

SAT I: Reasoning Test



Saturday, January 2000

Solutions to this test are available. Call 800 323-7155 and ask for the *10 Real SATs Solutions Manual*, item number 007042, or go to www.collegeboard.com.

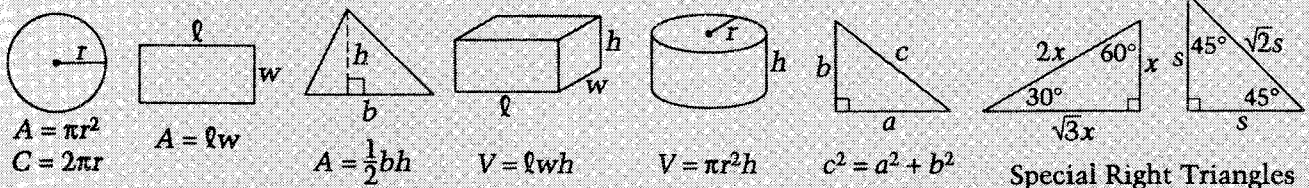
Section 1 1 1 1 1 1 1

Time—30 Minutes
25 Questions

In this section solve each problem, using any available space on the page for scratchwork. Then decide which is the best of the choices given and fill in the corresponding oval on the answer sheet.

Notes:

1. The use of a calculator is permitted. All numbers used are real numbers.
2. 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.



The number of degrees of arc in a circle is 360.
 The measure in degrees of a straight angle is 180.
 The sum of the measures in degrees of the angles of a triangle is 180.

- 1** If $4 + y = 7$, what is the value of $4 \times y$?

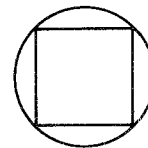
- (A) 3
 (B) 12
 (C) 28
 (D) 44
 (E) 49

**WORKDAY ABSENCES AT
EMPIRE PROCESSING PLANT**

Month	1994	1995
January	18	12
February	22	16
March	19	16
April	20	12
May	21	14

- 2** According to the table above, what was the total decrease from 1994 to 1995 in workday absences for the months shown?

- (A) 31
 (B) 30
 (C) 29
 (D) 28
 (E) 26



- 3** A square is inscribed in a circle as shown in the figure above. What is the least number of lines that must be added to the figure so that the resulting figure consists of two right triangles inscribed in the circle?

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

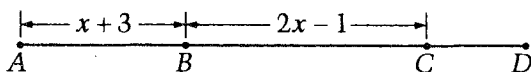
- 4** A printing press produces 4,200 posters per hour. At this rate, in how many minutes can the printing press produce 840 posters?

- (A) 0.2
 (B) 1.5
 (C) 5
 (D) 12
 (E) 70

GO ON TO THE NEXT PAGE

5 If $p = 3$, what is $4r(3 - 2p)$ in terms of r ?

- (A) $-12r$
- (B) $-8r$
- (C) $-7r$
- (D) $12r - 6$
- (E) $12r$



6 In the figure above, if the length of AD is $3x + 7$, what is the length of CD ?

- (A) $x + 2$
- (B) $x + 5$
- (C) 2
- (D) 4
- (E) 5

7 If r is 35 percent of p and s is 45 percent of p , what is $r + s$ in terms of p ?

- (A) $0.4p$
- (B) $0.5p$
- (C) $0.6p$
- (D) $0.7p$
- (E) $0.8p$

8 A bucket holds 4 quarts of popcorn. If $\frac{1}{3}$ cup of corn kernels makes 2 quarts of popcorn, how many buckets can be filled with the popcorn made from 4 cups of kernels?

- (A) 96
- (B) 24
- (C) 6
- (D) 3
- (E) $1\frac{1}{2}$

9 On a number line, if point P has coordinate $-1\frac{1}{2}$ and point Q has coordinate 10, what is the coordinate of the point that is located $\frac{1}{4}$ of the way from P to Q ?

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

0 A group of s children has collected 650 bottle caps. If each child collects w more bottle caps per day for the next d days, which of the following represents the number of bottle caps that will be in the group's collection?

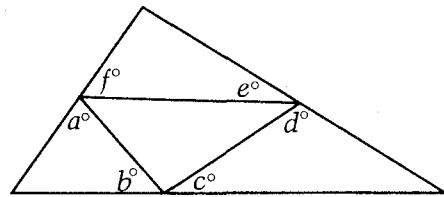
- (A) $650sw$
- (B) $650 + \frac{dw}{s}$
- (C) $650 + \frac{ds}{w}$
- (D) $650 + sw + d$
- (E) $650 + dsw$

11 Set T contains only the integers 1 through 50. If a number is selected at random from T , what is the probability that the number selected will be greater than 30?

- (A) $\frac{1}{4}$
- (B) $\frac{1}{3}$
- (C) $\frac{2}{5}$
- (D) $\frac{3}{5}$
- (E) $\frac{2}{3}$

12 If an integer k is divisible by 2, 3, 6, and 9, what is the next larger integer divisible by these numbers?

- (A) $k + 6$
- (B) $k + 12$
- (C) $k + 18$
- (D) $k + 30$
- (E) $k + 36$

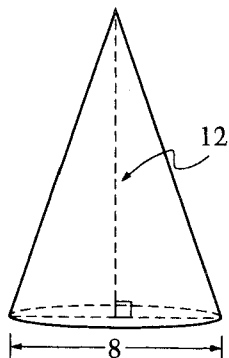


13 In the figure above, what is the value of $a + b + c + d + e + f$?

- (A) 180
- (B) 270
- (C) 360
- (D) 450
- (E) 540

- 14 If x is $\frac{2}{3}$ of y and y is $\frac{3}{5}$ of z , what is the value of $\frac{x}{z}$?

(A) $\frac{2}{5}$
(B) $\frac{5}{8}$
(C) $\frac{9}{10}$
(D) $\frac{10}{9}$
(E) $\frac{5}{2}$



- 15 The right circular cone shown above is to be cut by a plane parallel to the base to form a new, smaller cone. If the diameter of the base of the smaller cone is 3, what is its height?

(A) 4
(B) 4.5
(C) 5
(D) 5.5
(E) 6

- 16 In how many different ways can 5 people arrange themselves in the 5 seats of a car for a trip if only 2 of the people can drive?

(A) 12
(B) 15
(C) 26
(D) 48
(E) 120

- 17 If $2^x = 7$, then $2^{2x} =$

(A) 3.5
(B) 7
(C) 14
(D) 28
(E) 49

Questions 18-20 refer to the following definition.

A positive integer is called a palindrome if it reads the same forward as it does backward. For example, 959 and 8228 are palindromes, whereas 12 is not. Neither the first nor the last digit of a palindrome can be 0.

Which of the following integers is a palindrome?

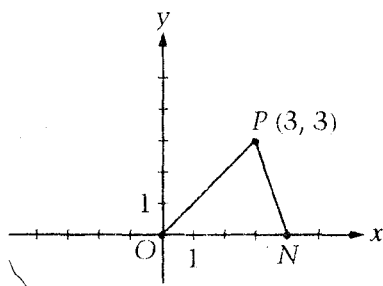
- (A) 550
- (B) 2255
- (C) 2525
- (D) 2552
- (E) 5002

How many three-digit palindromes are there?

- (A) 19
- (B) 20
- (C) 90
- (D) 100
- (E) 810

The next two palindromes greater than 50805 are m and p , where $m < p$. What is the value of $p - m$?

- (A) 10
- (B) 90
- (C) 100
- (D) 110
- (E) 210



21 In the figure above, for which of the following coordinates of a point T (not shown) will $\triangle OTN$ have the same perimeter as $\triangle OPN$?

