DO NOT OPEN THE TEST BOOK UNTIL YOU ARE TOLD TO DO SO!

Name _____
Last First Middle Initial

Form S

PSAT/NMSQT®

Preliminary SAT/ National Merit Scholarship Qualifying Test

➤ **SATURDAY, October 18, 2008**

(This is the authorized administration date of this test form for entry to scholarship and recognition programs.)

Timing	The PSAT/NMSQT® has five sections. You will have 25 minutes each for Sections 1–4 and 30 minutes for Section 5.
Scoring	For each correct answer, you receive one point. For questions you omit, you receive no points. For a wrong answer to a multiple-choice question, you lose a quarter (¼) of a point. For a wrong answer to a math question that is not multiple choice, you do not lose any points.
Guessing	If you can eliminate one or more choices as wrong, you increase your chances of choosing the correct answer and earning one point. If you can't eliminate any choices, move on. You can return to the question later if there is time.
Marking Answers	You must mark all of your answers on your answer sheet to receive credit. Make sure each mark is dark and completely fills the oval. If you erase, do so completely. You may write in the test book, but you won't receive credit for anything you write there.
Checking Answers	You may check your work on a particular section if you finish it before time is called, but you may not turn to any other section.

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Preliminary SAT/National Merit Scholarship Qualifying Test
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SECTION 1

Time — 25 minutes
24 Questions
(1-24)

Directions: 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:

Hoping to ------- the dispute, negotiators proposed a compromise that they felt would be ------- to both labor and management.

(A) enforce . . useful
(B) end . . divisive
(C) overcome . . unattractive
(D) extend . . satisfactory
(E) resolve . . acceptable

Ⓐ Ⓑ Ⓒ Ⓓ ●

1. Those who had been laid off were pleased to ------- their jobs, since the work was both enjoyable and financially rewarding.

(A) resume (B) forgo (C) undermine
(D) interrupt (E) compare

2. The fact that Barbara had won a new plasma television set on a game show made her the ------- of her less ------- acquaintances who resented her good luck.

(A) delight . . happy
(B) mystery . . suggestive
(C) joke . . defensive
(D) envy . . fortunate
(E) symbol . . artful

3. Already one of the most-watched curators in the United States, Thelma Golden further ------- the public's ------- with the controversial show she organized at the Whitney Museum in 1994.

(A) quelled . . apathy
(B) censored . . curiosity
(C) mitigated . . wariness
(D) fueled . . interest
(E) established . . indifference

4. The region's barrenness, evident in its lack of animal life, vegetation, and even flowing water, presents an extreme example of -------.

(A) elevation (B) desolation (C) cynicism
(D) impermanence (E) versatility

5. The critic praised the author's ------- style: his essay was able to convey complex ideas in remarkably few words.

(A) dogmatic (B) skittish (C) succinct
(D) effusive (E) prescriptive

6. Election officials initiated an investigation of the incumbents for -------, for dividing voting districts to advantage their party unfairly.

(A) extortion (B) perjury (C) insurgency
(D) filibustering (E) gerrymandering

7. The odds that a complex mechanical system will ------- increase when a vital function is performed by a single component; thus, ------- is highly desirable.

(A) proliferate . . complexity
(B) operate . . magnitude
(C) endure . . symmetry
(D) falter . . concentration
(E) fail . . redundancy

8. Since most non-native species have minimal effects on the ecosystems they invade, a key question is what factors distinguish invaders that become ------- from the majority that remain -------.

(A) denizens . . ensconced
(B) scourges . . innocuous
(C) residents . . benign
(D) pests . . pernicious
(E) omens . . intrusive

GO ON TO THE NEXT PAGE

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 passages and in any introductory material that may be provided.

Questions 9-12 are based on the following passages.

Passage 1

Psychologist Sandra Trehub studies the effects of music on babies. Specifically, she has studied the history and universality of lullabies (she found that they sound the same the world over) and has documented the power of a mother's singing (it decreases stress hormones in her child). "Music making," she writes, "is so successful in managing the baby's state and getting the baby to sleep that it makes the task of caring for the baby easier." And a baby that's better cared for, she concludes, is more likely to survive to adulthood and reproduce. This gets to the crux of a debate that has galvanized evolutionary biologists, psychologists, and neuroscientists alike: Could music making have evolved to help us survive and reproduce?

Passage 2

"Music is auditory cheesecake," says cognitive scientist Steven Pinker. He concedes that music is one of those wonderful things that make life worth living, but he doesn't believe it contributes to the propagation of the species, which, to a biologist, is what counts. As far as biological cause and effect are concerned, music is useless, Pinker argues, because it does not increase an individual's chances of passing genes along to the next generation. Music, he maintains, is something humans invented and then cultivated because it tweaks the brain and body in a pleasurable way. Humans invented music only because they enjoy it.

9. Both Trehub and Pinker suggest that music is

(A) specific to particular cultures
(B) soothing to unsettled babies
(C) not fully appreciated by people
(D) appealing to human beings
(E) of limited biological importance

10. Pinker uses the word "cheesecake" (line 14) in order to suggest that music is

(A) enticing but potentially harmful
(B) an experience that cannot be conveyed verbally
(C) of little benefit beyond being enjoyable
(D) only marginally relevant scientifically
(E) a pleasant combination of discrete elements

11. Passage 1 suggests that Trehub would most likely respond to what "Pinker argues" (lines 19-20, Passage 2) by

(A) asserting that mothers sing to their babies in all known societies
(B) observing that Pinker's explanation ignores the indirect effects of lullabies
(C) denying that the appeal of music can ever be explained genetically
(D) pointing out that bedtime tunes are continually passed down from generation to generation
(E) criticizing Pinker's failure to distinguish among songs of different cultures

12. Which best describes the relationship between Passage 1 and Passage 2 ?

(A) Passage 2 systematically analyzes a theory outlined in Passage 1.
(B) Passage 2 presents a view that contradicts a hypothesis introduced in Passage 1.
(C) Passage 2 offers a social perspective on a topic that Passage 1 examines scientifically.
(D) Passage 2 cites experimental evidence that debunks assumptions made in Passage 1.
(E) Passage 2 explores an alternative means of supporting a conclusion reached in Passage 1.

