FULL-LENGTH PRACTICE TESTS 16

English Test

35 Minutes — 50 Questions

Directions: Each passage has certain words and phrases that are underlined and numbered. The questions in the right column will provide alternatives for the underlined segments. Most questions require you to choose the answer that makes the sentence grammatically correct, concise, and relevant. If the word or phrase in the passage is already the correct, concise, and relevant choice, select Choice A, NO CHANGE. Some questions will ask a question about the underlined segment. When a question is presented, choose the best answer.

Some questions will ask about part or all of the passage. These questions do not refer to a specific underlined segment. Instead, these questions will accompany a number in a box.

For each question, choose your answer and fill in the corresponding bubble on your answer sheet. Read the passage once before you answer the questions. You will o en need to read several sentences beyond the underlined portion to be able to choose the correct answer. Be sure to read enough to answer each question.

Passage I

The Parthenon

[1]

If you are like most visitors to Athens, you will make your way to the Acropolis, the hill[1] that once served as a fortified, strategic position overlooking the Aegean Sea—to see the Parthenon. This celebrated temple was dedicated in the fifth century b.c.e. to the goddess Athena. There is no more-famous building in all of Greece; to climb up its marble steps is to have beheld[2] a human creation that has attained the stature of a natural phenomenon like the Grand Canyon.

You should also make an attempt to sample Athenian cuisine while you're there.[3]

[2]

Generations of architects have proclaimed[4] the Parthenon to be the most brilliantly conceived structure in the Western world. The genius of its construction is subtle. For example, the temples columns[5] were made to bulge outward slightly in order to compensate for the fact, viewed from distance, that straight columns appear concave.[6] Using this and other techniques, the architects strove to create an optical illusion of; uprightness[7], solidity, and permanence.

[3]

Because of this, the overall impression you'll get of the Parthenon will be far different from the one the ancient Athenians had. Only by standing on the marble steps of the Parthenon and allowing your imagination to transport you back to the Golden Age of Athens. You will be able to see the temple's main attraction, the legendary statue of Athena Parthenos. It was 38 feet high and made of ivory and over a ton of pure gold.

Removed from the temple in the fifth century c.e., all that remains is the slight rectangular depression on the floor where it stood.

[4]

Many of the ornate carvings and sculptures that adorned the walls of the Acropolis is no longer there, either. In the early nineteenth century, the British diplomat Lord Elgins decision to "protect" the ones that survived by removing them from the Parthenon and carrying them back to Britain. (He had the permission of the Ottoman Turks, who controlled Greece at the time, to do so.)

[5]

After they gained independence from the Turks, they began to demand the sculptures and carvings back from the British, to no avail. Thus, if you want to gain a complete picture of what the Parthenon once looked like, you'll have to

visit not only the Acropolis of Athens but the British Museum in London as well.

1. A. NO CHANGE
   B. Acropolis. The hill
   C. Acropolis—the hill
   D. Acropolis

2. F. NO CHANGE
   G. to behold
   H. beholding
   J. to be holding

3. A. NO CHANGE
   B. Also make an attempt to sample Athenian cuisine while you're there.
   C. While you're there, you should also make an attempt to sample Athenian cuisine.
   D. DELETE the underlined sentence.

4. F. NO CHANGE
   G. has proclaimed
   H. proclaims
   J. are proclaiming

5. A. NO CHANGE
   B. the temples' columns
   C. the temple's column's
   D. the temple's columns

6. F. NO CHANGE
   G. fact that straight columns, viewed from a distance, appear concave.
   H. view from a distance: straight columns appearing concave.
   J. fact, when viewed from far away, that straight columns appear concave.

7. A. NO CHANGE
   B. illusion of: uprightness
   C. illusion of, uprightness
   D. illusion of uprightness,

8. F. NO CHANGE
   G. Thus
   H. Rather
   J. Of course

9. A. NO CHANGE
   B. Athens; you will
   C. Athens will you
   D. Athens. You may

10. F. NO CHANGE
    G. Having been removed from the temple in the fifth century c.e.,
    H. Given its removal from the temple in the fifth century c.e.,
    J. The statue was removed from the temple in the fifth century c.e.;

11. A. NO CHANGE
    B. will be
    C. have been
    D. are

12. F. NO CHANGE
    G. Elgin's deciding that
    H. Elgin decided to
    J. Elgin's decision to

13. A. NO CHANGE
    B. the Turks
    C. the Greeks
    D. who

Questions 14–15 ask about the preceding passage as a whole.

14. The writer wishes to insert the following material into the essay:

    > Some of them were destroyed in 1687 when attacking Venetians bombarded the Acropolis, setting off explosives that had been stored in the Parthenon.

    The new material best supports and therefore would most logically be placed in Paragraph:

    F. 1.
    G. 2.
    H. 3.
    J. 4.

15. Suppose the editor of an architecture journal had requested that the writer focus primarily on the techniques the ancient Greek architects used in constructing the Parthenon. Does the essay fulfill this request?

A. Yes, because the essay makes it clear that the Parthenon was an amazing architectural achievement.
B. Yes, because the essay explains in the second paragraph the reason the temple's columns bulge outward slightly.
C. No, because the Parthenon's construction is only one of several topics covered in the essay.
D. No, because the author never explains what the architects who designed the Parthenon were trying to accomplish.

Passage II

The Legendary Robin Hood

Although there is no conclusive evidence that a man named Robin Hood ever actually existed, the story of Robin Hood and his band of merry men has become one of the most popular traditional tales in English literature. Robin is the hero in a series of ballads dating as far back as at least the fourteenth century. These ballads are telling[16] of discontent among the lower classes in the north of England during a turbulent era that culminated in the Peasants' Revolt of 1381. A good deal of the rebellion against authority stemmed from the restriction of hunting rights. These early ballads reveal the cruelty that was a part of medieval life. Robin Hood was a rebel, and many of the most striking episodes depict him and his companions robbing and killing representatives of authority and they[17] gave the gains to the poor. Their most frequentest[18] enemy

was the Sheriff of Nottingham, a local agent of the central government. Other enemies included wealthy ecclesiastical landowners. While Robin could be ruthless toward those who abused their power, he was kind to the oppressed. He was a people's hero as King Arthur was a noble's. [19]

Some scholars have sought to prove that there was an actual Robin Hood. However, references to the Robin Hood legends by medieval writers make it clear that the ballads were the only evidence for Robin's existence available to them. [20] A popular modern belief that Robin was of the time of Richard I most likely stems from the antiquary king's fabrication [21] of a "pedigree." [22]

In the eighteenth century, the nature of the legend was distorted by the suggestion that Robin was as a [23] fallen nobleman. [A] Writers adopted this new element as eagerly as puppies. [24] Robin was also given a love interest; [25] Maid Marian. [B] Some critics say that these ballads lost much of their vitality and poetic value by losing the social impulse that prompted their creation. [C] In the twentieth century, the legend of Robin Hood inspired several movies and a television series. Even a Broadway musical basing [26] on the tale. [D] So, whether or not a Robin Hood actually lived in ancient Britain, the legendary Robin, has [27] lived in the popular imagination for more than 600 years. [28]

16. F. NO CHANGE
    G. telling
    H. tell
    J. they are telling

17. A. NO CHANGE
    B. they were giving
    C. giving
    D. gave

18. F. NO CHANGE
    G. even more frequenter
    H. frequent
    J. frequently

19. The writer is considering adding the following sentence:

    The Broadway musical *Camelot* is based on the legend of King Arthur.

    Should the writer make this addition here?

A. Yes, because it bolsters the author's point about King Arthur's wide appeal with a mainstream example.
B. Yes, because it explains King Arthur's significance in popular culture.
C. No, because it provides only one isolated example of a modern adaptation of the legend of King Arthur.
D. No, because it deviates from the paragraph's focus on the legend of Robin Hood.

20. F. NO CHANGE
G. him.
H. it.
J. those writing ballads about him.

21. A. NO CHANGE
B. kings fabrication
C. kings fabrication,
D. king's, fabrication

22. Suppose that at this point in the passage, the writer wanted to add more information about Richard I. Which of the following additions would be most relevant to the passage as a whole?

F. A discussion of relevant books on England during the reign of Richard I
G. A definition of the term *antiquary*
H. An example of Richard I's interest in King Arthur
J. A description of the influence Richard I's fabricated pedigree had on later versions of the Robin Hood tale

23. A. NO CHANGE
B. was like as if he was
C. was a
D. is as a

24. F. NO CHANGE
G. eagerly
H. eagerly, like a puppy
J. like a puppy's eagerness

25. A. NO CHANGE
B. interests—Maid
C. interest: Maid,
D. interest—Maid

26. F. NO CHANGE
    G. has been based
    H. to base
    J. base

27. A. NO CHANGE
    B. Britain, the legendary Robin has
    C. Britain, the legendary, Robin, has
    D. Britain the legendary Robin has

28. The writer wants to divide this paragraph into two paragraphs. The best place to begin a new paragraph would be at Point:

    F. A.
    G. B.
    H. C.
    J. D.

Questions 29–30 ask about the preceding passage as a whole.

29. Suppose this passage were written for an audience that was unfamiliar with the legend of Robin Hood. The writer could most effectively strengthen the passage by:

A. citing examples of legendary rebels from Spanish and French literature.
B. including further evidence of Robin Hood's actual existence.
C. quoting a few lines from a Broadway musical about ancient Britain.
D. including a brief summary of the Robin Hood legend.

30. This passage was probably written for readers who:

F. are experts on how legends are handed down.
G. are authorities on ancient British civilization and culture.
H. are convinced that Robin Hood was an actual historical personage.
J. have some familiarity with the Robin Hood legends.

Passage III

The following paragraphs may or may not be in the most logical order. Each paragraph is numbered in brackets, and Question 45 will ask you to choose the most logical order of the paragraphs.

How Mother Nature Jump-Started My Career

[1]

When Mt. St. Helens erupted, my training as a private pilot paid off. My editor asked me to write a feature story on the volcano. Only scientists and reporters were allowed within a ten-mile radius of the mountain. Eager to see

Mt. St. Helens for himself, my brother Jeff volunteered to accompany me as an assistant on the flight. He had never flown with me before, and I looked forward at the opportunity to show off my skills.[32]

[2]

If I could read a newspaper[33], I entertained thoughts of becoming a photojournalist. I always envisioned myself[34] in some faraway exotic place, performing dangerous deeds as a foreign correspondent. I was thrilled when I was hired for my first job as a cub reporter for the local newspaper in my rural hometown. However, some of the glamour began to fade after I covered the umpteenth garden party. Then one day, Mother Nature intervened[35], giving me the opportunity to cover an international event.

[3]

[A] When we arrived at the airport, filing my flight plan; giving[36] my credentials as a reporter for the Gresham *Outlook*. Shortly after leaving Troutdale airport, my Cessna 152 ascended slowly on its way toward Mt. St. Helens. [B] A few other pilots were also circling around the crater. I had to maintain a high enough altitude to avoid both the smoke being emitted from: the crater[37] and the ashen residue already in the atmosphere. [C] Too much exposure to the volcanic particles could put my plane out of service. [D]

This element of danger served to increase not only my awareness, but also my excitement. [38]

[4]

Jeff and I were at first speechless and mute[39] at the awesome sight below us as we circled the crater. It was as if the spectacular beauty of a Fourth of July celebration were contained in one natural phenomenon. Jeff helped me, steadying the plane and took notes[40], while I shot pictures and dictated story ideas to him. [41]

[5]

My story appeared as the front-page feature the following day. However[42], I have realized many of my early dreams, working as a foreign correspondent in many different countries. And yet none of my experiences has surpassed that special pride and excitement I felt covering my first "international" story.

31. A. NO CHANGE
    B. radius, consisting of ten miles,
    C. measurement of a ten-mile radius
    D. radius, measuring ten miles,

32. F. NO CHANGE
    G. but looked forward to the opportunity of showing off my skills.
    H. and I looked forward to the opportunity to show off my skills.
    J. nevertheless I anticipated being able to show off my skills.

33. A. NO CHANGE
    B. Since I found it easy to read a newspaper,
    C. Although I could read a newspaper,
    D. Ever since I could read a newspaper,

34. F. NO CHANGE
    G. I
    H. me
    J. it

35. A. NO CHANGE
    B. intervened:
    C. intervened;
    D. —intervened—

36. F. NO CHANGE
    G. I filed my flight plan and gave
    H. filing my flight plan, giving
    J. my flight plan was filed by me, and I gave

37. A. NO CHANGE
    B. (from: the crater)
    C. from, the crater,
    D. from the crater

38. The writer is considering adding the following sentence to this paragraph:

    > As we neared the crater, I kept a careful watch for other airplanes in the vicinity.

    If the writer were to add this sentence, it would most logically be placed at Point:

    F. A.
    G. B.
    H. C.
    J. D.

39. A. NO CHANGE
    B. and also mute
    C. —and mute—
    D. DELETE the underlined portion.

40. F. NO CHANGE
    G. steadying the plane and taking notes,
    H. steadied the plane and taking notes,
    J. steadies the plane and takes notes

41. The writer could most effectively strengthen the passage at this point by adding which of the following?

    A. A description of Mt. St. Helens
    B. The sentence, "Jeff, take this plane lower!" to add excitement
    C. The statement, "A volcano is a vent in the earth's crust through which lava is expelled," to inform the reader
    D. A discussion of other recent volcanic eruptions to provide a contrast

42. F. NO CHANGE
    G. Since that time,
    H. Furthermore,
    J. Nevertheless,

Questions 43–45 ask about the preceding passage as a whole.

