

SECTION 1

Time -30 minutes

38 Questions

1. We first became aware that her support for the new program was less than---- when she declined to make a speech in its favor.
- (A) qualified
(B) haphazard
(C) fleeting
(D) unwarranted
(E) wholehearted
2. When a person suddenly loses consciousness, a bystander is not expected to ---- the problem but to attempt to ---- its effects by starting vital functions if they are absent
- (A) cure.. precipitate
(B) minimize.. predict
(C) determine.. detect
(D) diagnose.. counter
(E) magnify.. evaluate
3. The remark was only slightly ----, inviting a chuckle, perhaps, but certainly not a ----.
- (A) audible.. reward
(B) hostile.. shrug
(C) amusing.. rebuke
(D) coherent.. reaction
(E) humorous.. guffaw
4. Doors were closing on our past, and soon the values we had lived by would become so obsolete that we would seem to people of the new age as ----as travelers from an ancient land.
- (A) elegant
(B) ambitious
(C) interesting
(D) comfortable
(E) quaint
5. Ability to ---- is the test of the perceptive historian, a history, after all, consists not only of what the historian has included, but also, in some sense, of what has been left out.
- (A) defer
(B) select
(C) confer
(D) devise
(E) reflect
6. Some artists immodestly idealize or exaggerate the significance of their work; yet others, ---- to exalt the role of the artist, reject a transcendent view of art
- (A) appearing
(B) disdain
(C) seeking
(D) failing
(E) tending
7. Estimating the risks of radiation escaping from a nuclear power plant is ---- question, but one whose answer then becomes part of a value-laden, emotionally charged policy debate about whether to construct such a plant.
- (A) an incomprehensible
(B) an undefined
(C) an irresponsible
(D) a divisive
(E) a technical
8. TREE: FORESTRY::
- (A) tractor: agriculture
(B) experiment: laboratory
(C) fuel: combustion
(D) flower: horticulture
(E) generator: electricity
9. COMMAND: REQUEST
- (A) presume: inquire
(B) recommend: propose
(C) summon: invite
(D) refuse: rebel
(E) authorize: permit
10. PESTLE: GRIND::
- (A) whetstone: sharpen
(B) balloon: float
(C) mill: turn
(D) hinge: fasten
(E) switch: conduct

11. ILLITERACY: EDUCATION

- (A) bureaucracy: clarification
- (B) oppression: agreement
- (C) vagrancy: travel
- (D) inequity: redistribution
- (E) inclemency: evasion

12. REVERENCE: RESPECT::

- (A) resiliency: vitality
- (B) appreciation: dependency
- (C) avidity: enthusiasm
- (D) imagination: creativity
- (E) audacity: sentiment

13. APOSTROPHES: WORD

- (A) letters: alphabet
- (B) verbs: syntax
- (C) ellipses: sentence
- (D) commas: punctuation
- (E) paragraphs: essay

14. EXAGGERATION: CARICATURE::

- (A) craft: art
- (B) detail: sketch
- (C) illusion: story
- (D) brevity: epigram
- (E) sophistication: farce

15. MALLEABLE: SHAPE

- (A) apathetic: emotion
- (B) irresolute: opinion
- (C) demonstrable: evidence
- (D) irredeemable: value
- (E) gustatory: taste

16. BOLSTER: SUPPORT::

- (A) axis: revolve
- (B) spackle: paint
- (C) leakage: caulk
- (D) heat: insulate
- (E) tackle: hoist

Geologists Harris and Gass hypothesized that the Red Sea rift developed along the line of a suture (a splice in the Earth's crust) formed during the late Proterozoic era, and that significant observable differences in the composition of

(5)the upper layers of rocks deposited on either side of the suture give clues to the different natures of the underlying igneous rocks.

Other geologists argued that neither the upper rock layer nor the underlying igneous rocks on the one side of the rift (10)differ fundamentally from the corresponding layers on the other side. These geologists believe, therefore, that there is inadequate evidence to conclude that a suture underlies the rift.

In response, Harris and Gass asserted that the upper rock (15)layers on the two sides of the rift had not been shown to be of similar age, structure, or geochemical content. Furthermore, they cited new evidence that the underlying igneous rocks on either side of the rift contain significantly different kinds of rare metals.

17.Part of the Harris and Gass hypothesis about the Red Sea rift would be weakened if it could be demonstrated that the composition of upper rock layers

- (A) cannot cause a suture to develop
- (B) has no effect on where a suture will occur
- (C) cannot provide information about the nature of underlying rocks
- (D) is similar on the two sides of a rift unless a suture divides the two sides
- (E) is usually different from the composition of underlying rocks

18.It can be inferred from the passage that the "Other geologists" (line 8) would be most likely to agree with which of the following statements?

- (A) Similar geological features along both sides of a possible suture imply the existence of that suture
- (B) Sutures can be discovered only where they are not obscured by superimposed geological features.
- (C) The composition of igneous rocks permits prediction of the likelihood of a rift developing through them.
- (D) It is possible to date igneous rocks by carefully studying the different kinds of rare metals contained in them and by observing their similarity to the layer of rock that lies above them.
- (E) The existence of rock layers on one side of a rift that are similar in composition to rock layers on the other side suggests that no suture exists between the two sides.

19. It can be inferred from the passage that Harris and Gass have done which of the following?
- (A) Drawn detailed diagrams of the Red Sea rift.
 - (B) Based their conclusions on the way in which sutures develop in the Earth's crust.
 - (C) Rejected other geologists' objections to their hypothesis about the Red Sea rift.
 - (D) Suggested that the presence of rare metals in rocks indicates an underlying suture.
 - (E) Asserted that rifts usually occur along the lines of sutures.

20. According to the passage, Harris and Gass have mentioned all of the following properties of rocks along the Red Sea rift EXCEPT
- (A) age of the upper layers of rock
 - (B) structure of the upper layers of rocks
 - (C) geochemical content of the upper layers of rocks
 - (D) metallic content of the underlying igneous rocks
 - (E) age of the underlying igneous rocks

Proponents of different jazz styles have always argued that their predecessors' musical style did not include essential characteristics that define jazz as jazz. Thus, 1940's swing was belittled by beboppers of the 1950's, who were themselves attacked by free jazzers of the 1960's. The neoboppers of the 1980's and 1990's attacked almost everybody else. The titanic figure of Black saxophonist John Coltrane has complicated the arguments made by proponents of styles from bebop through neobop because in his own musical journey he drew from all those styles. His influence on all types of jazz was immeasurable. At the height of his popularity, Coltrane largely abandoned playing bebop, the style that had brought him fame, to explore the outer reaches of jazz.

- (15) Coltrane himself probably believed that the only essential characteristic of jazz was improvisation, the one constant in his journey from bebop to open-ended improvisations on modal, Indian, and African melodies. On the other hand, this dogged student and prodigious technician—who insisted on spending hours each day practicing scales from theory books—was never able to jettison completely the influence of bebop, with its fast and elaborate chains of notes and ornaments on melody.

Two stylistic characteristics shaped the way Coltrane played the tenor saxophone, he favored playing fast runs

of notes built on a melody and depended on heavy, regularly accented beats. The first led Coltrane to "sheets of sound," where he raced faster and faster, pile-driving notes into each other to suggest stacked harmonies. The second (30) meant that his sense of rhythm was almost as close to rock as to bebop.

Three recordings illustrate Coltrane's energizing explorations. Recording *Kind of Blue* with Miles Davis, Coltrane found himself outside bop, exploring modal melodies. Here (35) he played surging, lengthy solos built largely around repeated motifs—an organizing principle unlike that of free jazz saxophone player Ornette Coleman, who modulated or altered melodies in his solos. On *Giant Steps*, Coltrane debuted as leader, introducing his own compositions. Here the sheets of sound, downbeat accents, repetitions, and great speed are part of each solo, and the variety of the shapes of his phrases is unique. Coltrane's searching explorations produced solid achievement. *My Favorite Things* was another kind of watershed. Here (45) Coltrane played the soprano saxophone, an instrument seldom used by jazz musicians. Musically, the results were astounding. With the soprano's piping sound, ideas that had sounded dark and brooding acquired a feeling of giddy fantasy.