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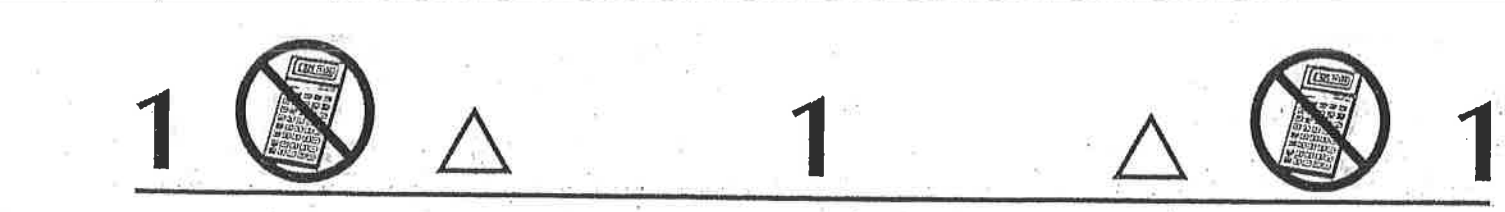

Questions 13-24 are based on the following passage.

In this passage, a historian discusses some of the issues she encountered while researching the life of James Forten (1766-1842), a member of Philadelphia's early Black American community. Probably most famous as an advocate of abolitionism (the movement to abolish slavery), Forten also made a fortune as the owner of a business that made and supplied sails to the shipping trade.

James Forten's relationship with Philadelphia's White business community remains elusive to the twenty-first-century researcher. Well-to-do Quaker Susanna Emlen described Forten, in a letter to an English friend in 1809, as "a person of good character and considerable property. . . . On his marriage a few years ago it was said a number of the most respectable merchants in Philadelphia called to congratulate him and drink punch with him." Merchant Abraham Ritter describes Forten as "popular as a man of trade" and "well received by the gentlemen" of the city's White community. There are also stray references to White businessmen greeting him in the street: " . . . it was no uncommon thing to see him shaking hands, or walking arm in arm, with merchants of the first respectability." As court records and the inventory of Forten's estate after his death prove, he both borrowed money from White businessmen and loaned money to them. How his various business relationships began and progressed, *who* took him by the hand in the street—these are the dimensions of his life as a "gentleman" on which the records are silent.

The attitude of many members of the Black American community was that James Forten was definitely a man to be trusted, a man whose business abilities and knowledge of how to get things done could be relied upon. Sailors undertaking voyages to China and India appointed him to supervise their families' affairs, should they be lost at sea. Black American organizations elected him to their boards. He served as an administrator at his church. He helped coordinate the raising of funds to support Black schools and colleges. He gave White abolitionists advice on the marketing of antislavery publications. In short, what Forten did not know about the making and investing of money was probably not worth knowing.

Precisely how wealthy Forten was at any one point in his career is difficult to gauge. An obituary noted that "for many years" Forten was "the leading sailmaker in this city." He paid out $10,000 per year in wages (a figure that seems impossibly high given what sailmakers such as his employees usually earned), and at one time simultaneously held contracts to provide the sails for ninety-five vessels. Evidence like this is useful. Account books and ledgers would be even more useful.

In 1838, to defeat a proposal to prohibit Black citizens in Pennsylvania from voting, White abolitionist Benjamin Bacon and Black American minister Charles Gardner went from house to house in Philadelphia's Black community gathering data for a massive census to document the contributions of Black citizens. Forten always spoke up loudly for equality before the law, but he withheld the details of his personal fortune, which must have been considerable, from the census takers. However worthy the cause—and he was clearly in sympathy with Bacon and Gardner's aims—there were some things an astute businessman kept to himself.

If the narrative of James Forten's life as a businessman has many more loose ends than, for example, the story of his involvement in the antislavery crusade, or his relationship with various family members, it is largely because of the nature of the evidence. His business interests were many, and it was as a businessman that he would often define himself. When he wrote to his friend abolitionist William Lloyd Garrison, he alluded again and again to his need to attend to "business." "Business prevents more at this time" and "You know I am a man of business, and have not always time at my disposal." Perhaps these were polite excuses but, when all was said and done, James Forten *was* "a man of business."

Sadly, the records that should enable us to get to the heart of his success in business have simply not survived. Pulling together the scattered pieces of the puzzle, the loose threads of half a century spent in amassing an impressive fortune, is a task that intrigues even as it ultimately frustrates. In matters of business James Forten did as any good businessman of the time would do. Aware that idle talk about one's affairs could prove costly, he kept his counsel . . . and he keeps it still.

