

Critical Reasoning

Each of the critical reasoning questions is based on a short argument, a set of statements, or a plan of action. For each question, select the best answer of the choices given.

Sentence Correction

Each of the sentence correction questions presents a sentence, part or all of which is underlined. Beneath the sentence you will find five ways of phrasing the underlined part. The first of these repeats the original; the other four are different. Follow the requirements of standard written English to choose your answer, paying attention to grammar, word choice, and sentence construction. Select the answer that produces the most effective sentence; your answer should make the sentence clear, exact, and free of grammatical error. It should also minimize awkwardness, ambiguity, and redundancy.

QUANT SECTION – 37 Q, 75 min

1.

Xander, Yolanda, and Zelda each have at least one hat. Zelda has more hats than Yolanda, who has more than Xander. Together, the total number of hats the three people have is 12. How many hats does Yolanda have?

- (1) Zelda has no more than 5 hats more than Xander.
- (2) The product of the numbers of hats that Xander, Yolanda, and Zelda have is less than 36.

2.

What is the remainder, after division by 100, of 7^{10} ?

- (A) 1
- (B) 7
- (C) 43
- (D) 49
- (E) 70

3.

If x is a positive integer, what is the value of x ?

- (1) The first nonzero digit in the decimal expansion of $1/x!$ is in the hundredths place.
- (2) The first nonzero digit in the decimal expansion of $1/(x+1)!$ is in the thousandths place.

4.

Four concentric circles share the same center. The smallest circle has a radius of 1 inch. For n greater than 1, the area of the n th smallest circle in square inches, A_n , is given by $A_n = A_{n-1} + (2n - 1)$.

What is the sum of the areas of the four circles, divided by the sum of their circumferences, in inches?

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

5.

If x , y , and z are integers, with $x < y < z$, what is the average(arithmetic mean) of x , y , and z ?

(1) $(x + y)z = 5$

(2) $x + z < 3$

6.

The velocity, density, and pressure of a certain fluid are related by the equation $5v^2 + P = c$, where v is the velocity in meters per second, P is the pressure in pascals, and c is a constant. If the velocity of this fluid decreases from 10 meters per second to 5 meters per second, by how many pascals does the pressure in the fluid rise?

(A) 125

(B) 250

(C) 375

(D) 500

(E) 625

7.

Two lines, k and m , intersect in the coordinate plane at point (a, b) . The x -intercept of k and the y -intercept of m are both positive. Is ab positive?

(1) The x -intercept of m and the y -intercept of k are both negative.

(2) The slopes of k and m are both positive.

8.

The function $g(x)$ is defined as the greatest integer less than or equal to x , while the function $h(x)$ is defined as the least integer greater than or equal to x .

What is the product $g(1.7) \times h(2.3) \times g(-1.7) \times h(-2.3)$?

(A) 6

(B) 9

(C) 12

(D) 16

(E) 24

9.

If x and y are positive integers, is $x + y$ even?

(1) xy is even.

(2) x/y is even.

10.

A certain car traveled twice as many miles from Town A to Town B as it did from Town B to Town C. From Town A to Town B, the car averaged 12 miles per gallon, and from Town B to Town C, the car averaged 18 miles per gallon. What is the average miles per gallon that the car achieved on its trip from Town A through Town B to Town C?

- (A) 13
- (B) 13.5
- (C) 14
- (D) 14.5
- (E) 15

11.

A rectangular solid box is x inches long, y inches wide and z inches tall, where x , y , and z are positive integers, exactly two of which are equal. What is the total surface area of the box?

- (1) One face of the box has an area of 9 square inches.
- (2) One face of the box has an area of 81 square inches.

12.

The Simplastic language has only 2 unique values and 3 unique consonants. Every noun in Simplastic has the structure CVCVC, where C stands for a consonant and V stands for a vowel. How many different nouns are possible in Simplastic?

- (A) 9
- (B) 12
- (C) 36
- (D) 72
- (E) 108

13.

Positive integers a , b , c , m , n , and p are defined as follows: $m = 2^a 3^b$, $n = 2^c$, and $p = 2m/n$. Is p odd?

- (1) $a < b$
- (2) $a < c$

14.

A bathtub has two faucets, P and Q , and one drain. Faucet P alone can fill the whole tub in ten minutes, and faucet Q alone can fill the whole tub four minutes faster than the drain can empty the whole tub. With faucets P and Q both running and the drain unstopped, the tub fills in six minutes. How long would the drain take to empty the whole tub?

- (A) 5 and $5/11$ minutes
- (B) 6 minutes
- (C) 10 minutes
- (D) 19 minutes
- (E) 30 minutes

15.

If p , q , r , and s are consecutive integers, with $p < q < r < s$, is $pr < qs$?

- (1) $pq < rs$
- (2) $ps < qr$

16.

The product of the digits of the four-digit number h is 36. No two digits of h are identical. How many different numbers are possible values of h ?

- (A) 6
- (B) 12
- (C) 24
- (D) 36
- (E) 48

17.

The Farmer in the Deli sandwich shop sells two kinds of sandwich: tuna melts and veggie melts. Each customer buys exactly one sandwich. If there were 300 customers yesterday, what fraction of veggie melts sold yesterday were bought by female customers?

(1) $1/2$ of all sandwiches sold yesterday were tuna melts, and $1/3$ of all customers yesterday were male.

(2) Yesterday, twice as many tuna melts were bought by females as there were veggie melts bought by males.