- (50) When Coltrane began recording for the Impulse! label, he was still searching. His music became raucous, physical. His influence on rockers was enormous, including Jimi Hendrix, the rock guitarist, who following Coltrane, raised the extended guitar solo using repeated motifs to a kind of rock art form.

21. The primary purpose of the passage is to
- (A) discuss the place of Coltrane in the world of jazz and describe his musical explorations
 - (B) examine the nature of bebop and contrast it with improvisational jazz
 - (C) analyze the musical sources of Coltrane's style and their influence on his work
 - (D) acknowledge the influence of Coltrane's music on rock music and rock musicians
 - (E) discuss the arguments that divide the proponents of different jazz styles

22. The author implies that which of the following would have been an effect of Coltrane's having chosen to play the tenor rather than the soprano saxophone on

- My Favorite Things?*
- (A) The tone of the recording would have been more somber.
- (B) The influence of bebop on the recording would have been more obvious
- (C) The music on the recording would have sounded less raucous and physical
- (D) His influence on rock music might have been less pervasive.
- (E) The style of the recording would have been indistinguishable from that on *Kind of Blue*
23. Which of the following best describes the organization of the fourth paragraph?
- (A) A thesis referred to earlier in the passage is mentioned and illustrated with three specific examples
- (B) A thesis is stated and three examples are given each suggesting that a correction needs to be made to a thesis referred to earlier in the passage
- (C) A thesis referred to earlier in the passage is mentioned, and three examples are presented and ranked in order of their support of the thesis.
- (D) A thesis is stated, three seemingly opposing examples are presented, and their underlying correspondence is explained
- (E) A thesis is stated, three dissimilar examples are considered, and the thesis is restated.
24. According to the passage, John Coltrane did all of the following during his career EXCEPT
- (A) improvise on melodies from a number of different cultures
- (B) perform as leader as well as soloist
- (C) spend time improving his technical skills
- (D) experiment with the sounds of various instruments
- (E) eliminate the influence of bebop on his own music
25. The author mentions the work of Ornette Coleman in the fourth paragraph in order to do which of the following?
- (A) Expand the discussion by mentioning the work of a saxophone player who played in Coltrane's style.
- (B) Compare Coltrane's solos with the work of another jazz artist.
- (C) Support the idea that rational organizing principles need to be applied to artistic work .
- (D) Show the increasing intricacy of Coltrane's work after he abandoned bebop
- (E) Indicate disagreement with the way Coltrane modulated the motifs in his lengthy solos.
26. According to the passage, a major difference between Coltrane and other jazz musicians was the
- (A) degree to which Coltrane's music encompassed all of jazz
- (B) repetition of motifs that Coltrane used in his solos
- (C) number of his own compositions that Coltrane recorded
- (D) indifference Coltrane maintained to musical technique
- (E) importance Coltrane placed on rhythm in jazz
27. In terms of its tone and form, the passage can best be characterized as
- (A) dogmatic explanation
- (B) indignant denial
- (C) enthusiastic praise
- (D) speculative study
- (E) lukewarm review
28. RECORD
- (A) postpone
- (B) disperse
- (C) delete
- (D) delay
- (E) devise
29. EMBED
- (A) induce
- (B) extend
- (C) extract
- (D) receive
- (E) diverge
30. WHOLESOME
- (A) deleterious
- (B) submissive
- (C) provoking
- (D) monotonous
- (E) rigorous

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31. EXTINCTION:

- (A) immunity
- (B) mutation
- (C) inhibition
- (D) formulation
- (E) perpetuation

32. CURSE:

- (A) exoneration
- (B) untruth
- (C) redress
- (D) benediction
- (E) separation

33. DECORUM

- (A) constant austerity
- (B) false humility
- (C) impropriety
- (D) incompetence
- (E) petulance

34. AGGRANDIZE:

- (A) misrepresent
- (B) disparage
- (C) render helpless
- (D) take advantage of
- (E) shun the company of

35. VIGILANT

- (A) reluctant
- (B) haphazard
- (C) gullible
- (D) ignorant
- (E) oblivious

36. FASTIDIOUS

- (A) coarse
- (B) destructive
- (C) willing
- (D) collective
- (E) secret

37. TRACTABLE

- (A) indefatigable
- (B) incorrigible
- (C) insatiable

(D) impractical

(E) impetuous

38. RESCISSION

(A) expansion

(B) enactment

(C) instigation

(D) stimulation

(E) abdication

SECTION 3

Time –30 minutes

30 Questions

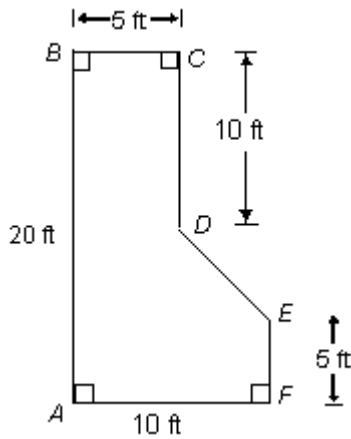
5 is $\frac{1}{5}$ of x

1. x 1

2. A number whose square is 4 less than twice the square of 10 15

$$\sqrt{x-1} = 4$$

3. x 17



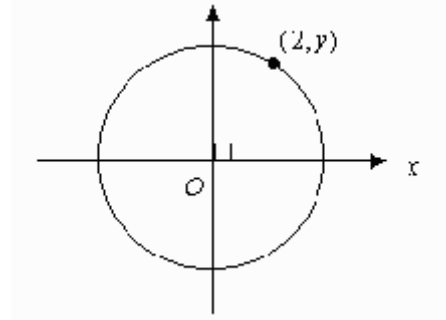
4. The area of region $ABCDEF$ 150 sqft

$$2x = x + 1$$

5. x y

$$x \neq 0$$

6. $\frac{2}{x}$ $2x$



The circle above with center O has a radius of 5

7. y $\sqrt{20}$

A government program paid out \$20,000 to each of 60,000 families.

8. The total amount that the program paid out to the families $\$1.2 \times 10^9$

x and y each represent single digits in the decimal $4.3xy8$. When the decimal is rounded to the nearest hundredth, the result is 4.36.

9. x 5

In $\triangle ABC$, $AB = 6$, $BC = 8$, and $CA = 10.5$

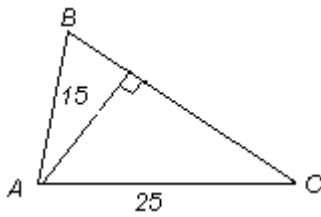
10. The measure of angle ABC 90°

11. $\frac{4^6 - 4^4}{4^5 - 4^3}$ 1

12. The standard deviation of the sample measurements 0, 1, 2, 4, 8 The standard deviation of the ample measurements 1, 2, 3, 5, and 9

P, Q and R are distinct points on a straight line, with Q between P and R , S is a point not on the line, and $QR = QS$

13. PR PS



14. The area of triangular region ABC 225

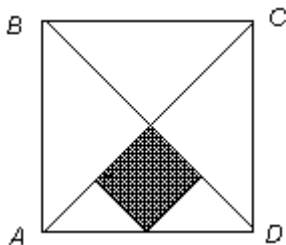
15. t^3 $\frac{r}{1,000}$

16. Diane completed each of her exercise sets in 75 seconds and rested for 55 seconds between the exercise sets. What is the ratio of the amount of time it took her to complete an exercise set to the amount of time she rested between the sets?

- (A) 5:6
(B) 5:11
(C) 6:11
(D) 11:5
(E) 11:6

17. A certain car gets 20 miles per gallon of gasoline for city driving. If the car gets 15 percent more miles per gallon for highway driving, how many miles per gallon does the car get for highway driving?