- (A) (0, 3)
- (B) (1, 3)
- (C) (2, 3)
- (D) (4, 3)
- (E) (5, 3)

22 A person slices a pie into k equal pieces and eats one piece. In terms of k , what percent of the pie is left?

- (A) $100(k - 1) \%$
- (B) $\frac{100(k - 1)}{k} \%$
- (C) $\frac{100k}{k - 1} \%$
- (D) $\frac{k - 1}{100} \%$
- (E) $\frac{k - 1}{100k} \%$

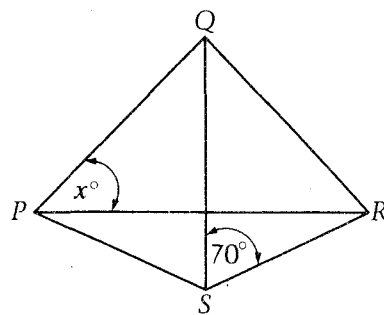
- 23 When each side of a given square is lengthened by 2 inches, the area is increased by 40 square inches. What is the length, in inches, of a side of the original square?

(A) 4
(B) 6
(C) 8
(D) 9
(E) 10

- 24 If a and b are positive, then the solution to

the equation $\frac{bx}{a-x} = 1$ is $x =$

(A) $\frac{a}{b+1}$
(B) $\frac{a+1}{b+1}$
(C) $\frac{b-1}{a}$
(D) $\frac{b}{a+1}$
(E) $\frac{b+1}{a}$



Note: Figure not drawn to scale.

- 25 In the quadrilateral above, if $PQ = SQ = RQ$ and $PS = SR$, then $x =$

(A) 30
(B) 40
(C) 50
(D) 60
(E) 70

Section 2

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Time—30 Minutes
31 Questions

For each question in this section, select the best answer from among the choices given and fill in the corresponding oval 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:

Medieval kingdoms did not become constitutional republics overnight; on the contrary, the change was ----.

- (A) unpopular
- (B) unexpected
- (C) advantageous
- (D) sufficient
- (E) gradual

(A) (B) (C) (D) (E)

Although he can ---- isolated facts, he is no scholar: he is able to ---- information but cannot make sense of it.

- (A) regurgitate .. synthesize
- (B) memorize .. recite
- (C) falsify .. denounce
- (D) misinterpret .. acquire
- (E) recall .. disregard

The use of tools among chimpanzees is learned behavior: young chimpanzees become ---- by ---- others.

- (A) socialized .. overcoming
- (B) dominant .. obeying
- (C) vocal .. mimicking
- (D) adept .. imitating
- (E) agile .. following

The speech was a ---- of random and contradictory information that could not be integrated into ----, consistent whole.

- (A) collage .. a rambling
- (B) development .. an ambiguous
- (C) hodgepodge .. a coherent
- (D) morass .. an amorphous
- (E) harangue .. an unintelligible

4 The prosecutor termed the defendants' actions ---- because there was no justification for their intentional disregard for the law.

- (A) indefensible (B) surreptitious
- (C) indefatigable (D) comprehensive
- (E) corrective

5 Acid rain is damaging lakes in ---- way, causing the virtually unnoticed ---- of these aquatic ecosystems.

- (A) a manifest .. eradication
- (B) a nefarious .. polarization
- (C) an insidious .. destruction
- (D) a methodical .. amalgamation
- (E) an obvious .. stagnation

6 The new concert hall proved to be a ----: it was costly, acoustically unsatisfactory, and far too small.

- (A) colossus (B) milestone (C) debacle
- (D) consecration (E) fabrication

A hypocrite may ---- reprehensible acts but escape discovery by affecting ----

- (A) abhor .. profundity
- (B) condone .. enthusiasm
- (C) commit .. innocence
- (D) perform .. immorality
- (E) condemn .. repentance

8 The review was ----, recounting the play's felicities and its flaws without unduly emphasizing one or the other.

- (A) equitable (B) immoderate
- (C) cumulative (D) unproductive
- (E) adulatory

9 Rosita Perú, who rose to become the highest-ranking female in the television industry, was ---- recruited: Spanish language program-producers courted her persistently.

- (A) indiscriminately (B) enigmatically
- (C) vicariously (D) rancorously
- (E) assiduously

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Each question below consists of a related pair of words or phrases, followed by five pairs of words or phrases labeled A through E. Select the pair that best expresses a relationship similar to that expressed in the original pair.

Example:

CRUMB : BREAD ::

- (A) ounce : unit
- (B) splinter : wood
- (C) water : bucket
- (D) twine : rope
- (E) cream : butter

(A) (B) (C) (D) (E)

10 LUBRICANT : SLIDE ::

- (A) battery : discharge
- (B) glue : adhere
- (C) stain : cleanse
- (D) poison : ingest
- (E) water : drink

11 STOMP : WALK ::

- (A) devour : starve
- (B) shout : speak
- (C) run : scamper
- (D) prepare : finish
- (E) deliberate : conclude

12 INDEX : TOPICS ::

- (A) agenda : meeting
- (B) diary : secrets
- (C) roster : names
- (D) manual : equipment
- (E) ledger : numbers

13 MENDICANT : BEG ::

- (A) sycophant : demean
- (B) braggart : boast
- (C) parasite : contribute
- (D) hero : worship
- (E) dissembler : believe

14 PRUDENT : INDISCRETION ::

- (A) frugal : wastefulness
- (B) proud : accomplishment
- (C) generous : wealth
- (D) disqualified : competition
- (E) disgruntled : cynicism

15 VISCOUS : FLOW ::

- (A) transparent : see
- (B) stationary : stop
- (C) arid : rain
- (D) stiff : bend
- (E) damp : soak

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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 16-24 are based on the following passage.

This passage on Navajo sandpainting was published in 1989 by a scholar of Navajo traditions who was trying to interpret them for non-Navajo readers. Sandpaintings are made by trickling fine, multi-colored sands onto a base of neutral-colored sand.

We cannot fully appreciate some Native American objects we consider art without also appreciating the contexts in which they are produced. When our understanding of art is heavily focused on objects, we tend to look in the wrong place for art. We find only the leavings or by-products of a creative process.

The concerns I have are deepened as I begin to compare how we, as outsiders, view sandpaintings with how the Navajo view them, even just from a physical perspective. Let me list several points of comparison. We have only representations of sandpaintings drawn or painted on paper or canvas, which we enjoy as objects of art. The Navajo strictly forbid making representations of sandpaintings, and they are never kept as aesthetic objects. Even the use of figures from sandpaintings in the sand-glue craft has not met with the approval of most Navajo traditionalists. Sandpaintings must be destroyed by sundown on the day they are made. They are not aesthetic objects; they are instruments of a ritual process. The sandpainting rite is a rite of re-creation in which a person in need of healing is symbolically remade in a way corresponding to his or her ailment. This person sits at the center of the very large painting and identifies with the images depicted, experiencing the complexity and the diversity, the dynamics and the tension, represented in the surrounding painting. The illness is overcome when the person realizes that these tensions and oppositions can be balanced in a unity that signifies good health and beauty.

In terms of visual perspective, we traditionally view sandpainting from a position as if we were directly above and at such a distance that the whole painting is immediately graspable, with each side equidistant from our eyes. This view is completely impossible for the Navajo. I got a laugh when I asked some Navajo if anyone ever climbed on the roof of a hogan* to look at a sandpainting through the smoke hole. When a painting 6 feet in diameter, or even larger, is constructed on the floor of a hogan only 20 feet in diameter, the perspective from the periphery is always at an acute angle to the surface. A sandpainting cannot be easily seen as a whole. The most important point of view is that of the person for whom the painting is made, and this person sees the painting from the inside out because

he or she sits in the middle of it. These differences (50) are basic and cannot be dismissed. The traditional Navajo view is inseparable from the significance that sandpainting has for the Navajo.

I think we can say that for the Navajo the sandpainting is not the intended product of the creative (55) process in which it is constructed. The product is a healthy human being or the re-creation of a well-ordered world. The sandpainting is but an instrument for the creative act, and perhaps it is the wisdom of the Navajo that it be destroyed in its use so (60) that the obvious aesthetic value of the instrument does not supplant the human and cosmic concern. The confinement of our attention to the reproduction of sandpaintings is somewhat analogous to hanging paint-covered artists' palettes on the wall (65) to admire, not acknowledging that these pigment-covered boards are not paintings but the means to create them. There is a certain aesthetic value in artists' palettes, I suppose, but surely most would think of this action as foolishly missing the point.

