D) 49
- (E) 48

5. If $f(3) = 6$ and $f(4) = 13$, then which of the following could be $f(x)$?

- (A) $x + 3$
- (B) $2x$
- (C) $3x + 1$
- (D) $x^2 - 2$
- (E) $x^2 - 3$



4. In the figure above, line p is parallel to line q . What is the value of a ?

- (A) 10
- (B) 30
- (C) 35
- (D) 40
- (E) 70

6. In $\triangle ABC$, $\overline{AB} \cong \overline{BC}$ and $\overline{AB} \perp \overline{BC}$. If $AC = 10$, what is the area of the triangle?

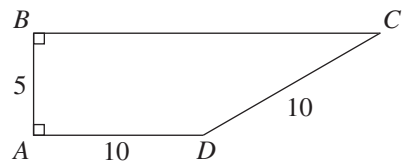
- (A) $10\sqrt{2}$
- (B) 25
- (C) 50
- (D) $50\sqrt{2}$
- (E) 100

GO ON TO THE NEXT PAGE



7. In 1998, Andrei had a collection of 48 baseball caps. Since then, he has given away 13 caps, purchased 17 new caps, and traded 6 of his caps to Pierre for 8 of Pierre's caps. Since 1998, what has been the net percent increase in Andrei's collection?

- (A) 6%
 (B) $12\frac{1}{2}\%$
 (C) $16\frac{2}{3}\%$
 (D) 25%
 (E) $28\frac{1}{2}\%$



8. What is the area of quadrilateral $ABCD$ in the figure above?
- (A) 50
 (B) $50 + \frac{25\sqrt{2}}{2}$
 (C) 70
 (D) $50 + \frac{25\sqrt{3}}{2}$
 (E) 75

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

← Fraction line

Grid in result. →

Answer: 2.5

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

← Decimal point

Answer: 201
Either position is correct.

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

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

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

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

9. A certain clothing store sells only T-shirts, sweatshirts, and turtlenecks. On Wednesday, the store sells T-shirts, sweatshirts, and turtlenecks in a ratio of 2 to 3 to 5. If the store sells 30 sweatshirts on that day, what is the total number of garments that the store sells on Wednesday?

10. A rectangular box has a height of 4.5 inches and a base with an area of 18 square inches. What is the volume of the rectangular box in cubic inches?

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5**5****5****5****5**

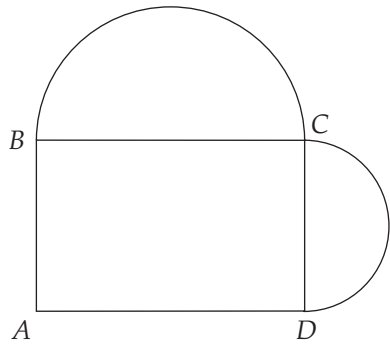
11. If $5x - 4 = x - 1$, what is the value of x ?

12. If $a^b = 4$, and $3b = 2$, what is the value of a ?

13. If b is a prime number such that $3b > 10 > \frac{5}{6}b$, what is one possible value of b ?

14. The Tyler Jackson Dance Company plans to perform a piece that requires 2 dancers. If there are 7 dancers in the company, how many possible pairs of dancers could perform the piece?

GO ON TO THE NEXT PAGE 



15. In the figure above, if semicircular arc BC has length 6π and semicircular arc CD has length 4π , what is the area of rectangle $ABCD$?

16. Let $f(x) = x^2 - 5$. If $f(6) - f(4) = f(y)$, what is $|y|$?

SPICE PRICES OF DISTRIBUTOR D

Spice	Price Per Pound
Cinnamon	\$8.00
Nutmeg	\$9.00
Ginger	\$7.00
Cloves	\$10.00

17. The owner of a spice store buys 3 pounds each of cinnamon, nutmeg, ginger, and cloves from distributor D. She then sells all of the spices at \$2.00 per ounce. What is her total dollar profit (1 pound = 16 ounces)? (Disregard the \$ sign when gridding your answer.)

18. Points E , F , G , and H lie on a line in that order. If $EG = \frac{5}{3}EF$ and $HF = 5FG$, then what is $\frac{EF}{HG}$?

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

18 Questions

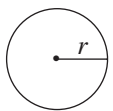
Turn to Section 2 of your answer sheet to answer the questions in this section.

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

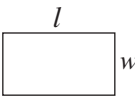
- The use of a calculator is permitted.
- All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not 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

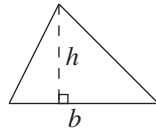


$$A = \pi r^2$$

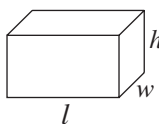
$$C = 2\pi r$$



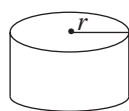
$$A = lw$$



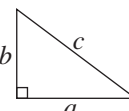
$$A = \frac{1}{2}bh$$



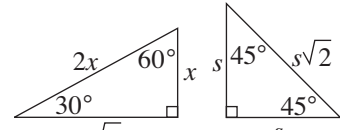
$$V = lwh$$



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



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



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.

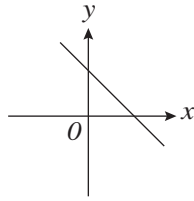
1. If $x + 6 > 0$ and $1 - 2x > -1$, then x could equal each of the following EXCEPT

- (A) -6
 (B) -4
 (C) -2
 (D) 0
 (E) $\frac{1}{2}$

2. Elsa has a pitcher containing x ounces of root beer. If she pours y ounces of root beer into each of z glasses, how many ounces of root beer will remain in the pitcher?