- (A) 17
(B) 22
(C) 23
(D) 30
(E) 35



18. In the figure above, the area of the shaded square region is what percent of the area of the square region $ABCD$?

- (A) $16\frac{2}{3}\%$

- (B) $12\frac{1}{2}\%$
(C) 12%
(D) $8\frac{1}{2}\%$
(E) 8%

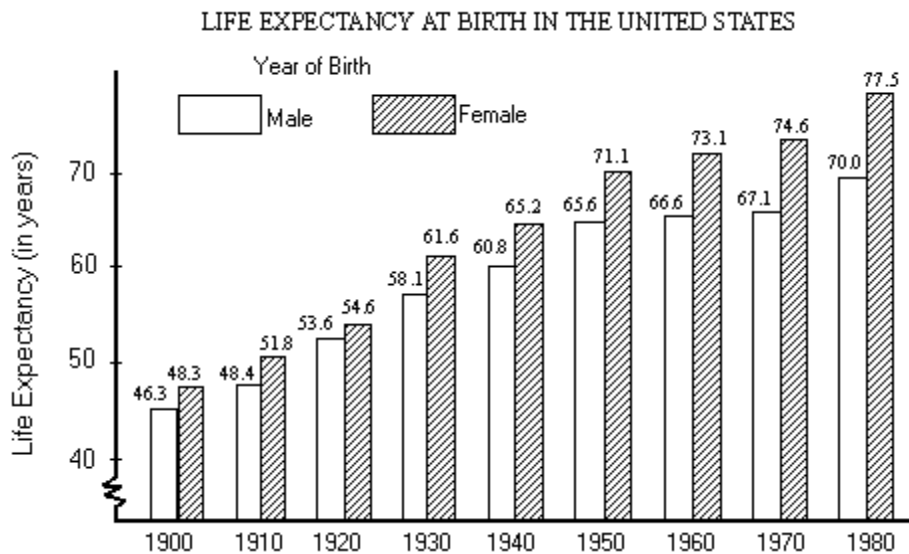
19. The cost of sending a package special delivery is x cents per ounce up to 10 ounces and y cents for each ounce in excess of 10. Which of the following represents the total cost, in cents, of sending special delivery a package weighing w ounces, if $w > 10$?

- (A) $x + (w - 10)y + 10$
(B) $x + (w - 10) + y$
(C) $10x + 10(w - y)$
(D) $10x + y(w - 10)$
(E) $10x + wy$

20. All of the following are equivalent to $\frac{a-b}{c}$ EXCEPT

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

Questions 21-25 refer to the following graph. In answering these questions, assume that the male and female populations are equal for each of the years shown.



21. For which of the following years was the difference between the life expectancy at birth for males and the life expectancy at birth for females the least?
- (A) 1900
(B) 1910
(C) 1920
(D) 1930
(E) 1940
22. The average(arithmetic mean) life expectancy at birth for a person born in 1980 was approximately how many more years than for a person born in 1900?
- (A) 20
(B) 22
(C) 24
(D) 26
(E) 30
23. The life expectancy at birth of a male born in 1900 is closest to what fraction of the life expectancy at birth of a male born in 1980?
- (A) $\frac{4}{3}$
(B) $\frac{2}{3}$
- (C) $\frac{1}{2}$
(D) $\frac{1}{3}$
(E) $\frac{1}{4}$
24. Which of the following statements can be inferred from the graph?
- I For each year shown, the life expectancy at birth was greater for females than it was for males
II The increase in the life expectancy at birth for males was greater from 1940 to 1980 than it was from 1900 to 1940.
III For each year shown, the difference between the life expectancy at birth for males and that for females was greater than the corresponding difference in the preceding year shown.
- (A) I only
(B) I and II only
(C) I and III only
(D) II and III only
(E) I, II and III
25. From 1900 to 1980, life expectancy at birth for males increased by approximately what percent?
- (A) 24%

- (B) 34%
 (C) 40%
 (D) 51%
 (E) 66%

26 If $\sqrt{7} < x < \sqrt{37}$ and x is an integer, then x can have how many different values?

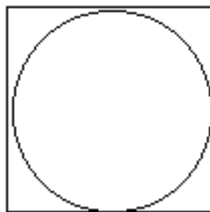
- (A) Three
 (B) Four
 (C) Five
 (D) Eight
 (E) Ten

27. For which of the following expressions is the value for $x = 0$ equal to the value for $x = 1$?

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

28. If the average (arithmetic mean) of x , y , z , 5, and 7 is 8, which of the value for $x = 1$?

- I The median of the five numbers cannot be 5
 II At least one of x , y and z is greater than 9
 III The range of the five numbers is 2 or more
 (A) I only
 (B) II only
 (C) III only
 (D) I and III
 (E) II and III



29. As shown in the figure above a circular flower bed lies in a square garden plot that is 60 meters on each side. What fraction of the garden plot area is not part of the flower bed?

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

30. Which of the following CANNOT be a factor of 2^i and 3^j , where i and j are positive integers?

- (A) 6
 (B) 8
 (C) 27
 (D) 42
 (E) 54

SECTION 4

Time –30 minutes

25 Questions

1. The university's constitution defines the powers of two governing bodies. The general council, which currently retains authority over constitutional matters, consists of all the university's living alumni. The twenty-member senate decides routine matters by majority vote. A new proposal suggests making a unanimous vote in the senate sufficient to change the constitution.

If the statements above are true, which of the following must follow on the basis of them?

- (A) The proposal will take effect only if it receives the senate's unanimous support.
- (B) Currently each member of the senate has power of veto over any proposal that comes before that body.
- (C) Adopting the proposal would allow passage of constitutional changes without the general council's approval.
- (D) Any of the university's alumni can fill any one of the twenty seats on the senate.
- (E) Adopting the new proposal would increase the voice of the alumni in the conduct of university affairs.
2. Comparison of the growth rings of ancient trees enables scientists to determine from a piece of timber the year in which the tree used for the timber was felled. Hence, by analyzing the growth rings in timber surviving from ancient buildings, archaeologists can determine precisely when those buildings were constructed.

Which of the following is an assumption on which the argument depends?

- (A) The timber used for construction purposes in ancient times was made from very old trees.
- (B) The timber that was used in ancient building construction had not, prior to being used in the construction of the buildings, lain unused for an indeterminable amount of time.
- (C) The growth rings of any tree felled in a given

year are identical to the growth rings of any other tree felled in that year.

- (D) The oldest of the ancient buildings that survive to the present day were constructed of the most durable woods.
- (E) Ancient builders did not use more than one type of wood for the construction of a given building.

Questions 3-8

A researcher has designed an experiment to evaluate a theory about the health benefits of exercise at different times during the day. Nine subjects—F, G, H, J, K, M, O, P, and S—must be divided into three groups of three subjects each. Group 1 will exercise in the morning; group 2 will exercise in the afternoon; group 3 will exercise in the evening. The researcher must assign subjects to groups according to the following conditions:

- F must be assigned to group 2.
- H must be assigned to the same group as O.
- J cannot be assigned to group 2.
- M cannot be assigned to group 3.
- P cannot be assigned to the same group as S.

3. Which of the following is an acceptable assignment of subjects to the three groups?

	<u>Group1</u>	<u>Group2</u>	<u>Group3</u>
(A)	F, M, P	H, J, O	G, K, S
(B)	G, J, M	F, H, O	K, P, S
(C)	G, K, P	F, M, S	H, J, O
(D)	H, J, M	F, G, P	K, O, S
(E)	H, O, P	F, G, J	K, M, S

4. If H, J, and O are assigned to group 1, which of the following must be assigned to group 2?

- (A) G
- (B) K
- (C) M
- (D) P
- (E) S

5. If O is assigned to group 2, which of the following could be the subjects assigned to group 1?

- (A) G, J, M

- (B) G, K, M
 (C) G, K, P
 (D) J, M, S
 (E) M, P, S
6. If G, J, and M are assigned to group 1, which of the following must be assigned to group 2?
- (A) H
 (B) K
 (C) O
 (D) P
 (E) S
7. If G, K, and S are assigned to group 1, which of the following must be the subjects assigned to group 3?
- (A) F, H, O
 (B) H, J, O
 (C) H, J, P
 (D) J, M, P
 (E) M, O, P
8. If G, J, and P are assigned to group 1, which of the following must be true?
- (A) H is assigned to group 3.
 (B) K is assigned to group 3.
 (C) M is assigned to group 3.
 (D) O is assigned to group 2.
 (E) S is assigned to group 2.
9. Fossilized animal bones marked with scratches other than tooth marks were discovered in the sand near some stone tools. When bones were scratched using similar tools, the resulting scratches resembled the scratches found on the fossils. Therefore, stone tools had probably been used on the animal bones that became fossilized.
- Which of the following, if true, most seriously undermines the argument?
- (A) The fossilized bones with scratches are not as old as nearby fossilized bones found to have tooth marks.
 (B) Trampling on sand in which a bone is buried produces scratches on that bone that are similar to those on the fossils.
 (C) Stone tools have been found in areas where nearby

fossilized bones were not scratched.