* A traditional Navajo dwelling

16 According to Navajo tradition, the most significant perspective on a sandpainting is that of the

- (A) group that requests the sandpainting's creation
- (B) persons represented by the sandpainting figures
- (C) Navajo leader conducting the sandpainting rite
- (D) artists who conceive and design the sandpainting
- (E) person for whom the sandpainting is made

17 As used in line 8, "deepened" most nearly means

- (A) darkened
- (B) heightened
- (C) immersed
- (D) made distant
- (E) made obscure

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2**2****2****2****2****2****2****2**

- 18** What would happen if Navajo practices regarding sandpaintings (lines 14-20) were strictly observed?
- (A) Only the Navajo would be permitted to exhibit sandpaintings as works of art.
 - (B) All sandpaintings would be destroyed before the rite of re-creation.
 - (C) The sandpaintings could be viewed only during the sandpainting rite.
 - (D) The sand-glue craft would be the only art form in which figures from sandpaintings could appear.
 - (E) The Navajo would be able to focus exclusively on the sandpaintings' images of unity.
- 19** Why did the Navajo listeners mentioned in line 39 laugh?
- (A) It would be dangerous for a person to climb onto the roof of a hogan.
 - (B) The view from the periphery is more amusing than the view from the center of the paintings.
 - (C) Only the person in need of healing should act in the way suggested by the author.
 - (D) Critical details in the sandpaintings would be imperceptible from such a distance.
 - (E) A bird's-eye perspective is irrelevant to the intended function of the paintings.
- 20** The phrase "obvious aesthetic value" (line 60) suggests that
- (A) despite an attempt to separate sandpaintings from the realm of art, the author recognizes their artistic qualities
 - (B) imposing artistic rules on sandpaintings diminishes their symbolic value
 - (C) the Navajo believe the sandpaintings' artistic qualities to be as important as their function
 - (D) the author discourages artistic elitism, yet acknowledges the esteemed reputation that sandpainters enjoy within the Navajo community
 - (E) aesthetic value should be associated with objects of natural beauty as well as with things created by humans
- 21** The author's discussion of artists' palettes (lines 62-69) emphasizes the
- (A) array of colors in the creation of sandpaintings
 - (B) insight required to appreciate technically unique art
 - (C) growing legitimacy of sandpainting reproductions
 - (D) value of sandpaintings as a means rather than an end
 - (E) benefit of combining several components to produce a single painting
- 22** The information in the passage suggests that a museum's exhibition of reproduced Navajo sandpaintings would
- (A) undermine the effectiveness of sandpaintings in the healing process
 - (B) help to safeguard the traditions and treasures of Navajo civilization
 - (C) devalue the representations of sandpainting figures in the sand-glue craft
 - (D) discourage non-Navajo people from preserving actual sandpaintings
 - (E) perpetuate the importance of a painting's form rather than its function
- 23** Which of the following would the author consider to be most similar to a non-Navajo person's appreciation of sandpainting, as it is discussed in the passage?
- (A) Savoring the taste of a cake that someone else has baked
 - (B) Enjoying a book written by an anonymous author
 - (C) Admiring an ancient structure without comprehending its historical context
 - (D) Praising a concert performance without knowing how to play a musical instrument
 - (E) Appreciating a building without having contributed to its construction
- 24** Which statement best summarizes the author's perspective on the appreciation of sandpainting?
- (A) We should not revere ceremonial art objects because such reverence is a kind of tyranny that stifles the full expression of ideas.
 - (B) We must understand that the materials of the object and the design it takes are at the core of its meaning.
 - (C) We cannot fully understand sandpaintings until we witness their healing powers.
 - (D) We must understand the process by which an object was created and the purpose it serves in order to grasp its significance.
 - (E) Our usual way of looking at art objects should be augmented by knowledge of the artists' personal history.

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Questions 25-31 are based on the following passage.

During the nineteenth century privileged travelers from England and the United States often published accounts of their journeys to foreign lands. Some of these travelers were women who wrote travel books.

For most women of the leisure class, immobilized as they were by the iron hoops of convention, the term "abroad" had a dreamlike, talismanic quality. It conjured up a vision composed of a whole cluster of myths, half-myths, and truths—of sunlight, liberty, the fantastic and the healing, the unknown and the mysterious—all those concepts that stood in direct contrast to domesticity. When women who had the time and means traveled to India, China, or Africa, their real destination, more often than not, was a restorative idea rather than a place on the map.

Though this restorative idea sometimes led them to endure long, uncomfortable journeys to remote places where few of their compatriots had penetrated before them, there was little intent to imitate the male fashion for exploration, which was such a feature of the time. It is apparent that discovery was not the aim of most women travelers, nor did their wanderings inspire other expeditions of greater size or ambition.

What, specifically, were these women seeking "abroad"? From their diaries, letters, and published accounts, travel seems to have been the individual gesture of the previously housebound, male-dominated, wealthy lady. Desperate for an emotional outlet, she often found it through travel. Aboard a boat, perched atop a camel or an elephant, paddling an outrigger, away for months on end, she could enjoy a sense of control and a freedom of action and thought unthinkable at home. Travel offered the kind of adventure imaginable to her heretofore only in the Gothic or romantic novels of the day—encounters with the exotic, the exciting, the self-fulfilling. The challenges and new experiences increased confidence and allowed the woman within to emerge, at least temporarily.

But the motive for going abroad was more than a quest for the extraordinary. Travel satisfied that established Victorian passion for improvement—of oneself and of others. This passion, once regarded as the property of men only, was shared by these "new" women. Touring or residing in foreign lands, they learned history, geography, languages, and politics. Many vivid images were imprinted upon the memory that would have been poorer without them. The recorded accounts of their adventures—mountain climbing in Japan, outdoor bathing in Finland, monkey watching in India, canoeing along

(50) the Nile—helped to educate British and American readers. Simply said, the women travelers brought back a powerful commodity—knowledge.

History put these women travelers in a unique position, and they responded in a unique way: they created a small but impressive library of first-person narratives that combined genuine learning with the spirit of individualism. The succeeding generations of women travelers—the daughters and granddaughters of these pioneers—were impelled by essentially the same impetus, the desire for independence and enlightenment. These were the twin forces that crystallized in the ongoing movement for equal rights. Thus, the once-lowly travel book rather unexpectedly became an important instrument for the emancipation of women.

23 The primary purpose of the passage is to

- (A) evaluate women's travel books and journals from a literary perspective
- (B) contrast nineteenth-century women travelers with male explorers of the same period
- (C) describe changes in travel opportunities for wealthy women in the nineteenth century
- (D) examine the motives that some nineteenth-century women had for traveling
- (E) analyze the historical significance of women travelers' books and journals

26 In line 2, "iron hoops" primarily signify the

- (A) strict codes governing the social behavior of women
- (B) unbecoming styles of Victorian fashion
- (C) lack of mobility within society
- (D) household implements disdained by Victorian women
- (E) barriers to a woman's right to travel alone

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2**2****2****2****2****2****2****2**

- The main reason certain women traveled abroad during the nineteenth century was to
- (A) seek the companionship of like-minded women
 - (B) satisfy a desire for freedom and adventure
 - (C) explore remote and uncharted places
 - (D) research and publish travel guides
 - (E) visit countries about which they had only read

- In line 62, "crystallized" most nearly means
- (A) refracted
 - (B) metamorphosed
 - (C) glittered
 - (D) sharpened
 - (E) solidified

- In what way was a certain type of travel book an "instrument" (lines 64-65) ?
- (A) It conveyed an impression of beauty.
 - (B) It revealed what would otherwise have been hidden.
 - (C) It was an agent that helped bring about a change.
 - (D) It registered a cataclysmic change in society.
 - (E) It was an implement wielded by an expert.