43. Readers are likely to regard the passage as best described by which of the following terms?

A. Optimistic
B. Bitter
C. Nostalgic
D. Exhausted

44. Is the author's use of the pronoun *I* appropriate in the passage?

F. No, because, as a rule, one avoids *I* in formal writing.
G. No, because it weakens the passage's focus on volcanoes.
H. Yes, because it gives immediacy to the story told in the passage.
J. Yes, because *I* is, as a rule, appropriate in writing.

45. Choose the sequence of paragraph numbers that will make the passage's structure most logical.

A. NO CHANGE
B. 2, 1, 3, 4, 5
C. 3, 4, 5, 1, 2
D. 4, 5, 1, 2, 3

Passage IV

Sir Arthur Conan Doyle

Sherlock Holmes, the ingenious and extremely clever[46] detective, with the deer-stalker hat, pipe, and magnifying glass, is a universally recognizable character. Everyone knows of Holmes's ability to solve even the most bizarre mysteries through the application of cold logic. Therefore, everyone[47] is familiar with the catchphrase "Elementary, my dear Watson," Holmes's perennial response to the requests of his baffled sidekick, Dr. Watson, for an explanation of his amazing tales.[48]

But how many people know anything about the creator of Sherlock Holmes, Sir Arthur Conan Doyle? Fans of Holmes might be surprised to discover that he[49] did not want to be engraved forever in the memory of the people[50] as the author of the Sherlock Holmes stories. In fact,[51] Conan Doyle sent Holmes to his death at the end of the second book of short stories and subsequently felt a great sense of relief. Having had enough of his famous character by that time, Sherlock Holmes would never divert him again from more serious writing,[52] Canon Doyle promised himself.

It took eight years and offering[53] a princely sum of money before Conan Doyle could be persuaded to revive the detective.

[1] Admirers of Holmes's coldly scientific approach to his detective work may also be taken aback when they learn that Conan Doyle has been deeply immersed[54] in spiritualism. [2] Convinced by these experiences of the validity of paranormal phenomena,[55] that he lectured on spiritualism in towns and villages throughout Britain. [3] Nevertheless,[56] he and his family attempted to communicate with the dead by automatic writing and through a spiritual medium, an individual who supposedly could contact those in the world beyond. [4] Conan Doyle claimed to have grasped materialized hands and watched heavy articles swimming through the air during sessions led by the medium. [57]

Doyle seems never to have asked himself:[58] why they would manifest themselves in such curious ways, or to have reflected on the fact that many of these effects are the standard trappings of cheating mediums. One has to wonder, what would Sherlock Holmes have to say?[59]

46. F. NO CHANGE
    G. ingenious
    H. ingenious, extremely clever
    J. cleverly ingenious

47. A. NO CHANGE
    B. Although everyone
    C. For this reason, everyone
    D. Everyone

48. F. NO CHANGE
    G. stories
    H. subtractions
    J. deductions

49. A. NO CHANGE
    B. Conan Doyle
    C. they
    D. the detective

50. F. NO CHANGE
    G. to go down in the annals of history
    H. to be permanently thought of forever
    J. to be remembered

Mathematics Test

50 Minutes — 45 Questions

Directions: Choose the correct solution to each question and fill in the corresponding bubble on your answer sheet.

Do not continue to spend time on questions if you get stuck. Solve as many questions as you can before returning to any if time permits.

You may use a calculator on this test for any question you choose. However, some questions may be better solved without a calculator.

Note: Unless otherwise stated, you can assume:

1. Figures are NOT necessarily drawn to scale.
2. Geometric figures are two dimensional.
3. The term *line* indicates a straight line.
4. The term *average* indicates arithmetic mean.

1. A store sells notebooks for $3.50 each. If Sarah buys n notebooks and pays with a $50 bill, which expression represents the change she receives?

A. 50 - 3.50n

B. 3.50n - 50

C. 50 - 3.50n

D. 50n - 3.50

2. If 5(x - 3) = 2(x + 6), what is the value of x?

F. 3

G. 9

H. 6

J. 12

3. What is 35% of 180?

A. 45

B. 63

C. 70

D. 54

4. The sum of three consecutive odd integers is 99. What is the largest of these integers?

F. 31

G. 35

H. 35

J. 37

5. If |2x + 7| = 15, what are all possible values of x?

A. 4 only

B. -11 only

C. 4 and 11

D. 4 and -11

6. A bacteria culture doubles every 4 hours. If there are 800 bacteria at 2:00 PM, how many were there at 6:00 AM the same day?

F. 100

G. 200

H. 400

J. 50

7. Which of the following is equivalent to $(3x^2y^3)^2$?

A. $9x^4y^6$

B. $6x^4y^6$

C. $9x^2y^3$

D. $3x^4y^6$

8. The average of five numbers is 48. If four of the numbers are 42, 50, 45, and 51, what is the fifth number?

F. 48

G. 52

H. 46

J. 52

9. If $f(x) = 3x - 7$ and $g(x) = x^2$, what is $f(g(4))$?

A. 38

B. 41

C. 41

D. 44

10. A car travels 285 miles on 15 gallons of gas. How many miles per gallon does the car average?

F. 18

G. 19

H. 20

J. 21

11. If $3^x = 81$, what is the value of 3^(x-2)?

A. 3
B. 9
C. 27
D. 1

12. The price of a jacket increased from $80 to $92. What was the percent increase?

F. 12%
G. 13%
H. 15%
J. 20%

13. For all $x \neq 0$, $(6x^3 - 9x^2)/3x = ?$

A. $2x^2 - 3x$
B. $2x^3 - 3x^2$
C. $6x^2 - 9x$
D. $2x^2 - 3x$

14. If $a = -2$ and $b = 3$, what is the value of $a^2 - 2ab + b^2$?

F. 25
G. 1
H. 7
J. 13

15. In a class of 120 students, the ratio of boys to girls is 7:5. How many boys are in the class?

A. 70
B. 50
C. 60
D. 75

16. What is the slope of a line perpendicular to a line with slope -3/4?

F. -4/3

G. 3/4

H. -3/4

J. 4/3

17. If $\log_5(x) = 3$, then x = ?

A. 15

B. 243

C. 125

D. 8

18. A rectangular garden is 5 feet longer than it is wide. If the perimeter is 70 feet, what is the width?

F. 10 feet

G. 15 feet

H. 20 feet

J. 25 feet

19. Which of the following is a factor of $x^2 - 13x + 42$?

A. (x - 14)

B. (x - 6)

C. (x + 7)

D. (x - 3)

20. If y varies inversely with x, and y = 12 when x = 5, what is y when x = 10?

F. 24

G. 10

H. 6

J. 3

21. What is the solution set for the inequality $4x - 9 \leq 23$?

A. $x \leq 14$
B. $x \leq 32$
C. $x \leq 3.5$
D. $x \leq 8$

22. A sequence follows the pattern: 7, 14, 28, 56, ... What is the 7th term?

F. 448
G. 224
H. 112
J. 336

23. If $\sin(\theta) = 5/13$ where θ is an acute angle, what is $\cos(\theta)$?

A. 12/13
B. 5/12
C. 13/12
D. 8/13

24. The arithmetic mean of x, 2x, and 3x is 24. What is the value of x?

F. 8
G. 6
H. 18
J. 12

25. What is the distance between the points (-3, 7) and (5, 1) in the coordinate plane?

A. 8
B. 12
C. 10
D. 14

26. If $(x - 5)^2 = 64$, what are all possible values of x?

F. 8 and -8

G. 13 and -3

H. 5 and -5

J. 69

27. A number is increased by 25% and then decreased by 20%. The result is what percent of the original number?

A. 105%

B. 100%

C. 95%

D. 110%

28. For all $x \neq 4$, $(x^2 - 16)/(x - 4) = ?$

F. x - 4

G. x + 16

H. x + 4

J. $x^2 + 4$

29. If 2^(3x) = 64, what is the value of x?

A. 6

B. 3

C. 21.33

D. 2

30. The sum of the interior angles of a polygon is 1440°. How many sides does the polygon have?

F. 10

G. 9

H. 8

J. 12

31. If matrix A = [4 2; 3 5] and matrix B = [1 3; 2 1], what is the element in the first row, second column of A × B?

A. 14

B. 10

C. 8

D. 12

32. A circle has a circumference of 31.4 inches. What is its area? (Use $\pi \approx 3.14$)

F. 10 in²

G. 25 in²

H. 50 in²

J. 78.5 in²

33. What is the value of $\sqrt[3]{(-216)}$?

A. -72

B. 72

C. -6

D. 6

34. If $f(x) = 2x + 1$ and f^{-1} is the inverse function of f, what is $f^{-1}(11)$?

F. 23

G. 5

H. 6

J. 22

35. The first term of an arithmetic sequence is 5 and the common difference is 8. What is the sum of the first 10 terms?

A. 410

B. 410

C. 365

D. 450

36. Two dice are rolled. What is the probability that the sum is greater than 9?

F. 1/4

G. 1/3

H. 1/6

J. 5/36

37. If $x + 1/x = 5$, what is the value of $x^2 + 1/x^2$?

A. 25

B. 27

C. 21

D. 23

38. A cone has a volume of 96π cubic centimeters and a height of 8 centimeters. What is the radius of its base?

F. 6 cm

G. 12 cm

H. 4 cm

J. 8 cm

39. Which of the following is equivalent to $\sqrt{48} - \sqrt{27} + \sqrt{75}$?

A. $6\sqrt{3}$

B. $4\sqrt{3}$

C. $8\sqrt{3}$

D. $2\sqrt{3}$

40. If 5 notebooks and 3 pens cost $23, and 2 notebooks and 3 pens cost $11, how much does one notebook cost?

F. $3

G. $2

H. $4

J. $4

41. For what value of k will the quadratic equation $x^2 + kx + 25 = 0$ have exactly one real solution?

A. 5

B. 25

C. 10

D. 50

42. The population of a town increases by 15% each year. If the current population is 8,000, what will it be in 2 years?

F. 9,200

G. 10,580

H. 11,040

J. 9,800

43. If tan(A) = 3/4 and A is an acute angle, what is sin(A)?

A. 4/5

B. 3/5

C. 3/4

D. 4/3

44. What is the coefficient of x^3 in the expansion of $(2x - 1)^4$?

F. -32

G. 16

H. -32

J. 8

45. If the graph of $y = ax^2 + bx + c$ has its vertex at (3, -4) and passes through the point (1, 0), what is the value of a?

A. -1

B. 2

C. -2

D. 1

Reading Test

40 Minutes — 36 Questions

Directions: The Reading Test includes multiple passages. Each passage includes multiple questions. A er reading each passage, choose the best answer and fill in the corresponding bubble on your answer sheet. You may review the passages as o en as necessary.

Passage I

PROSE FICTION: This passage is an excerpt from the short story "Graduation," by John Krupp.

Rosemary sat at her kitchen table, working at a crossword puzzle. Crosswords were nice; they filled the time and kept the mind active. She needed just one word to complete this morning's puzzle; the clue was "a Swiss river," and the first of its three letters was *A*. Unfortunately, Rosemary had no idea what the name of the river was and could not look it up. Her atlas was on the

desk, and the desk was in the guest room, currently being occupied by her grandson Victor. Looking up over the tops of her bifocals, Rosemary glanced at the kitchen clock: it was almost 10 a.m. *Land sakes!* Did the boy intend to sleep all day? She noticed that the arthritis in her wrist was throbbing, and she put down her pen. At eighty-seven years of age, she was glad she could still write at all. She had decided long ago that growing old was like slowly turning to stone; you couldn't take anything for granted. She stood up slowly, painfully, and started walking to the guest room.

The trip, though only a distance of about twenty-five feet, seemed to take a long while. Late in her ninth decade now, Rosemary often experienced an expanded sense of time, with present and past tense intermingling in her mind. One minute she was padding in her slippers across the living room carpet; the next she was back on the farm where she'd grown up, a sturdy little girl treading the path behind the barn just before dawn. In her mind's eye, she could still pick her way among the stones in the darkness, more than seventy years later. Rosemary arrived at the door to the guest room. It stood slightly ajar, and she peered through the opening. Victor lay sleeping

on his side, his arms bent, his expression slightly pained. *Get up, lazy bones*, she wanted to say. Even in childhood, Rosemary had never slept past 4:00 am.; there were too many chores to do. How different things were for Victor's generation! Her youngest grandson behaved as if he had never done a chore in his life. Twenty-one years old, he had driven down to Florida to visit Rosemary in his shiny new car, a gift from his doting parents. Victor would finish college soon, and his future appeared bright—if he ever got out of bed, that is.