18.

Each of four different locks has a matching key. The keys are randomly reassigned to the locks. What is the probability that exactly two of the keys fit the locks to which they are reassigned?

- (A) $1/8$
- (B) $1/6$
- (C) $1/4$
- (D) $3/8$
- (E) $1/2$

19.

Samantha invests i_1 dollars in bond X, which pays r_1 percent simple interest annually, and she invests i_2 dollars in bond Y, which pays r_2 percent simple interest annually. After one year, will she have earned more interest, in dollars, from bond X than from bond Y?

(1) $r_1^2 > r_2^2$

(2) The ratio of i_1 to i_2 is larger than the ratio of r_1 to r_2 .

20.

A medical test for a certain liver enzyme can be given in the morning, in the afternoon, or in the evening; moreover, the result of the test can be low, average, or high. At least three-quarters of low and medium readings are not given in the evening. Sixty percent of exams are given in the morning or in the afternoon, and 20% of exams result in a high reading. What percent of exams given in the evening result in low or medium readings?

- (A) 20% (B) 30% (C) 40% (D) 50% (E) 60%

21.

A certain military vehicle can run on pure Fuel X, pure Fuel Y, or any mixture of X and Y. Fuel X costs \$3 per gallon; the vehicle can go 20 miles on a gallon of Fuel X. In contrast, Fuel Y costs \$5 per gallon, but the vehicle can go 40 miles on a gallon of Fuel Y. What is the cost per gallon of the fuel mixture currently in the vehicle's tank?

1) Using fuel currently in its tank, the vehicle burned 8 gallons to cover 200 miles.

2) The vehicle can cover 7 and $1/7$ miles for every dollar of fuel currently in its tank.

22.

The “length” of a positive integer greater than 1 is the number of prime numbers, including repeats, that are factors of that integer. For instance, the length of 20 is 3, because $2 \times 2 \times 5 = 20$. What is the length of 5,950?

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

23.

At a particular moment, a restaurant has x biscuits and y patron(s), with $x \geq 2$ and $y \geq 1$. How many values of y are there, such that all the biscuits can be distributed among the patrons, with each patron receiving an equal number of whole biscuits and with no biscuits left over?

- (1) $x = a^2b^3$, where a and b are different prime numbers.
- (2) $b = a + 1$

24.

Each of the cucumbers in 100 pounds of cucumbers is composed of 99% water, by weight. After some of the water evaporates, the cucumbers are now 98% water by weight. What is the new weight of the cucumbers, in pounds?

- A) 2
- B) 50
- C) 92
- D) 96
- E) 98

25.

Is $(x - 2)^2 > x^2$?

- (1) $x^2 > x$
- (2) $1/x > 0$

26.

What is the smallest positive integer x such that $450x$ is the cube of a positive integer?

- A) 2
- B) 15
- C) 30
- D) 60
- E) 120

27.

If n is a positive integer and x does not equal zero, is $x^n > x^{(n+1)}$?

1) $x < 1$

2) n is even.

28.

On Lake Coheeries, there are only three kinds of boats: catamarans, canoes, and kayaks. The ratio of catamarans to canoes is 4:7, and the ratio of canoes to kayaks is 5:9. Which of the following could be the total number of boats on the lake?

- A) 575
- B) 580
- C) 585
- D) 590
- E) 595

29.

If x and n are positive integers, is $n = 1$?

- (1) The sum of n consecutive integers, starting at x , is divisible by xn .
- (2) The product of n consecutive integers, starting at x , is divisible by x^n .

30.

The function $f(x)$ is defined as $f(x) = 1 - 1/(1-x)$ for all x not equal to 1. The sequence $A(n)$ for all integers $n > 1$ is defined as $A(n) = f(A(n-1))$.

What values of $A(1)$ create a sequence such that $A(n) = A(n-2)$ for all $n > 2$?

- (I) $x < 0$
- (II) $x = 0$
- (III) $0 < x < 1$
- (IV) $x > 1$

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

31.

If a , b , and c are integers, and the product abc is even, is b even?

- (1) $(ab)/c$ is an even integer.
- (2) $(ac)/b$ is an odd integer.

32.

If the prime factorization of the integer q can be expressed as $a^{2x} b^x c^{3x-1}$, where a , b , c , and x are distinct positive integers, which of the following could be the total number of factors of q ?

- (A) $3j + 4$, where j is a positive integer
- (B) $5k + 5$, where k is a positive integer
- (C) $6l + 2$, where l is a positive integer
- (D) $9m + 7$, where m is a positive integer
- (E) $10n + 1$, where n is a positive integer

33.

Grace makes an initial deposit of x dollars into a savings account with a z percent interest rate, compounded annually. On the same day, Georgia makes an initial deposit of y dollars into a savings account with a z percent annual interest rate, compounded quarterly. Assuming that neither Grace nor Georgia makes any other deposits or withdrawals and that x , y , and z are positive numbers no greater than 50, whose savings account will contain more money at the end of exactly one year?

- (1) $z = 4$
- (2) $100y = zx$

34.

A survey was sent to 80 customers, 7 of whom responded. Then the survey was redesigned and sent to another 63 customers, 9 of whom responded. By approximately what percent did the response rate increase from the original survey to the redesigned survey?

- (A) 2%
- (B) 5%
- (C) 14%
- (D) 28%
- (E) 63%

35.

If p , x , and y are positive integers, y is odd, and $p = x^2 + y^2$, is x divisible by 4?