- The author's conclusion would be most directly supported by additional information that

- (A) described the details of particular journeys of women travelers
- (B) revealed the number and titles of travel journals published by women
- (C) indicated how nineteenth-century travel writers influenced the future status of women
- (D) discussed the accuracy of the travel information included in women's journals and books
- (E) discussed the effect of nineteenth-century travel writers on modern women writers

- The author suggests that the travel books written by nineteenth-century women are significant primarily because they

- (A) reflect the expanding role women were soon to assume in Britain and America
- (B) were "once-lowly" and are now prized by book collectors
- (C) helped women to achieve economic independence
- (D) were richly illustrated and helped to educate people about life abroad
- (E) are valuable historical sources that describe nineteenth-century travel

I Become Part of It, D.M. Dooling & Paul Jordan-Smith, editors,
New York: Parabola Books, 1989. Copyright © The Society
for the Study of Myth and Tradition.

NOTE: The reading passages in this test are brief excerpts or adaptations of excerpts from published material. The ideas contained in them do not necessarily represent the opinions of the College Board or Educational Testing Service. To make the text suitable for testing purposes, we may in some cases have altered the style, contents, or point of view of the original.

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.

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Section 4 4 4 4 4

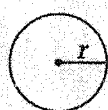
Time—30 Minutes
25 Questions

This section contains two types of questions. You have 30 minutes to complete both types. You may use any available space for scratchwork.

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Reference Information

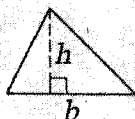


$$A = \pi r^2$$

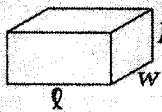
$$C = 2\pi r$$



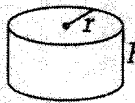
$$A = \ell w$$



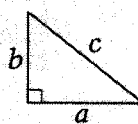
$$A = \frac{1}{2}bh$$



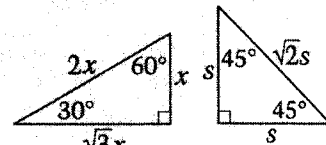
$$V = \ell wh$$



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



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



Special Right Triangles

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

The measure in degrees of a straight angle is 180.

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

Directions for Quantitative Comparison Questions

Questions 1-15 each consist of two quantities in boxes, one in Column A and one in Column B. You are to compare the two quantities and on the answer sheet fill in oval

- A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

AN E RESPONSE WILL NOT BE SCORED.

Notes:

1. In some questions, information is given about one or both of the quantities to be compared. In such cases, the given information is centered above the two columns and is not boxed.
2. In a given question, a symbol that appears in both columns represents the same thing in Column A as it does in Column B.
3. Letters such as x , n , and k stand for real numbers.

EXAMPLES

Column A

Column B

Answers

E1

$$5^2$$

$$20$$

☒ (A) (B) (C) (D) (E)

E2

$$x$$

$$30$$

(A) (B) ☒ (C) (D) (E)

E3

$$r + 1$$

$$s - 1$$

(A) (B) (C) ☒ (D) (E)

GO ON TO THE NEXT PAGE

SUMMARY DIRECTIONS FOR COMPARISON QUESTIONS

Answer: A if the quantity in Column A is greater;
 B if the quantity in Column B is greater;
 C if the two quantities are equal,
 D if the relationship cannot be determined from the information given.

Column A

Column B

$$3n - 6 = 21$$

1

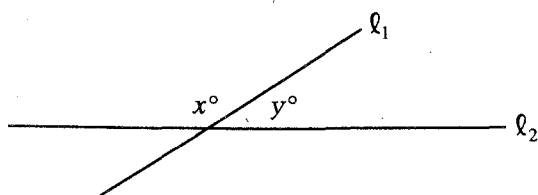
 n

5

2

The average (arithmetic mean) of 3, 4, and 5

The average (arithmetic mean) of 2, 3, 7, and 8



Note: Figure not drawn to scale.

$$x > 90$$

3

 y

30

r , s , t , and u are consecutive integers.
 $r < s < t < u$

4

 $r + u$ $s + t$

Column A

Column B

Ian has x dollars in a savings account.
 $x > 0$

5

Twice the number of dollars that Ian has in the account

 $200x$

$$y = ax^2 + bx$$

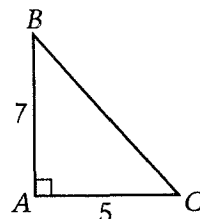
$$x = 1$$

$$y = 3$$

6

 b

1



7

The length of BC

9

$$(x - 3)(x + 2) < 0$$

8

 x

3

SUMMARY DIRECTIONS FOR COMPARISON QUESTIONS

Answer: A if the quantity in Column A is greater;
 B if the quantity in Column B is greater;
 C if the two quantities are equal;
 D if the relationship cannot be determined from the information given.

Column A

Column B

$$\begin{array}{r} PW \\ - WP \\ \hline 72 \end{array}$$

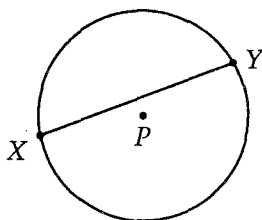
P and W represent different nonzero digits in the correctly solved subtraction problem.

9

 P W

u , v , and w are positive numbers.

10

 $u + v + w$ uvw 

The circle has center P and area 5π .

11

The length of XY

5

$$x = y + 1$$

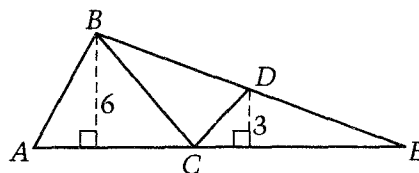
x is a positive odd integer.

12

 $2x$ $3y - 1$

Column A

Column B



Note: Figure not drawn to scale.

$$\begin{array}{l} AE = 27 \\ AC = 9 \end{array}$$

13

The area of $\triangle ABC$ The area of $\triangle CDE$

When the square of $2m$ is multiplied by 2, the result is g .

$$m > 0$$

14

$$\frac{g}{4m}$$

 m

p and r are different prime numbers.

15

The number of positive integer divisors of p^3

The number of positive integer divisors of pr

Directions for Student-Produced Response Questions

Each of the remaining 10 questions requires you to solve the problem and enter your answer by marking the ovals in the special grid, as shown in the examples below.

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

Write answer
in boxes.

Grid in
result.

7	/	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0

Fraction
line

Answer: 2.5

2	.	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

Decimal
point

Answer: 201
Either position is correct.

2	0	1
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0

2	0	1
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0

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

- Mark no more than one oval in any column.
- Because the answer sheet will be machine-scored, **you will receive credit only if the ovals 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 ovals 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 $2\frac{1}{2}$ must be gridded as 2.5 or 5/2. (If $\frac{21}{2}$ is gridded, it will be interpreted as $\frac{21}{2}$, not $2\frac{1}{2}$.)

- **Decimal Accuracy:** If you obtain a decimal answer, **enter the most accurate value the grid will accommodate.** For example, if you obtain an answer such as 0.6666..., you should record the result as .666 or .667. **Less accurate values such as .66 or .67 are not acceptable.**

Acceptable ways to grid $\frac{2}{3} = .6666\ldots$

2	/	3
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0

.	6	6	6
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

.	6	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

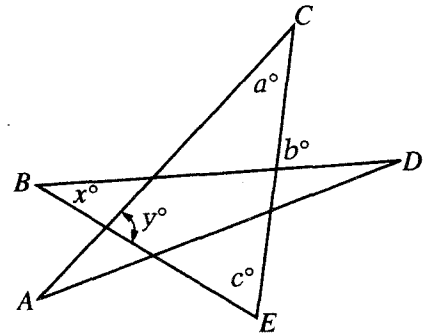
- 16** A certain car's gasoline tank holds 20 gallons when full. The tank is $\frac{3}{4}$ full. At \$1.20 a gallon, how many dollars worth of gasoline must be purchased to fill the remainder of the tank? (Disregard the \$ sign when gridding your answer.)

- 17** If $(3 \times 10^3) + (2 \times 10^2) = a \times 10^3$, what is the value of a ?

- 18 If $2x + y = 14$ and $4x + y = 20$, what is the value of $3x + y$?

- 19 What is the number that satisfies the following three conditions?

- It is an integer greater than 999 and less than 1,234.
- The sum of its digits is 14.
- Its tens and units digits are the same.



Note: Figure not drawn to scale.

- 20 In the figure above, AC , CE , EB , BD , and DA are line segments. If $a = 40$, $b = 70$, and $c = 50$, what is the value of $x + y$?