13. The author suggests that Forten's relationship with the White community is "elusive to the twenty-first-century researcher" (lines 2-3) because

(A) Forten's success in business puzzled many of his contemporaries
(B) Forten's popularity cannot be confirmed by historical records
(C) anecdotes about Forten are contradictory and confusing
(D) legal records indicate that Forten had both borrowed and lent money
(E) existing documents do not fully explain the nature of Forten's business associations

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14. In lines 1-33, the author's discussion of Forten's contemporaries is used to

(A) indicate their hopes for social reform
(B) demonstrate their perceptions of Forten's social status
(C) illustrate the full extent of Forten's wealth
(D) reveal challenges met by the community
(E) exemplify the social views of an era

15. In line 10, "trade" most nearly means

(A) craft
(B) qualification
(C) exchange
(D) commerce
(E) profession

16. The author mentions court records and Forten's estate inventory (lines 14-15) as indications of the

(A) periodic instability of Forten's sailmaking ventures
(B) bureaucratic nature of documents available to researchers
(C) ways in which Forten's investments ultimately benefited his family
(D) significant role Forten played in Philadelphia's business community
(E) strength of Forten's determination to improve Philadelphia's economy

17. The author most directly supports the statement in lines 21-24 ("The attitude . . . upon") by citing

(A) challenges that Forten encountered
(B) decisions that Forten made
(C) situations that involved a position of trust
(D) responsibilities related to Forten's business
(E) endeavors that made Forten wealthy

18. In line 41, "like this" most directly refers to evidence that

(A) constitutes a comprehensive record
(B) enables researchers to focus on case histories
(C) confirms data collected by earlier historians
(D) reveals the daily lives of working people
(E) provides concrete details about business activities

19. In lines 43-54, the author discusses the "massive census" (line 47) primarily to

(A) indicate the size of the Black community in Philadelphia
(B) cite an effective strategy for influencing public policy
(C) note an important source of information for modern historians
(D) demonstrate Forten's commitment to racial equality
(E) illustrate the way that Forten balanced competing interests

20. In line 53, "astute" most directly emphasizes which aspect of Forten's approach to business?

(A) His skill in negotiating
(B) His sense of discretion
(C) His willingness to take calculated risks
(D) His reputation as a merchant of quality goods
(E) His skepticism about overly optimistic goals

21. In lines 55-67, the author emphasizes which point about Forten?

(A) His political activities were secondary to his concerns about business.
(B) His public actions were consistent philosophically with his private actions.
(C) His public commitment to social reform may seem misleading to modern historians.
(D) His lifelong support for social equality had practical applications for his employees.
(E) His political friends failed to appreciate his business accomplishments.

22. In line 63, "attend to" most nearly means

(A) wait upon
(B) go along with
(C) listen to
(D) look after
(E) be ready for

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23. Which resource, if it existed, would be most helpful for the task described in lines 70-73 ("Pulling . . . frustrates") ?

(A) Forten's correspondence with his clients
(B) Diaries kept by Forten's family members
(C) Copies of the prototypes of Forten's sail designs
(D) Navigational records of Philadelphia sailing vessels
(E) Documents showing the average income of workers in the community

24. The final phrase in line 76 ("and . . . still") primarily emphasizes which of the following points?

(A) Forten remained silent on many of the racial issues of his day.
(B) Members of the Black community were correct to place their trust in Forten.
(C) Forten knew more than most of his contemporaries did about making and investing money.
(D) Many details about Forten's business activities remain unknown to researchers.
(E) Forten was not forthcoming about his relationships with family members.

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.

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SECTION 2

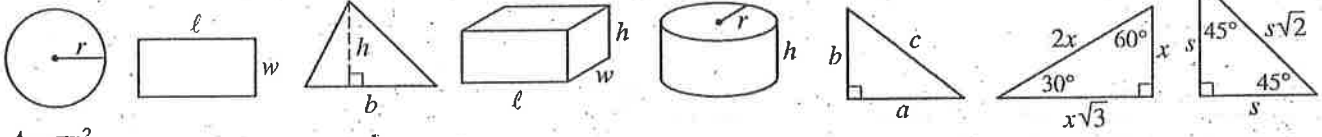
Time — 25 minutes
20 Questions
(1-20)

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

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

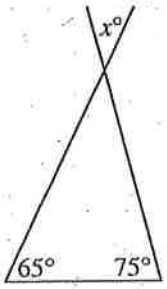


$A = \pi r^2$ $C = 2\pi r$ | $A = \ell w$ | $A = \frac{1}{2}bh$ | $V = \ell wh$ | $V = \pi r^2 h$ | $c^2 = a^2 + b^2$ | Special Right Triangles

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

1. What is the least positive integer that is divisible by 2, 3, and 9 ?

(A) 6
(B) 9
(C) 12
(D) 18
(E) 54



2. What is the value of x in the figure above?

(A) 50
(B) 40
(C) 30
(D) 20
(E) 10

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3. Of 40 people, $\frac{1}{8}$ are children. If 2 of the children are not wearing name tags, how many of the children are wearing name tags?

(A) Three
(B) Four
(C) Five
(D) Six
(E) Eight

4. If $k^2 = 9$, what is the value of $(k+1)(k-1)$?

(A) -10
(B) -1
(C) 0
(D) 8
(E) 9

5. If the sum of x and $2x$ is greater than the sum of $4y$ and $-y$, which of the following must be true?

(A) $y = 0$
(B) $x = 0$
(C) $y > 0$
(D) $x > 0$
(E) $x > y$

6. If the average (arithmetic mean) of the three numbers 3, x, and 7 is 5, what is the average of 4, x, and 6 ?

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

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7. If x is a positive number satisfying the equation $10 = \sqrt{50 + x^2}$, which of the following is closest to x ?

(A) 5
(B) 6
(C) 7
(D) 8
(E) 9

8. In the xy-plane, the coordinates of point A are $(-2, -1)$ and the coordinates of point B are $(0, -1)$. If B is the midpoint of $\overline{AC}$, what are the coordinates of point C ?