(1) When p is divided by 8, the remainder is 5.

(2) $x - y = 3$

36.

How many liters of oil must be added to x liters of an oil-water solution that is y percent oil to produce a solution that is z percent oil?

(A) $\frac{xz - xy}{100}$

(B) $\frac{xz - xy}{z - 100}$

(C) $\frac{xy - xz}{z - 100}$

(D) $\frac{100y - xz}{z - 100}$

(E) $\frac{xz - 100y}{z - 100}$

37.

If n is a positive integer, what is n ?

(1) $3^n - 1$ has three prime factors, not necessarily distinct.

(2) $n^2 = 2^n$.

Section 2 – Verbal Section – 41 Q, 75 min

Question #1

Salary increases, when unaccompanied correspondingly by a rise in productivity, can lead to a decrease in profits and possibly financial ruin.

- (A) when unaccompanied correspondingly by a rise in productivity, can lead
- (B) if not accompanied by a corresponding rise in productivity, can lead
- (C) when it was unaccompanied by a corresponding rise in productivity, can lead
- (D) if not accompanied correspondingly to a rise in productivity, possibly leads
- (E) if not accompanied by a corresponding rise in productivity, leads

Question #2

A fatal disease caused by the parasite *Encarsia formosa* and spread by greenhouse whiteflies has already killed 50 percent of the cucumber crops in the northeastern United States. *Trialeurodes vaporariorum* kills the larvae of greenhouse whiteflies. In an effort to save the remaining crops, plant biologists plan to introduce *Trialeurodes vaporariorum* into many areas of the Northeastern U.S.

Which one of the following, if true, would cast the most serious doubt on the plan's prospects for success?

- (A) During the last year, the population of greenhouse whiteflies in the northeastern U.S. has fallen by 25 percent as a result of unusually wet conditions.
- (B) The disease cannot be controlled by man-made anti-parasite treatments used to eradicate the diseases that afflict other vegetables, such as carrots.
- (C) The introduction of *Trialeurodes vaporariorum* has saved cucumber crops in the southwestern United States.
- (D) For *Trialeurodes vaporariorum* to successfully control greenhouse whiteflies, it must be introduced into a geographic area prior to infestation by these flies.
- (E) The northeastern United States has lost many squash plants because of root diseases.

Question #3

The decline in variable-rate mortgages have forced potential homeowners to look elsewhere for financial options, sending many into the waiting arms of private mortgage companies, which have proliferated in recent years.

- (A) have forced potential homeowners to look elsewhere for financial options, sending many into
- (B) had forced potential homeowners to looking elsewhere for financial options, sending many toward
- (C) have forced potential homeowners elsewhere to look for financial options, sending many into
- (D) has forced potential homeowners toward other options financially, sending many in
- (E) has forced potential homeowners to look for other financial options, sending many into

Question #4

Among the more effective kinds of publicity that a traveling circus can get for a new show is to have one act from that show air on a television station with a large audience in a given area shortly before the show is performed live in that area. The benefits of such exposure include not only a sure increase in ticket sales for the show, but also a fee paid by the television station to the traveling circus.

Which of the following is best supported by the information above?

- (A) The number of people for whom seeing one act from the show performed on television is an adequate substitute for seeing the show performed live is smaller than the number for whom seeing one act from the show on television stimulates a desire to see the show performed live.
- (B) Because the majority of profits derived from airing one act from a show on television usually go to the traveling circus rather than the television station, station executives are unwilling to broadcast single acts from circus shows.
- (C) In calculating the total number of audience members that a circus show has attracted, traveling circuses include the size of the viewership of television stations that aired a single act from the show.
- (D) The effectiveness of having a single act from a circus show broadcast on a television station, measured in terms of increased ticket sales for the entire show, is proportional to the viewership size of a television station that broadcasted a single act from the show.
- (E) Traveling circuses with shows with single acts that are suitable for broadcast on popular television stations attract larger audiences than traveling circuses with shows with single acts not suitable for broadcast on popular television stations.

Question #5

Which of the following best completes the passage below?

Following a sharp increase in cases of aggressive behavior exhibited by local dogs, a town in Washington is considering an ordinance banning dogs over certain height and weight measurements. To avoid being overly restrictive, however, the ordinance should _____.

- (A) be mailed to the public before enforcement begins
- (B) provide exceptions for trained service dogs or other dogs that have passed certified obedience courses
- (C) help breeders or owners with large numbers of dogs find new homes for their dogs
- (D) invest more money in animal control measures so that fewer stray dogs reside in the town
- (E) map and publicize the locations of the incidents of aggressive behavior

Question #6

Explorers of the abandoned city of Ambrose, Kansas, discovered a pattern of obliterated streets and collapsed buildings characteristic of tornado damage. Engineers have hypothesized that the destruction was caused by a tornado that struck Kansas in 1976.

Which of the following, if true, most strongly supports the engineers' hypothesis?

- (A) Certain types of steering wheels, often found in cars dating from years preceeding and following 1976, were found in several abandoned cars in Ambrose.
- (B) No cars manufactured after 1976 were found in Ambrose, but cars manufactured before that year were found in abundance.
- (C) Most historical textbooks that focus on Kansas mention that a tornado occured there in 1976.
- (D) Bicycles with banana-shaped seats, popular in Kansas between 1976 and 1986, were found in Ambrose.
- (E) A torn magazine advertisement for low-tar cigarettes that were only offered in the early 1980's was found in Ambrose.