- 21 For all integers x , let \boxed{x} be defined as follows:

$$\boxed{x} = \frac{x}{2} \text{ if } x \text{ is even.}$$

$$\boxed{x} = x^2 \text{ if } x \text{ is odd.}$$

If $\boxed{2} + \boxed{3} = y$, what is the value of y^3 ?

4

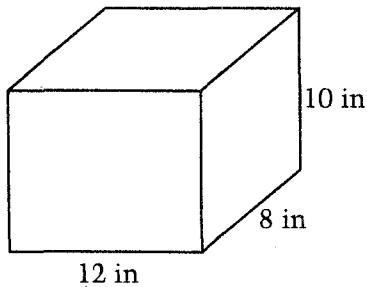
4

4

4

4

4



- 22** A solid block of wood with dimensions as shown in the figure above is to be painted on all of its faces. What is the total area (in square inches) to be painted?

- 23** Hakim and Chris began running a 50-yard race at the same time. When Hakim finished the race, Chris was 4 yards behind him. If Hakim ran the race in 7 seconds, what was the difference in their rates in yards per second for those 7 seconds?

- 24** What is one possible value for the slope of a line passing through point $(-1, 1)$ and passing between points $(1, 3)$ and $(2, 3)$ but not containing either of them?

- 25** If the average (arithmetic mean) of x , $2x - 8$, $2x + 2$, $3x - 1$, and $4x + 1$ is 6, what is the value of the mode of these numbers?

Section 5

5

Time—30 Minutes
35 Questions

For each question in this section, select the best answer from among the choices given and fill in the corresponding oval 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:

Medieval kingdoms did not become constitutional republics overnight; on the contrary, the change was ----.

- (A) unpopular
- (B) unexpected
- (C) advantageous
- (D) sufficient
- (E) gradual

(A) (B) (C) (D) (E)

1 Mammals of temperate zones often give birth in the spring, thereby ---- their offspring to ---- the season's abundant food.

- (A) subjecting...subsidize on
- (B) encouraging...compete for
- (C) tempting...abstain from
- (D) forcing...forage for
- (E) enabling...benefit from

2 While the dome of the nineteenth-century city hall once ---- the city's skyline, a much taller new office building now ---- the old landmark.

- (A) overshadowed...enhances
- (B) dominated...dwarfs
- (C) punctuated...resembles
- (D) cluttered...destroys
- (E) beautified...uplifts

3 Ancient cloth makers probably could not twist flax fibers until they had dipped the fibers into water to make them ----.

- (A) solvent (B) supple (C) nonporous
- (D) immutable (E) invisible

4 In an effort to ---- people's physical discomforts, modern medicine sometimes wrongly treats the body's defense mechanisms as ---- and in need of corrective intervention.

- (A) cure...complex
- (B) prescribe...symptomatic
- (C) diagnose...suppressive
- (D) relieve...defective
- (E) analyze...medicinal

5 *Crazy Love*, by Elías Miguel Muñoz, is an ---- novel: it takes the form of a series of letters.

- (A) archetypal (B) epistolary
- (C) inauspicious (D) inconspicuous
- (E) illusory

6 The meal had ---- effect on the famished travelers: their energy was restored almost instantly.

- (A) a tonic
- (B) a cloying
- (C) an indefinite
- (D) a debilitating
- (E) an intemperate

7 While cynics may ---- the goal of international disarmament as utopian, others believe that laughing contemptuously at idealism leads nowhere.

- (A) exalt (B) confirm (C) renew
- (D) deride (E) defend

8 Although his memoirs contained scathing criticisms of his opponents, the politician ---- vindictiveness as his motive.

- (A) disavowed
- (B) claimed
- (C) disparaged
- (D) substantiated
- (E) evaluated

9 Even in her most casual conversation, one detects the impulse to ----, to impart knowledge systematically to her listener.

- (A) mystify (B) instruct (C) insinuate
- (D) embellish (E) meditate

10 Ms. Turner was an ---- opponent, one who never swerved from her purpose and would never compromise or yield.

- (A) inexorable
- (B) ambivalent
- (C) eloquent
- (D) impassive
- (E) obstreperous

GO ON TO THE NEXT PAGE

Each question below consists of a related pair of words or phrases, followed by five pairs of words or phrases labeled A through E. Select the pair that **best** expresses a relationship similar to that expressed in the original pair.

Example:

CRUMB : BREAD ::

- (A) ounce : unit
- (B) splinter : wood
- (C) water : bucket
- (D) twine : rope
- (E) cream : butter

(A) ● (C) (D) (E)

11 MAP : NAVIGATE ::

- (A) manuscript : submit
- (B) license : revoke
- (C) writing : erase
- (D) blueprint : build
- (E) receipt : pay

12 SKULL : HEAD ::

- (A) heart : organ
- (B) finger : hand
- (C) skeleton : body
- (D) elbow : joint
- (E) scalp : hair

13 ACCOMPLICE : CRIME ::

- (A) inmate : prison
- (B) detective : clue
- (C) employer : work
- (D) salesperson : store
- (E) partner : business

14 BARRICADE : ACCESS ::

- (A) heal : illness
- (B) demand : due
- (C) bind : movement
- (D) complete : task
- (E) chat : conversation

15 ENSEMBLE : DANCER ::

- (A) clique : outsider
- (B) band : musician
- (C) gymnasium : athlete
- (D) museum : curator
- (E) audience : performer

16 CONSIDER : CONTEMPLATE ::

- (A) smile : greet
- (B) write : compose
- (C) complain : bicker
- (D) examine : scrutinize
- (E) ignore : notice

17 CONGEAL : SOLID ::

- (A) heat : fire
- (B) breathe : air
- (C) immunize : disease
- (D) melt : liquid
- (E) push : resistance

18 SHEAR : WOOL ::

- (A) reap : wheat
- (B) whittle : wood
- (C) sweep : broom
- (D) prune : tree
- (E) rake : leaves

19 EPILOGUE : BOOK ::

- (A) sequel : movie
- (B) conclusion : title
- (C) tiff : quarrel
- (D) intermission : play
- (E) finale : symphony

20 GLUTTON : MODERATION ::

- (A) thief : larceny
- (B) peer : nobility
- (C) scoundrel : virtue
- (D) gambler : luck
- (E) benefactor : gift

21 AFFECTATION : BEHAVIOR ::

- (A) speech : topic
- (B) tension : violence
- (C) façade : appearance
- (D) buffoonery : action
- (E) pretense : honesty

22 EXHORTATION : URGE ::

- (A) division : unite
- (B) agreement : dissent
- (C) eulogy : praise
- (D) travesty : reproduce
- (E) charity : donate

23 COOPERATION : COLLUSION ::

- (A) evidence : proof
- (B) achievement : reward
- (C) damage : compensation
- (D) imitation : forgery
- (E) emotion : ecstasy

GO ON TO THE NEXT PAGE

The passage below is followed by questions based on its content. 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 24-35 are based on the following passage.

The following passage, first published in 1960, is adapted from an essay in which the author, an anthropologist, discusses his recent visit to a lake.

Not long ago I visited a New England lake that has been preempted and civilized by human beings. All day long in the vacation season high-speed motorboats, driven with the reckless abandon common to the young of our society, speed back and forth. The shores echo to the roar of powerful motors and the delighted screams of young people with uncounted horsepower surging under their hands. If I had had some desire to swim or to canoe in the older ways of the great forest that once lay about this region, either notion would have been silly. I would have been gaily chopped to ribbons by young people whose eyes were always immutably fixed on the far horizons of space, or on the dials which indicated the speed of their passing. There was another world, I was to discover, along the lake shallows and under the boat dock, where the motors could not come.