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

WOMEN'S SHOE SIZES

If foot length is greater than	But less than or equal to	Then shoe size should be
9 inches	$9\frac{1}{6}$ inches	$6\frac{1}{2}$
$9\frac{1}{6}$ inches	$9\frac{1}{3}$ inches	7
$9\frac{1}{3}$ inches	$9\frac{1}{2}$ inches	$7\frac{1}{2}$
$9\frac{1}{2}$ inches	$9\frac{2}{3}$ inches	8
$9\frac{2}{3}$ inches	$9\frac{5}{6}$ inches	$8\frac{1}{2}$

9. According to the table above, if a woman's foot is $9\frac{1}{4}$ inches long, what should her shoe size be?

(A) $6\frac{1}{2}$
(B) 7
(C) $7\frac{1}{2}$
(D) 8
(E) $8\frac{1}{2}$

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10. Which of the following fractions can be written in the form $\frac{x}{x+1}$ for some positive integer x?

(A) $\frac{1}{3}$

(B) $\frac{2}{5}$

(C) $\frac{3}{4}$

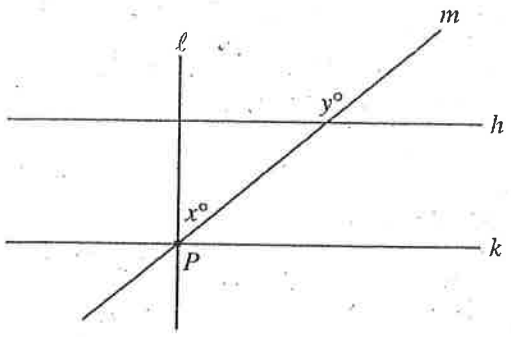
(D) $\frac{5}{3}$

(E) $\frac{8}{7}$

11. If $x < 4$ and $y < 8$, which of the following must be true?

I. $y - x > 0$
II. $x + y < 12$
III. $x + y < y$

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



Note: Figure not drawn to scale.

12. In the figure above, $\ell \perp h$, $h \parallel k$, and lines ℓ, m, and k intersect at point P. If $y = 130$, what is the value of x?

(A) 40
(B) 45
(C) 50
(D) 55
(E) 60

13. Each of the marbles in a bag is either red, black, or green. The number of green marbles is 1 more than the number of red marbles, and the number of black marbles is 3 times the number of green marbles. Which of the following could be the total number of marbles in the bag?

(A) 8
(B) 12
(C) 14
(D) 17
(E) 21

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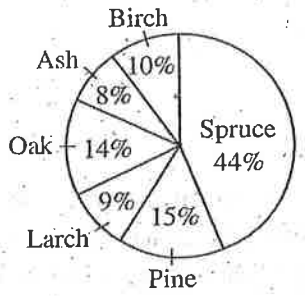
14. For all numbers x, let the functions f and g be defined by $f(x) = x^2 + 2x + 1$ and $g(x) = \sqrt{f(x)}$. What is the value of $g(9)$?

(A) 2
(B) 3
(C) 4
(D) 10
(E) 16

TREE SPECIES IN A PARK



15. The graph above shows the distribution of different tree species in a certain park as a percent of the total number of trees in the park. If there are 200 birch trees, how many more oak trees are there than larch trees?

(A) 5
(B) 10
(C) 25
(D) 50
(E) 100

16. In the xy-plane, line ℓ contains the points (j, k) and $(2j, 2k)$, where j and k are both positive. Which of the following is an equation of line ℓ in terms of j and k ?

(A) $y = \frac{j}{k}x$
(B) $y = \frac{k}{j}x$
(C) $y = \frac{k}{j}x + k$
(D) $y = \frac{j}{k}x + j$
(E) $y = 2x + j + k$

17. A box contains building blocks of different shapes and colors. If all the cubes in the box are green, which of the following statements about the blocks in the box must be true?

I. If a block is not a cube, then it is not green.
II. If a block is not green, then it is not a cube.
III. If a block is green, then it is a cube.

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

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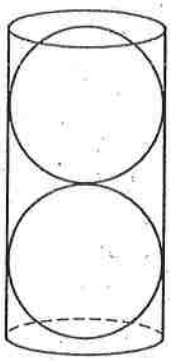

18. In the figure above, two identical spheres fit exactly inside a cylinder, just touching the top, bottom, and sides of the cylinder. If the radius of each sphere is r, what is the volume of the cylinder in terms of r ?

(A) $2\pi r^2$

(B) $4\pi r^2$

(C) $2\pi r^3$

(D) $\frac{8}{3}\pi r^3$

(E) $4\pi r^3$

19. How many positive four-digit <u>even</u> integers have a 5 in the thousands place, a 2 in the tens place, and at least one of the digits equal to 6 ?

(A) 10
(B) 12
(C) 14
(D) 16
(E) 18

20. Side $\overline{RS}$ in isosceles triangle RST is longer than the other two sides. If the degree measure of $\angle T$ is a multiple of 10, what is the greatest possible measure of $\angle R$?

(A) 40°
(B) 45°
(C) 50°
(D) 55°
(E) 70°

STOP

If you finish before time is called, you may check your work on this section only.
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SECTION 3

Time — 25 minutes
24 Questions
(25-48)

Directions: 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:

Hoping to ------- the dispute, negotiators proposed a compromise that they felt would be ------- to both labor and management.