- (A) $\frac{x}{y} + z$
 (B) $xy - z$
 (C) $\frac{x}{yz}$
 (D) $x - yz$
 (E) $\frac{x}{y} - z$

GO ON TO THE NEXT PAGE



3. Which of the following could be the equation of the line represented in the graph above?

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

4. Starting with a blue light, a strand of colored lights contains lights in a repeating pattern of blue, orange, green, purple, red, and yellow. What is the color of the 53rd light?

- (A) Blue
 (B) Orange
 (C) Green
 (D) Purple
 (E) Red

5. If $x = y + 1$ and $y \geq 1$, then which of the following is equal to $x^2 - y^2$?

- (A) $(x - y)^2$
 (B) $x^2 - y - 1$
 (C) $x + y$
 (D) $x^2 - 1$
 (E) $y^2 + 1$

6. Triangle ABC has a perimeter of 10, and the lengths of its sides are all integers. If a is the length of side \overline{BC} , what is the difference between the largest and smallest possible values of a ?

- (A) 1
 (B) 2
 (C) 3
 (D) 4
 (E) 7

GO ON TO THE NEXT PAGE 



7. What is the greatest number of regions into which an equilateral triangle can be divided using exactly three straight lines?

- (A) 4
- (B) 6
- (C) 7
- (D) 8
- (E) 9

8. If $a = 4b + 26$, and b is a positive integer, then a could be divisible by all of the following EXCEPT

- (A) 2
- (B) 4
- (C) 5
- (D) 6
- (E) 7

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
•	•	•	•
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
•	•	•	•
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
•	•	•	•
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

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

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
•	•	•	•
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.**

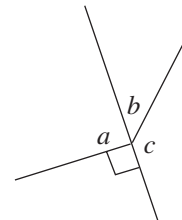
Acceptable ways to grid $\frac{2}{3}$ are:

	2	/	3
•	•	•	•
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
•	•	•	•
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
•	•	•	•
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 $3x = 12$, what is the value of $\frac{8}{x}$?



10. In the figure above, what is the value of $a + b + c$?

GO ON TO THE NEXT PAGE



11. Y is a point on \overline{XZ} such that $XY = \frac{1}{2}XZ$. If the length of \overline{YZ} is $4a + 6$, and the length of \overline{XZ} is 68, what is the value of a ?

13. If $\frac{x^2 + x - 6}{x^2 - 8x + 12} = 4$, what is the value of x ?

12. If $4x + 2y = 24$ and $\frac{7y}{2x} = 7$, what is the value of x ?

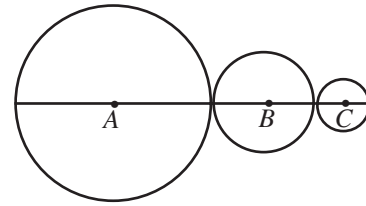
14. Twenty bottles contain a total of 8 liters of apple juice. If each bottle contains the same amount of apple juice, how many liters of juice are in each bottle?

GO ON TO THE NEXT PAGE 



15. The American Ballet Repertory Company will choose 4 new corps members from its apprentice program. The apprentice program is made up of 6 women and 6 men. If 3 women and 1 man are to be chosen for the corps, how many different groupings are possible?

16. The estimated population of rabbits in a certain forest is given by the function $P(t) = at + 120$ where t is an integer which represents the number of years after the rabbit population was first counted, $0 \leq t \leq 10$, and a is a constant. If there were 192 rabbits 3 years after the population was first counted, how many rabbits will there be 7 years after the population was first counted?



17. In the figure above, the radius of the circle with center A is twice the radius of the circle with center B and four times the radius of the circle with center C . If the sum of the areas of the three circles is 84π , what is the length of \overline{AC} ?

18. One-fifth of the cars in a parking lot are blue and $\frac{1}{2}$ of the blue cars are convertibles. If $\frac{1}{4}$ of the convertibles in the parking lot are blue, then what percent of the cars in the lot are neither blue nor convertibles? (Disregard the % sign when gridding your answer.)

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

35 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.

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. Rotary phones, once the height of technology, are now so obsolete and rare as to be unknown to younger generations.
 - (A) are now so obsolete and rare as to be unknown to younger generations
 - (B) are now so obsolete and rare and unknown to younger generations
 - (C) are now unknown to younger generations stemming from their obsolescence and rareness
 - (D) now are obsolete and rare, which means that younger generations are unaware of it
 - (E) now are unknown and younger generations think they are obsolete and rare
2. The hearings of the McCarthy era often cast doubt on the integrity of those brought to trial as well as anyone that had a relation to them, however distant.
 - (A) that had a relation to them, however distant
 - (B) with relationships to them, even distantly
 - (C) related to them, however distantly
 - (D) with a relationship to the defendants, however distantly
 - (E) related to them, however distant
3. When you look at a sixteenth-century painting of the Annunciation by Lorenzetti or Giotto, one may notice certain sartorial or architectural details outlined in gold leaf.
 - (A) one may notice
 - (B) people may notice
 - (C) you may notice
 - (D) one may be noticing
 - (E) one's thoughts are
4. Fats nicknamed "trans fats" cling to body cells for 57 days, and this is not true of unsaturated fats such as olive and canola oils, which nourish the body without damaging the cells.
 - (A) and this is not true of unsaturated fats such as olive and canola oils, which nourish
 - (B) not true of unsaturated fats such as olive and canola oils, which nourish
 - (C) as opposed to unsaturated fats such as olive and canola oils, nourishing
 - (D) unsaturated fats such as olive and canola oils nourish
 - (E) but unsaturated fats such as olive and canola oils nourish