As I sat there one sunny morning when the water was peculiarly translucent, I saw a dark shape moving swiftly over the bottom. It was the first sign of life I had seen in this lake, whose shores seemed to yield little but washed-in beer cans. By and by the gliding shadow ceased to scurry from stone to stone over the bottom. Unexpectedly, it headed almost directly for me. A furry nose with gray whiskers broke the surface. Below the whiskers, green water foliage trailed out in an inverted V as long as his body. A muskrat still lived in the lake. He was bringing in his breakfast. I sat very still in the strips of sunlight under the pier. To my surprise, the muskrat came almost to my feet with his little breakfast of greens. He was young, and it rapidly became obvious to me that he was laboring under an illusion of his own, that he thought animals and people were still living in the Garden of Eden. He gave me a friendly glance from time to time as he nibbled his greens. Once, even, he went out into the lake again and returned to my feet with more greens. He had not, it seemed, heard very much about people. I shuddered. Only the evening before I had heard my neighbor describe with triumphant enthusiasm how he had killed a muskrat in the garden because the creature had dared to nibble his petunias.

On this pleasant shore a war existed and would go on until nothing remained but human beings. Yet this creature with the gray, appealing face wanted very little: a strip of shore to coast up and down, sunlight and moonlight, some weeds from the deep water. He was an edge-of-the-world dweller, caught between a vanishing forest and a deep lake preempted by unpredictable machines full of chopping blades. He eyed me nearsightedly, a green leaf poised in his mouth. Plainly he had come with some poorly instructed memory about the lion and the lamb.*

"You had better run away now," I said softly, making no movement in the shafts of light. "You are in the wrong universe and must not make this mistake again. I am really a very terrible and cunning beast. I can throw stones." With this I dropped a little pebble at his feet.

He looked at me half blindly, with eyes much better adjusted to the wavering shadows of his lake bottom than to sight in the open air. He made almost as if to take the pebble up into his forepaws. Then a thought seemed to cross his mind: perhaps after all this was not Eden. His nose twitched carefully; he edged toward the water.

As he vanished in an oncoming wave, there went with him a natural world, distinct from the world of young people and motorboats. . . . It was a world of sunlight he had taken down into the water weeds. It hovered there, waiting for my disappearance.

* The lion lying down with the lamb is a Biblical image of ideal peace.

24 The passage as a whole can best be described as an expression of

- (A) amusement at the behavior of muskrats
- (B) regret at the impact of humans on the lake
- (C) scorn for the people who use the lake
- (D) optimism about the future of the lake
- (E) irritation at the modern obsession with speed

25 Lines 3-9 indicate that the word "civilized" (line 2) is being used

- (A) cautiously
- (B) sarcastically
- (C) humorously
- (D) hopefully
- (E) wistfully

- 26** The underlying sentiment in the sentence beginning "If I had" (lines 9-12) is the author's
- (A) nostalgia for experiences that are no longer possible
 - (B) grudging admiration for young people
 - (C) regret for something he had failed to do
 - (D) amusement at his own foolishness
 - (E) feeling of moral paralysis
- 27** In lines 12-15, the author suggests that the young people are
- (A) competitive
 - (B) violent
 - (C) self-absorbed
 - (D) rebellious
 - (E) uninformed
- 28** In line 27, "broke" most nearly means
- (A) destroyed
 - (B) surpassed
 - (C) weakened
 - (D) pierced
 - (E) tamed
- 29** In the sentence beginning in line 33 ("He was young . . . Garden of Eden"), the author suggests that
- (A) in this lake, few muskrats have the chance to reach maturity
 - (B) an older, wiser muskrat would have learned to fear people
 - (C) the muskrat was only one of several types of animals living in the lake
 - (D) at one time the lake had been home to a variety of animals
 - (E) some parts of the lake had remained unchanged for centuries
- 30** In line 35, "laboring under" most nearly mean
- (A) moving with great effort
 - (B) being exploited by
 - (C) striving to achieve
 - (D) working for
 - (E) suffering from
- 31** The author probably "shuddered" (line 41) because
- (A) he was afraid of the muskrat
 - (B) he envisioned what could happen to the muskrat
 - (C) he was sitting in shade under the boat dock
 - (D) the behavior of the young people in the motorboats frightened him
 - (E) he wondered what else could happen to undermine the ecology of the lake
- 32** The phrase "dared to" in line 45 emphasizes the author's belief that
- (A) the muskrat was dangerous
 - (B) the muskrat was insolent
 - (C) humans will eventually destroy all life in the lake
 - (D) the neighbor's behavior was uncalled for
 - (E) the author felt intimidated by his neighbor
- 33** The quotation in lines 58-62 primarily serves as a warning about the
- (A) threat from the author
 - (B) behavior of humans in general
 - (C) predatory nature of many wild animals
 - (D) inevitable destruction of the natural world
 - (E) callousness of the young people in the motorboats

GO ON TO THE NEXT PAGE 

- Which of the following best describes the author's action in lines 62-63 ("With this ... at his feet") as compared to his words in lines 58-62 ?
- (A) His action exaggerates his words.
 - (B) His action is more admirable than his words.
 - (C) His action reveals a hidden dimension to his words.
 - (D) His action parallels the severity of his words.
 - (E) His action is much less emphatic than his words.

- In the last sentence (lines 75-76), the author implies that
- (A) he himself does not belong to the natural world
 - (B) his fears have been unfounded
 - (C) his behavior has been unacceptable
 - (D) humans will eventually learn to behave responsibly toward nature
 - (E) there is no future for the young muskrat

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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.

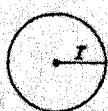
STOP

Time—15 Minutes
10 Questions

In this section solve each problem, using any available space on the page for scratchwork. Then decide which is the best of the choices given and fill in the corresponding oval on the answer sheet.

Notes:

1. The use of a calculator is permitted. All numbers used are real numbers.
2. 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.

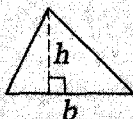


$$A = \pi r^2$$

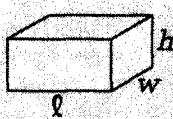
$$C = 2\pi r$$



$$A = lw$$



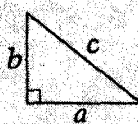
$$A = \frac{1}{2}bh$$



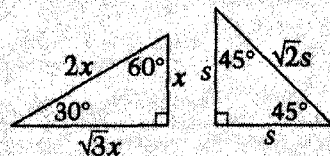
$$V = lwh$$



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



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



Special Right Triangles

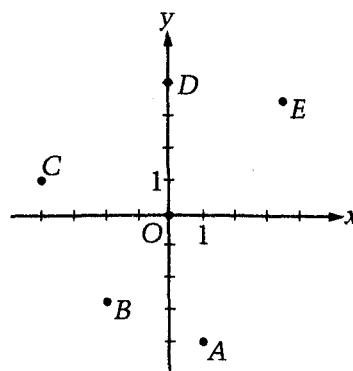
The number of degrees of arc in a circle is 360.

The measure in degrees of a straight angle is 180.

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

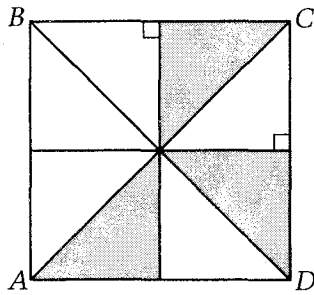
- 1** If $x = 2y$ and $y = \frac{10}{z}$, what is the value of x when $z = 4$?

- (A) $\frac{5}{4}$
(B) $\frac{5}{2}$
(C) 5
(D) 8
(E) 20



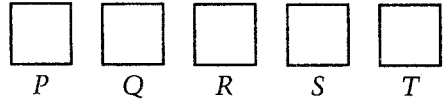
- 2** In the figure above, which lettered point, other than point O , lies in the interior of a circle with center O and radius 4?

- (A) A
(B) B
(C) C
(D) D
(E) E



- 3 In the figure above, $ABCD$ is a square. What percent of the square is shaded?

- (A) 25%
 (B) $33\frac{1}{3}\%$
 (C) $37\frac{1}{2}\%$
 (D) 40%
 (E) 50%



- 4 Each of the boxes above must contain one number from the set $\{8, 15, 16, 18, 27\}$. A different number is to be placed in each box so that the following conditions are met.