(A) enforce . . useful
(B) end . . divisive
(C) overcome . . unattractive
(D) extend . . satisfactory
(E) resolve . . acceptable

Ⓐ Ⓑ Ⓒ Ⓓ ●

25. Unlike coworkers who delighted in office gossip, Felicia remained -------, completely indifferent to these matters.

(A) detached (B) impulsive (C) enthralled (D) bewildered (E) receptive

26. Perhaps an archaeologist could have ------- the strange markings on the ancient tablet, but to me they were -------.

(A) interpreted . . simplicity
(B) deciphered . . gibberish
(C) refracted . . chaos
(D) complicated . . confusion
(E) explained . . revelation

27. Despite the regime's efforts to eradicate it, the country's enormous foreign debt -------.

(A) flagged (B) persisted (C) receded (D) moderated (E) retrenched

28. The ------- of individual American Indian tribes is reflected in the diversity of Indian woven baskets, where each basket style serves as a means of tribal -------.

(A) paucity . . communication
(B) homogeneity . . production
(C) variance . . simulation
(D) distinctiveness . . identification
(E) similarity . . recognition

29. For Nancy, anything she had done or seen previously was now loathsomely boring; repetition, therefore, was ------- to her.

(A) solace (B) anathema (C) hyperbole (D) duplicity (E) ecstasy

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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 passages and in any introductory material that may be provided.

Questions 30-31 are based on the following passage.

Punctuation, one is taught, has a point: to keep up law and order. Punctuation marks are the traffic signals placed along the highway of our communications—to control speeds, provide direction, and prevent head-on collisions. A period has the unblinking finality of a red light; the comma is a flashing yellow light that asks us only to slow down; and the semicolon is a stop sign that tells us to ease gradually to a halt before starting up again. By establishing the relations between words, punctuation establishes the relations between the people using words.

30. The primary purpose of the passage is to

(A) illustrate the role of different punctuation marks
(B) chastise people for not using correct punctuation
(C) emphasize the dangers of ignoring traffic signals
(D) demonstrate the importance of laws in maintaining order
(E) suggest that learning grammar is similar to learning to drive

31. In the passage, the author makes use primarily of

(A) speculation
(B) irony
(C) extended analogy
(D) exaggeration
(E) emotional appeal

Questions 32-33 are based on the following passage.

A physicist trained by Chien-Shiung Wu vividly described Dr. Wu's standards of experimental research. "One of the things I learned from her was that if you got a result that didn't agree with someone else's you had to be able to show what they'd done wrong as well as what you'd done right. Otherwise, no one would know whose data to trust. . . . you had to believe that what you had done was right, so that you could go on from there and use the data. If it was done sloppily, it wasn't worth doing because the results weren't reliable."

32. The physicist implies that the most valuable scientific results

(A) enhance professional opportunities for researchers
(B) conform to a range of theoretical models
(C) have practical uses beyond their scientific purpose
(D) can be readily understood by laypersons
(E) provide a sound basis for further research

33. According to the passage, Dr. Wu's training emphasized that documenting another researcher's apparent errors would benefit students by

(A) earning them additional praise for their research
(B) helping them to further validate their own work
(C) lessening the likelihood that they would make similar mistakes
(D) enhancing their appreciation of the complexity of a problem
(E) increasing their familiarity with the topic being studied

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Questions 34-39 are based on the following passages.

The following passages were adapted from two recently published stories.

Passage 1

Roberta disliked this new weather forecaster, whose delivery, speaking of the terrible weather, tilted alternately toward the jaunty and the grave. He moved before his cartoon maps, trailing, through some technical chicanery, jet streams and storm fronts from his fingers. Rough sailing, he said. Pioneer spirit. We may be down, Oregon, but we're not out. He was fit and handsome and winning and would have made a fine game-show host, Roberta thought—all that easy, disarming, fraudulent charm. Trust me, he invited you. You'll enjoy it.

Roberta preferred the old weather forecaster, Larry—an honest, straightforward name, not like this one, Bryce or Brock. Larry was flushed and unfit, inclined toward panic. He looked like a conventioneer on New Year's Eve—his plaid jacket threatened to come loose, his tie to go flapping. From the first, he seemed stopgap, ripe for replacement, which it turned out he was. He was a pessimist, one of the things Roberta liked best about him, and a worrier. He reported mudslides and stationary low fronts and the inevitable weeks of rain with a petulant regret, as if all this bad news were, in some way he hadn't yet been able to figure, partly his fault. Roberta had looked forward to seeing him every morning, again at six o'clock, following his unswerving decline with affection. She hoped he was off forecasting someplace warm and predictable, Arizona, for example, though she doubted it.

Passage 2

Pilots, surgeons, and weather forecasters are all cut from the same cloth; their imperative is to keep their cool, even as danger unfolds around them. Whether they are about to take a 757 full of Girl Scouts up in a thunderstorm, remove a kidney, or watch a twister touch down, they all talk with the same high-wire slang. "We're gonna button up and roll on out of here," a doctor might say, about to complete a liver transplant, but the words might just as easily come from a fighter pilot finishing a dangerous reconnaissance mission or Bobby K. the weatherwolf completing his nightly forecast. It's their way of letting you know you are in capable hands.

Bobby always starts his weather report off with some kind of folksy observation. "Better tie yourselves down, gang, because we got a nor'easter* that's gonna twist your nimbus into a real knot," he'll say. "It's moving south over Albany carrying a bushel basket of the white stuff." Then, just when you think he's a little too casual for his own good, Bobby gets serious: "We're putting out a winter storm warning and it looks like it's going to be twins as a second storm pinwheels over Beacon. You're gonna see more water vapor than a steam tunnel, and you can bet on the low 20s turning it into glass overnight, with a split high and low, and a figure eight in Central Park. This one comes straight from blizzard country, folks." I liked Bobby's sense of drama, even if it was, at times, completely artificial. Why should he be different from anyone else on television?