One of the most robust and agriculturally useful groups of plants known to man is the legume family. The beans, peas, sprouts, and flowers that make up the legume family provide farmers with a means to replenish critical nutrients that most crops leach out of the soil. This surprising ability can be credited to the presence of tiny nodules on the roots of these legumes. These structures are readily colonized by bacteria known as Rhizobia, which derive energy from sugars produced by the plant while capturing nitrogen from the atmosphere and redepositing it in the soil as ammonia, a converted form of nitrogen useful to plants. This mutualistic relationship allows the Rhizobia to thrive while providing both the legumes and future crops with the nitrogen necessary for all plant growth.

Commercial pressures, however, have come to limit the salutary use of legumes in agriculture. The development of nitrogen-rich fertilizers and government subsidies for non-legume crops such as corn are decreasing farmers' incentive to dedicate precious acres to nutrient-replenishing legumes. However, such artificial nitrogen enrichment results in increased growth of weeds on arable land and thus increased reliance on weed-fighting herbicides. Observations of greater undesirable fluctuations in the chemical makeup of agricultural soil have coincided with decreased reliance on the replenishment of nutrients by legumes, illustrating the important though increasingly disregarded benefits of legume cultivation.

Question #7

According to the passage, which of the following factors is necessary in order for plants to grow?

- (A) the use of fertilizers and herbicides
- (B) plentiful nitrogen in the air surrounding the plants
- (C) the presence of Rhizobia bacteria in the vicinity of the roots of the plants
- (D) the presence of forms of nitrogen in the soil in which the plants are growing
- (E) energy derived from sugars produced by legumes

Question #8

With which of the following statements regarding commercial agriculture would the author most likely agree?

- (A) A more profitable strategy for commercial agriculture would be to reduce the use of fertilizers and to devote a greater proportion of arable land to legumes.
- (B) The quality of the soil used in commercial agriculture decreases when fertilizers are relied upon as a major source of nitrogen.
- (C) The chemicals used in commercial agriculture render soil useless for other purposes.
- (D) Government subsidies for nitrogen-rich fertilizers create a conflict between commercial and ecological interests within agriculture
- (E) Though their beneficial influence is appreciable on a small scale, Rhizobia have no place in commercial agriculture.

Question #9

The passage most strongly suggests which of the following concerning nitrogen and agriculture?

- (A) Herbicides usually lower the nitrogen content of soil.
- (B) Nitrogen may be obtained less expensively from fertilizers than from legume cultivation.
- (C) Plants cannot easily absorb nitrogen directly from the atmosphere.
- (D) Rhizobia bacteria require nitrogen in order to thrive.
- (E) Bean plants produce more ammonia than do flowers.

Question #10

Although, according to several studies, the costs of treating acute otitis media(AOM) episodes amounts to a sum higher than 2 percent of the estimated \$3 billion the nation spent on illness last year, doctors say that these costs can be mitigated if parents take preventative measures for their children.

- (A) amounts to a sum higher
- (B) amounts to greater
- (C) amounted to greater
- (D) amounted to higher
- (E) amounted to a higher sum

Question #11

Divers can only survive the high-pressure environment of the ocean floor because they wear an atmospheric diving suit which kept the pressure inside the suit at a safe level.

- (A) which kept
- (B) that is keeping
- (C) that keeps
- (D) which has kept
- (E) having kept

Question #12

From comic artist Mark Tatulli's witty observations about the American obsession with all things Hollywood have emerged Heart of the City, a series centered on celebrity gossip and popular movies that are inspiring readers to send record volumes of fan mail to newspapers across the country.

- (A) things Hollywood have emerged Heart of the City, a series centered on celebrity gossip and popular movies that are inspiring
- (B) things Hollywood has emerged Heart of the City, a series centered on celebrity gossip and popular movies that is inspiring
- (C) things that are related to Hollywood has emerged Heart of the City, a series centered on celebrity gossip and popular movies that inspire
- (D) Hollywood things have emerged Heart of the City, a series centered on celebrity gossip and popular movies that are inspiring
- (E) Hollywood things have emerged Heart of the City, a series centered on celebrity gossip and popular movies that inspire

Question #13

Scientists have discovered many fascinating and unusual adaptations in amphibians; one species of frog, for instance, breaks its own bones to extend cat-like claws out of its toe pads.

- (A) amphibians; one species of frog, for instance, breaks
- (B) amphibians, as an instance, in one species of frog, to break
- (C) amphibians, like, in one species of frog, to break
- (D) amphibians, such as to be, in one species of frog, breaking
- (E) amphibians; which might, as an instance, in one species of frog, be the breaking of

High transportation costs, an obstacle for many businesses, occur for several reasons. Vehicle operators may demand higher wages. Vehicles often require costly repairs. Companies will invest in improving the outward appearance of their vehicles to gain a competitive edge. When roadways are heavily congested, delivery vehicles stall and thus drive up expenditures on fuel. Most importantly, however, as the supply of fuel decreases, demand for fuel increases, and so gas prices continue to rise. This has a drastic impact on overall expenses for transportation companies.

Some companies compensate for rising transportation costs by raising prices for their goods and services. If prices become too high, however, companies risk losing customers. Others have found a different solution; replacing newer vehicles with older ones. Although this move seems counter-intuitive, there is a logic behind it. Older vehicles are about as fuel efficient as the current vehicles and do not need to be as heavily insured. Therefore, transportation costs remain low, and so the company can continue to deliver the same goods and services without raising prices. The drawback is the potential for bad publicity. Older vehicles generally do not meet the same emissions standards as newer ones.