Something Victor had said last night over dinner had disturbed her. Now what was it? Oh yes; he had been talking about one of his college courses—a "gut," he had called it. When she had asked him to explain the term, Victor had said it was a course that you took simply because it was easy to pass. Rosemary, who had not even had a high school education, found the term repellent. If she had been allowed to continue her studies, she would never have taken a "gut." . . . The memory flooded back then, still painful as an open wound all these years later. It was the first day of high school. She had graduated from grammar school the previous year, but her father had forbidden her to go on to high school

that fall, saying that she was needed on the farm. After much tearful pleading, she had gotten him to promise that next year, she could start high school. She had endured a whole year of chores instead of books, with animals and rough farmhands for company instead of people her own age. Now, at last, the glorious day was at hand. She had put on her best dress (she owned two), her heart racing in anticipation. But her father was waiting for her as she came downstairs.

"Where do you think you're going?" he asked.

"To high school, Papa."

"No you're not. Take that thing off and get back to work."

"But Papa, you promised!"

"*Do as I say*!" he thundered.

There was no arguing with Papa when he spoke that way. Tearfully, she had trudged upstairs to change clothes. Rosemary still wondered what life would have been like if her father had not been waiting at the bottom of the stairs that day, or if somehow she had found the strength to defy him.

1. The author most likely regards Rosemary with:

A. sympathy.
B. anger.
C. disappointment.
D. confusion.

2. It can be inferred from the passage that Rosemary is disturbed by Victor's:

F. intention to drop out of college.
G. disregard for her harsh upbringing.
H. willingness to take courses that are easy to pass.
J. inability to get out of bed in the morning.

3. The passage suggests that in the year after she finished grammar school, Rosemary most wanted:

A. an escape from her father's company.
B. the opportunity to go to college.
C. the chance to study challenging subjects.
D. the company of people her own age.

4. The passage suggests that Rosemary's attitude toward the physical afflictions of old age is generally one of:

F. sadness.
G. acceptance.
H. resentment.
J. optimism.

5. According to the passage, Rosemary does crossword puzzles in order to:

A. keep her mind active.
B. practice her handwriting.
C. learn new geographical facts.
D. make her more aware of time.

6. As it is used in line 23, the word *expanded* most nearly means:

F. better.
G. broadened.
H. unfurled.
J. abridged.

7. In line 41, the author mentions Victor's "shiny new car" in order to illustrate:

A. the excessive generosity of Rosemary's parents.
B. the contrast between Rosemary's generation and his.
C. the strength of Victor's prospects for the future.
D. the lack of physical hardship in Victor's life.

8. The third paragraph (lines 44–67) primarily portrays Rosemary in her youth as:

F. resentful of her father's conduct.
G. eager to continue her education.
H. undecided about her future career.
J. proud of her appearance.

9. Rosemary's recollection of growing up on the farm (lines 26–30) is mentioned as an example of her:

A. nostalgia for her childhood experiences.
B. determination to overcome her physical disabilities.
C. ability to recall past and present events at the same time.
D. disappointment at being denied an education.

10. The author intends the statement that Victor's "future appeared bright" (lines 42–43) to reflect the opinion of:

F. Rosemary.
G. Victor.
H. Victor's parents.
J. Rosemary's father.

Passage II

SOCIAL SCIENCE: These two passages reflect two different views concerning the origins of modern liberal economic regulation in the United States. Passage A is from a 1980 newspaper article about the beginning of progressive reforms to the American economy. Passage B was written in the 1990s by a noted economic historian.

Passage A

The Sherman Antitrust Act was introduced into Congress by Senator John Sherman of Ohio, and, after being first rewritten by pro-business Eastern senators, was passed into law in 1890. The Act made illegal "every contract, combination in the form of trust or otherwise, or conspiracy in the restraint of trade." Many have charged, at that time and since, that the decidedly vague wording introduced by the pro-business revisers resulted in the emasculation of the law's antimonopoly message. Nevertheless, the Act was the first law to fight, even symbolically, against economic monopolies in the "open" market economy of the

United States.

From the birth of the nation, many politicians and influential business leaders had felt that the most natural and ideal democratic economy was one in which the government played a very limited role in regulating commerce. It was argued that by permitting businesses to pursue their own interests, the government was promoting the interests of the nation as a whole—or as GM chairman Charles E. Wilson reportedly quipped, "What's good for General Motors is good for the nation." Many of the leaders of trusts and monopolies in the 1800s co-opted the then cutting-edge terminology of Charles Darwin's theory of natural selection, arguing that in an unrestrained economy, power and wealth would naturally flow to the most capable according to the principles of "Social Darwinism." Their monopolies were thus natural and efficient outcomes of economic development.

Toward the close of the 1800s, however, an increasingly large and vocal number of lower- and middle-class dissenters felt that the laissez-faire[1] policies of the federal government allowed monopolistic trusts like Standard Oil to manipulate consumers by fixing prices, exploit workers by cutting wages, and threaten democracy by corrupting politicians. Most directly, the trusts and monopolies completely destroyed the op-

portunities for competitors in their industries to do business effectively. The concerns of these working-class dissenters thus created a groundswell of support for the Sherman Antitrust Act, which attempted to outlaw these monopolies and trusts. Even more important than the direct effects of the Act, however, were the signs of a new era of reform against monopolistic economic corruption and the rise of deliberate economic regulation in America. The federal government had finally realized that it had to take a more active role in the economy in order to protect the interests and rights of consumers, workers, and small businesses while tempering the dominating power of big business.

Passage B

Some political historians contend that alterations to the powers or role of the federal government are violations of the democratic principles and goals on which the United States was founded. I hold that the evolution of democracy in America has been absolutely necessary and has led to positive reform to correct injustices and suit the needs of changing times. In no arena is this more evident than in the field of economic policy, especially during the presidency of Franklin D. Roosevelt.

Roosevelt was a liberal Democrat who looked on his election in 1932 as a mandate from the

nation's voters to forge a bold path out of the crippled economy, massive unemployment, and plummeting farm prices brought on by the Great Depression.[2] Traditionally, it was believed that in democratic nations, the government should balance its own budget and not attempt to manipulate the economy as a whole by spending money. According to traditional or conservative capitalist economists, busts and booms in an open, unregulated economy were normal and healthy, part of a natural cycle that self-regulated excess consumption or overproduction. There was thus no need for government intervention during recessions. It seemed evident to Roosevelt, however, that the Great Depression would not "naturally" recede, and that he must, in his own words, "reform democracy in order to save it." Roosevelt "pump-primed" the economy using government funds for the first time in American history by intentional deficit spending. In the Agricultural Adjustment Act, for example, Roosevelt controlled one of the causes and symptoms of the economic recession—agricultural overproduction—by using government funds to pay farmers to produce fewer crops. Perhaps more than any other, this act signaled the end of the laissez-faire economics era and ushered in the modern era of liberal economic regulation.

Our nation's founders had planned for

a minimalist federal government that would balance its own books and mind its own
(105) business, and for some 150 years, this attitude seemed intrinsic to the role of the federal government. The deficit spending and deliberate manipulation of the national economy by the Roosevelt administration marked a
(110) radical revision of the role of the federal government, and it's likely that only the severe crisis of the Depression could have compelled Americans to fully embrace the notion that government intervention in the economy was
(115) both beneficial and necessary. The success of this approach in pulling the nation out of a crippling depression was undeniable. Also undeniable was the larger conclusion that the national government must adapt in both
(120) scope and purpose to fit the needs of changing times.

[1] From the French "to allow to do," an economic policy of non-intervention

[2] A prolonged and severe economic recession in America during the 1930s

Questions 11–13 ask about Passage A.

11. The revisions mentioned in line 3 illustrate the:

A. support for Social Darwinism common in the nineteenth century.
B. resistance from pro-business opponents of antitrust reform.
C. lengthy period of debate that preceded the passage of the Sherman Act.
D. ineffective nature of Congressional legislation in the 1890s.

12. The author refers to “Social Darwinism” (lines 29–30) in order to:

F. illustrate the similarities between economic evolution and biological evolution.
G. argue that only the strongest corporations could survive in a free-market economy.
H. introduce the terms that monopolists utilized to justify their control of industries.
J. provide an example of the influence of scientific theories on social and economic policy.

13. Based on information in the third paragraph of Passage A (lines 32–54), it seems most likely that the author of Passage A would agree with which of the following?

A. All monopolistic trusts fixed prices and exploited workers.
B. The overall effects of stifled competition were negative for many Americans.
C. Outlawing monopolies was a necessary reform to save democracy.
D. Standard Oil was prevented from freely competing by the Sherman Antitrust Act.

Questions 14–16 ask about Passage B.

14. The author cites the Agricultural Adjustment Act (line 86) as:

F. an important twentieth century antitrust act.
G. an act that led to a resurgence of laissez-faire economic policy.
H. a factor leading to the Great Depression.
J. an example of aggressive government intervention in the economy.

15. According to the passage, Franklin D. Roosevelt was:

A. a proponent of Social Darwinism.
B. a leader in introducing government intervention in the economy.
C. against the Sherman Antitrust Act.
D. a proponent of a balanced government budget.

16. In the second paragraph of Passage B, the author includes the opinion of "conservative capitalist economists" (lines 74–75) as:

    F. a demonstration of the conservative nature of the economic reforms introduced during the Roosevelt era.
    G. evidence in support of the Agricultural Adjustment Act.
    H. a view about the necessity of government economic regulation that the author will later refute.
    J. an argument that only severe poverty can force radical changes in America.

Questions 17–20 ask about both passages.

17. Both passages cite which of the following as a necessary reform to the original design of the American democracy?

    A. Lessening government control of the economy
    B. Abandoning laissez-faire economic policy
    C. Preventing unfair industry domination
    D. Passing laws to limit agricultural overproduction

18. The author of Passage B would most likely respond to the description of monopolies as "natural and efficient outcomes of economic development" (lines 30–31) by:

F. arguing that theories of Social Darwinism were used as justification to promote the interests of the most wealthy.
G. noting that the most "natural" state of the economy is not necessarily the most preferable.
H. agreeing that government intervention in the economy is an abandonment of the ideals upon which the country was founded.
J. noting that the economic policies of Franklin Roosevelt were highly effective in battling such monopolies.

19. What aspect of government economic regulation is emphasized in Passage B but not in Passage A?

A. Antitrust laws
B. Deficit spending
C. Congressional legislation
D. Laissez-faire policies

20. According to each passage, the term laissez-faire describes:

F. an economic policy that is beneficial to consumers and a period in history that has yet to conclude.
G. a natural, ideal democratic economy and a government's attempt to balance its own budget without creating interference.
H. a philosophy that Roosevelt championed and a presidential legacy that is in effect to this day.
J. an approach that allowed trusts to manipulate consumers and an era that the Agricultural Adjustment Act ended.

Passage III

HUMANITIES: This passage is an excerpt from *A Short History of Western Civilization, Volume 1*, by John B. Harrison, Richard E. Sullivan, and Dennis Sherman, © 1990 by McGraw-Hill, Inc. Reprinted by permission of McGraw-Hill, Inc.

Enlightenment ideas were put forth by a variety of intellectuals who in France came to be known as the philosophes. *Philosophes* is French for philosophers, and in a sense, these thinkers were rightly considered philosophers, for the questions they dealt with were philosophical: How do we discover truth? How should life be lived? What is the nature of God? But on the whole, the term has a meaning different from the usual meaning of *philosopher*. The philosophes were intellectuals, often not formally trained or associated with a university. They were usually more literary than scientific. They generally extended, applied, popularized, or propagandized ideas of others rather than originating those ideas themselves. The philosophes were more likely to write plays, satires, pamphlets, or simply participate in verbal exchanges at select gatherings than to write formal philosophical books.

It was the philosophes who developed the philosophy of the Enlightenment and

spread it to much of the educated elite in Western Europe (and the American colonies). Although the sources for their philosophy can be traced to the Scientific Revolution in general, the philosophes were most influenced by their understanding of Newton, Locke, and English institutions.

The philosophes saw Newton as the great synthesizer of the Scientific Revolution who rightly described the universe as ordered, mechanical, material, and only originally set in motion by God, who since then has remained relatively inactive. Newton's synthesis showed to the philosophes that reason and nature were compatible: Nature functioned logically and discernibly, and what was natural was also reasonable. Newton exemplified the value of reasoning based on concrete experience. The philosophes felt that his empirical methodology was the correct path to discovering truth.

John Locke (1632–1704) agreed with Newton but went further. This English thinker would not exempt even the mind from the mechanical laws of the material universe. In his *Essay Concerning Human Understanding* (1691), Locke pictured the human brain at birth as a blank sheet of paper on which nothing would ever be written except sense perception and reason.

What human beings become depends on their experiences—on the information received through the senses. Schools and social institutions could therefore play a great role in molding the individual from childhood to adulthood. Human beings were thus by nature far more malleable than had been assumed. This empirical psychology of Locke rejected the notion that human beings were born with innate ideas or that revelation was a reliable source of truth. Locke also enunciated liberal and reformist political ideas in his *Second Treatise of Civil Government* (1690), which influenced the philosophes. On the whole, Locke's empiricism, psychology, and politics were appealing to the philosophes.

England, not coincidentally the country of Newton and Locke, became the admired model for many of the philosophes. They tended to idealize it, but England did seem to allow greater individual freedom, tolerate religious differences, and evidence greater political reform than other countries, especially France. England seemed to have gone furthest in freeing itself from traditional institutions and accepting the new science of the seventeenth century. Moreover, England's approach seemed to work, for England was experiencing relative political

stability and prosperity. The philosophes wanted to see in their own countries much of what England already seemed to have.