- (D) The stone tools were too hard to be scratched by animal bones.
 (E) Modern microscopes can clearly reveal the differences between tooth marks and other kinds of scratches.
10. Color-tinting of movies originally photographed in black-and-white is inappropriate. Hundreds of the original artistic choices would have been made differently had these movies been filmed in color. Lighting on the sets of these movies was arranged to make highlights and shadows look right in black-and-white.
- Which of the following claims, if substituted for the claim about the lighting of movie sets, would lend the same type of support to the argument above?
- (A) An important part of what gives these movies their identity is the result of the black-and-white format.
 (B) Color film would have better captured the filmmakers' intentions.
 (C) Color film is superior to black-and-white film for making movies.
 (D) Makeup for the actors was applied so as to look best in black-and-white films.
 (E) The choice of black-and-white film over color film is entirely a matter of taste.

11. In Borkland, university scholarship stipends worth \$4.2 million were unclaimed last year because several scholarship programs attracted no applicants who met the programs' qualifying criteria. This is an egregious waste of funds in a country where thousands of promising students each year cannot afford tuition. Qualifying criteria for those scholarships, therefore, should be revised.

Which of the following, if true about Borkland, most strongly supports the conclusion drawn above?

- (A) Many scholarships are unclaimed not because their qualifying criteria are too restrictive but because the scholarship programs rarely announce the scholarships' availability.
 (B) Because of inflation, the stipends offered by

certain scholarship programs now appear less attractive to potential applicants than they did when they were first offered.

- (C) A significant number of scholarship programs awarded all of their available scholarship stipends last year, yet most of those programs have very restrictive qualifying criteria.
- (D) Certain scholarship programs accept applications only from students enrolled in specific major fields of study, but Borkland's universities no longer offer courses in the fields specified by many of those programs.
- (E) Several scholarship programs have found it impossible to revise their qualifying criteria without engaging in lengthy and costly legal proceedings.

12. In Diersville the new Environmental Action party won two seats on the seven-member town council in 1988. It lost both of those seats in the 1992 election, even though the party's pro-environment platform had essentially remained unchanged. This decline in the party's fortunes clearly demonstrates that in Diersville environmental concerns faded in significance between 1988 and 1992.

Which of the following, if true, most seriously weakens the argument?

- (A) Between 1988 and 1992, the number of eligible voters in Diersville rose, but not the percentage who actually voted.
- (B) Between 1988 and 1992, Diersville's leading political party revised its platform, adopting a strongly environmentalist stance.
- (C) The parties that ran candidates in the 1992 election in Diersville were the same as those that had done so in the 1988 election.
- (D) In 1992 the Environmental Action party won fewer votes in Diersville than it had won in 1988.
- (E) Between 1988 and 1992, some measures intended to benefit the environment had been adopted by the town council, but with inconclusive results.

Questions 13-17

A gardener is landscaping part of a front yard with six types of bushes—forsythia, holly, lilac, oleander, rose, and spirea. The forsythia and the lilac bushes are the only bushes classified as tall bushes. The gardener will plant two clusters of exactly four bushes each, one on the east edge of the property and one on the west edge. The selection of the bushes is subject to the following constraints:

Each type of bush must be used at least once.

Each cluster of bushes must contain at least one tall bush.

A cluster that includes one or more forsythia bushes must include at least one oleander bush.

A lilac bush cannot be planted in the same cluster as a spirea bush.

13. If three lilac bushes are selected for one cluster, which of the following can be the bushes selected for the other cluster?

- (A) Forsythia, holly, oleander, rose.
 (B) Forsythia, holly, rose, spirea.
 (C) Forsythia, lilac, oleander, spirea.
 (D) Forsythia, oleander, rose, spirea.
 (E) Holly, oleander, rose, spirea.

14. Which of the following can be the selection of bushes for one of the clusters?

- (A) Forsythia, holly, oleander, rose.
 (B) Forsythia, holly, oleander, spirea.
 (C) Forsythia, lilac, rose, rose.
 (D) Forsythia, oleander, oleander, oleander.
 (E) Lilac, lilac, rose, spirea.

15. If a total of two forsythia bushes is selected, which of the following must be true?

- (A) Only one holly bush is selected.
 (B) Only one rose bush is selected.
 (C) Only one spirea bush is selected.
 (D) Two oleander bushes are selected.
 (E) The two forsythia bushes are in the same cluster.

16. If one rose bush is selected for each cluster, which of the following combinations must complete one of the

clusters?

- (A) Forsythia, forsythia, oleander.
- (B) Forsythia, lilac, oleander.
- (C) Forsythia, oleander, spirea.
- (D) Holly, holly,holly.
- (E) Holly, lilac, oleander.

17.If one forsythia bush is selected for the east cluster, and if two holly bushes are selected for the west cluster, then any of the following can be selected for the east cluster EXCEPT

- (A) holly
- (B) lilac
- (C) oleander
- (D) rose
- (E) spirea

Questions 18-22

A ballroom dance competition will be held between two teams, the Green team and the Red team. The Green team consists of couple H, couple I, and couple K. The Red team consists of couple X, couple Y, and couple Z. During the competition, each team will perform three types of dances—the fox-trot, the tango, and the waltz. Each couple on each team will perform exactly one of the three types of dances. At any one time, only one couple will be performing, but the six couples can perform in any order until all dances have been performed. The following rules also apply to the competition:

The same type of dance cannot be performed twice in succession.

Couple H cannot dance the waltz.

Couple I cannot dance the tango.

Couple Y must dance the waltz.

18.If couple K dances a fox-trot, which of the following couples must dance a tango?

- (A) H
- (B) I
- (C) X
- (D) Y
- (E) Z

19.Which of the following could be the schedule for the competition's first three dances?

	<u>Fox-trot</u>	<u>Tango</u>	<u>Waltz</u>
(A)	H	I	Z
(B)	K	I	Y
(C)	X	Z	H
(D)	Y	K	I
(E)	Z	H	Y

20.If the competition schedule strictly alternates couples on the Green team with couples on the Red team, and if couple Y dances fourth, then a waltz must be performed

- (A) first
- (B) second
- (C) third
- (D) fifth
- (E) sixth

21.If the third through the sixth dances in the competition are the fox-trot, the tango, the waltz, and the tango, respectively, then couple X can perform in any of the following positions EXCEPT.

- (A) first
- (B) second
- (C) third
- (D) fourth
- (E) sixth

22.Assume that the order of the couples, from first to sixth, has been established as X, Y, Z, H, I, and K. If couple X performs a fox-trot, which of the following couples must also perform a fox-trot?

- (A) H
- (B) I
- (C) K
- (D) Y
- (E) Z

23.The United States is not usually thought of as a nation of parakeet lovers. Yet in a census of parakeet owners in selected comparable countries, the United States ranked second, with eleven parakeet owners per hundred people. The conclusion can be drawn from this that people in the United States are more likely to own parakeets than are people in most other

countries.

Knowledge of which of the following would be most useful in judging the accuracy of the conclusion?

- (A) The number of parakeets in the United States.
- (B) The number of parakeet owners in the United States.
- (C) The number of parakeet owners per hundred people in the country that ranked first in the census.
- (D) The number of parakeet owners in the United States compared to the numbers of owners of other pet birds in the United States.
- (E) The numbers of parakeet owners per hundred people in the countries not included in the census.

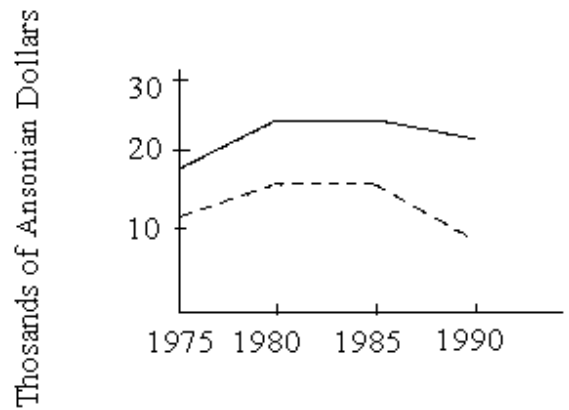
24. Until 1984 only aspirin and acetaminophen shared the lucrative nonprescription pain-reliever market. In 1984, however, ibuprofen was expected to account for fifteen percent of all nonprescription pain-reliever sales. On that basis business experts predicted for 1984 a corresponding fifteen percent decrease in the combined sales of aspirin and acetaminophen.