Some companies use certain discontinued truck models, which emit black clouds of smoke and exhaust. Since media outlets publicize reports that link rising asthma rates to atmospheric pollution, companies using these older trucks may bear the brunt of media scrutiny.

Company executives do not intend to harm the environment; they are simply unaware of better alternatives. If they were to purchase electrically-powered or hybrid vehicles(those that run on electricity or gasoline depending on the vehicle's speed), not only would fuel costs be reduced, but companies would also be eligible for the reduced insurance rates offered by many insurance providers as an incentive for companies to utilize environmentally sustainable vehicles. Thus, insurance companies actively encourage business executives to preserve the environment by helping to make the cost of environmentally sustainable vehicles itself sustainable.

Question #14

The author mentions each of the following as a cause of high transportation costs EXCEPT:

- (A) transportation employees' demands
- (B) necessary vehicle maintenance
- (C) ineffective employee training
- (D) worsening traffic conditions
- (E) cosmetic vehicle improvements

Question #15

The author most likely cites the example highlighted in the text in order to illustrate

- (A) the environmental irresponsibility of replacing newer vehicles with older models that do not meet the same emissions standards
- (B) the environmental problems created when companies elect to use vehicles that do not meet current emissions standards
- (C) the advantages companies gain by replacing newer vehicles with older models that require less costly insurance
- (D) the alternatives to replacing newer vehicles with older models explored by other transportation companies
- (E) how the media can portray certain companies as posing an environmental threat to local residents

Question #16

The passage provides information that supports which of the following statements?

- (A) High transportation costs force many companies out of business.
- (B) Company executives are responsible for environmental pollution.
- (C) There is a publicity-friendly means of reducing transportation costs.
- (D) Insurance companies are not profit-motivated.
- (E) Environmentally unfriendly vehicles are the leading cause of bad publicity for most companies.

Question #17

Which of the following best completes the passage below?

The more consumers desire a powerful notebook computer, the more willing they are to accept a large form factor; high performance comes at the cost of increased size and weight. This is the fundamental principle underlying the production of consumer electronics today, and is illustrated by the fact that _____.

- (A) current cellular telephones have more features in a smaller form factor than do previous models
- (B) the fastest and most feature-rich video players are larger and heavier than other contemporary models
- (C) successful products are distinguished by their ability to couple performance with aesthetically pleasing packaging
- (D) in times of high consumer demand, manufacturers disregard consumer preference for both faster performance and small form factor
- (E) the potential market for a product is largest when the product is as small and light as possible

Question #18

The recent surge in bank robberies has mobilized the city's Anti-Bank Robbery Special Operations Task Force, to lead to 20 percent more security expenditures at each bank, and causes additional measures to be taken, like the installation of closed circuit television systems and the construction of bullet-resistant "bandit barriers" between customers and tellers.

- (A) to lead to 20 percent more security expenditures at each bank, and causes
- (B) leading to 20 percent more security expenditure at each bank and causing
- (C) to lead to a 20 percent increase in security expenditures at each bank and causes
- (D) to lead to an increase of 20 percent in security expenditures at each bank, and caused
- (E) leading to a 20 percent increase in security expenditures at each bank and causing

Question #19

Because sport utility vehicles require more fuel and produce a greater amount of pollutants than do other types of automobiles, California legislators are considering passing a bill outlawing the sale of sport utility vehicles by 2018.

Which of the following, if true, indicates that the plan to ban the sale of sport utility vehicles is poorly suited to California's environmental goals?

- (A) Although more efficient sport utility vehicles are now available, legislators believe that other vehicles are safer for the environment.
- (B) Major car manufacturers are planning to shift resources from the production of sport utility vehicles to the production of other types of automobiles.
- (C) Several years after some small towns enacted similar bans on the sale of sport utility vehicles, no environmental benefits were noticeable.
- (D) Since many Californians prefer to drive sport utility vehicles, they are likely to purchase them in other states and drive them back to California.
- (E) Many Californians use their sport utility vehicles to transport recyclables and to perform other tasks that benefit the environment.

Question #20

Just as analyzing Van Gogh's paintings gives a curator insight into the artist's mental illnesses— of his depression and mania— so Charles "Buddy" Bolden's novel jazz compositions provide a music critic with a glimpse into the mind of the schizophrenic genius credited with the birth of improvisation.

- (A) so Charles "Buddy" Bolden's novel jazz compositions provide a music critic
- (B) so listening to Charles "Buddy" Bolden's novel jazz compositions provides a music critic
- (C) so the novel jazz compositions of Charles "Buddy" Bolden provide a music critic
- (D) listening to Charles "Buddy" Bolden's novel jazz composition provides
- (E) Charles "Buddy" Bolden's novel jazz compositions provide a music critic

Question #21

As it moves into international markets once thought to be resistant to foreign trade, the steel company has decided to bid on contracts they would in the past have found unfeasible.

- (A) they would in the past have found unfeasible
- (B) they would have found to be unfeasible in the past
- (C) that it previously would have found to be unfeasible in the past
- (D) it would in the past have found unfeasible
- (E) that in the past would have been previously found to be unfeasible

Question #22

Although recorded instances of hysteria, phobia, and melancholy date back to ancient Greece and Rome, President John F. Kennedy was one of the first American policymakers to consider the mentally ill legitimately afflicted members of society and to present them with opportunities to receive appropriate health care and insurance coverage.