GO ON TO THE NEXT PAGE



5. Knoll, known for their Scandinavian designs, sells the Barcelona chair that the architect Mies van der Rohe designed in the style of his own building in Barcelona.
- (A) known for their Scandinavian designs
 (B) known for its Scandinavian designs
 (C) designing the Scandinavian furniture that it's known for
 (D) though they're known for Scandinavian designs
 (E) known to be Scandinavian designers
6. Towing companies face harsh new restrictions that detail where they can operate, which vehicles are off limits, and when they can begin; because of new legislation is why.
- (A) because of new legislation is why
 (B) new legislation being the reason
 (C) with new legislation as the reason
 (D) these restrictions are the result of new legislation
 (E) all of those restrictions come from new legislation recently passed
7. The increase in hours they are required to work in an understaffed, unsupportive situation have angered the nurses at West Branch Rest Home and threatened a walkout.
- (A) have angered the nurses at West Branch Rest Home and threatened a walkout
 (B) has angered the nurses at West Branch Rest Home and caused them to threaten a walkout
 (C) have angered the nurses at West Branch Rest Home, and a walkout is threatened
 (D) has angered the nurses at West Branch Rest Home, which caused a threat to have a walkout
 (E) has angered the nurses at West Branch Rest Home to have a walkout
8. Galleons, a sailing ship from the seventeenth century, were known for their large size, however they were unable to sail into the wind because of the design of their sails.
- (A) a sailing ship from the seventeenth century, were known for their
 (B) a sailing ship from the seventeenth century, was known for its
 (C) a seventeenth-century sailing ship, was known for its
 (D) seventeenth-century sailing ships, was known for its
 (E) seventeenth-century sailing ships, were known for their
9. Just an hour after Evan and Ken reached the skate park, he fell and broke his wrist in two places.
- (A) he fell and broke his wrist in two places
 (B) his wrist broke when he fell in two places
 (C) his wrist being broke in two places as a result of falling
 (D) Evan fell and broke his wrist in two places
 (E) Evan was falling and breaking two bones in his wrist
10. The Advanced Acting course requires neither a final exam or project other than the performance of a major role in the spring play.
- (A) neither a final exam or project other than the performance of
 (B) no final exam and assigns no project, but does expect each student to perform
 (C) no other final exam or project excepting for the performing by students of
 (D) no other final exam nor assigns any project other than to be performing
 (E) neither a final exam or a major project other than performing
11. Many regard Sappho as the writer who originated the tradition of expressing tormented love in Western poetry.
- (A) regard Sappho as
 (B) regard Sappho to be
 (C) regard Sappho to have been
 (D) consider that Sappho is
 (E) consider Sappho as being

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) ● (C) (D) (E)

12. The object of the game of chess is to put the other
A B
player's king in a vulnerable position, so that you can
C
eventually capture them. No error
D E
13. In the author's latest novel, the hero traveled to Montana
A
where she finds a mysteriously deserted house and,
B
through a series of misunderstandings, becomes
C
embroiled in an international smuggling ring. No error
D E
14. Many biographers had claimed that Samuel Langhorne
A B
Clemens changed his name to Mark Twain to echo the
C
riverboat captain's call ascertaining the safe navigation
D
depth of the Mississippi River. No error
E
15. After having read numerous diet books, Charles
A
decided that the simplest plan would be the best: eat
B
fewer calories and exercise more. No error
C D E
16. A study showed that students prefer writing in pencil
A
more than writing in pen simply because fixing
B C
mistakes is less difficult. No error
D E
17. When learning how to paint, one should comply to
A
the teacher's instruction; with more experience, the
B
burgeoning painter can experiment with technique.
C D
No error
E
18. Not having traveled abroad before, John was both
A B C
apprehensive and excited about his upcoming trip to the
D
Galápagos Islands. No error
E
19. The field of consumer electronics have never been fixed;
A
DVDs have replaced VHS tapes, just as CDs replaced
B C
cassette tapes in the past. No error
D E
20. One should use parchment paper while baking cookies
A B
because the cookies won't stick to this lining and you
C D
won't have to scrub the pan. No error
E

GO ON TO THE NEXT PAGE 

7



7



7



7

21. Salma and Raiza may be identical twins, but Salma is the more athletic and Raiza the most studious. No error
- A B C D E
22. Forest fires, long thought to be a detriment to the environment, are now understood not only to be unavoidable but also to be a boon to the forests. No error
- A B C D E
23. Superbowl commercials perfectly target their demographics because the advertisers regularly spent exorbitant amounts of time and money designing the ads. No error
- A B C D E
24. Although many people scoff at superstitions, they usually have some of their own, from retrieving face-up pennies from the sidewalk to selecting lucky numbers for the lottery. No error
- A B C D E
25. Returning to school in September, Linnea told us in minute detail how she had rode her bike from our town in coastal New Jersey to Eugene, Oregon, entirely on her own. No error
- A B C D E
26. The sculptor Rodin often departed from traditional styles in his creations; unlike other sculptors, his creations made obvious the materials from which they were built. No error
- A B C D E
27. Jane, who is known for her diligence, smugly reminded Jason that if he would have planned ahead instead of procrastinating, he would not have had to write his entire research paper in just one weekend. No error
- A B C D E
28. Some words in the English language has several meanings that are unrelated except through their origins: *testudinate*, for example, can mean either curved and vault-shaped, or extremely slow moving, since the word derives from the Latin word for *turtle*. No error
- A B C D E
29. The woman whom the board picked to design the new building is a renowned architect and has received many awards. No error
- A B C D 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 passage.