The prediction mentioned in the last sentence above was based on which of the following assumptions?

- (A) Most consumers would prefer ibuprofen to both aspirin and acetaminophen.
- (B) Aspirin, acetaminophen, and ibuprofen all relieve headache pain and muscular aches, but aspirin and ibuprofen can also cause stomach irritation.
- (C) Before 1984 ibuprofen was available only as a prescription medicine.
- (D) The companies that manufacture and sell aspirin and acetaminophen would not also manufacture and sell ibuprofen.
- (E) The introduction of ibuprofen would not increase total sales of nonprescription pain reliever.

Questions 25 is based on the following graph.

AVERAGE PER CAPITA YEARLY EARNINGS FOR TWO POPULATION GROUPS IN THE COUNTRY OF ANSONIA



- Ansonians with at least a college degree
- - - Ansonians with a high school diploma only

Which of the following, if true, utters the best explanation for the growing disparity in the earning levels of the two groups in the graph presented above?

- (A) Since 1985 there has been a decline in the total number of Ansonians who have only a high school diploma.
- (B) Since 1985 the percentage of Ansonians without a college degree who are unemployed has remained relatively constant.
- (C) Government financial support for educational research in Ansonia has declined since 1985.
- (D) The enactment of generous social security legislation by the Ansonian parliament has allowed many Ansonians with only a high school diploma to retire at full salary at age 63.
- (E) The shift in Ansonia from an industrial to a service economy has resulted in a net loss of high-paying jobs traditionally available to Ansonians with only a high school diploma.

SECTION 5

Time –30 minutes

38 Questions

1. Because modern scientists find the ancient Greek view of the cosmos outdated and irrelevant, they now perceive it as only of ----- interest.
 - (A) historical
 - (B) intrinsic
 - (C) astronomical
 - (D) experimental
 - (E) superfluous
2. Religious philosopher that he was, Henry More derived his conception of an infinite universe from the Infinite God in whom he believed, a benevolent God of -----whose nature was to create-----
 - (A) plenitude ..abundance
 - (B) vengeance .. justice
 - (C) indifference .. suffering
 - (D) indulgence .. temperance
 - (E) rectitude .. havoc
3. While some argue that imposing tolls on highway users circumvents the need to raise public taxes for road maintenance, the phenomenal expense of maintaining a vast network of roads-----reliance on these general taxes.
 - (A) avoids
 - (B) diminishes
 - (C) necessitates
 - (D) discourages
 - (E) ameliorates
4. Although they were not direct-----,the new arts of the Classical period were clearly created in the spirit of older Roman models and thus-----many features of the older style.
 - (A) impressions .. introduced
 - (B) translations .. accentuated
 - (C) copies .. maintained
 - (D) masterpieces .. depicted
 - (E) borrowings .. improvised
5. In spite of the increasing-----of their opinions, the group knew they had to arrive at a consensus so that the award could be presented
 - (A) impartiality
 - (B) consistency
 - (C) judiciousness
 - (D) incisiveness
 - (E) polarity
6. By forcing our surrender to the authority of the clock systematic timekeeping has imposed a form of----- on society.
 - (A) anarchy
 - (B) permanence
 - (C) provincialism
 - (D) tyranny
 - (E) autonomy
7. Our high-----vocabulary for street crime contrasts sharply with our-----vocabulary for corporate crime, a fact that corresponds to the general public's unawareness of the extent of corporate crime.
 - (A) nuanced ..subtle
 - (B) uninformative ..misleading
 - (C) euphemistic ..abstract
 - (D) differentiated ..limited
 - (E) technical ..jargon-laden
8. DIVERGE : APART::
 - (A) traverse : across
 - (B) suspend : around
 - (C) reverse : beyond
 - (D) repose : beside
 - (E) involve : among
9. ATROCIOUS : BAD::
 - (A) excessive : adequate
 - (B) momentous : important
 - (C) unavailing : helpful
 - (D) contagious : diseased
 - (E) nominal : satisfactory
- 10.PATRONIZE : CONDESCENSION::
 - (A) exasperate : anger
 - (B) deride : mockery
 - (C) compensate : apology
 - (D) hurry : decision
 - (E) encroach : fearlessness

11.FANG : TOOTH::

- (A) gum : mouth
- (B) elbow : arm
- (C) bank : river
- (D) finger : digit
- (E) summit ; mountain

12.ANALGESIC : PAIN::

- (A) sedative : sleep
- (B) stimulant : mood
- (C) antiseptic : odor
- (D) anesthetic : sensation
- (E) ointment : skin

13.IMPECCABLE : FLAW::

- (A) foreseeable : outcome
- (B) mundane : substance
- (C) dishonorable : blemish
- (D) ingenuous : guile
- (E) portentous : omen

14.POLEMIC : DISPUTATIOUS::

- (A) anachronism : chronological
- (B) vernacular : unpretentious
- (C) invective : abusive
- (D) platitude : insightful
- (E) eulogy : unrealistic

15.EMBARRASS : SHAME::

- (A) coax : reluctance
- (B) sleep : fatigue
- (C) doubt : uncertainty
- (D) belittle : condescension
- (E) console : comfort

16.ETCH : CORROSIVE::

- (A) shrink : diminutive
- (B) destroy : worthless
- (C) glue : adhesive
- (D) sculpt : malleable
- (E) polish : glossy

A special mucous coating that serves as a chemical camouflage allows clown fish to live among the deadly tentacles of the unsuspecting sea anemone . Utterly dependent on this unlikely host for protection from

(5)predators, clown fish have evolved in isolated communities, a pattern that has led to unusual behavioral adaptations.

The rigidly defined hierarchy of each clown-fish community is dominated by a monogamous breeding pair (10)consisting of the largest fish, a female, and the next largest a male, attended by a fixed number of sexually immature fish ranging in size from large to tiny. A remarkable adaptation is that the development of these juveniles is somehow arrested until the hierarchy changes; then they (15)crow in lockstep, maintaining their relative sizes. While the community thus economizes on limited space and food resources, life is risky for newly spawned clown fish. On hatching, the hundreds of larvae drift off into the plankton. If, within three weeks, the defenseless larval clown fish (20)locates a suitable anemone(either by pure chance or perhaps guided by chemicals secreted by the anemone), it may survive. However, if an anemone is fully occupied, the resident clown fish will repel any newcomer.

Though advantageous for established community mem- (25)bers, the suspended and staggered maturation of juveniles might seem to pose a danger to the continuity of the community: there is only one successor for two breeding fish. Should one of a pair die, the remaining fish cannot swim off in search of a mate, nor is one likely to arrive. It (30)would seem inevitable that reproduction must sometimes have to halt, pending the chance arrival and maturation of a larval fish of the appropriate sex.

This, however, turns out not to be the case. In experi- (35)ments, vacancies have been contrived by removing an established fish from a community. Elimination of the breeding male triggers the prompt maturation of the largest juvenile. Each remaining juvenile also grows somewhat, and a minuscule newcomer drops in from the plankton. Removal of the female also triggers growth in all (40)remaining fish and acceptance of a newcomer, but the female is replaced by the adult male. Within days, the male's behavior alters and physiological transformation is complete within a few months. Thus, whichever of the breeding pair is lost, a relatively large juvenile can fill (45)the void, and reproduction can resume with a minimal loss of time. Furthermore, the new mate has already proved its ability to survive.