- (A) legitimately afflicted members of society and to present them
- (B) should be legitimately afflicted members of society and present these
- (C) as being legitimately afflicted members of society and presenting them
- (D) as if they were legitimately afflicted members of society and present them
- (E) to be legitimately afflicted members of society and present these

It has become accepted wisdom in brain science that, after early childhood, neurons can no longer grow. Our new studies, however, reveal that some adult neurons do exhibit structural plasticity, that is, growth in response to stimuli.

Former studies on the plasticity of neurons examined adult excitatory neurons, which send messages that signal other neurons to increase their activity. These studies focused on adult neurons' axons(parts of neurons that transmit signals away from the cell body), since damage to the long axons of the spinal cord cause most spinal cord injuries and regeneration of such axons might reverse the damage. The results of these studies supported the view that neuronal plasticity exists only during the first few years of life, when massive neuronal growth(250,000 neurons per minute) takes place.

Our studies looked elsewhere for structural plasticity. We looked at inhibitory neurons called interneurons, which delay or block signals from excitatory neurons. These less-known, less-accessible neurons comprise twenty to thirty percent of the neocortex, the part of the brain that orchestrates thought and other higher functions. We examined the neocortex of rats and used a technology called two-photon imaging to track the progress of these interneurons over the course of several weeks. Two-dimensional pictures were pieced together to create three-dimensional time-lapse images that revealed neural growth that, though not as pronounced as that of early childhood, was nonetheless significant. We found that fourteen percent of these interneurons displayed growth in their dendrites(parts of neurons that receive signals and transmit them towards the cell body), some doubling their size through impressive growth spurts of up to 90 microns. Independent studies have suggested a genetic basis for this capacity. Of the 360 candidate plasticity genes(CPGs), which encode proteins that scientists believe to be responsible for structural change, a significant percentage remain "turned on" past the early childhood development stage.

Question #23

Based on the passage, which of the following is most likely to be true about candidate plasticity genes(CPGs)?

- (A) Young children have more CPGs turned on than do adults
- (B) When CPGs are turned off, they cannot be reactivated
- (C) CPGs are promising therapeutic targets for treating spinal cord injuries
- (D) Their activity can be shown using three-dimensional, time-lapse imaging
- (E) CPGs are turned on in only fourteen percent of interneurons

Question #24

Similarities shared by axons and dendrites, as they are described in the passage, include which of the following?

- I. They can transmit signals
 - II. They have structural plasticity in adulthood
 - III. They are distinct from the cell body
- (A) I only
 - (B) II only
 - (C) III only
 - (D) I and II only
 - (E) I and III only

Question #25

The primary purpose of this passage is to

- (A) support a conventional belief
- (B) summarize new research findings
- (C) describe a sophisticated technology
- (D) suggest an explanation for seemingly inexplicable phenomena
- (E) outline the development of a methodology

Question #26

According to the passage, the dendrites of interneurons

- (A) cannot be seen with a microscope
- (B) can double their size over the course of several weeks
- (C) can grow at a rate rivaling that of early childhood
- (D) transmit inhibitory signals to other neurons
- (E) can "turn off" candidate plasticity genes

Question #27

Certain researchers study present-day native Amazonian tribes to learn about ancient native Amazonian tribes. One reason this strategy is flawed is that native Amazonian tribes vary widely. In fact, all of the tribes of which researchers are aware have had considerable contact with modern groups not native to the Amazon.

Which of the following, if true, would most weaken the criticism made above of the researchers' strategy?

- (A) Throughout history, all native Amazonian tribes have had many significant characteristics in common that are not present in groups from other regions.
- (B) Most ancient native Amazonian tribes have either disappeared or adopted another mode of living.
- (C) All researchers examine some type of modern group or tribe.
- (D) Many researchers who study some type of modern native Amazonian tribe do not make inferences about ancient tribes on the basis of their observations.
- (E) Even present-day native Amazonian tribes that have not had significant contact with modern groups differ in important ways from their ancient ancestors.

Question #28

Unlike other mammals that carry their offspring to term and bear live young, laying eggs is the reproduction method of platypuses.

- (A) laying eggs is the reproduction method of platypuses
- (B) platypuses reproduce by the method of laying eggs
- (C) platypuses' method of reproduction is laying eggs
- (D) eggs are laid by platypuses for reproduction
- (E) the reproduction method of platypuses is egg-laying

Question #29

In order to cover maintenance costs, a historic theater is considering a 20 percent increase in ticket prices. The theater's owner claims that the price increase will increase the annual revenue generated by ticket sales by at least 20 percent per year.

Which of the following is an assumption on which the theater owner's claim depends?

- (A) The amount of money required annually for theater maintenance will not increase from its current level.
- (B) The total number of patrons per year will not decrease from the current level.
- (C) The number of shows playing at the theater will not decrease from its current level.
- (D) The total number of patrons who buy tickets from scalpers will not increase from its current level.
- (E) The total number of tickets sold per year will not decrease from its current level.

Question #30

In an anonymous survey of employees at a large financial services company, one-fifth admitted to lying on expense reports. However, this survey may underestimate the actual proportion of liars because _____.