(1) When I agreed to stage-manage my school's production of *Guy and Dolls*, I really had no idea of what a stage manager actually did. (2) Still, I decided that it would be an interesting experience, and a way to get involved with theater, since I am definitely not an actor. (3) Besides, if there were already a director, a choreographer, and sets and lights to be built and run by technicians, how much could there be left for a stage manager to do? (4) I figured that I would spend a lot of time watching rehearsal and doodling into my script.

(5) My illusions were shattered by the first rehearsal. (6) I discovered that it was my responsibility to make sure that all of the actors were present, had scripts, and gave me their schedules before they left the room. (7) It became a nightmare. (8) I found that it was virtually impossible to get all twenty-five cast members together for a group scene, especially since actors kept calling me with emergency orthodontist appointments, and last-minute family gatherings. (9) When the actor who was playing Sky was sick one day and had to miss rehearsal, I had to walk through his part myself. (10) It was probably the first time in the history of American theater that Sky Masterson was ever wearing a miniskirt and leggings.

(11) I sat to the side of the stage, with my script open on a music stand in front of me. (12) "Standby, cue 1," I whispered into my headset. (13) "Cue 1: go." The lights came up, the show began, and I knew that it had all been worthwhile.

30. Which of the following words or phrases is unnecessary in sentence 1?
- (A) production of
 - (B) actually did
 - (C) agreed to
 - (D) When
 - (E) really

31. In context, which version of the underlined part of sentence 3 (reproduced below) is the best?

Besides, if there were already a director, a choreographer, and sets and lights to be built and run by technicians, how much could there be left for a stage manager to do?

- (A) (As it is now)
- (B) and sets, lights, and technicians
- (C) and the building and running of sets and lights by technicians
- (D) and technicians to build the sets and run the lights
- (E) and technicians who would run the lights and be building the sets

32. In context, the best version of the underlined portion of sentence 10 (reproduced below) is which of the following?

It was probably the first time in the history of American theater that Sky Masterson was ever wearing a miniskirt and leggings.

- (A) (As it is now)
- (B) had ever worn
- (C) could have worn
- (D) would ever be wearing
- (E) had ever before worn

33. Which of the following sentences, if added at the beginning of the final paragraph, would provide the best transition?

- (A) Luckily, the actor soon regained his health.
- (B) We rehearsed for five weeks.
- (C) Finally, it was opening night.
- (D) Everyone was filled with nervous excitement.
- (E) I communicated with the light and sound operators through a headset.

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7



7



7



7

34. The writer's story would be most improved if a paragraph were included on which of the following topics?

- (A) The author's other extracurricular activities
- (B) The author's responsibilities during different phases of rehearsal
- (C) The historical background of *Guys and Dolls*
- (D) The audition process
- (E) The plays produced in previous years

35. In context, which is the best version of the underlined portion of sentence 11 (reproduced below) ?

I sat to the side of the stage, with my script open on a music stand in front of me.

- (A) (As it is now)
- (B) stage, my script being open
- (C) stage, my script having been opened
- (D) stage. With my script opened
- (E) stage. My script open

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

16 Questions

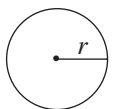
Turn to Section 8 of your answer sheet to answer the questions in this section.

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

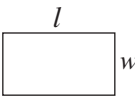
- The use of a calculator is permitted.
- All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not 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

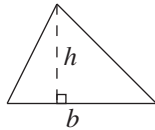


$$A = \pi r^2$$

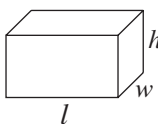
$$C = 2\pi r$$



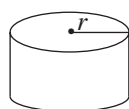
$$A = lw$$



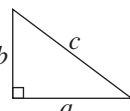
$$A = \frac{1}{2}bh$$



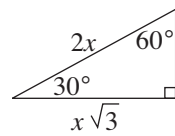
$$V = lwh$$



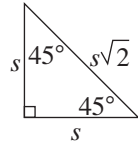
$$V = \pi r^2 h$$



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



Special Right Triangles

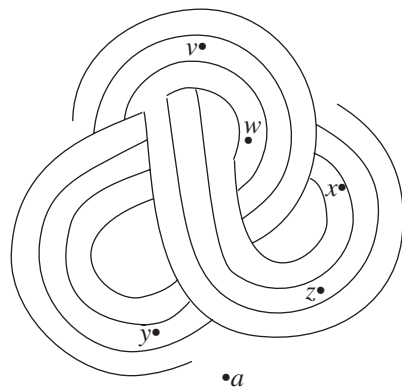


The number of degrees of arc in a circle is 360.

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

1. If $6 - y = 2y - 6$, what is the value of y ?

- (A) 0
(B) 2
(C) 4
(D) 6
(E) 12



2. Which of the following points can be connected to point a by a continuous path without crossing any line or curve in the figure above?