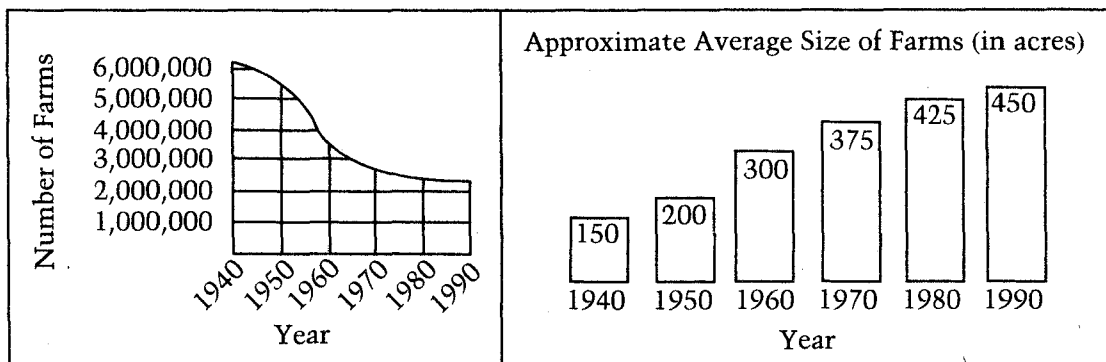
- (1) Box P contains an odd number.
- (2) Box Q contains an even number.
- (3) Boxes R and S each contain a number that is a multiple of 9.
- (4) The number in box P is less than the number in box Q .

What number must be in box T ?

- (A) 8
 (B) 15
 (C) 16
 (D) 18
 (E) 27

Questions 5-6 refer to the following graphs, which show the change in the number and average (arithmetic mean) size of farms in the United States during the years 1940-1990.

UNITED STATES FARMS, 1940-1990



5 Which of the following is NOT a valid conclusion from the information shown in the graphs?

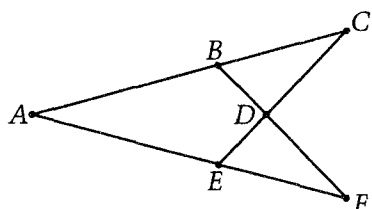
- (A) From 1950 to 1960, the number of farms decreased by approximately 2,000,000.
- (B) From 1940 to 1990, the number of farms decreased.
- (C) From 1940 to 1990, the average size of farms increased each decade.
- (D) In 1980, there were about 2,500,000 farms.
- (E) From 1950 to 1960, the average size of farms increased by approximately 100%.

6 According to the graphs, which of the following is the best estimate of the total acreage of farms in 1950?

- (A) 200,000
- (B) 1,100,000
- (C) 5,500,000
- (D) 1,100,000,000
- (E) 11,000,000,000

- 7 In the exact middle of a certain book, when the page numbers on the facing pages, x and $x + 1$, are multiplied together, the product is 210. If all of the pages are numbered in order, how many numbered pages are in the book?

(A) 24
(B) 26
(C) 28
(D) 32
(E) 34

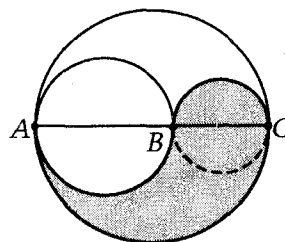


- 8 Segments AC , AF , BF , and EC intersect at the labeled points as shown in the figure above. Define two points as "independent" if they do not lie on the same segment in the figure. Of the labeled points in the figure, how many pairs of independent points are there?

(A) None
(B) One
(C) Two
(D) Three
(E) Four

- 9 If a and b are positive integers, which of the following expressions is equivalent to $\frac{(3^a)^b}{3^a}$?

(A) 1^b
(B) 3^b
(C) 3^{ab-1}
(D) $3^{ab} - 3^a$
(E) $(3^a)^{b-1}$



Note: Figure not drawn to scale.

- 10 AB , BC , and AC are diameters of the three circles shown above. If $BC = 2$ and $AB = 2BC$, what is the area of the shaded region?

(A) 12π
(B) 6π
(C) $\frac{9}{2}\pi$
(D) 3π
(E) 2π

Time—15 Minutes
12 Questions

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

The two passages below are followed by questions based on their content and on the relationship between the two passages. Answer the questions on the basis of what is stated or implied in the passages and in any introductory material that may be provided.

Questions 1-12 are based on the following passages.

The following adaptations from late-twentieth-century works offer perspectives on the work of botanist Carolus Linnaeus (1707-1778), who taught at the University of Uppsala, Sweden.

Passage 1

Linnaeus' enormous and essential contribution to natural history was to devise a system of classification whereby any plant or animal could be identified and slotted into an overall plan. In creating this system, Linnaeus also introduced a method of naming biological species that is still used today. These two innovations may sound unexciting until one tries to imagine a scientific world without these fundamental tools—as was indeed the case with natural history before the Linnaean system.

Previous naturalists (and Linnaeus himself in his youth) had tried to name species by enumerating all of a species' distinguishing features. Often these multiword names had to be expanded when similar related species were discovered, and the names differed from author to author and language to language. Naturalists therefore had difficulty understanding and building on one another's work. It became crucial that every species have the same name in all languages. In using Latin for naming species, Linnaeus followed the custom of his time, but in reducing the name of each species to two words—the genus, common to every species within the genus, and the species name itself—he made an invaluable break with the past. For instance, a shell with earlier names such as "Marbled Jamaica Murex with Knotty Twirls (Petiver)" became simply *Strombus gigas* L. ("L" for Linnaeus).

Yet the invention of a system of nomenclature, vital as it has come to seem, was trivial by comparison with Linnaeus' main achievement: devising a classification system for all organisms, so that scientists no longer had to list every species individually. Linnaeus' universally understood classification of species also enabled scientists to retrieve information, make predictions, and

understand traits by association. Linnaeus divided each kingdom (animal, vegetable, and mineral) into hierarchies that are still, with some additions, followed today. His classifications reflect an eighteenth-century concept of nature in which all organisms, graded from lower to higher, formed a ladder or "great chain of being," with the human species at the summit.

Linnaeus himself would probably have been the first to admit that classification is only a tool, and not the ultimate purpose, of biological inquiry. Unfortunately, this truth was not apparent to his immediate successors, and for the next hundred years biologists were to concern themselves almost exclusively with classification. All facts, however trivial, were revered; all theories, however stimulating, were shunned. And the facts with which these naturalists were most concerned were those bearing on the description and classification of species.

Passage 2

A few years ago I stood in a historic place—a neat little eighteenth-century garden, formally divided by gravel walks, with a small wooden house in one corner where the garden's owner had once lived. This garden, which lies in the old Swedish university town of Uppsala, was owned by the warehouse clerk and great indexer of nature, Linnaeus, who between 1730 and 1760 docketed, or attempted to docket, most of the biological world. Perhaps nothing is more moving at Uppsala than the actual smallness and ordered simplicity of that garden, as compared to the immense consequences that sprang from it in terms of the way humans see and think about the external world. For all its air of gentle peace, this garden is closer to an explosion whose reverberations continue to resonate inside the human brain; it is the place where an intellectual seed landed and has now grown to a tree that shadows the entire globe.

GO ON TO THE NEXT PAGE

I am a heretic about Linnaeus. I do not dispute the value of the tool he gave natural science, but am wary about the change it has effected in humans' relationship to the world. From Linnaeus on, much of science has been devoted to providing specific labels, to explaining specific mechanisms — to sorting masses into individual entities and arranging the entities neatly. The cost of having so successfully itemized and pigeonholed nature, of being able to name names and explain behaviors, is to limit certain possibilities of seeing and apprehending. For example, the modern human thinks that he or she can best understand a tree (or a species of tree) by examining a single tree. But trees are not intended to grow in isolation. They are social creatures, and their society in turn creates or supports other societies of plants, insects, birds, mammals, and microorganisms, all of which make up the whole experience of the woods. The true woods is the sum of all its phenomena.

Modern humans have come to adopt the scientific view of the external world as a way of understanding their everyday experience in it. Yet that experience is better understood as a synthesis, a complex interweaving of strands, past memories and present perceptions, times and places, private and public history, that is hopelessly beyond science's powers to analyze. It is quintessentially "wild": irrational, uncontrollable, incalculable. Despite modern humans' Linnaeus-like attempts to "garden" everyday experience, to invent disciplining social and intellectual systems for it, in truth it resembles wild nature, the green chaos of the woods.