This transformation of a male into a female, or pro- (50)tandrous hermaphroditism, is rare among reef fish. The more common protogynous hermaphroditism, where

- females change into males, does not occur among clown fish. An intriguing question for further research is whether a juvenile clown fish can turn directly into a female or whether it must function first as a male.
17. The passage is primarily concerned with
- (A) analyzing the mutually advantageous relationship between two species
 - (B) comparing two forms of hermaphroditism among clown fish
 - (C) describing and explaining aspects of clown-fish behavior
 - (D) outlining proposed research on clown-fish reproduction
 - (E) attempting to reconcile inconsistent observations of clown-fish development
18. It can be inferred from the passage that the clown fish is able to survive in close association with the sea anemone because the
- (A) sea anemone cannot detect the presence of the clown fish
 - (B) tentacles of the sea anemone cannot grasp the slippery clown fish
 - (C) sea anemone prefers other prey
 - (D) clown fish does not actually come within the range of the sea anemone's tentacles
 - (E) clown fish has developed tolerance to the sea anemone's poison
19. According to the passage, adult clown fish would be at a disadvantage if they were not associated with sea anemones because the clown fish would.
- (A) be incapable of sexual transformation
 - (B) be vulnerable to predators
 - (C) have no reliable source of food
 - (D) have to lay their eggs in the open
 - (E) face competition from other clown fish
20. It can be inferred from the passage that sex change would have been less necessary for the clown fish if
- (A) the male clown fish were larger than the female
 - (B) each sea anemone were occupied by several varieties of clown fish
 - (C) many mature clown fish of both sexes occupied each sea anemone
 - (D) juvenile clown fish had a high mortality rate
 - (E) both male clown fish and female clown fish were highly territorial
21. The author mentions all of the following as characteristic of the "rigidly defined hierarchy" (line 8) of the clown-fish community EXCEPT:
- (A) At any time only one female clown fish can be reproductively active
 - (B) The mature clown fish are monogamous
 - (C) The growth of clown fish is synchronized
 - (D) The maximum number of clown fish is fixed
 - (E) There are equal numbers of male juveniles and female juveniles
22. Which of the following statements about newly hatched clown fish can be inferred from the passage?
- (A) They develop rapidly
 - (B) They remain close to the sea anemone occupied by their parents
 - (C) They are more sensitive to chemical signals than are adult clown fish.
 - (D) They are not protected by their parents
 - (E) They are less vulnerable to predation than are adult fish.
23. Which of the following, if true, would be LEAST consistent with the author's explanation of the advantage of hermaphroditism for clown fish?
- (A) The number of individuals in a clown-fish community fluctuates significantly
 - (B) Adult clown fish frequently cannibalize their young
 - (C) The sea anemone tolerates clown fish only during a specific stage of the anemone's life cycle.
 - (D) Juvenile clown fish rarely reach maturity
 - (E) Clown-fish communities are capable of efficiently recruiting solitary adult clown fish
- Comparing designs in music with visual designs raises interesting questions. We are familiar with the easy transfers of terms denoting qualities from one field to another. The basic problem can be put this way: can music (5) sound the way a design looks? The elements of music are not the same as those of painting. They may be analogous, but to be analogous is not to be identical. Is it possible,

- then, for the same broad characteristics to emerge from different perceptual conditions?
- (10) Two facts about the relation between broad characteristics of a work and their perceptual conditions must be kept distinct. First, the global characteristics of a visual or auditory complex are determined by the discernible parts and their relationships. Thus, any notable change in the (15) parts or their relationships produces a change in some of the global characteristics. Second, a change in the parts or their relationships may leave other global characteristics unchanged.
24. In the first paragraph, the author is primarily concerned with establishing the fact that
- (A) comparisons are not equations
 (B) auditory phenomena are not visual phenomena
 (C) frequently used comparisons are usually inaccurate
 (D) careless perceptions result from careless thought
 (E) questions concerning perception are psychological
25. In the passage, the author is primarily concerned with
- (A) distinguishing mutually exclusive categories
 (B) clarifying an apparent contradiction
 (C) supporting new ideas
 (D) analyzing a problem
 (E) comparing opinions
26. The second paragraph is primarily concerned with establishing the idea that
- (A) different global characteristics of a work result from the same discernible parts
 (B) the parts of a work of art influence the total perception of the work
 (C) visual and auditory characteristics can be combined
 (D) changes in the parts of a work remain isolated from the work as a whole
 (E) the visual complexes in a work of art influence the work's auditory complexes
27. Which of the following statements is most likely be a continuation of the passage?
- (A) The search for broad similarities thus begins by understanding and distinguishing these two facts.
 (B) The search for musical-visual analogies thus depends on the complexity of the works being compared.
 (C) The search for music and art of the highest quality thus depends on very different assumptions
 (D) Thus music and painting exist in mutually exclusive worlds.
 (E) Thus music and painting are too complicated to be evaluated in terms of analogies.
28. COMPRESSION:
- (A) increase in volume
 (B) change of altitude
 (C) loss of stability
 (D) absence of matter
 (E) lack of motion
29. REFINE:
- (A) loosen
 (B) obscure
 (C) destabilize
 (D) decrease size
 (E) reduce purity
30. BALK:
- (A) extend
 (B) derive
 (C) observe
 (D) plan ahead carefully
 (E) move ahead willingly
31. ANTIPATHY:
- (A) affection
 (B) courtesy
 (C) exasperation
 (D) obstinacy
 (E) cynicism
32. PATHOLOGICAL:
- (A) acute
 (B) normal
 (C) adequate
 (D) variable
 (E) temporary
33. REIN:
- (A) prod
 (B) assess

- (C) engulf
(D) commend
(E) affirm
34. MELLIFLUOUS:
(A) obtuse
(B) ineffable
(C) raspy
(D) deranged
(E) uproarious
35. IMPUGN:
(A) abandon
(B) anticipate
(C) enable
(D) clarify
(E) endorse
36. PERTINACITY:
(A) liability
(B) simplicity
(C) vacillation
(D) eccentricity
(E) misrepresentation
37. GAINSAY:
(A) speak kindly of
(B) tell the truth about
(C) forecast
(D) affirm
(E) reiterate
38. ABSOLUTE:
(A) inferior
(B) tolerant
(C) qualified
(D) preliminary
(E) immeasurable

SECTION 6

Time -30 minutes

30 Questions

The scale used on a certain map is $\frac{1}{3}$ inch = 12 miles.

1. The number of miles represented by 2 inches on the map 72

2. The number of positive divisors of 24 The number of positive divisors of 50

$xy = 4$

3. $(2x)(3y)$ 24

x is an integer greater than 500

4. The value of the integer formed if the order of the digits in x is reversed 200

A man drove his automobile 10 kilometers in 10 minutes and then drove an additional 15 kilometers in the next 10 minutes.

5. His average speed during 50 kilometers per hour the 20-minute drive

$$y > 0 \text{ and } \frac{y}{y-1} > 0$$

6. y 1

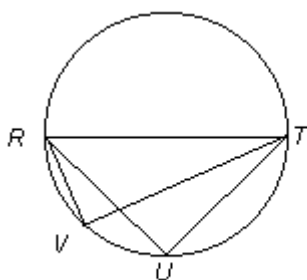
7. $\frac{1}{2} + \frac{2}{3} + \frac{3}{4}$ $\frac{2}{5} + \frac{5}{3} + \frac{3}{8}$

In the rectangular coordinate plane, (x,y) represents a point with coordinates x and y .

8. The distance between the points (1,3) and (1,4) The distance between The points(2,3)and (3,4)

$$5n + 2 = 7n - 3$$

9. $\left(\frac{n}{5}\right)^2$ $\frac{1}{5}$



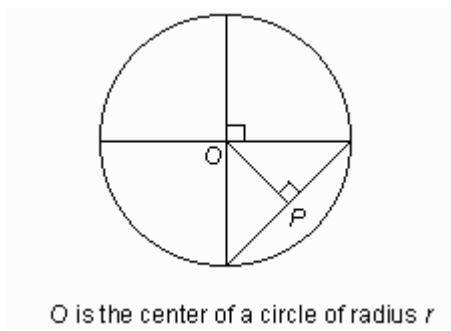
RT is a diameter of the circle above

10. The measure of $\angle RUT$ The measure of $\angle RVT$

11. 2^m $(-2)^m$

$a_k = 1 - (-1)^k$, for positive integers k
 n is a positive integer

12. a_n a_{n-1}



O is the center of a circle of radius r

13. OP $\frac{r}{\sqrt{2}}$

14. The ratio of the area of a circular region with diameter 3 to the area of a circular region with diameter 5 $\frac{3}{5}$