- (A) v
(B) w
(C) x
(D) y
(E) z

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	Computer Production	
	Morning Shift	Afternoon Shift
Monday	200	375
Tuesday	245	330
Wednesday	255	340
Thursday	250	315
Friday	225	360

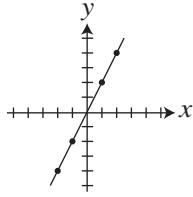
3. Computer production at a factory occurs during two shifts, as shown in the chart above. If computers are produced only during the morning and afternoon shifts, on which of the following pairs of days is the greatest total number of computers produced?
- (A) Monday and Thursday
 (B) Tuesday and Thursday
 (C) Tuesday and Wednesday
 (D) Tuesday and Friday
 (E) Monday and Friday

4. If a rectangular swimming pool has a volume of 16,500 cubic feet, a uniform depth of 10 feet, and a length of 75 feet, what is the width of the pool, in feet?
- (A) 22
 (B) 26
 (C) 32
 (D) 110
 (E) 1,650

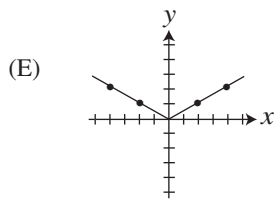
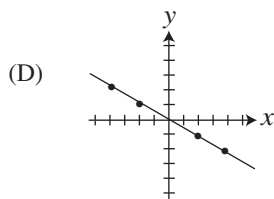
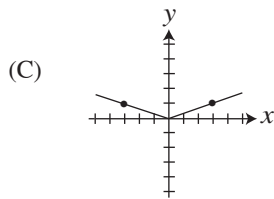
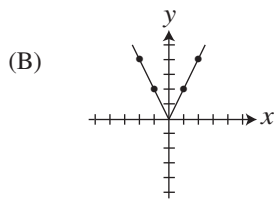
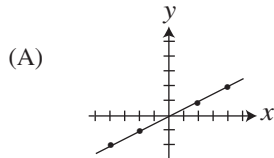
5. Cindy has a collection of 80 records. If 40% of her records are jazz records, and the rest are blues records, how many blues records does she have?
- (A) 32
 (B) 40
 (C) 42
 (D) 48
 (E) 50

6. A science class has a ratio of girls to boys of 4 to 3. If the class has a total of 35 students, how many more girls are there than boys?
- (A) 20
 (B) 15
 (C) 7
 (D) 5
 (E) 1

GO ON TO THE NEXT PAGE 

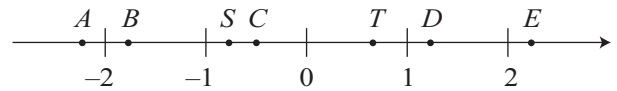


7. The graph above shows $y = 2x$. Which of the following graphs represents $y = |2x|$?



8. The length of a certain rectangle is twice the width. If the area of the rectangle is 128, what is the length of the rectangle?

- (A) 4
 (B) 8
 (C) 16
 (D) $21\frac{1}{3}$
 (E) $42\frac{2}{3}$



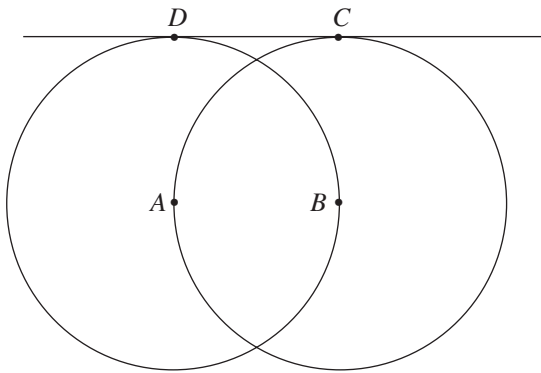
9. Which of the lettered points on the number line above could represent the result when the coordinate of point T is divided by the coordinate of point S?
- (A) A
 (B) B
 (C) C
 (D) D
 (E) E

GO ON TO THE NEXT PAGE



10. For positive integer x , 10 percent of x percent of 1,000 is equal to which of the following?

(A) x
 (B) $10x$
 (C) $100x$
 (D) $1,000x$
 (E) $10,000x$



11. In the figure above, A and B are the centers of two circles of identical circumference. \overline{CD} is tangent to both circles and parallel to \overline{AB} (not shown). If r is the radius of the circle with center A , what is the area of quadrilateral $ABCD$ (not shown) in terms of r ?

(A) $4r^2$
 (B) $4r$
 (C) $2r^2$
 (D) $2r$
 (E) r^2

12. Nails are sold in 8-ounce and 20-ounce boxes. If 50 boxes of nails were sold and the total weight of the nails sold was less than 600 ounces, what is the greatest possible number of 20-ounce boxes that could have been sold?

(A) 34
 (B) 33
 (C) 25
 (D) 17
 (E) 16

13. If $c = \frac{1}{x} + \frac{1}{y}$ and $x > y > 0$, then which of the following is equal to $\frac{1}{c}$?

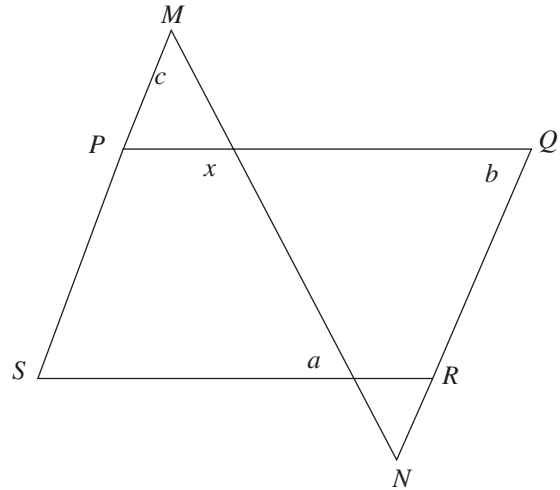
(A) $x + y$
 (B) $x - y$
 (C) $\frac{x + y}{xy}$
 (D) $\frac{xy}{x + y}$
 (E) $\frac{1}{x} + \frac{1}{y}$

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14. In the xy -plane, which of the following is a point of intersection between the graphs of $y = x + 2$ and $y = x^2 + x - 2$?
- (A) $(0, -2)$
 (B) $(0, 2)$
 (C) $(1, 0)$
 (D) $(2, 4)$
 (E) $(3, 5)$

15. If $f(g(a)) = 6$, $f(x) = \frac{x}{2} + 2$, and $g(x) = |x^2 - 10|$, which of the following is a possible value of a ?
- (A) $\sqrt{2}$
 (B) $\sqrt{3}$
 (C) 2
 (D) 6
 (E) 18



16. If $PQRS$ is a parallelogram, then which of the following must be equal to x ?
- (A) $180 - b$
 (B) $180 - c$
 (C) $a + b$
 (D) $a + c$
 (E) $b + c$

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.