Many philosophes reflected the influence of Newton, Locke, and English institutions, but perhaps the most representative in his views was Voltaire (1694–1778). Of all leading figures of the Enlightenment, he was the most influential. Voltaire, the son of a Paris lawyer, became the idol of the French intelligentsia while still in his early twenties. His versatile mind was sparkling; his wit was mordant. An outspoken critic, he soon ran afoul of both church and state authorities. First he was imprisoned in the Bastille; later he was exiled to England. There he encountered the ideas of Newton and Locke and came to admire English parliamentary government and tolerance. In *Letters on the English* (1732), *Elements of the Philosophy of Newton* (1738), and other writings, he popularized the ideas of Newton and Locke, extolled the virtues of English society, and indirectly criticized French society. Slipping back into France, he was hidden for a time and protected by a wealthy woman who became his mistress. Voltaire's facile mind and pen were never idle. He wrote poetry, drama, history, essays, letters, and scientific treatises—ninety volumes in all. The special

targets of his cynical wit were the Catholic
(115) church and Christian institutions. Few
people in history have dominated their age
intellectually as did Voltaire.

21. The philosophes can best be described as:

A. writers swept up by their mutual admiration of John Locke.
B. professors who lectured in philosophy at French universities.
C. intellectuals responsible for popularizing Enlightenment ideas.
D. scientists who furthered the work of the Scientific Revolution.

22. From the author's point of view, the philosophes were:

F. Deservedly influential
G. Seriously misguided
H. Unoriginal in their thinking
J. Excellent writers but poor philosophers

23. According to the passage, Locke felt that schools and social institutions could "play a great role in molding the individual" (lines 50–51) primarily because:

A. human beings were born with certain innate ideas.
B. human nature becomes more malleable with age.
C. society owes each individual the right to an education.
D. the human mind is chiefly influenced by experience.

24. Based on the information in the passage, which of the following best describes Newton's view of the universe?

I. The universe was initially set in motion by God.
II. Human reason is insufficient to understand the laws of nature.
III. The universe operates in a mechanical and orderly fashion.

F. I only
G. I and II only
H. I and III only
J. II and III only

25. According to the passage, which of the following works questioned the idea that revelation was a reliable source of truth?

A. *Letters on the English*
B. *Second Treatise of Civil Government*
C. *Elements of the Philosophy of Newton*
D. *Essay Concerning Human Understanding*

26. The passage supports which of the following statements concerning the relationship between Newton and Locke?

F. Locke's psychology contradicted Newton's belief in an orderly universe.
G. Locke maintained that Newton's laws of the material universe also applied to the human mind.
H. Newton eventually came to accept Locke's revolutionary ideas about the human mind.
J. Newton's political ideas were the basis of Locke's liberal and reformist politics.

27. According to the passage, the philosophes believed that society should:

I. allow individuals greater freedom.
II. free itself from traditional institutions.
III. tolerate religious differences.

A. I only
B. I and II only
C. II and III only
D. I, II, and III

28. It can be inferred from the passage that the author regards England's political stability and economic prosperity as:

F. the reason why the philosophes did not idealize England's achievement.
G. evidence that political reforms could bring about a better way of life.
H. the result of Voltaire's activities after he was exiled to England.
J. an indication that the Scientific Revolution had not yet started there.

29. As it is used in line 84, the word *mordant* most nearly means:

A. random.
B. intellectual.
C. gentle.
D. biting.

30. What function does the statement that philosophes were "more literary than scientific" (lines 12–13) play in the passage?

F. It demonstrates how the philosophes' writings contributed to political change.
G. It compares the number of works that Voltaire authored to Newton's output.
H. It traces the influences of English literary works on French scientists.
J. It describes the kinds of literary activities the philosophes commonly engaged in.

Passage IV

NATURAL SCIENCE: This passage explores the theory that a large asteroid collided with the Earth 65 million years ago.

Sixty-five million years ago, something triggered mass extinctions so profound that they define the geological boundary between the Cretaceous and Tertiary periods (the K-T Boundary). Approximately 75 percent of all animal species, including every species of dinosaur, were killed off; those that survived lost the vast majority of their numbers. The Earth exists in a region of space teeming with asteroids and comets that on collision have frequently caused enormous environmental devastation, including extinctions of animal species. Yet few traditional geologists or biologists considered the effect such impacts may have had on the geologic and biologic history of the Earth. Since gradual geologic processes like erosion or repeated volcanic eruptions can explain the topographical development of the Earth, they felt that there was no need to resort to extraterrestrial explanations.

An important theory proposed in 1980 by physicists Luis and Walter Alvarez challenged this view. The Alvarezes argued that an asteroid roughly six miles in

diameter collided with the Earth in the K-T Boundary. Although the damage caused by the meteorite's impact would have been great, the dust cloud that subsequently would have enveloped the planet, completely blotting out the sun for up to a year—the result of soil displacement—would have done most of the harm, according to this theory. The plunge into darkness—and the resulting drastically reduced temperatures—would have interrupted plant growth, cutting off the food supply to herbivorous species, the loss of which in turn would have starved carnivores. Additional species would have perished as a result of prolonged atmospheric poisoning, acid rain, forest fires, and tidal waves, all initiated by the asteroid's impact.

Some subsequent research not only tended to support the Alvarez theory but suggested that similar impacts may have caused other sharp breaks in Earth's geologic and biologic history. Research in the composition of the Earth revealed a 160-fold enrichment of iridium all over the world in a thin layer of sediments formed at the K-T Boundary. The presence of this element, which is extremely uncommon in the Earth's crust but very common in asteroids and comets, suggested that a

meteorite must have struck Earth at that time. Additional physical evidence of such a strike was found in rock samples, which contained shocked quartz crystals and microtektites (small glass spheres)—both byproducts of massive collisions.

Observation of the lunar surface provided further evidence of the likelihood of a massive strike. Since the moon and the Earth lie within the same swarm of asteroids and comets, their impact histories should be parallel. Although some lunar craters were of volcanic origin, over the last four billion years at least five impact craters ranging from 31 to 58 miles in diameter have marred the lunar surface. Therefore, over the same time span, Earth must have experienced some 400 collisions of similar magnitude. Although such an impact crater had not been found, Alvarez supporters didn't consider finding it necessary or likely. They reasoned that geologic processes over 65 million years, like erosion and volcanic eruptions, would have obscured the crater, which in any case probably formed on the ocean floor.

Traditional biologists and geologists resisted the Alvarez theory. They pointed to the absence of any impact crater; to the fact that iridium, while rare at the Earth's

surface, was common at its core and could be transported to the surface by volcanic activity; and to the fact that the Alvarezes, though eminent physicists, were not biolo-
(90) gists, geologists, or paleontologists.

31. According to the Alvarez theory, the mass extinctions of animal species at the end of the Cretaceous period were caused by:

A. animals being crushed by an enormous asteroid.
B. processes like erosion and repeated volcanic eruptions.
C. extreme global warming causing a global firestorm.
D. environmental conditions following a meteorite impact.

32. Based on the information in the passage, the author probably believes that those who held the traditional views about the topographical development of the Earth were:

F. proven incorrect by the Alvarezes.
G. skeptical about the new evidence of iridium.
H. correct in challenging alternative views.
J. unreceptive to new evidence.

33. As it is used in line 42, the word *enrichment* most nearly means:

A. wealth.
B. improvement.
C. increase in amount.
D. reward.

34. The views of scientists who opposed the Alvarez theory would have been strengthened if:

F. major deposits of iridium were found in the lava flows of active Earth volcanoes.
G. iridium were absent in sediments corresponding to several episodes of mass extinction.
H. iridium were absent in fragments of several recently recovered meteorites.
J. the Alvarezes were biologists as well as physicists.

35. The author's attitude toward the Alvarez theory is best characterized as:

A. dismissive.
B. neutral.
C. skeptical.
D. supportive.

36. According to the passage, which of the following is the correct order of events in the Alvarez theory explaining the mass extinction of

species at the end of the Cretaceous period?

F. Soil displacement, disappearance of the sun, decline of plant life, fall in temperature
G. Soil displacement, disappearance of the sun, fall in temperature, decline of plant life
H. Fall in temperature, decline of plant life, soil displacement, disappearance of the sun
J. Disappearance of the sun, fall in temperature, decline of plant life, soil displacement

Science Test

40 Minutes — 40 Questions

Directions: The Science Test includes multiple passages. Each passage includes multiple questions. A er reading each passage, choose the best answer and fill in the corresponding bubble on your answer sheet. You may review the passages as o en as necessary.

You may NOT use a calculator on this test.

Passage I

The growth of flowering plants and trees can depend on a number of factors, including the type of soil in which the plant is grown and the latitude where it is grown. Table 1, shown here, contains typical soil types, latitudes, and adult heights for several different varieties of a particular flowering plant.

Table 1			
Variety	Soil type	Latitude (degrees)	Height (meters)

Table 1			
Variety	Soil type	Latitude (degrees)	Height (meters)
Lagerstroemia indica × *fauriei* 'Apalachee'	Soil alone	28	5.2
Lagerstroemia indica 'Catawba'	Soil and organic compost	28	2.7
Lagerstroemia 'Chickasaw'	Soil alone	28	0.9
Lagerstroemia 'Choctaw'	Soil and mulch	28	7.3
Lagerstroemia indica 'Conestoga'	Soil alone	28	2.4
Lagerstroemia fauriei 'Kiowa'	Soil and organic compost	28	8.3
Lagerstroemia 'Miami'	Soil alone	28	6.4
Lagerstroemia 'Natchez'	Soil and mulch	33	5.8
Lagerstroemia 'Natchez'	Soil and natural fertilizer	28	8.6
Lagerstroemia 'Natchez'	Soil and artificial fertilizer	28	7.6
Lagerstroemia indica 'Potomac'	Soil alone	28	4.6
Lagerstroemia 'Tuscarora'	Soil alone	25	4.9

The rate of flowering for many trees, such as the pecan tree, depends on the age of the organism. Growth occurs in several distinct phases, which reflect changes in the development of the tree over time. See Figure 1.

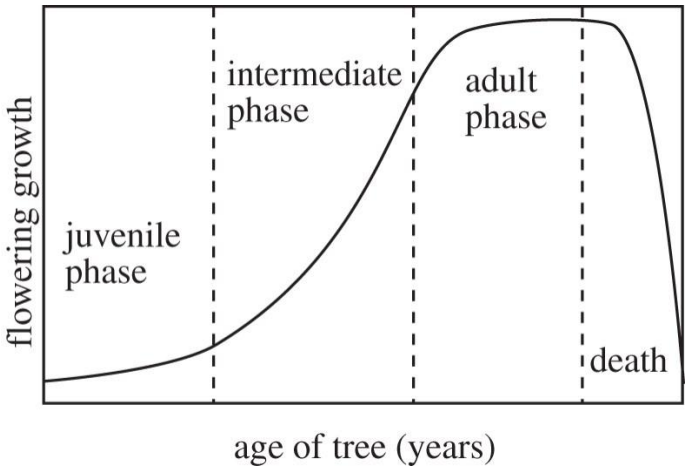


Figure 1

1. Based on the information presented in Table 1, if a young *Lagerstroemia* 'Natchez' were planted at a latitude of 28 degrees, its adult height would most likely be:

   A. less than 6.0 meters.
   B. between 6.0 and 6.5 meters.
   C. between 6.5 and 7.5 meters.
   D. greater than 7.5 meters.

2. Flowering growth increases most rapidly during which of the following phases?

   F. Juvenile phase
   G. Intermediate phase
   H. Adult phase
   J. Death

3. Based on the information contained within Table 1, which of the following varieties grown in soil alone reaches the greatest adult height?

   A. *Lagerstroemia indica* 'Conestoga'
   B. *Lagerstroemia* 'Miami'
   C. *Lagerstroemia indica* 'Potomac'
   D. *Lagerstroemia* 'Tuscarora'

4. Seedlings of the plant varieties shown in Table 1 were planted in a patch of soil enriched with organic compost at a latitude of 28 degrees. Which of the following varieties would probably come closest to an adult height of 3 meters?

   F. *Lagerstroemia indica* 'Catawba'
   G. *Lagerstroemia* 'Chickasaw'
   H. *Lagerstroemia fauriei* 'Kiowa'
   J. *Lagerstroemia* 'Natchez'

5. Which of the following hypotheses about flowering trees is supported by the information displayed in Figure 1 ?

A. Flowering growth increases at a constant rate throughout the life cycle of the tree.
B. The flowering growth of juvenile trees begins to increase sharply immediately after they are planted.
C. The flowering growth of juvenile trees begins to decrease immediately after they are planted.
D. Young trees experience relatively little flowering growth until they reach a certain point in their development.

6. If a *Lagerstroemia indica* 'Potomac' shrub that is almost 5 meters tall and is located at 28 degrees latitude were observed for one year, what trend of flowering growth would most likely be observed?

F. The shrub would not produce flowers during that time.
G. Its flowering growth rate would substantially increase.
H. Its flowering growth rate would substantially decrease.
J. Its flowering growth rate would remain about the same.