SURVEY OF PETS IN HOUSEHOLDS
 IN AN APARTMENT COMPLEX

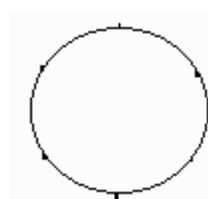
Kind of Pet	Number of Households
Dog	25
Cat	41
Other	19
No Pet	44

15. The total number of households with at least one pet 85

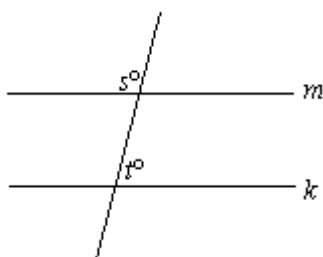
16. If 14 percent of an amount of money is \$420, then 10 percent of the same amount is
 (A) \$224
 (B) \$294
 (C) \$300
 (D) \$378
 (E) \$400

$$n = \frac{k + \frac{r}{s}}{\frac{t}{v}}$$

17. In the equation above, $k, r, s, t,$ and v represent positive numbers. Multiplying which one of these numbers by 2 will reduce the value of n to $\frac{1}{2}$ of its present value?
 (A) k (B) r (C) s
 (D) t (E) v



18. There are six marked points on the circle above. How many different lines can be drawn that contain two of the marked points?
 (A) 5
 (B) 6
 (C) 12
 (D) 15
 (E) 30



19. In the figure above, if $m \parallel k$ and $s = t + 30$ then $t =$
- (A) 30
 - (B) 60
 - (C) 75
 - (D) 80
 - (E) 105

20. On the real number line, which of the following is halfway between -3.4 and 5.2?
- (A) 0.9
 - (B) 1.2
 - (C) 1.8
 - (D) 2.2
 - (E) 4.3

APPARENT FAHRENHEIT TEMPERATURES DUE TO WIND-CHILL FACTOR

(corresponding to actual temperatures and wind speeds)

WIND SPEEDS (miles per hour)	ACTUAL TEMPERATURES (degrees Fahrenheit)				
	-10	0	10	20	30
5	-15	-5	7	16	27
10	-34	-22	-9	3	16
15	-45	-31	-18	-5	9
20	-53	-39	-24	-10	4
25	-59	-44	-29	-15	1
30	-64	-49	-33	-18	-2
35	-67	-52	-35	-20	-4
40	-69	-53	-37	-21	-5

21. If the actual temperature is 20 degrees Fahrenheit and the wind speed increases from 5 miles per hour to 40 miles per hour, what is the corresponding decrease in the apparent temperature?
- (A) 5 degrees Fahrenheit
 - (B) 24 degrees Fahrenheit
 - (C) 32 degrees Fahrenheit
 - (D) 37 degrees Fahrenheit

(E) 44 degrees Fahrenheit

22. If the actual temperature is 13 degrees Fahrenheit and the wind speed is 14 miles per hour, then the apparent temperature could be
- (A) 5 degrees Fahrenheit
 - (B) -12 degrees Fahrenheit
 - (C) -20 degrees Fahrenheit
 - (D) -25 degrees Fahrenheit
 - (E) -32 degrees Fahrenheit
23. If the actual temperature is 30 degrees Fahrenheit and the apparent temperature due to the wind-chill factor is 0 degrees Fahrenheit then the wind speed in miles per hour, must be between
- (A) 5 and 10
 - (B) 10 and 15
 - (C) 15 and 20
 - (D) 20 and 25
 - (E) 25 and 30
24. At a wind speed of 30 miles per hour, if the actual temperature increases by t degrees Fahrenheit then the apparent temperature increases by approximately how many degrees Fahrenheit?
- (A) 5
 - (B) 7
 - (C) 10
 - (D) 15
 - (E) 20
25. Which of the following can be inferred from the table?
- I The apparent temperature for an actual temperature of 20 degrees Fahrenheit and a wind speed of 15 miles per hour is the same as that for an actual temperature of 60 degrees Fahrenheit and a wind speed of 40 miles per hour
 - II At a constant wind speed as the actual temperature increases the difference between the actual and the apparent temperatures also increases
 - III At a constant actual temperature of -10 degrees Fahrenheit the apparent temperature decreases at a constant rate as the wind speed increases
- (A) I only

- (B) II only
(C) I and III only
(D) II and III only
(E) I, II and III
26. If the sum of two positive integers is 43 and the difference of their squares is 43, then the smaller integer is
(A) 17
(B) 19
(C) 20
(D) 21
(E) 22
27. To obtain an FHA mortgage for \$50,000 or more, the home buyer must have a down payment equal to 4 percent of the first \$25,000 of the mortgage amount and 5 percent of the portion in excess of \$25,000. At settlement the buyer pay a mortgage insurance premium equal to 3 percent of the mortgage amount. What is the maximum FHA mortgage, if any a buyer can obtain if the buyer has only \$6,000 available for the down payment and insurance premium?
(A) \$62,500
(B) \$71,875
(C) \$78,125
(D) \$125,00
(E) The home buyer cannot obtain an FHA mortgage
28. If two sides of a triangle have lengths 3.2 and 5.4 then the length of the third side must be between
(A) 0.0 and 2.2
(B) 2.2 and 5.4
(C) 2.2 and 8.6
(D) 3.2 and 5.4
(E) 5.4 and 8.6
29. The odds that a certain event will occur is the ratio of the probability that the event will occur to the probability that it will not occur. If the odds that Pat will win a prize are 4 to 3, what is the probability that Pat will not win the prize ?
(A) $\frac{1}{4}$
(B) $\frac{1}{3}$
- (C) $\frac{3}{7}$
(D) $\frac{4}{7}$
(E) $\frac{3}{4}$
30. A certain money market account that had a balance of \$48,000 during allof last month earned \$360 in interest for the month. At what simple annualinterest rate did the account earn interest last month?
(A) 7%
(B) 7.5%
(C) 8%
(D) 8.5%
(E) 9%

SECTION 7

Time 30 minutes

25 Questions

Questions 1-7

Seven pedigreed dogs—Frieda, King, Laddie, Max., Pal, Spot, and Topsy—are entered in a dog show. The dogs must be scheduled into seven consecutive time slots for judging, and only one dog can be scheduled into any time slot. The schedule must be based on the following constraints:

Frieda cannot be in a time slot immediately before or immediately after Max's time slot

Laddie cannot be in a time slot immediately before or immediately after Topsy's time slot.

Pal's time slot must be sometime before Spot's time slot.

King must be in the seventh time slot

- If Pal and Max are the third and fourth dogs judged, respectively, Frieda must be scheduled for a time slot selected from which of the following pairs of slots?
 - First and second
 - First and sixth
 - Second and fifth
 - Second and sixth
 - Fifth and sixth
- Which of the following is an acceptable sequence of dogs in the first four time slots?

	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>
(A)	Frieda	Pal	Topsy	Laddie
(B)	Laddie	Spot	Topsy	Pal
(C)	Max	Frieda	Pal	Spot
(D)	Pal	Frieda	Laddie	King
(E)	Topsy	Max	Pal	Laddie
- Any of the following can be the sixth dog judged EXCEPT
 - Frieda
 - Laddie
 - Max
 - Pal
 - Spot
- If Pal is the first, Laddie the third, and Frieda ----- fifth dog judged, which of the following must be true?
 - The remaining dogs can be acceptably scheduled in either of exactly two ways
 - The remaining dogs can be acceptably scheduled in only one way.
 - Max is judged immediately before King
 - Spot is judged immediately before Laddie
 - Topsy is judged immediately before Frieda.
- If the first three dogs judged are Max, Pal, and Frieda, respectively, which of the following must be true?
 - King is the sixth dog judged.
 - Laddie is the fourth dog judged.
 - Spot is the fifth dog judged.
 - Topsy is the fifth dog judged.
 - Topsy is the sixth dog judged.
- If Laddie is the fourth dog judged, Topsy can be scheduled into any one of how many different time slots?
 - Two
 - Three
 - Four
 - Five
 - Six
- If the schedule includes Laddie sometime before Pal and Pal sometime before Max, which of the following must be true?
 - Laddie is in one of the first three time slots.
 - Max is in one of the last three time slots
 - Pal is in one of the first three time slots
 - Spot is in the time slot immediately after Max
 - Topsy is in the time slot immediately after Max
- New regulations in Mullentown require manufacturers there to develop five-year pollution-reduction plans. The regulations require that each manufacturer develop a detailed plan for reducing its released pollutants by at least 50 percent. Clearly, the regulations will not result in significant pollution reduction, however, since the regulations do not force manufacturers

to implement their plans.