NO TEST MATERIAL ON THIS PAGE.



SECTION 9

Time — 20 minutes

19 Questions

Turn to Section 9 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 success of the school's book club is owed to the club's policy that the novels selected, authored by a ----- group, cover a broad array of subject matters and range of historical eras.
(A) scholarly (B) meritorious (C) diverse
(D) erudite (E) sophisticated
- The apparent ----- with which professional skiers descend the slopes is deceptive; this activity requires ----- effort and intense concentration.
(A) trepidation . . conscious
(B) motivation . . resolute
(C) nonchalance . . strenuous
(D) consideration . . unpredictable
(E) insouciance . . minimal
- The children in the parade wore a range of costumes, some dressing in classic ghost or witch costumes, some as civic figures such as firefighters or police officers, and others as famous singers and other ----- of popular culture.
(A) monikers (B) diplomats (C) icons
(D) pariahs (E) dupes
- Mr. Planka's explanations were unnecessarily -----, incorporating entirely too many layers of trivial information that his students did not need.
(A) winsome (B) terse (C) convoluted
(D) fallacious (E) deafening
- Reflecting upon her vacation, Cecilia felt that it was both ----- and -----; she enjoyed visiting New York, but did not like all the traveling required to get there.
(A) arduous . . distressing
(B) realistic . . dramatic
(C) relaxing . . peaceful
(D) restful . . wearisome
(E) traditional . . consistent
- Despite appearing stylistically -----, Pablo Picasso's paintings exhibit artistic ----- on multiple levels.
(A) superficial . . inaccuracy
(B) excessive . . abundance
(C) precise . . elegance
(D) unsophisticated . . complexity
(E) imaginative . . creativity

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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 7–19 are based on the following passages.

The discipline of physics has seen a number of changes in the last 100 years. The following passages discuss two of those changes.

Passage 1

It is mandatory to preface any discussion of atoms by paying homage to Democritus, an Ionian philosopher of the fifth century B.C., the earliest known proponent of an atomic theory. Though Democritus's ideas were in many ways strikingly modern and were promulgated by his more celebrated successor Epicurus, his theory never gained wide acceptance in Greek thought. It had largely been forgotten by the time of the late Renaissance rebirth of science. While the dramatic rise of the atomic theory over the last century and a half seems to have vindicated Democritus, only the Greek name atom (“indivisible”) remains to establish his claim as the father of the theory.

Nonetheless, Democritus's thinking contained the seed of the idea that has dominated twentieth-century physical thought. He was one of the first to perceive that nature on a sufficiently small scale might be qualitatively different in a striking way from the world of our ordinary experience. And he was the first to voice the hope, today almost an obsession, that underlying all the complex richness, texture, and variety of our everyday life might be a level of reality of stark simplicity, with the turmoil we perceive representing only the nearly infinite arrangements of a smaller number of constituents.

Today, the notion that simplicity is to be found by searching nature on a smaller level is embedded in physical thought to the point that few physicists can imagine any other approach.

Democritus's ideas were popular among the philosophically sophisticated founders of modern physics. Galileo, Newton, and most of their contemporaries were atomists, but their beliefs were based more on intuition than on concrete evidence. Moreover, the invention of calculus had eliminated the difficulties with continuity that had in part motivated the Greek atomists, so the theory received little attention in the century following Newton's work. Still, the atomic theory remained a popular speculation among physicists, because it offered the hope that all the properties of matter might ultimately be explained in terms of the motion of the atoms themselves.

It remained for the chemists of the early nineteenth century to find the first solid empirical support for atomism. Without stretching the point too far, it is fair to say that in 1800 the atomic theory was something physicists believed but couldn't prove, while the chemists were proving it but didn't believe it.

Passage 2

The discovery that the universe is expanding was one of the great intellectual revelations of the twentieth century. With hindsight, it is easy to wonder why no one had thought of it before. Newton, and others, should have realized that a static universe would soon start to contract under the influence of gravity. But suppose instead the universe is expanding. If it were expanding fairly slowly, the force of gravity would cause it eventually to stop expanding and then to start contracting. However, if it were expanding at more than a certain critical rate, gravity would never be strong enough to stop it, and the universe would continue to expand forever. This is a bit like what happens when one fires a rocket upward from the surface of the earth. If it has a fairly low speed, gravity will eventually stop the rocket and it will start falling back. On the other hand, if the rocket has more than a certain critical speed (about seven miles per second), gravity will not be strong enough to pull it back, so it will keep going away from the earth forever. This behavior of the universe could have been predicted from Newton's theory of gravity at any time in the nineteenth, the eighteenth, or even the late seventeenth centuries. Yet so strong was the belief in a static universe that it persisted into the early twentieth century. Even Einstein, when he formulated the general theory of relativity in 1915, was so sure that the universe had to be static that he modified his theory to make this possible, introducing a so-called cosmological constant into his equations. Einstein introduced a new “antigravity” force, which, unlike other forces, did not come from any particular source, but was built into the very fabric of space-time. He claimed that space-time had an inbuilt tendency to expand, and this could be made to balance exactly the attraction of all the matter in the universe, so that a static universe would result.