Passage II

The *atomic mass* (A) of an atom is equal to its total number of protons and neutrons, while the *atomic number* (Z) equals its number of protons. *Isotopes* of a given element have the same number of protons but different numbers of neutrons. Isotopes that are *radioactive* have unstable nuclei and decay by emitting alpha (α) particles, beta (β) particles, and/or gamma (γ) rays to become stable.

A series of α and β decay reactions is called a *radioactive decay chain*. This decay process will continue until a relatively stable nucleus is reached—for example, unstable parent nuclei will decay to form daughter nuclei, which if unstable will further decay to form granddaughter nuclei, and so on.

During α decay, an α particle, which consists of 2 protons and 2 neutrons, is emitted from the nucleus, as illustrated in the following reaction equation:

$$^{A}_{Z}X \rightarrow {}^{A-4}_{Z-2}X' + {}^{4}_{2}\alpha$$

parent daughter alpha particle

During β decay, a neutron is converted to a proton and a high-energy electron, which is emitted as a β particle, as illustrated in the following reaction equation:

$$^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X' + {}^{0}_{-1}\beta$$

parent daughter beta particle

Scientists performed 2 experiments with 6 different isotopes (A−F) to investigate their decay processes and to measure the radiation they emit during decay.

Experiment 1

Isotope A was placed in a cloud chamber, a device that can detect α and β particles by the paths they produce. Tracks of the particles emitted during decay were observed for 3 generations (parent, daughter, and granddaughter) and the type of decay was recorded. The experiment was repeated with Isotopes B, C, D, E, and F. The results can be found in Table 1, shown here ("+" indicates that a particle of that type was emitted, "–" indicates no emission of that type).

Table 1

Isotope	Parent		Daughter		Grand-daughter	
	α	β	α	β	α	β
A	+	–	+	–	+	–
B	–	+	–	+	+	–
C	+	–	+	–	–	–
D	–	+	+	–	–	+
E	+	–	–	+	–	–
F	–	+	–	–	–	–

Experiment 2

The scientists used a proportional counter, a type of gaseous ionization detector, to measure the radiation energy in megaelectronvolts (MeV) emitted during the decay of Isotopes A–F (see Table 2).

Table 2			
Isotope	Radiation energy emitted (MeV)		
	Parent	Daughter	Grand-daughter
A	5.4	5.7	6.3
B	0.1	2.1	5.4
C	6.0	6.8	–
D	0.3	5.0	0.1
E	6.0	1.8	–
F	1.4	–	–

7. What is the radiation energy emitted by the daughter nucleus for Isotope B ?

   A. 0.1 MeV
   B. 2.1 MeV
   C. 5.7 MeV
   D. 6.8 MeV

8. According to Table 1, how many total neutrons were emitted from Isotope C ?

F. 0
G. 2
H. 4
J. 8

9. The scientists examined a seventh isotope, Isotope G, and found the radiation energy emitted by the parent and daughter nuclei to be 6.2 and 0.7 MeV, respectively. Based on the experiments, what particles were most likely emitted during each generation?

	parent	daughter
A.	alpha	alpha
B.	alpha	beta
C.	beta	alpha
D.	beta	beta

10. Based on the data presented in Table 1, which isotope became stable after only one generation?

F. Isotope A
G. Isotope C
H. Isotope E
J. Isotope F

11. Compared to the atomic mass of the parent nucleus, the atomic mass of the daughter nucleus for Isotope A is:

A. 4 less.
B. 4 greater.
C. 2 less.
D. 2 greater.

12. Which of the following ranks the total radiation energy emitted over 3 generations for Isotopes A, E, and F from least to greatest?

F. Isotope A, Isotope E, Isotope F

G. Isotope E, Isotope F, Isotope A

H. Isotope F, Isotope A, Isotope E

J. Isotope F, Isotope E, Isotope A

13. The decay chain $^{212}_{83}\mathrm{X} \rightarrow {}^{208}_{81}\mathrm{X'} \rightarrow {}^{208}_{82}\mathrm{X''}$ could apply to which of the following isotopes?

A. Isotope A
B. Isotope B
C. Isotope E
D. Isotope F

Passage III

Ultraviolet (UV) light, a component of natural sunlight, can be damaging to human skin at high doses. UV light occurs in several ranges, including less damaging UV-A light and more damaging UV-B and UV-C light. Scientists designed 2 experiments to investigate the various factors affecting levels of UV light in a certain region of the United States.

Experiment 1

Scientists studied how levels of UV-A light vary seasonally and with elevation. They measured UV-A energy over a 10-minute span of time for several days to determine an average daily UV-A value for each site. Three sites were studied at 3 different elevations, and measurements from each site were obtained once in the winter and once in the summer. UV-A levels for an average 10-minute period beginning 30 minutes after the sun appeared directly overhead were calculated in millijoules per square centimeter (mJ/cm^2). The results are shown in Table 1.

Table 1

Season	Elevation (meters above sea level)	Average UV-A level (mJ/cm^2)
Winter	0	1,270

Table 1		
Season	Elevation (meters above sea level)	Average UV-A level (mJ/cm^2)
	1,000	1,400
	2,000	1,530
Summer	0	1,580
	1,000	1,740
	2,000	1,900

Experiment 2

Next, the levels of UV-A and UV-B were measured at 0, 1, and 2 hours past the time of day at which the sun was directly overhead during the winter at the site with an elevation of 2,000 meters above sea level. The level of UV-A decreased from 1,620 mJ/cm^2 at 0 hours to 1,430 mJ/cm^2 at 2 hours. The level of UV-B decreased from 48 mJ/cm^2 at 0 hours to 42 mJ/cm^2 at 2 hours.

Experiment 3

UV-B light reaches the Earth's surface at a lower rate than UV-A light, but with higher energy. Levels of UV-B light, in millijoules per square centimeter (mJ/cm^2), were measured at various times of day during the summer at the site with an elevation of 2,000 meters above sea level. The results are shown in Table 2.

Table 2	
Hours a er sun is directly overhead	Average UV-B level (mJ/cm^2)

Table 2	
Hours a er sun is directly overhead	Average UV-B level (mJ/cm^2)
0	68
1	63
2	57
3	49
4	41

14. Which of the following quantities was the independent variable in Experiment 3 ?

    F. Background levels of UV-A light
    G. Background levels of UV-B light
    H. Time of day
    J. Season of the year

15. According to the results of the experiments detailed in the passage, one way to reduce exposure to UV-A light would be to:

    A. spend time in environments with higher levels of UV-B light.
    B. live in an area with shorter summers and longer winters.
    C. live in an area with longer summers and shorter winters.
    D. live in a home with windows designed to filter out UV-B light.

16. Based on the results of the experiments from the passage, if a researcher compared UV-B levels when the sun is directly overhead to those when the sun is low on the horizon later in the day, the UV-B levels:

    F. when the sun is overhead would be lower than when the sun is low on the horizon.
    G. when the sun is overhead would be higher than when the sun is low on the horizon.
    H. when the sun is overhead would be the same as when the sun is low on the horizon.
    J. would be measurable only when the sun is overhead.

17. UV-C light is a third type of UV light that was not directly studied in the experiments from the passage. However, if UV-C behaves like the other types of UV light, a new experiment investigating UV-C would most likely reveal that UV-C levels:

    A. decrease from year to year.
    B. increase from year to year.
    C. are higher when the sun is directly overhead.
    D. are lower when the sun is directly overhead.

18. Based on the experimental results from the passage, as the number of hours after the sun is directly overhead increases:

F. UV-A and UV-B levels both increase.
G. UV-A levels increase and UV-B levels decrease.
H. UV-A levels decrease and UV-B levels increase.
J. UV-A and UV-B levels both decrease.

19. A community near the region studied has an elevation of 3,000 meters above sea level. At a time 30 minutes after the sun is directly overhead, measurement of UV-A levels during the summer would most likely be:

A. less than 1,580 mJ/cm^2.
B. between 1,580 and 1,740 mJ/cm^2.
C. between 1,740 and 1,900 mJ/cm^2.
D. above 1,900 mJ/cm^2.

20. Based on the passage, which of the following is most likely to be the average UV-B level measured in winter one hour after the sun is directly overhead at the site with the elevation of 2,000 meters?

F. 45 mJ/cm^2
G. 48 mJ/cm^2
H. 57 mJ/cm^2
J. 63 mJ/cm^2

Passage IV

The following experiments were performed to study the motion of gyroscopes, objects that spin quickly around an axis of rotation, which exhibit more complex motion when placed on a surface with their axis tilted. These experiments focus on the gyroscopes' rate of *precession*, or the rate at which they revolve around the point where the axis of rotation touches the surface (see Diagram 1).

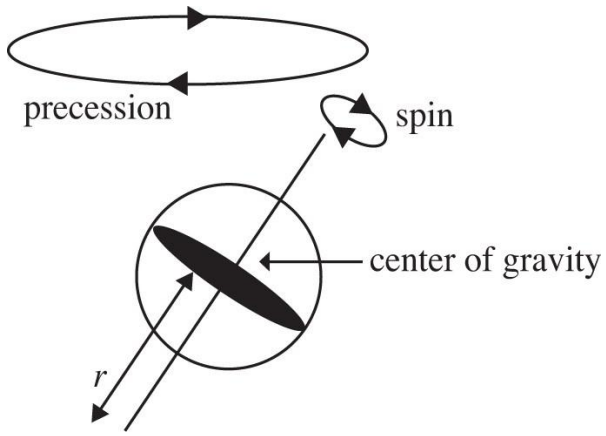


Diagram 1

Experiment 1

A scientist tested several different gyroscopes that differed only in the distance (r) from the gyroscope's center of gravity to the surface (see Diagram 1). A mechanical device was used to spin each gyroscope at the exact same spin rate on the same surface, and the rate of precession was measured for each gyroscope in revolutions per minute (rpm). These precession rates are given in Table 1.

Table 1	
r (centimeters)	Precession rate (rpm)

Table 1	
r (centimeters)	Precession rate (rpm)
4	9
6	14
8	19
10	24
12	28

Experiment 2

Next, the scientist used a gyroscope of fixed size and varied the settings on the mechanical device spinning the gyroscope. The precession rate was measured several times for different spin rates, also measured in revolutions per minute (rpm). The results of this experiment are given in Table 2.

Table 2	
Spin rate (rpm)	Precession rate (rpm)
250	41
400	25.5
600	17
750	14
1,200	8.5

Experiment 3

Finally, the scientist placed gyroscopes similar to those used in the first 2 experiments on board a satellite orbiting Earth. It was found that for a gyroscope of fixed size and spin rate, its precession rate on the satellite was about one-eighth of its precession rate on Earth's surface. For example, a precession rate of 24 rpm on Earth would become approximately 3 rpm on the satellite.

21. If, during Experiment 1, the scientists had tested a sixth gyroscope with a center of gravity that was 9 cm from the surface, its precession rate would most likely have been:

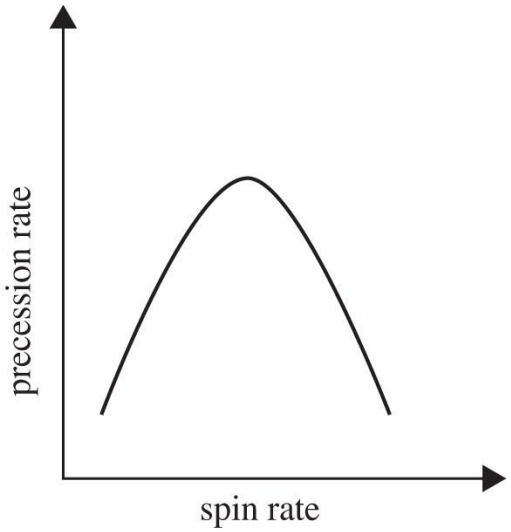
    A. 4 rpm.
    B. 9 rpm.
    C. 21.5 rpm.
    D. 23.5 rpm.

22. According to the results of Experiment 1, it is reasonable to conclude that the gyroscope's precession rate increases as the gyroscope's center of gravity:

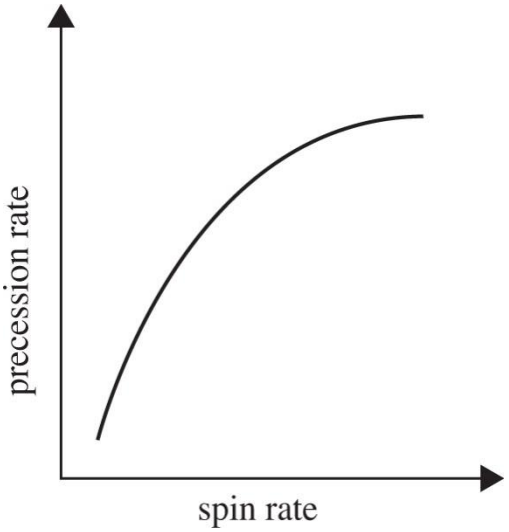
    F. decreases in distance from the surface.
    G. increases in distance from the surface.
    H. moves closer to the axis of rotation.
    J. moves farther away from the axis of rotation.

23. Of the following graphs, which best represents how changes in precession rate are related to changes in spin rate, as demonstrated in Experiment 2 ?