* Nor'easters are storms that can occur in the Eastern United States. They are known for hurricane-force winds and for dumping large amounts of snow and rain.

34. In context, the phrase "technical chicanery" (line 4) primarily serves to demonstrate Roberta's

(A) fascination with special effects
(B) impatience with inaccurate weather forecasts
(C) general distrust of the new weather forecaster
(D) lack of sophistication about technology
(E) fear that technology is a dangerous force

35. The author of Passage 2 would most likely view the observation in lines 7-9, Passage 1 ("He . . . charm"), as

(A) troubling, because it indicates a real disrespect for weather forecasters
(B) odd, because weather forecasters are usually less able to handle pressure than are game-show hosts
(C) unsurprising, because weather forecasters are generally not that different from other television personalities
(D) laughable, because weather forecasters receive their training in an entirely different field
(E) puzzling, because weather reports and game shows have nothing in common

36. Passage 1 serves as evidence that the assertion in lines 27-28, Passage 2 ("Pilots . . . cloth"), is

(A) somewhat clichéd
(B) obviously outdated
(C) unnecessarily vague
(D) lacking in sincerity
(E) not entirely accurate

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37. The author of Passage 2 uses the phrase "high-wire slang" (line 32) to describe language that is

(A) cautious yet confident
(B) impatient yet uncertain
(C) inventive yet accurate
(D) pedantic yet compelling
(E) nonchalant yet reassuring

38. The author of Passage 2 would consider Larry (Passage 1) to be

(A) atypical of most weather forecasters
(B) innovative yet misunderstood
(C) symbolic of a troubling trend in forecasting
(D) unfamiliar with current technology
(E) transparently insincere

39. In Passage 2, the author's attitude toward Bobby K. is best described as one of

(A) unqualified approval
(B) tempered appreciation
(C) studied indifference
(D) mild annoyance
(E) intense dislike

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Questions 40-48 are based on the following passage.

The following excerpt is adapted from a 1996 book on the nature of seeing.

Our eyes are built to seek out complete figures. If I am shown a triangle missing the midsections of its sides, I will complete it in my mind. We instinctively repair the fragments into wholes and search for continuous contours and closed curves. Shards present our eyes with a problem, and our brains cast around for patterns, assembling pieces into shapes. Our eyes prefer practically any object to a borderless scatter of points.

Those, at least, are the facts of vision. If a building is half hidden by the branches of a tree, we literally see it in fragments: subtract the tree and you have a floating collection of irregular building pieces. But the brain completes the puzzle and the building is seen as a whole. Psychoneurologists[1] call this phenomenon subjective contour completion, and it helps explain how we can routinely see a single building instead of disjunct pieces. On a deeper level, subjective contour completion answers a desire for wholeness over dissection and form over shapelessness.

The night sky is such a shapeless thing. It is a chaos; it has no pictures; it does not represent any earthly forms. It has no border, no picture frame, no outlines, no up or down, no beginning or end. For those reasons, it is beautiful but intolerable to our eyes, and we make it into a tapestry of pictures and patterns, of mythical creatures and geometric regions. I still find a sense of pleasure and wonderment when I look straight up on an August night and see Cygnus, the Swan, silently flying across the Milky Way. Having learned how to pick out its vast wings and its long, thin neck, I can never again see those stars as random points. It is not surprising that Cygnus has been a bird since before the Greeks, though it has not always been a swan. In early texts it is a hen, a big goose, a pigeon, a horned owl, an ibis, a mottled desert partridge, and a roc (the bird that carried off Sinbad the Sailor). Yet from the moment it was seen as a bird, it was destined to always be a bird, and that is the way it usually is with constellations.

With force of will, people have been able to see things in the night sky; at one time the pagan heavens were Christianized so that the believer would see nothing but saints in the night sky. In the Southern Hemisphere, some even more striking patterns were observed. Because the Southern Hemisphere was first mapped during the fervor of Enlightenment[2] rationalism, it has constellations named after scientific instruments. There is the Telescope, the Air Pump, and the Microscope—very unlikely objects to imagine floating in the sky, and decidedly unromantic. Few of them fit the stars very well, but the point of constellations is to make a comprehensible unity out of an underlying chaos, and it takes only one or two stars to anchor a fantasy as odd as a microscope to the heavenly vault. The one star at the top of the microscope and the other below are like quilting points, the buttons in upholstery: they force the fabric into contact with the frame beneath just enough so the two remain connected. The rest is stuffing. The other stars and other parts of the microscope don't need to be anywhere in particular. As long as the quilting points hold, we will see the microscope. Bird or saint, desert partridge or mythical roc, it doesn't matter. All that counts is that we are not thrown back on the incomprehensible field of nameless stars.

[1] Psychoneurologists study the way the human brain processes, stores, and utilizes sensory data.

[2] The Enlightenment was an eighteenth-century philosophical movement that advocated the critical reexamination of dominant social, religious, and political beliefs.

40. In line 1, "figures" most nearly means

(A) personages
(B) diagrams
(C) forms
(D) statistics
(E) symbols

41. The author implies that "continuous contours and closed curves" (lines 4-5) are patterns that

(A) suggest unrestrained motion
(B) force the mind to compensate
(C) often prove to be illusory
(D) are predominant in nature
(E) inherently appeal to a viewer

42. The author refers to "practically any object" (line 7) in order to

(A) identify the origins of an impulse
(B) stress the creative aspects of a process
(C) emphasize the strength of a response
(D) marvel at the flexibility of the human mind
(E) criticize a lack of aesthetic discrimination

43. In context, the reference to "the puzzle" (line 13) serves to emphasize the

(A) difficulty of constructing certain forms
(B) incomplete nature of sensory data
(C) complexity of the human mind
(D) challenging aspects of an intellectual discipline
(E) visual elements of an artistic process

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44. The phrase "On a deeper level" (line 17) serves as a transition between a discussion of

(A) a superficial explanation and a nuanced theory
(B) a neurological response and a psychological need
(C) an intuitive reaction and a rational analysis
(D) an individual preference and a cultural tradition
(E) an aesthetic critique and a scientific discussion

45. Based on information presented in lines 38-61, which of the following would most likely be the name of a constellation visible in the Southern Hemisphere?