Which of the following, if true, most weakens the argument?

- (A) Mullentown's manufacturing plants are not the only source of pollution there.
- (B) Detailed plans would reveal that measures to reduce released pollutants would also reduce manufacturers' costs for materials, waste disposal, and legal services
- (C) Pollutants that manufacturing processes create but that are not released directly into the environment must nonetheless be collected and prepared for disposal
- (D) Any reductions in pollutants released from Mullentown's manufacturing plants would not be noticeable for at least five years.
- (E) Each manufacturer will be required to submit its plan to a committee appointed by Mullentown's officials.

9. Not Scored

10. To produce seeds, plants must first produce flowers. Two kinds of tarragon plants, Russian tarragon and French tarragon, look very similar except that Russian tarragon produces flowers and French tarragon does not. The leaves of Russian tarragon, however, lack the distinctive flavor that makes French tarragon a desirable culinary herb

If the information presented is true, which of the following can most reliably be concluded on the basis of it?

- (A) As a decorative plant, French tarragon is more desirable than Russian tarragon.
- (B) The flowers of Russian tarragon plants are probably not flavorful.
- (C) Plants that grow from seeds sold in a packet labeled "tarragon" are not French tarragon.
- (D) There are no other kinds of tarragon besides Russian tarragon and French tarragon
- (E) Garden plants that have flavorful leaves generally do not produce flowers.

Questions 11-16

A historian is attempting to reconstruct the locations of five volcanic islands—Kappa, Lambda, Mu, Pi, and Omega—that once existed off the coast of Penelopia. On the basis of historical documents, the historian has established that the five islands were arranged in a straight line running north to south. The historian also discovered the following:

Lambda was located immediately north of Pi.

Omega and kappa were immediately adjacent to each other.

Mu was located somewhere north of Lambda.

11. The five islands could have been arranged in which of the following north-to-south orderings?

- (A) Kappa, Mu, Omega, lambda, Pi
- (B) Lambda, Pi, Omega, Kappa, Mu
- (C) Mu, Kappa, Omega, Lambda, Pi
- (D) Mu, Pi, lambda, Kappa, Omega
- (E) Omega, Mu, Lambda, Pi, Kappa

12. If Mu was located immediately north of Omega, which of the following must be true?

- (A) Kappa was the southernmost of the islands.
- (B) Lambda was the northernmost of the islands
- (C) Pi was the southernmost of the islands.
- (D) Omega was the northernmost of the islands
- (E) Omega was the southernmost of the islands

13. If Omega was located somewhere north of Mu, which of the following must be true?

- (A) Kappa was located immediately north of Mu.
- (B) Mu was located immediately north of Lambda.
- (C) Omega was located immediately north of Mu.
- (D) Kappa was located immediately north of Lambda.
- (E) Mu was located immediately north of Pi

14. Which of the following is a complete and accurate list of the islands any one of which could be the island that was northernmost?

- (A) Kappa, Lambda
- (B) lambda, Mu
- (C) Mu, Omega
- (D) Kappa, Lambda, Omega
- (E) Kappa, Mu, Omega

15. If Mu is discovered to have been the northernmost of the islands, there remain how many possible arrangements any one of which could have been the historically accurate arrangement of the island?

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

16. If Mu was adjacent of Kappa, which of the following must be true?

- (A) Kappa was located somewhere north of Mu
- (B) Lambda was located somewhere north of Omega.
- (C) Mu was located somewhere north of Kappa
- (D) Mu was located somewhere north of Omega
- (E) Omega was located somewhere north of Lambda.

Questions 17-22

Six clubs—F, G, H, J, K, and L—have applied for funding from the student council. The council cannot fund all six club immediately. Unfunded clubs go on a waiting list and will be funded, in the order in which they appear on that list, as money becomes available. Funding decisions are subject to the following constraints:

No more than three clubs can be funded immediately.

L can be funded neither before F is funded nor before G is funded.

If J is assigned to the waiting list, K must also be assigned to the waiting list.

H must be on the waiting list.

17. Which of the following could be a complete and accurate list of the unfunded clubs in the order in which they initially appear on the waiting list?

- (A) F, K, L, H
- (B) H, F, L, J
- (C) H, K
- (D) L, H, F
- (E) L, J, K

18. If K receives immediate funding, which of the following clubs must also receive immediate funding?

- (A) F
- (B) G

- (C) H
- (D) J
- (E) L

19. If G is the third club on the waiting list, which of the following must be true?

- (A) Exactly one club receives immediate funding.
- (B) At most two clubs receive immediate funding.
- (C) Three clubs receive immediate funding
- (D) H is ahead of G on the waiting list
- (E) L is after H on the waiting list

20. Which of the following could be a complete list of the clubs that the student council funds immediately?

- (A) F, G, J, and L
- (B) F, G, and K
- (C) F, J, and L
- (D) G and H
- (E) J

21. If K receives immediate funding and L is the second club on the waiting list, which of the following must be true?

- (A) Exactly two clubs receive immediate funding.
- (B) F and G both receive immediate funding.
- (C) F is first on the waiting list.
- (D) G is first on the waiting list.
- (E) H is third on the waiting list.

22. If both F and J are on the waiting list, which of the following must be true?

- (A) No more than one club receives immediate funding.
- (B) Two clubs receive immediate funding
- (C) G is either first or second on the waiting list
- (D) H is last on the waiting list
- (E) K is ahead of L on the waiting list

23. In the United States, the financing of industrial research by private industrial firms remained steady as a percentage of sales during the period between 1968 and 1978 (after correcting for inflation). But slowdowns in the growth of industrial productivity also occurred during that period, a fact that refutes the notion that the growth of industrial productivity is directly proportional to the amount invested in industrial research.

Which of the following, if true for the United States, most weakens the argument above?

- (A) Federal funds, which constituted a significant portion of the support for industrial research from 1968 to 1978, fell annually and substantially during that period.
- (B) The inflation that occurred between 1968 and 1978 was more severe than leading economists had expected.
- (C) Industrial executives generally favor investing an appreciably larger portion of corporate funds in short-term product development than in basic research.
- (D) The scientists and engineers who worked in industry from 1968 to 1978 were, as a group, more experienced in their jobs than were those who worked in industry during the previous ten-year period.
- (E) Corporate financing of industrial research increased in several of the years immediately following 1978 (after correcting for inflation)

24. Although many brands of gasoline are sold on Haibei Island, gasoline companies there get all of the refined gasoline they sell from Haibei seaport's only storage tank, which is always refilled with the same quality of gasoline. Therefore, the brands of gasoline of sale on Haibei may be different in name and price, but they are identical in quality.

The conclusion drawn above depends on which of the following assumptions?

- (A) Consumers are usually unaware of variations in the quality of the gasoline they buy unless those variations are announced by the gasoline companies.
- (B) When tankers make gasoline deliveries at Haibei's seaport, the storage tank on Haibei always receives the same quantity of gasoline as that in the preceding delivery.
- (C) There is a wide variation in the prices at which the different brands of gasoline on Haibei are sold.
- (D) If any gasoline company on Haibei alters the quality of its gasoline before sale, the other

gasoline companies also use methods before sale that result in the same change in the quality of their gasoline .

- (E) The gasoline storage tank on Haibei is large enough to meet the needs of all of Haibei's different gasoline companies.

25. A group of paintings made approximately 15,000 years ago in a cave in the Loire River valley in what is now France depicts a number of different animals. One of the animals depicted seems to resemble the chiru, a rare antelope of the Himalayas.

Which of the following, if true, best supports the hypothesis that in painting the animal that resembles a chiru the cave artist painted a chiru with which she or he was familiar?

- (A) There are numerous representations of imaginary animals in cave paintings of similar age.
- (B) Fossilized remains of a chiru, approximately 16,000 years old, have been found at the northern end of the valley.
- (C) The cave that contains the depiction of an animal that resembles a chiru contains stylized representations of plant life.
- (D) Older caves from the same region contain no representations of animals that resemble a chiru.
- (E) The antlers of the animal in the painting are longer than those of the mature Himalayan chiru.