1 In the first paragraph of Passage 1, the attitude of the author toward Linnaeus' legacy is one of

- (A) nostalgia
- (B) appreciation
- (C) delight
- (D) bafflement
- (E) resentment

2 The word "case" as it is used in line 10 most nearly means

- (A) example
- (B) lawsuit
- (C) convincing argument
- (D) set of circumstances
- (E) situation under investigation

3 The discussion of "a shell" in lines 26-29 serves primarily to illustrate

- (A) what types of Latin names were commonly used for biological species in Linnaeus' day
- (B) why the Linnaean system of naming was trivial in comparison to another innovation
- (C) why other naturalists initially opposed the Linnaean system of naming
- (D) how the Linnaean system helped naturalists identify previously unknown species
- (E) how the Linnaean system simplified the names of biological species

4 As used in line 31, "vital" most nearly means

- (A) animated
- (B) invigorating
- (C) essential
- (D) necessary to maintaining life
- (E) characteristic of living beings

5 Passage 1 indicates that Linnaeus' classification of the natural kingdom was based on

- (A) the conclusions of previous naturalists
- (B) a conception of nature's order
- (C) the idea that classifying forms the basis of biological inquiry
- (D) close observation of nature's patterns
- (E) a theory about how biological species developed over time

GO ON TO THE NEXT PAGE

- 6 In Passage 2, the author mentions that the garden "is closer to an explosion" (line 72) in order to
- (A) illustrate the impact that Linnaeus' fame had on the town of Uppsala
 - (B) emphasize the influence that Linnaeus has had on human thought
 - (C) call attention to the profusion of growth in the small garden
 - (D) note that the seeds that Linnaeus planted in the garden have grown into large trees
 - (E) express concern about the destructive potential of scientific advancement
- 7 The author of Passage 2 characterizes "much of science" (line 81) as
- (A) reductive
 - (B) innovative
 - (C) controversial
 - (D) idealistic
 - (E) obscure
- 8 As used in lines 87-88, "apprehending" most nearly means
- (A) seizing
 - (B) anticipating
 - (C) fearing
 - (D) understanding
 - (E) doubting
- 9 The author of Passage 2 suggests that the "scientific view of the external world" (lines 97-98) involves
- (A) perceiving the actual chaos of nature
 - (B) recognizing that plants and animals are social creatures
 - (C) limiting one's understanding of the world
 - (D) appreciating nature only for its usefulness to humans
 - (E) performing experiments with potentially destructive results

- 10 Which of the following techniques is used in each of the last two sentences of Passage 2 (lines 104-109) ?
- (A) Comparison and contrast
 - (B) Personal anecdote
 - (C) Elaboration of terms
 - (D) Summary of opposing arguments
 - (E) Illustration by example
- 11 The approaches of the two passages to the topic of Linnaeus differ in that only Passage 2 uses
- (A) second-person address to the reader
 - (B) several specific examples of Linnaean nomenclature
 - (C) an anecdote from the author's personal experience
 - (D) references to other authors who have written about Linnaeus
 - (E) a comparison between Linnaeus' system and other types of scientific innovations
- 12 Both passages emphasize which of the following aspects of Linnaeus' work?
- (A) The extent to which it represented a change from the past
 - (B) The way in which it limits present-day science
 - (C) The degree to which it has affected humans' reverence toward nature
 - (D) The decisiveness with which it settled scientific disputes
 - (E) The kinds of scientific discoveries on which it built

Correct Answers and Difficulty Levels

VERBAL

MATHEMATICAL

Section 2

Section 5

Section 7

Section 1

Section 4

Section 6

Five-choice Questions

Five-choice Questions

Five-choice Questions

Five-choice Questions

Four-choice Questions

Five-choice Questions

COR. DIFF.
ANS. LEV.

COR. DIFF.
ANS. LEV.

COR. DIFF.
ANS. LEV.

COR. DIFF.
ANS. LEV.

COR. DIFF.
ANS. LEV.

COR. DIFF.
ANS. LEV.

1. B 1
2. D 2
3. C 3
4. A 2
5. C 2
6. C 3
7. C 3
8. A 4
9. E 5
10. B 1
11. B 1
12. C 2
13. B 3
14. A 4
15. D 5
16. E 3
17. B 3
18. C 4
19. E 3
20. A 5
21. D 4
22. E 4
23. C 3
24. D 2
25. D 3
26. A 3
27. B 2
28. E 3
29. C 3
30. C 3
31. A 4

1. E 1
2. B 3
3. B 3
4. D 2
5. B 3
6. A 4
7. D 4
8. A 4
9. B 4
10. A 5
11. D 1
12. C 2
13. E 3
14. C 2
15. B 3
16. D 3
17. D 3
18. A 3
19. E 3
20. C 3
21. C 4
22. C 4
23. D 5
24. B 2
25. B 3
26. A 2
27. C 3
28. D 3
29. B 3
30. E 4
31. B 1
32. D 3
33. B 2
34. E 4
35. A 3

1. B 1
2. D 3
3. E 2
4. C 1
5. B 4
6. B 3
7. A 5
8. D 1
9. C 4
10. C 4
11. C 3
12. A 5

no. correct

no. incorrect

1. B 1
2. B 1
3. A 1
4. D 2
5. A 1
6. E 2
7. E 2
8. C 3
9. D 3
10. E 3
11. C 3
12. C 3
13. C 3
14. A 3
15. B 3
16. D 5
17. E 3
18. D 1
19. C 4
20. D 4
21. B 4
22. B 4
23. D 4
24. A 5
25. C 5

no. correct

no. incorrect

1. A 1
2. B 1
3. D 3
4. C 2
5. B 3
6. D 3
7. B 3
8. B 3
9. A 3
10. D 4
11. B 4
12. D 4
13. C 3
14. A 4
15. C 5

no. correct

no. incorrect

1. C 1
2. B 2
3. C 2
4. A 1
5. E 3
6. D 3
7. C 3
8. D 4
9. E 5
10. D 5

no. correct

no. incorrect

Section 4

Student-Produced Response Questions

COR.
ANS.

DIFF.
LEV.

16. 6 1
17. 3.2 or 16/5 2
18. 17 2
19. 1166 3
20. 150 4
21. 1000 3
22. 592 3
23. 4/7 or .571 4
24. $\frac{2}{3} < x < 1$ or $.666 < x < 1$ 4
25. 8 5

no. correct

(16-25)

no. correct

no. incorrect

no. correct

no. incorrect

NOTE: Difficulty levels are estimates of question difficulty for a recent group of college-bound seniors. Difficulty levels range from 1 (easiest) to 5 (hardest).

SAT I Score Conversion Table

Raw Score	Verbal Scaled Score	Math Scaled Score	Raw Score	Verbal Scaled Score	Math Scaled Score
78	800		36	500	570
77	800		35	490	560
76	800		34	490	560
75	800		33	480	550
74	800		32	480	540
73	790		31	470	540
72	780		30	460	530
71	760		29	460	520
70	750		28	450	510
69	740		27	450	510
68	730		26	440	500
67	710		25	440	490
66	700		24	430	490
65	700		23	420	480
64	690		22	420	470
63	680		21	410	470
62	670		20	410	460
61	660		19	400	450
60	650	800	18	390	440
59	640	800	17	390	440
58	640	790	16	380	430
57	630	770	15	370	420
56	620	760	14	370	420
55	620	740	13	360	410
54	610	730	12	350	400
53	600	720	11	340	390
52	600	710	10	340	380
51	590	700	9	330	370
50	580	690	8	320	360
49	580	680	7	310	350
48	570	670	6	300	340
47	560	660	5	280	330
46	560	650	4	270	320
45	550	640	3	260	310
44	540	640	2	240	290
43	540	630	1	220	280
42	530	620	0	200	260
41	530	610	-1	200	240
40	520	600	-2	200	220
39	520	600	-3	200	200
38	510	590	and		
37	500	580	below		

This table is for use only with the test in this booklet.