- (A) some employees who have lied on expense reports might not have admitted to it on the survey
- (B) some employees who have not lied on expense reports might have claimed to on the survey
- (C) some employees who admitted to lying on expense reports may have lied on many expense reports
- (D) some employees who claimed they lied on expense reports might have done so
- (E) some employees from other financial services firms have probably lied on expense reports

The second half of the twentieth century witnessed renewed interest in the planning and revitalization of major American metropolitan cities. In response, writer Jane Jacobs published her seminal work on twentieth-century urban planning, *Death and Life of Great American Cities*, in 1961. The ideas on the development and rebuilding of urban centers put forth in Jacobs' work were a radical departure from the predominating theories of the day. She believed cities should be treated as organic creatures, and made four primary recommendations for revitalizing cities: streets should be zoned to have a mix of businesses and residences; city blocks should be short; buildings of different ages, conditions and uses should be ubiquitous; and dense populations should be encouraged.

Unlike her contemporaries, Jacobs thought that only by observing a city's behavior do "we get useful information on what occurs tangibly and physically, instead of sailing off on metaphysical fantasies." Jacobs views the neighborhood as the essential building block of any effort to revitalize a city, and she sees city streets as the lifelines of neighborhoods. She uses the sidewalk in front of her house in New York's Greenwich Village as an exemplar of how neighborhood streets ought to work. She depicts the neighborhood activity she witnesses as "an intricate sidewalk ballet," where the interplay of residents, playing children, and shopkeepers creates the viability of her neighborhood.

In stressing the importance of neighborhoods and mixed-use buildings, Jacobs takes issue with the writings of city planner Patrick Geddes and architects such as Le Corbusier and Lewis Mumford. These men aimed to relieve cities of traffic and idealized the aesthetics of open space—their designs featured numerous parks, wide "superblocks" facing interior lawns, and clean lines of graceful skyscrapers. Such conceits, according to Jacobs, deprive a city of its vitality and make it more dangerous for both its residents and visitors. For Jacobs, cities need bustling communities to keep the streets safe and vibrant. A city is policed by an intricate dance of "public actors" who serve to keep a constant eye on the comings and goings of the neighborhood and ensure its safety.

Question #31

Based on the information given in the passage, many city planners contemporary with Jane Jacobs would most likely have preferred city plans characterized by

- (A) single-use housing, long city blocks, and low levels of street traffic
- (B) a dense population of local businesses and busy city streets
- (C) mixed-use buildings with clean, graceful lines
- (D) a sparse population of residences and a high concentration of local businesses in mixed-use zones
- (E) densely populated streets, single-use zoning, and interior lawns

Question #32

Which of the following criticisms of Le Corbusier and Lewis Mumford's architectural beliefs would most likely be made by proponents of Jane Jacobs's approach to city planning?

- (A) The intricate ballet of foot traffic makes it harder to build large blocks and skyscrapers in existing neighborhoods.
- (B) Le Corbusier and Lewis Mumford have no experience building city neighborhoods and therefore can only design metaphysical fantasies.
- (C) Large city blocks with interior lawns, which will pull traffic away from the streets, result in unsupervised and thus more dangerous streets.
- (D) While aesthetically pleasing, skyscrapers, superblocks, and open spaces do not succeed in relieving cities of traffic, but rather make traffic even worse.
- (E) City residents prefer to live on smaller blocks in busy neighborhoods and not in skyscrapers.

The second half of the twentieth century witnessed renewed interest in the planning and revitalization of major American metropolitan cities. In response, writer Jane Jacobs published her seminal work on twentieth-century urban planning, *Death and Life of Great American Cities*, in 1961. The ideas on the development and rebuilding of urban centers put forth in Jacobs' work were a radical departure from the predominating theories of the day. She believed cities should be treated as organic creatures, and made four primary recommendations for revitalizing cities: streets should be zoned to have a mix of businesses and residences; city blocks should be short; buildings of different ages, conditions and uses should be ubiquitous; and dense populations should be encouraged.

Unlike her contemporaries, Jacobs thought that only by observing a city's behavior do "we get useful information on what occurs tangibly and physically, instead of sailing off on metaphysical fantasies." Jacobs views the neighborhood as the essential building block of any effort to revitalize a city, and she sees city streets as the lifelines of neighborhoods. She uses the sidewalk in front of her house in New York's Greenwich Village as an exemplar of how neighborhood streets ought to work. She depicts the neighborhood activity she witnesses as "an intricate sidewalk ballet," where the interplay of residents, playing children, and shopkeepers creates the viability of her neighborhood.

In stressing the importance of neighborhoods and mixed-use buildings, Jacobs takes issue with the writings of city planner Patrick Geddes and architects such as Le Corbusier and Lewis Mumford. These men aimed to relieve cities of traffic and idealized the aesthetics of open space—their designs featured numerous parks, wide "superblocks" facing interior lawns, and clean lines of graceful skyscrapers. Such conceits, according to Jacobs, deprive a city of its vitality and make it more dangerous for both its residents and visitors. For Jacobs, cities need bustling communities to keep the streets safe and vibrant. A city is policed by an intricate dance of "public actors" who serve to keep a constant eye on the comings and goings of the neighborhood and ensure its safety.

Question #33

It can be inferred from the passage that which of the following is true about the "intricate sidewalk ballet" of Jane Jacobs' neighborhood?

- (A) Its participants are critical of the aesthetics of Le Corbusier and Patrick Geddes.
- (B) It is an example of how street life can invigorate city neighborhoods.
- (C) Because of it, the city becomes more dangerous for both its residents and visitors.
- (D) The nature of the ballet is often misunderstood by many of Jacobs' contemporaries.
- (E) Such a ballet can only take place on small city blocks.