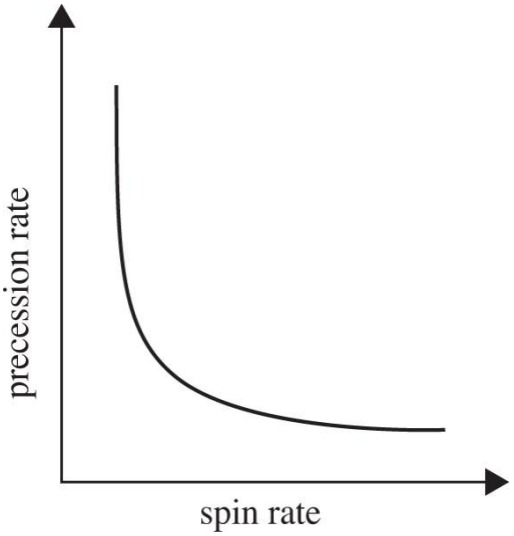
A.


precession rate
spin rate

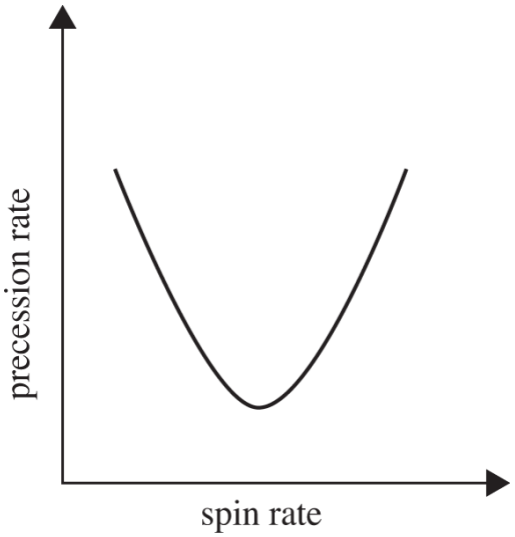
B.


precession rate
spin rate

C.


precession rate
spin rate

D.



24. The hypothesis of the scientist in Experiment 3 was that precession rate is related to the acceleration due to gravity, which decreases as one's distance from Earth increases. To confirm this hypothesis, the scientist should repeat this experiment on:

    F. several different satellites at varying distances from Earth.
    G. another satellite at the exact same distance from Earth as the first satellite.
    H. a satellite orbiting in the opposite direction.
    J. Earth's surface while varying the gyroscope's spin rate.

25. If an *r* of 6 cm was used throughout Experiment 2, what was the most likely spin rate used in Experiment 1 ?

A. 400 rpm
B. 600 rpm
C. 750 rpm
D. 1,200 rpm

26. If the information revealed by Experiment 1 had not been considered during the design of Experiment 2, which of the following design shortcomings would most likely have altered Experiment 2's results?

F. Using gyroscopes with different masses
G. Using gyroscopes of different sizes
H. Using gyroscopes with different shapes
J. Using gyroscopes on surfaces made of different materials

27. Which of the following would constitute the best way to investigate the effect of gyroscope mass on precession rate while keeping the spin rate constant?

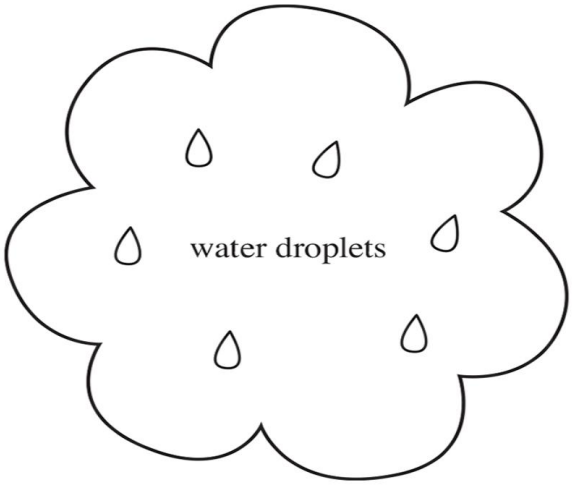
A. Test gyroscopes that are made by different companies.
B. Test gyroscopes that have a fixed size and shape but are made from different metals with varying densities.
C. Test gyroscopes that have a fixed size and shape but are measured at different distances from the Earth's surface.
D. Test gyroscopes that have a fixed mass but vary in size.

Passage V

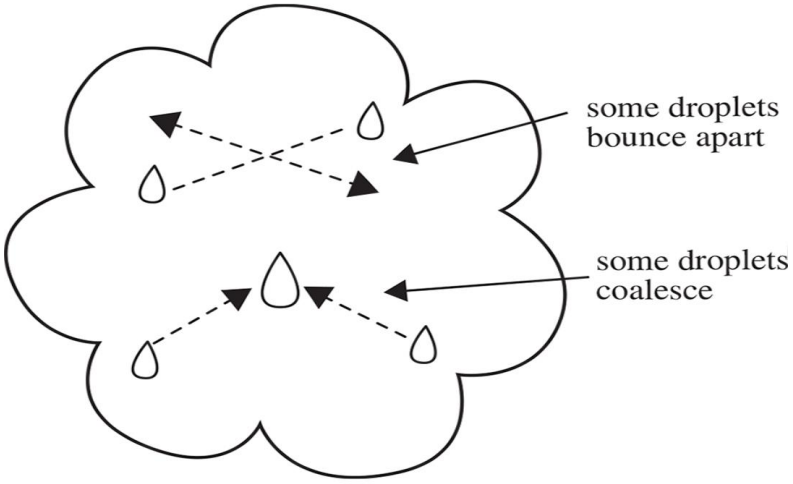
Precipitation is a general term for a form of water, such as rain, snow, sleet, or hail, that falls from the sky to Earth's surface. There are 2 theories that attempt to explain how the tiny water droplets in clouds combine to form precipitation.

Collision-and-Coalescence Theory

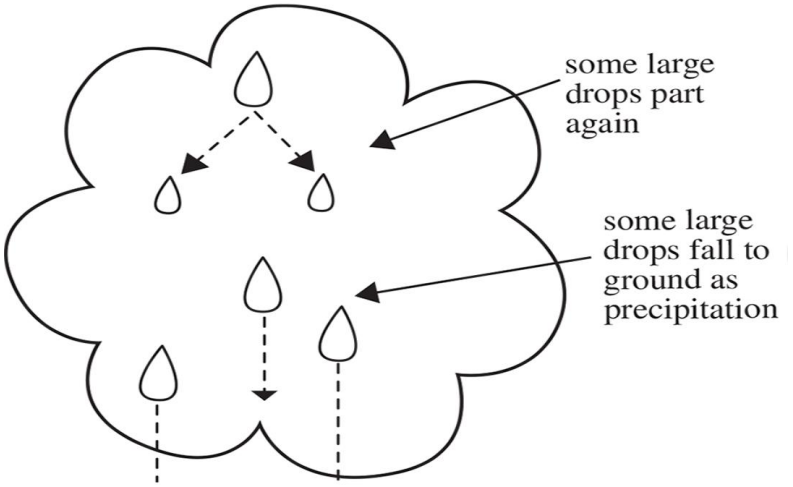
As shown in Stage I of Diagram 1, a cloud is initially composed of numerous droplets of liquid water, all of which are of varying sizes but microscopic. As these droplets move about within the cloud, they can collide with one another. These collisions can either result in the droplets' bouncing apart again or sticking together (a process known as *coalescence*) to form a larger droplet (see Stage II). The process continues until the drops formed are so large that they are too heavy to remain suspended in the cloud. Some of these drops will then split apart into smaller droplets that continue the collision and coalescence process, while others will fall to the ground in the form of precipitation (see Stage III).



Stage I



Stage II

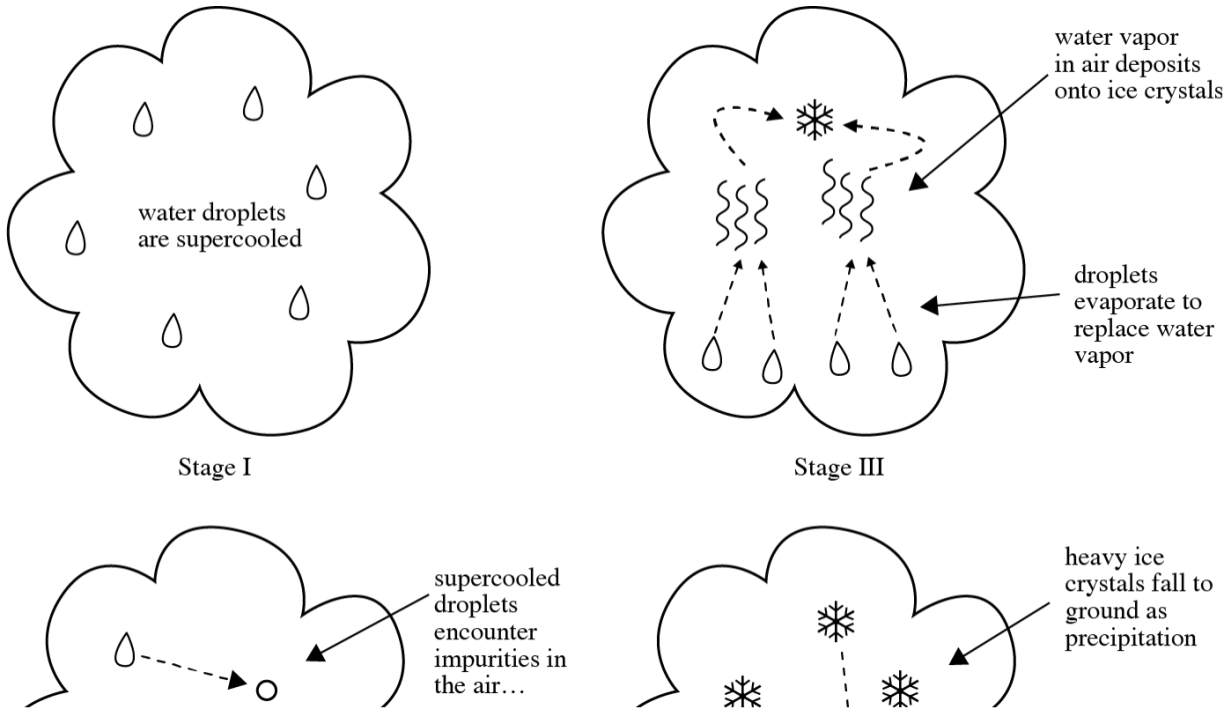


Stage III

Diagram 1

Ice Crystal Theory

In this theory, the tiny droplets in clouds rise to a point in Earth's atmosphere where the temperature is lower than the freezing point of water. Initially, the cloud is composed of many supercooled water droplets that are still in liquid form (see Stage I of Diagram 2). Some of these droplets then freeze around tiny impurities in the air to form miniature ice crystals (see Stage II). Water vapor in the air can then deposit onto the surface of the crystals, while some of the cloud's water droplets evaporate to maintain a constant level of water vapor (see Stage III). The ice crystals quickly become too heavy to remain suspended in the air and fall to the ground, often melting again in the warmer temperatures near the ground to form rain (see Stage IV). The net effect is that the formation of ice crystals takes moisture out of the air, allowing the crystals to grow larger at the expense of the droplets.



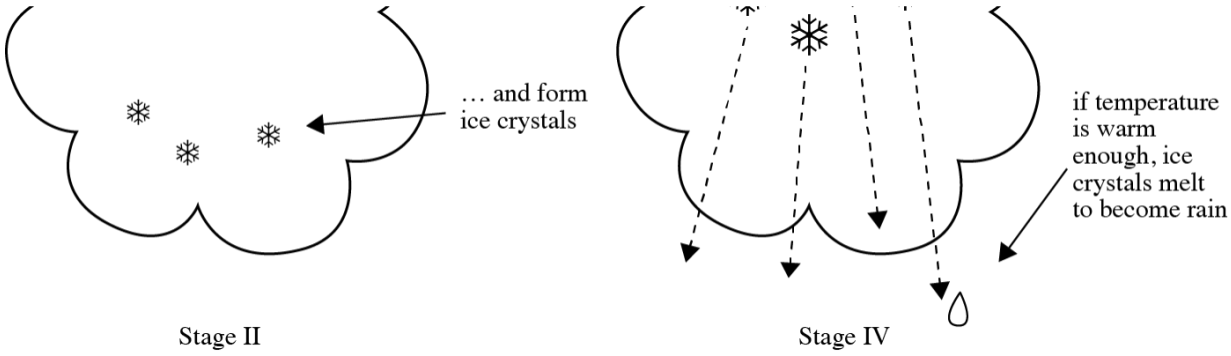


Diagram 2

28. In which of the following situations would supporters of both theories agree that precipitation would NOT be produced?

F. A cloud with water droplets colliding and coalescing to produce larger droplets
G. A cloud with water droplets forming crystals around impurities in the air
H. A cloud with an insufficient number of water droplets
J. A cloud containing entities too heavy to remain suspended in the air

29. The Collision-and-Coalescence Theory and the Ice Crystal Theory differ on which of the following points?

A. Exterior shape of cloud formation
B. Phase of matter of precipitation before falling from the cloud
C. Amount of precipitation that reaches the ground
D. Climate required for precipitation to occur

30. According to the Collision-and-Coalescence Theory, the likelihood of a cloud producing rainfall is greater:

F. when the droplets collide at a high rate.
G. when the droplets collide at a variable rate.
H. when the temperature causes droplets to freeze.
J. shortly after the last rainfall occurred.