(A) The Lady in the Chair
(B) The Drawing Compass
(C) The Great Bear
(D) The Giraffe
(E) The King

46. The author refers to "Enlightenment rationalism" (line 44) to help account for the

(A) human desire to map the cosmos in its entirety
(B) source of our present understanding of the origins of the universe
(C) human tendency to ascribe meaning to the stars
(D) array of names assigned to a particular constellation
(E) thematic consistency in the names of constellations in a region

47. In line 48, "point" most nearly means

(A) purpose
(B) tip
(C) location
(D) theme
(E) mark

48. Which of the following best captures the main idea in lines 59-61 ("Bird . . . stars") ?

(A) Many constellations are surprisingly similar to one another.
(B) Seeing patterns in the night sky is ultimately unimportant.
(C) It is safe to assume that names of constellations will change over time.
(D) The fact that we see something is more important than what we see.
(E) Different cultures tend to interpret constellations differently.

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.

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SECTION 4

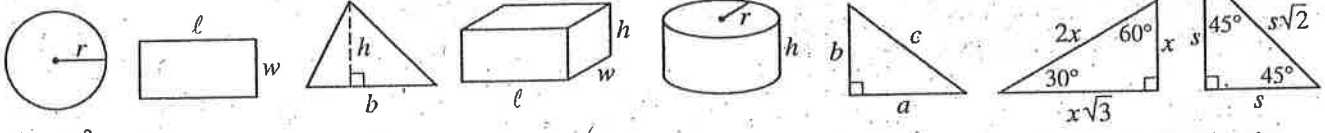
Time — 25 minutes
18 Questions
(21-38)

Directions: This section contains two types of questions. You have 25 minutes to complete both types. For questions 21-28, solve each problem and decide which is the best of the choices given. Fill in the corresponding oval on the answer sheet. You may use any available space for scratch work.

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



$A = \pi r^2$, $C = 2\pi r$ $\quad A = \ell w$ $\quad A = \frac{1}{2}bh$ $\quad V = \ell wh$ $\quad V = \pi r^2 h$ $\quad c^2 = a^2 + b^2$ $\quad$ 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.

21. If $x + 2 = 9$ and $x - y = 4$, what is the value of y?

(A) −3
(B) 2
(C) 3
(D) 5
(E) 7

X is the set of multiples of 3.
Y is the set of squares of integers.
Z is the set of odd integers.

22. Which of the following is a member of both sets X and Y, but not of set Z?

(A) 9
(B) 16
(C) 21
(D) 36
(E) 49

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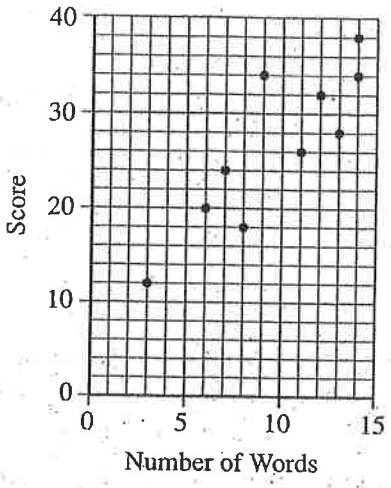
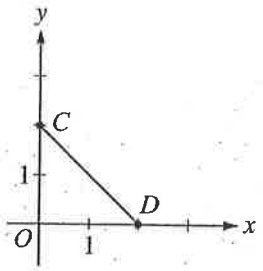
RESULTS OF IRINA'S WORD GAMES



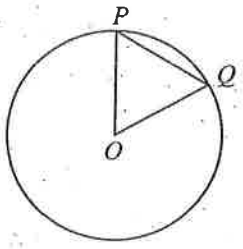
23. Each of the 10 points in the scatterplot above represents Irina's score in a word game plotted against the number of words she formed for that game. In how many of the 10 games did Irina form fewer than 10 words but receive a score greater than 30 ?

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



24. In the xy-coordinate plane above, line ℓ (not shown) is perpendicular to $\overline{CD}$. If line ℓ passes through the origin, which point lies on both line ℓ and $\overline{CD}$?

(A) $(0, 2)$
(B) $\left(\frac{1}{2}, \frac{3}{4}\right)$
(C) $\left(\frac{1}{2}, \frac{3}{2}\right)$
(D) $\left(\frac{3}{4}, \frac{3}{4}\right)$
(E) $(1, 1)$



25. In the figure above, O is the center of the circle and $\triangle OPQ$ is equilateral with a perimeter of 24. What is the area of the circle?

(A) 8π
(B) 12π
(C) 16π
(D) 36π
(E) 64π

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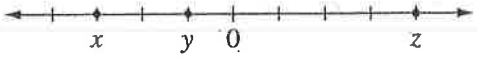


26. On the number line above, the tick marks are equally spaced. If $x + y = -1$, what is the value of z?

(A) 1

(B) $1\frac{1}{4}$

(C) $1\frac{1}{3}$

(D) $1\frac{1}{2}$

(E) $1\frac{2}{3}$

27. The number of cells in a certain population doubles every 30 minutes. If the population starts with 1 cell, which of the following gives the total number of cells in the population after n hours? (Assume n is a positive integer.)