7. The authors of both passages would most probably agree with which of the following statements?
- (A) Democritus and Newton both struggled to see their theories accepted by others.
 - (B) Neither Democritus nor Newton received credit for his theory.
 - (C) Newton, Einstein, and Democritus are all responsible in part for setting back modern physics.
 - (D) The atomic model of matter and the theory of the expanding universe cannot both be correct.
 - (E) Scientists may adopt particular theories in spite of weak or contradictory evidence.

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8. In line 5, the word “promulgated” most nearly means
- (A) plagiarized
(B) dismissed
(C) protected
(D) obscured
(E) promoted
9. The author would most likely agree about the “seed” (line 13) that
- (A) Although his view was initially met with skepticism, Democritus was among the first to advocate an atomic theory.
(B) Although he was known more for his work in politics, Democritus also made important scientific discoveries.
(C) Democritus’ ideas were incompatible with those of Galileo and Newton.
(D) Democritus was unduly credited with being the father of Greek atomism.
(E) Democritus was more known for his discovery of calculus than for his theory of atomism.
10. The “obsession” that the author describes in line 19 can best be described as
- (A) Democritus’ desire to see his ideas accepted by the scientific community
(B) physicists’ search for Democritus’ original writings on atoms
(C) the author’s own search for the principles underlying matter
(D) modern scientists’ quest for a simple unifying property of everyday matter
(E) early nineteenth-century chemists’ search for the first solid evidence of atomism
11. The third paragraph of Passage 1 is used by the author to
- (A) express dismay at the narrow-mindedness of early scientists
(B) highlight the passionate acceptance of a once spurned theory
(C) convey wonder for the inexplicableness of this obsession
(D) transition into a discussion of the usefulness of atomic theory
(E) show how modern physicists are unwilling to explore alternatives to atomic theory
12. The last paragraph of Passage 1 suggests that
- (A) it was only after the physicists proved the existence of atoms that the chemists believed their claims
(B) chemistry was the first scientific field to take atomic theory seriously
(C) atomic theory did not strictly fall within the domain of any one scientific discipline
(D) while physicists first proved the theory, it was chemists who made the most practical use of atoms
(E) the recognition of chemistry and physics as separate disciplines is arbitrary and detrimental to the pursuit of knowledge
13. Which of the following can be inferred from lines 3–4 of Passage 2 about the expanding universe?
- (A) It was incompatible with accepted nineteenth-century beliefs.
(B) Newton discovered it during his work with gravity.
(C) Most scientists believe that the idea is no longer tenable.
(D) The existence of gravity makes it impossible for the universe to expand.
(E) The expanding universe theory cannot be proven.
14. The author of Passage 2 mentions Newton (line 49) in order to
- (A) point out the ignorance of many physicists
(B) give one example of a proponent of the expanding universe theory
(C) illustrate that the expanding universe theory could have been discovered earlier
(D) provide evidence that the universe is not expanding
(E) show the consequences of a scientist’s disregard for a new theory
15. The author’s reference to a rocket (lines 57–63) serves to illustrate
- (A) the implications of an expanding universe
(B) the forces governing the universe’s gradual expansion
(C) the similarity of the energy released by the universe and that released by rockets
(D) the way in which gravity prevents the universe from expanding
(E) the theory of a static universe

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16. In Passage 2, the author’s description of Einstein’s general theory of relativity (line 68) serves to
- (A) bolster the author’s theory that the universe is expanding
 - (B) show that scientists were reluctant to abandon the theory of a static universe
 - (C) indicate the creativity that Einstein brought to his work
 - (D) question the validity of the theory of the expanding universe
 - (E) underscore Einstein’s reliance on Newtonian physics
17. The term “cosmological constant” (line 71) refers to
- (A) a mathematical constant employed by Einstein to bring his theories in line with the idea of a static universe
 - (B) an equation used by Einstein to debunk Newton’s ideas about universal expansion
 - (C) a theory developed by opponents of Einstein’s general theory of relativity
 - (D) the mathematical model that was used to disprove Newtonian physics
 - (E) the theory that the mass of all matter in the universe must remain the same
18. In the last line of Passage 2, the word “static” most nearly means
- (A) charged
 - (B) conflicting
 - (C) particulate
 - (D) unchanging
 - (E) dynamic
19. Based on the information in both passages, a difference between atomism and the expanding universe theory is
- (A) the idea of atomism can be traced to the ancient Greeks, while the model of the expanding universe is a relatively recent theory
 - (B) atomism is easier to understand and explore than the static universe theory
 - (C) atomism was developed for political reasons, while the static universe theory is purely scientific
 - (D) the theory of atomism has been thoroughly proven, while the static universe theory is now thought to be incorrect
 - (E) the static universe theory is more adaptable to modern science than is the atomistic theory

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. Of the top investment firms, only the few that have complied with SEC guidelines should be trusted by investors looking for a good place to build capital.
 - (A) Of the top investment firms, only the few that have complied with SEC guidelines
 - (B) Of the top investment firms, only a few, those which have compliance with SEC guidelines,
 - (C) Only a few of the top investment firms, because of complying with SEC guidelines
 - (D) Only a few of the top investment firms, in which the SEC guidelines were complied by,
 - (E) Only a few of the top investment firms complied with SEC guidelines,