31. A weather balloon travels through a cloud and detects that a high proportion of the cloud's components are too heavy to remain suspended in the air. Both theories would agree that:

A. there are insufficient impurities in the air to form ice crystals.
B. the probability of precipitation occurring soon is high.
C. water droplets in the cloud are colliding at a rapid rate.
D. the entire cloud is decreasing in altitude.

32. City A has a higher rate of precipitation than City B, despite similar temperatures, humidity levels, and cloud formation rates in both locations. The Ice Crystal Theory would suggest that the higher rate of precipitation in City A most likely results from which of the following?

F. The greater frequency of thunder-and-lightning storms in City A
G. Large atmospheric density differences between City A and City B
H. A greater number of impurities released into the air by factories in City A
J. The lower rate of air pollution in City A

33. Which of the following, if true, would best support the Collision-and-Coalescence Theory over the Ice Crystal Theory?

A. Areas with lower levels of air impurities tend to record less rainfall than those with higher levels.
B. The amount of water vapor in the atmosphere tends to remain roughly constant over time.
C. Precipitation can fall from a cloud when its temperature is higher than the freezing point of water.
D. Water in clouds regularly shifts back and forth between solid, liquid, and gaseous states.

34. Depending on temperature and other conditions, precipitation may change its state before reaching the ground. If precipitation only forms according to the Ice Crystal Theory, which of the following is LEAST likely to occur?

F. Some ice crystals that fall from a cloud melt to become rain.
G. Some ice crystals that fall from a cloud partially melt to become sleet.
H. Some water drops that fall from a cloud freeze to become snow.
J. Some miniature ice crystals suspended in a cloud melt to become water droplets.

Passage VI

Elements from the Periodic Table have a number of different properties that depend on the structure of an element's atoms. For example, some properties depend on the atom's number and arrangement of *electrons* (negatively charged particles), which move in patterns called *shells* (see Diagram 1). The number of electrons in the atom's outermost shell is especially important for determining some elemental properties.

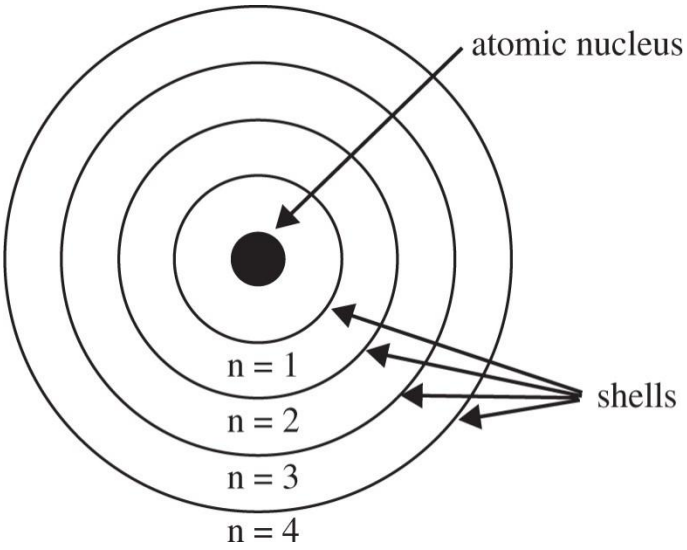


Diagram 1

Note: Drawing is NOT to scale.

Table 1 lists properties for several chemical elements. The table includes each element's atomic symbol; number of shells in the atom (*n*); number of electrons in the atom's outer shell (*e*); *atomic radius* (*r*), distance from the center of the atom's nucleus to the outer shell, in fractions of a meter; *ionization energy* (*I*), energy in electron volts (eV) required to remove one electron from the atom's outer shell; and *electronegativity* (*c*), a measure of attraction to electrons in a chemical bond (in Pauling units).

Table 1

Element	*n*	*e*	*r* ($\times 10^{-11}$ m)	*I* (eV)	*c*
C	2	4	9.1	11.2	2.5
N	2	5	7.5	14.5	3.0
O	2	6	6.5	13.6	3.5
F	2	7	5.7	17.4	4.0

Table 1					
Element	n	e	r ($\times 10^{-11}$ m)	I (eV)	c
Si	3	4	14.6	8.2	1.8
P	3	5	12.6	10.5	2.1
S	3	6	10.9	10.4	2.5
Cl	3	7	9.7	13.0	3.0
Ge	4	4	15.2	7.9	1.8
As	4	5	13.3	9.8	2.0
Se	4	6	12.2	9.8	2.4
Br	4	7	11.2	11.8	2.8

35. For any value of n, Table 1 indicates that as e increases, r :

A. increases only.
B. sometimes increases and sometimes decreases.
C. decreases only.
D. remains unchanged.

36. Based on Table 1, for an atom with $n = 2$ and $e = 3$, the most likely value of r would be:

F. 11.7×10^{-11} m.
G. 8.8×10^{-11} m.
H. 7.4×10^{-11} m.
J. 6.2×10^{-11} m.

37. According to information provided in the passage, it is possible to decrease the amount of negative charge in an atom by:

A. decreasing the radius of the atom's outer shell.
B. forming a chemical bond with the atom.
C. applying energy to the atom.
D. increasing the number of shells in the atom.

38. The hypothesis that for a given value of *n*, electronegativity increases as the number of electrons in the atom's outer shell increases, is supported by the data in Table 1 when *n* is equal to:

F. 2 only.
G. 2 or 3 only.
H. 4 only.
J. 2, 3, or 4.

39. The most energy will be required to remove an electron from shell:

A. $n = 3$ in Si.
B. $n = 3$ in Cl.
C. $n = 2$ in C.
D. $n = 2$ in F.

40. Which of the following pairs of elements does not share the same value for electronegativity in Pauling units?

F. Se and As
G. N and Cl
H. Ge and Si
J. C and S

Writing Test

40 Minutes — 1 Question

Directions: The essay is used to evaluate your writing skills. You will have **40 minutes** to review the prompt and plan and write an essay in English. Before you begin, read everything in this test booklet carefully to make sure you understand the task.

Your essay will be judged based on the evidence it provides of your ability to do the following:

- Assert your own perspective on a complex issue and evaluate the relationship between your perspective and at least one other perspective
- Use reasoning and evidence to refine and justify your ideas
- Present your ideas in an organized way
- Convey your ideas effectively using standard written English

Write your essay on the lined essay pages in the answer booklet. All writing on those lined pages will be scored. Use the unlined pages in this test booklet to plan your essay. Your work on these unlined pages will not be scored.

Put your pencil down as soon as time is called.

DO NOT OPEN THIS BOOKLET UNTIL TOLD TO DO SO.

Attendance Policies

Students are required to be in attendance during the school day unless they are ill, have a doctor's appointment, or need to attend a funeral. Parents are allowed to take students out of school for other reasons, but prior approval is often required. Truancy, or unexcused absenteeism, is a problem that many schools have yet to solve. Since reducing truancy increases student success, should schools be doing more to prevent unexcused absences? Considering that students rely on educators to offer guidance and support, it is wise for schools to assist students in attending school as regularly as possible.

Read and carefully consider these perspectives. Each suggests a particular approach regarding truancy.

Perspective One	Perspective Two	Perspective Three
Schools should contact law enforcement officers to report	Truancy is a symptom rather than a core issue. Students who skip school	Schools should offer helpful alternative instruction for students

students who skip school regularly. In addition to receiving detention for unexcused absences, students who engage in truancy should be given criminal records. This additional consequence will help discourage students from missing school.

regularly often do so because of transportation difficulties, social problems, violence concerns, or lack of interest. Addressing the core issues is the key to increasing student attendance, and schools should develop programs to help students overcome obstacles that prevent them from coming to school.

who regularly miss school. Whether students are allowed to attend school on the weekends or are required to take classes online, schools should provide students every opportunity to complete their courses and graduate.

Essay Task

Write a clear, well-reasoned essay evaluating multiple perspectives on attendance policies. In your essay, be sure to:

- Assert your own perspective on the issue and evaluate the relationship between your perspective and at least one other perspective
- Use reasoning and evidence to refine and justify your ideas
- Present your ideas in an organized way
- Convey your ideas effectively using standard written English

Your perspective may be fully, somewhat, or not at all in agreement with one or more of the three perspectives in the prompt.

Planning Your Essay

These pages are not scored.

Use the space below the prompt or another piece of paper to brainstorm and plan your essay. Consider the following as you think about the prompt:

- Strengths and weaknesses of the three perspectives in the prompt
  - What observations do they offer, and what do they overlook?
  - Why are they persuasive or why are they not persuasive?

- Your own background and identity
  - What is your perspective on this issue, and what are its strengths and weaknesses?
  - What evidence will you use in your essay?

Answers and Explanations

ENGLISH TEST

1. ### *Passage I*

1. **C**
   Difficulty: High

   Category: Sentence Structure

   Getting to the Answer: At first glance, there may not seem to be anything incorrect here. However, the dash a er *Aegean Sea* alerts you that the writer has chosen to set off the parenthetical phrase describing *Acropolis* with dashes instead of commas. This means that you have to replace the comma a er *Acropolis* with a dash in order to have a matching pair, making (C) correct. If there were a comma a er *Aegean Sea,* this underlined part of the sentence would not need to be changed. Knowing that you need to "make it all match" will help you score points on ACT English.

2. **G**
   Difficulty: Medium

Category: Agreement

Getting to the Answer: "To climb . . . is to have beheld" is unparallel. The two verbs should be in the same form: "to climb . . . is to behold." Choice (G) is correct; it is the only option that offers parallel construction.

3. **D**
   Difficulty: Low

   Category: Conciseness

   Getting to the Answer: DELETE the underlined sentence is an option, so check to see if the sentence is either redundant or irrelevant. Athenian cuisine has nothing to do with the subject of the paragraph or the passage, so (D) is correct.

4. **F**
   Difficulty: Medium

   Category: Agreement

   Getting to the Answer: This verb is appropriately plural—the subject, *generations,* is plural—and in the present perfect tense, so (F) is correct. Choices G and H are singular verbs, so they are incorrect. Choice J is incorrect because generations of architects can't all be proclaiming at the present time.

5. **D**

   Difficulty: Medium

   Category: Sentence Structure

   Getting to the Answer: The sentence discusses the columns of the temple, which requires the singular possessive form. Choice (D) correctly indicates that one temple had multiple columns. Choice A is missing a necessary apostrophe. Choice B changes the meaning of the sentence by creating a plural possessive word. Choice C includes the necessary apostrophe but creates a new error by changing the plural *columns* to a singular possessive *column's*.

6. **G**

   Difficulty: Medium

   Category: Sentence Structure

   Getting to the Answer: "Viewed from a distance" is a misplaced modifier that has to be moved to a position where it clearly modifies *columns*. Choice (G) accomplishes this. Choices F, H, and J each place the modifying phrase in an incorrect location.

7. **D**

   Difficulty: Medium

   Category: Sentence Structure

Getting to the Answer: The sentence is incorrect as written because the colon is not introducing a short phrase, quotation, explanation, example, or list. There is no need for a semicolon or any other kind of punctuation mark between *of* and *uprightness*, making (D) correct. Don't place a comma before the first element of a series, C, and don't place a colon between a preposition and its objects, B.

8. **J**
   Difficulty: Medium

   Category: Organization

   Getting to the Answer: The phrase "Because of this" doesn't make sense here. The optical illusion the architects created is not the reason you'll get a different impression of the Parthenon from the one the ancient Athenians had; the reason is that the statue of Athena Parthenos isn't there anymore. The introductory phrase that makes sense won't suggest conclusion or contrast; it will emphasize the information in the sentence, making (J) correct.

9. **C**
   Difficulty: Medium

   Category: Sentence Structure

   Getting to the Answer: "Only by standing . . . Golden Age of Athens" is a sentence fragment that has to be connected to the sentence a er it to fix the error, so you can eliminate A and D. You can't use a semicolon

to join the two, B, because then the first clause of the new sentence will still be only a fragment. You have to reverse the subject and verb of the second sentence to attach the fragment to it, as (C) does.

10. **J**

    Difficulty: High

    Category: Sentence Structure

    Getting to the Answer: What was removed from the temple? The underlined part of the sentence is an introductory modifying phrase that you know describes the statue, but the word *statue* isn't anywhere in the sentence. As a result, the sentence doesn't make sense at all; it's impossible that "all that remains" in the temple was removed in the fi h century c.e. Choice (J) fixes the error and provides the clearest wording.

11. **D**

    Difficulty: Medium

    Category: Agreement

    Getting to the Answer: Quite a few words come between the subject and the verb of this sentence; *many* is the subject of the sentence, not *carvings, walls*, or *Acropolis*. Because *many* is plural, the verb of the sentence has to be plural as well. *Is* has to be changed to *are*, which matches (D).

12. **H**

    Difficulty: High

    Category: Sentence Structure

    Getting to the Answer: This sentence is really only a sentence fragment; it has a subject, *decision*, but no verb. Choice (H) rewords the underlined portion to make *Lord Elgin* the subject and *decided* the verb.