Question #34

Jacobs refers to all of the following as important aspects of city planning and revitalization EXCEPT

- (A) the size of city blocks
- (B) the mix of businesses and private residences on a street
- (C) variety of building types and uses in a neighborhood
- (D) city parks and interior lawns
- (E) a city's population density

Question #35

A proposed law requires the installation of protective airbags in all new cars sold in a country. A car manufacturer, however, argued that because more than 80 percent of fatal injuries in auto accidents can be prevented by the use of seat belts, this new law would only marginally decrease fatalities resulting from car accidents.

Which of the following, if true, would most seriously weaken the car manufacturer's argument?

- (A) Seat belts make use of older and less sophisticated technology than airbags do.
- (B) Because most cars sold in this country are used rather than new, this law would affect only a small portion of the population.
- (C) This country has an unusually efficient paramedic and hospital system which helps minimize fatalities from car accidents.
- (D) The installation of seat belts is less expensive than the installation of airbags.
- (E) Air bags are designed to be most effective for the high-speed collisions in which seat belts often fail to prevent fatal injuries.

Question #36

Low-income students are often unable to get enough financial aid for college. One government program would give low-income students half the amount of their weekly salaries from on-campus jobs to put toward college expenses. This program would make it possible for all low-income students to receive more money for college.

Which of the following, if true, most seriously calls into question the claim that the program would make it possible for all low-income students to obtain more money for college?

- (A) The average low-income student spends more than half the amount of their weekly salary from on-campus jobs on yearly school expenses.
- (B) Some low-income students may not want to spend the extra government money from on-campus jobs on school expenses.
- (C) The reduction in government revenues stemming from giving students half of their weekly salaries from on-campus jobs will necessitate cuts in other government programs, such as grants for community programs.
- (D) Because there are limited numbers of positions available at universities, many low-income students are unable to obtain on-campus jobs.
- (E) Salaries for on-campus jobs have decreased substantially over the past ten years, reducing the money that low-income students have available to spend on school expenses.

Question #37

One way to evaluate a company's profitability is to compare the company's current annual profit with profits from past years. Adjusting for inflation and for growth in the company's capital, this technique allows observers to judge whether the company's current profitability is strong or poor relative to its historical profitability.

Any of the following, if true, is a valid reason for taking the yearly overall performance of the economy into consideration when judging a company's profitability in this way EXCEPT:

- (A) The company's primary customers are the rich, who save money that they make during periods of rapid economic growth to maintain their spending when the economy performs poorly.
- (B) Since there has been a large amount of fluctuation in the economy during recent years, only profit comparisons that take this into account are likely to be meaningful.
- (C) Historically, the company has made most of its profits during periods of rapid economic growth and has slowed its operations when the economy performed poorly.
- (D) Observers are best able to judge a company's profitability when they know the economic conditions in which the company is operating.
- (E) The company's accounting records contain little information about economic factors that could have affected the company's profitability.

Question #38

The phrase "The Empire on which the sun never sets" is used to describe a dominion so vast that at least part of its territory is in daylight at any given time; although the phrase originated to describe the Spanish Empire in the 16th century, in modern times they are countries that are known for having a worldwide cultural influence.

- (A) they are countries that are
- (B) it is a country that is
- (C) it is in reference to countries
- (D) it refers to a country that is
- (E) it is a country

Question #39

Most large commercial aircraft are subject to extreme weather events such as hurricanes, which produce winds in excess of one hundred miles per hour.

It is impossible to predict how highly-automated systems controlled by complex computer algorithms will respond to unexpected circumstances.

Which of the following conclusions can most properly be drawn, if the statements above are true, about a highly automated autopilot system controlled by a complex computer algorithm that is used by commercial aircraft?

- (A) The system might accidentally cause a large commercial aircraft to crash.
- (B) The system would mistake a hurricane for a different extreme weather event.
- (C) It is uncertain what the system's response to a hurricane would be if its creators did not plan for such an event.
- (D) Whether or not the system would respond appropriately to a hurricane would depend on wind speed within the hurricane.
- (E) The system would engage the aircraft in dangerous maneuvers to avoid a hurricane's high winds.

Question #40

Because sound waves, which are created by vibrating objects, travel at different speeds depending upon the composition of the medium through which they propagate, a loud sound would not sound the same to someone standing on land whose ears are pressed against a solid surface as a person swimming in a pool.

- (A) solid surface as a
- (B) solid surface as to a
- (C) solid surface; just as it would to a
- (D) solid surface, as it would to the
- (E) solid surface; just as to the

Question #41

The proposal to add five firefighters to Danbury's volunteer fire department is not well-reasoned. It's true that the city wouldn't need to pay these additional volunteers, but the expense of outfitting the fire hall with enough firefighting equipment for five additional firefighters as well as current firefighters will put too much strain on Danbury's budget.

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

- (A) Firefighters who are not provided with up-to-date equipment are noticeably less effective than firefighters who have such equipment.
- (B) After reaching a peak a decade ago, the cost of firefighting equipment has steadily decreased.
- (C) Any additional firefighters hired by Danbury would be assigned to work at times when the fire hall is severely understaffed.
- (D) Yearly funding for Danbury's school lunch program is more than the cost of equipping Danbury's fire hall to accommodate the new firefighters.
- (E) In many cases, adding new firefighters to a town's fire department has not appreciably decreased the value of property destroyed by fire each year in the town.