2. The audience, though still trying to appreciate the modern theater production, are getting restless and won't be able to sit still for much longer.
 - (A) production, are getting restless and won't be able to
 - (B) production is getting restless and aren't able to
 - (C) production, are getting restless and they won't be able to
 - (D) production is getting restless and they won't be able to
 - (E) production, is getting restless and won't be able to

3. Antique furniture can be worth a great deal of money, but so many fakes abound that it can be difficult to distinguish valuable and worthless pieces.
 - (A) valuable and worthless pieces
 - (B) valuable to worthless pieces
 - (C) between valuable and worthless pieces
 - (D) between valuable from worthless pieces
 - (E) valuable pieces from those that are worthless pieces

4. Unlike the Asian people that we now think of as Japanese, the first settlements in the Japanese Archipelago were established by Caucasians called the Ainu.
 - (A) the first settlements in the Japanese Archipelago were established by Caucasians called the Ainu
 - (B) the settling of the Japanese Archipelago was first done by the Ainu, who were Caucasians
 - (C) the Ainu, who established the first settlements in the Japanese Archipelago, were Caucasians
 - (D) the Ainu, as Caucasians, were the first to establish settlements in the Japanese Archipelago
 - (E) settling the Japanese Archipelago was first done by Caucasians called the Ainu

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5. A Mongol emperor associated with ancient Chinese splendor, the tiny Japanese fleet nevertheless managed to defeat Kublai Khan's huge, nearly invincible army.
- (A) splendor, the tiny Japanese fleet nevertheless managed to defeat Kublai Khan's huge, nearly invincible army
 (B) splendor, the tiny Japanese fleet nevertheless being the first to defeat Kublai Khan's huge nearly invincible army
 (C) splendor, Kublai Khan's army was nevertheless defeated by the tiny, nearly invincible Japanese fleet
 (D) splendor, Kublai Khan commanded a nearly invincible army that was nevertheless defeated by the tiny Japanese fleet
 (E) splendor, the tiny, nearly invincible fleet of the Japanese nevertheless managing to defeat the huge army commanded by Kublai Khan
6. In 1666, the Great Fire of London, though it destroyed over 14,000 buildings and left 100,000 people homeless, actually ended the bubonic plague outbreak by incinerating the rats that carried the disease.
- (A) homeless, actually ended
 (B) homeless, actually ending
 (C) homeless, actually it had ended
 (D) homeless; actually ended
 (E) homeless, and it ended
7. Though all of Dawn's Siamese kittens are descended from the same four progenitors, each kitten has its own distinct personality.
- (A) each kitten has its own distinct personality
 (B) each kitten has their own distinct personalities
 (C) with each one there having distinct personalities
 (D) which each has its own distinct personality
 (E) each kitten is having a distinct personality of their own
8. Jenna was very self-assured about the upcoming audition, this confidence gave her the ability to continue performing her scene even after she forgot several lines.
- (A) this
 (B) and this
 (C) however, her
 (D) that
 (E) because her
9. One of the deciding factors in Edward III's retreat from France in 1390 was a freak electrical hailstorm; killing scores of his horses and armored knights.
- (A) hailstorm; killing
 (B) hailstorm and it killed
 (C) hailstorm, and killing
 (D) hailstorm, being the death of
 (E) hailstorm that killed

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10. The effects of the poliomyelitis that author Kyra Stanley contracted as a young child had been evident in her early stories.
- (A) had been evident
(B) being evident
(C) was evident
(D) were evident
(E) and she was evident
11. During his semester of student teaching, the observation of several students copying from each other's papers without consequence gave Mr. Peters the impression that the school had no effective policy against cheating.
- (A) the observation of several students copying from each other's papers without consequence gave Mr. Peters
(B) Mr. Peters observed several students copying from each other's papers without consequence; he formed
(C) observing several students copying from each other's papers without consequence gave Mr. Peters
(D) Mr. Peters, observing several students copying from each other's papers without consequence and forming
(E) the observation by Mr. Peters of several students copying from each other's papers without consequence gave him
12. When Jacques Lacan was developing his psychoanalytical theories, ideas from Freud, Heidigger, and even the structural linguists were used, but also original concepts were added by him.
- (A) ideas from Freud, Heidigger, and even the structural linguists were used, but also original concepts were added by him
(B) ideas from Freud, Heidigger, and even the structural linguists were used, as well as original concepts were added by him
(C) he used not only ideas from Freud, Heidigger, and even the structural linguists, but also his original concepts
(D) he used not only ideas from Freud, Heidigger, and even the structural linguists and added original concepts, too
(E) ideas from Freud, Heidigger, the structural linguists, and original concepts were added by him
13. The nutrition guideline called the "Food Pyramid" has not been as effective in fighting obesity and heart disease as experts had anticipated; as a result, reduced levels of carbohydrate intake will be recommended by them.
- (A) reduced levels of carbohydrate intake will be recommended by them
(B) experts now recommend eating fewer carbohydrates
(C) had recommended reduced levels of carbohydrate intake
(D) the recommendations for reduced carbohydrate intake will be made by them
(E) will be recommending reduced levels of carbohydrate intake
14. In contrast to them in New York and other American cities, Belgium's streets are not littered with fast food containers and discarded papers; however, pedestrians do need to watch out for dog droppings.
- (A) In contrast to them in New York and other American cities, Belgium's streets
(B) Belgium's streets, in contrast to them in New York and other American cities,
(C) Belgium's streets, when in contrast to those in New York and other American cities,
(D) Belgium's streets, in contrast to those in New York and other American cities,
(E) Belgium's streets contrast to New York and American cities, they

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.**