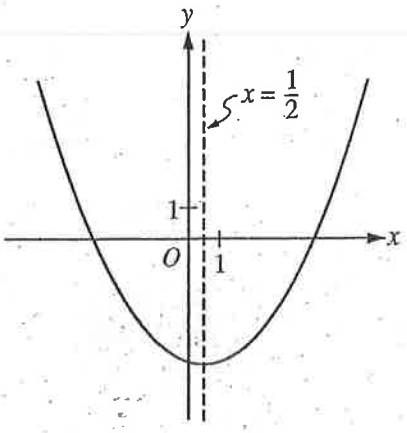
(A) $\frac{2n}{60}$

(B) $2n$

(C) n^2

(D) 2^n

(E) 2^{2n}



28. The graph above shows a parabola whose line of symmetry has equation $x = \frac{1}{2}$. If the x-intercepts of the parabola are $(a, 0)$ and $(4, 0)$, what is the value of a?

(A) −2.5

(B) −3

(C) −3.5

(D) −4

(E) −4.5

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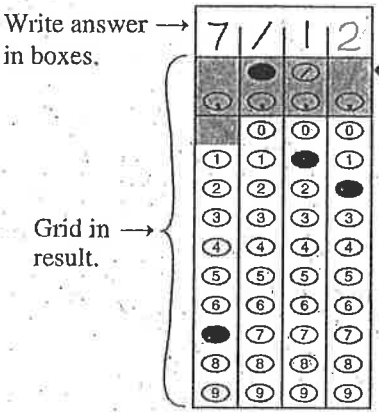
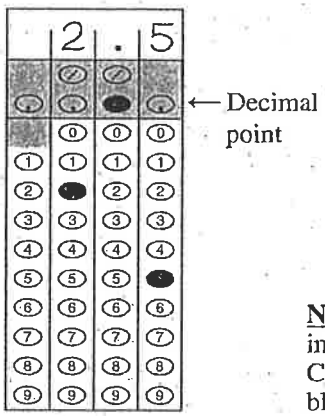
Directions for Student-Produced Response Questions

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. You may use any available space for scratch work.

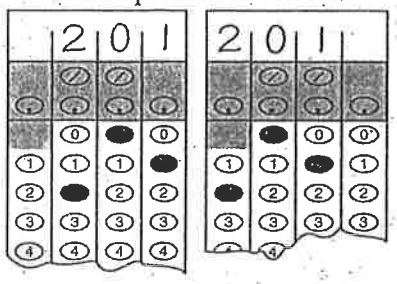
Answer: $\frac{7}{12}$



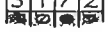
Answer: 2.5



Answer: 201
Either position is correct.

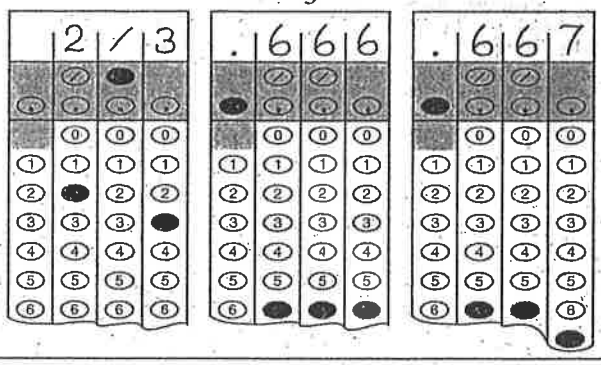


Note: You may start your answers in any column, space permitting. Columns not needed should be left blank.

- 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 $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  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:



$x, y, 18, 36, \ldots$

29. In the sequence above, the first term is x and each term after the first is twice the preceding term. What is the value of x?

30. The value V, in dollars, of a car t years after it was purchased is given by the function $V(t) = 10{,}000\left(\frac{1}{2}\right)^{\frac{t}{4}}$. What was the value, in dollars, of the car 12 years after it was purchased? (Disregard the $ sign when gridding your answer.)

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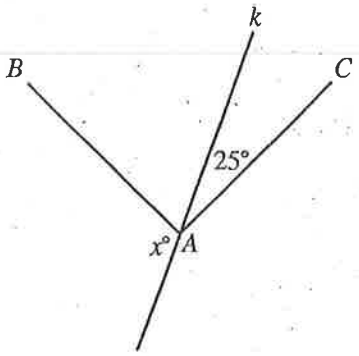

31. In the figure above, $\angle BAC$ is a right angle and line k passes through point A. What is the value of x?

32. The probability of selecting an even integer at random from a list of 30 integers is 7 out of 10. How many odd integers are in the list?

33. A rectangle is enlarged by making its length four times the original length and its width three times the original width. If the enlarged rectangle has an area of 72, what was the area of the original rectangle?

34. John and Ann together return 39 books to the library. If John returns 3 more than twice as many books as Ann does, how many books does Ann return?

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35. In the figure above, B is the midpoint of $\overline{MD}$, M is the midpoint of $\overline{AB}$, C is the midpoint of $\overline{AM}$, and E is the midpoint of $\overline{BD}$. The length of $\overline{AM}$ is what fraction of the length of $\overline{AE}$?

36. If n is a positive integer and $x > x^n > 0$, what is one possible value of x?

37. The president of a club retired in December 2000, after serving 9 consecutive complete terms. A complete term lasts two years, from the beginning of January through the end of December of the following year. In what year did the president begin serving these 9 terms?

38. If $\frac{a}{b} = \frac{2}{5}$ and $\frac{b}{c} = \frac{1}{3}$, what is the value of $\frac{a}{c}$?

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