13. **C**

    Difficulty: Medium

    Category: Agreement

    Getting to the Answer: *They* is an ambiguous pronoun because it's not immediately clear what group *they* refers to. You can figure out from the context that *they* is *the Greeks*; no other group could have won independence from the Turks and demanded the carvings back from the British. Choice (C) is correct.

14. **J**

    Difficulty: Medium

    Category: Organization

    Getting to the Answer: What could have been destroyed by explosions in the Parthenon? Carvings. The fact that some of the

carvings were destroyed during a war is another good reason that many of them can no longer be found in the Parthenon, as Paragraph 4 states. Therefore, the new material belongs in Paragraph 4.

15. **C**
    Difficulty: Medium

    Category: Development

    Getting to the Answer: The answer to the question is "No." The writer did not fulfill the request, because only the second paragraph discusses techniques of construction at all; even then, only one technique, the bulging of the columns, is described in any detail. The author covers several topics in the essay in addition to construction techniques, including the statue of Athena Parthenos and the fate of the carvings, which matches (C).

7. *Passage II*

16. **H**
    Difficulty: Low

    Category: Agreement

    Getting to the Answer: The previous sentence tells you that "Robin is the hero," so look for a verb form that matches the present tense *is* because the sentence continues the discussion of the ballads. In (H), *tell* is in the right tense. Choice F switches to another tense, the

present progressive, which makes it sound as if the ballads were literally speaking. Choice G lacks a main verb, creating a sentence fragment. Choice J has the same tense problem as F and compounds it by adding an extra, unnecessary subject, *they*.

17. **C**
    Difficulty: Medium

    Category: Agreement

    Getting to the Answer: You need a verb that is parallel to *robbing* and *killing*, so *giving*, (C), is the correct choice.

18. **H**
    Difficulty: Medium

    Category: Agreement

    Getting to the Answer: The adjective *frequent* is the correct choice to modify the noun *enemy*, making (H) correct. Choice F uses both the word *most* and the suffix *-est* to indicate the highest degree, or superlative form. Use one or the other, but not both. Likewise, G incorrectly uses *more* and the suffix *-er* together. Both of these express the comparative form—but again, you'd use one or the other, not both at once. In J, *frequently* is an adverb, which can't describe a noun.

19. **D**
    Difficulty: High

Category: Development

Getting to the Answer: Eliminate A and B because the proposed sentence discusses a modern adaptation of the King Arthur legend, which does not provide direct support the main focus of the paragraph: the legend of Robin Hood. Choice C is incorrect because even if the sentence included more than one example, it would still be off-topic. Choice (D) is correct; the sentence should not be added because it is irrelevant to the paragraph's main focus.

20. **F**
    Difficulty: Medium

    Category: Agreement

    Getting to the Answer: This is correct as is. *Them* matches the plural noun it is standing in for: *writers*. Choices G, *him*, and H, *it*, are singular, so they don't. Choice J is too wordy.

21. **A**
    Difficulty: Medium

    Category: Sentence Structure

    Getting to the Answer: Choice (A) is correct because the possessive apostrophe is necessary. Choices B and C are incorrect because they are the plural, not the possessive, form of *king*. Choice D is incorrect because the comma is unnecessary.

22. **J**

Difficulty: Medium

Category: Development

Getting to the Answer: Because this passage is aimed at discussing the historical development of the Robin Hood legend, (J) is most in keeping with the subject matter. Choice F goes way off track; you're asked to add more information on Richard I, not on English history. The main topic of the passage is Robin Hood, not antiquaries, as in G. (Remember, you want the choice that is most relevant to the passage as a whole.) As for H, King Arthur was mentioned earlier in the passage, but then only to make a point about Robin Hood. A discussion of Richard I's interest in King Arthur would stray from the topic of the passage.

23. **C**

Difficulty: Low

Category: Sentence Structure

Getting to the Answer: The shortest answer—(C)— is the best choice because it provides a verb, *was*, and an article, *a*. Choices A and D incorrectly imply a comparison between Robin and a nobleman, when the claim was that Robin was a nobleman. Choice B is incoherent.

24. **G**

Difficulty: Medium

Category: Agreement

Getting to the Answer: The comparison with a puppy doesn't match the matter-of-fact tone of this passage; all choices except (G) can be eliminated.

25. **D**
Difficulty: Medium

Category: Sentence Structure

Getting to the Answer: The only choice that will tie in both parts of the sentence is (D). A dash in this context correctly makes an emphatic pause between *love interest* and its appositive, *Maid Marian*. All the rest of the choices have punctuation errors. Semicolons are used between independent clauses, and the part that would follow the semicolon in A isn't a clause. The plural form of the noun, *interests*, B, doesn't agree with the singular article. Choice C can be ruled out because there is no reason to pause in the middle of a name, and so the comma is incorrectly placed.

26. **G**
Difficulty: Medium

Category: Sentence Structure

Getting to the Answer: The correct verb tense, and the only choice that doesn't create a sentence fragment, is (G). Choices F, H, and J

create fragments.

27. **B**
    Difficulty: Medium

    Category: Sentence Structure

    Getting to the Answer: The underlined portion includes two commas; check to make sure they are both necessary. Choices A and C are incorrect because the comma a er *Robin* is unnecessary. Choice (B) is correct because the comma a er "Britain" separates the dependent clause before the comma from the independent clause a er the comma. Choice D eliminates the necessary comma a er "Britain," so it is incorrect.

28. **H**
    Difficulty: High

    Category: Organization

    Getting to the Answer: The passage moves to a discussion of a new time period a er Point C, so you should begin a new paragraph there, matching (H). Choices F, G, and J are incorrect because they do not offer logical options.

29. **D**
    Difficulty: Medium

Category: Development

Getting to the Answer: You're told that the audience is unfamiliar with the story, so it would make sense to include a summary of the Robin Hood legend, (D), something the passage lacks. Choices A and C would do nothing for a reader curious about Robin Hood, because they go off on tangents about other issues. As the passage states that Robin Hood's existence is questionable (*legendary*), B doesn't fit in with the stance of the writer.

30. **J**
Difficulty: Low

Category: Development

Getting to the Answer: Rarely are ACT English passages written for authorities or experts; they're usually written for the general public, as (J) correctly states in this question. If the passage were directed toward *experts*, F, or *authorities*, G, much of the basic information it presents would be unnecessary and therefore not included. The passage states that the existence of Robin Hood is legendary, so the passage can't be aimed at readers craving confirmation that he "was an actual historical personage." So H is incorrect.

3. *Passage III*

31. **A**
Difficulty: Low

Category: Conciseness

Getting to the Answer: The shortest answer, (A), is correct. *Ten-mile* is correctly punctuated: the hyphen makes it an adjective modifying *radius*. The other answers—B, C, and D—are wordy and awkward.

32. **H**
Difficulty: Medium

Category: Sentence Structure

Getting to the Answer: You don't look forward *at* something. You look forward *to* something, so F is incorrect. Choice G incorrectly implies that it is the brother who looks forward to the opportunity to show off the narrator's skills. Choice J incorrectly implies a contrast between the two parts of the sentence. Choice (H) is correct.

33. **D**
Difficulty: Medium

Category: Organization

Getting to the Answer: *Ever since* means from the time the narrator first could read to the present time of the narrative, which makes sense in context, so (D) is correct. *If* in A signals a hypothetical situation, rather than a period of time. *Since* in B implies a cause-and-effect relationship that doesn't make sense in context. *Although* in C signals a contrast, but there isn't one.

34. **F**

Difficulty: Low

Category: Agreement

Getting to the Answer: It's true that you use *I* and *me*, in G and H, when you're writing about yourself. However, you can't say "I always envisioned I" or "I always envisioned me." Per the rules of grammar, you have to say "I always envisioned myself."

35. **A**

Difficulty: Medium

Category: Sentence Structure

Getting to the Answer: Choice (A) is correct because the comma separates the dependent clause "giving me . . . international event" from the rest of the sentence. You don't need a colon, as in B; colons signal lists or definitions. You don't need a semicolon, as in C, either—a semicolon should be placed between clauses that could stand alone as sentences, but the second part of this sentence can't. Choice D creates a sentence with no verb.

36. **G**

Difficulty: Medium

Category: Sentence Structure

Getting to the Answer: This is an example of a misplaced modifier. Choices F and H make it sound as if it is the airport, and not the pilot, that is filing the flight plan. Choice J is awkward (it uses a passive construction) and is wordy. Choice (G) is concise, and the verbs *filed* and *gave* are parallel.

37. **D**

Difficulty: Medium

Category: Sentence Structure

Getting to the Answer: The colon in the original interrupts the flow of the sentence, so A is incorrect. Colons signal lists or definitions, but nothing needs to be equated in this sentence, so B is incorrect as well. Choice C includes unnecessary commas. The correct answer is (D).

38. **G**

Difficulty: Medium

Category: Organization

Getting to the Answer: The sentence should appear a er "As we departed Troutdale airport, my Cessna 152 ascended slowly on its way toward Mt. St. Helens," and before "A few other pilots were also circling around the crater." Choice (G) is correct. Choices F, H, and J do place the sentence in a logical location within the paragraph.

39. **D**

Difficulty: Low

Category: Conciseness

Getting to the Answer: Because *speechless* and *mute* mean the same thing, it's redundant to use both of them. "DELETE the underlined portion," (D), is correct.

40. **G**

Difficulty: Medium

Category: Agreement

Getting to the Answer: *Steadying* and *took* should be in parallel form, so F and H are incorrect. This makes (G)—with *steadying* and *taking*—correct. The verbs in J are parallel, but they're in the present tense, which doesn't fit with the past-tense verbs *shot* and *dictated* in the non-underlined part of the sentence.

41. **A**

Difficulty: Medium

Category: Development

Getting to the Answer: Jeff and the narrator are circling the mountain, so "a description of Mt. St. Helens," (A), would be appropriate. Choice B contradicts the information in the passage; we're told that the plane must stay high enough to avoid smoke and

ash. Choice C sounds as if it belongs in a science textbook rather than in a story. Choice D wanders too far from the direct observation of the Mt. St. Helens volcano, which is the paragraph's focus.

42. **G**

Difficulty: Medium

Category: Organization

Getting to the Answer: "Since that time," (G), is an appropriate transition. It makes clear the time shi between the day at Mt. St. Helens and the present. The other choices contain inappropriate connecting words. *However* in F and *nevertheless* in J signal contrasts, but there isn't one in the passage. *Furthermore*, H, suggests an elaboration of what came before, but there is no elaboration in the passage.

43. **C**

Difficulty: Medium

Category: Development

Getting to the Answer: Because the author is favorably recalling a memorable past experience, *nostalgic*, (C), is the best choice. The passage is positive in tone. It's definitely not *bitter*, B, or *exhausted*, D. *Optimistic*, A, is close but incorrect. *Optimistic* means "hopeful." The passage focuses on the excitement of the past, not on the good things that might happen.

44. **H**

    Difficulty: Medium

    Category: Development

    Getting to the Answer: The use of *I* is appropriate because this is a firsthand account. First-person narratives are designed to draw the reader in, making the immediacy mentioned in (H) the desired outcome. Choice J is not true, because *I* is not appropriate in all types of writing. The passage is personal and chatty; it's not an example of "formal writing." The passage isn't focused on volcanoes in general, as G says, but on the Mt. St. Helens eruption, the narrator's first international story.

45. **B**

    Difficulty: High

    Category: Organization

    Getting to the Answer: The passage reads best if the first and second paragraphs are switched. Choices A, C, and D confuse the time sequence of the narrative, which follows the narrator from early dreams of becoming a photojournalist, to the memorable Mt. St. Helens story, to the present experience as a foreign correspondent.

9. *Passage IV*

46. **G**

Difficulty: Low

Category: Conciseness

Getting to the Answer: The description of Sherlock Holmes as "ingenious and extremely clever" is redundant because *ingenious* and *extremely clever* mean the same thing. You need to use only one of the two to get the point across, so (G) is the only possible option.

47. **D**

Difficulty: High

Category: Organization

Getting to the Answer: *Therefore* is supposed to be a signal that the sentence that follows is a logical conclusion based on information from the preceding sentence or sentences. The use of *therefore* doesn't make sense here because you can't conclude that everyone knows the phrase "Elementary, my dear Watson," just because everyone knows of Holmes's detective abilities. Choice C is incorrect for the same reason—*for this reason* and *therefore* mean the same thing in this context. *Although*, in B, indicates some sort of contrast; this is incorrect because there is no contrast within this sentence or between this sentence and the previous one. Really, there is no need for a structural signal here at all. Choice (D) is correct.

48. **J**

Difficulty: Medium

Category: Development

Getting to the Answer: You must choose the word that best fits the context of the sentence. The essay discusses Holmes's ability to solve mysteries, which matches (J) since *deductions* are conclusions reached through reasoning. Choices F, G, and H do not make sense in context; the words *tales* and *stories* do not indicate Holmes's logical reasoning skills, and the word *subtractions* is illogical in context.

49. **B**
Difficulty: Medium

Category: Agreement

Getting to the Answer: *He* is an ambiguous pronoun because it's unclear whether *he* refers to Conan Doyle or to Sherlock Holmes. You know a er reading the entire sentence that *he* is Conan Doyle, so you have to replace *he* with *Conan Doyle* for the sake of clarity. This makes (B) correct.

50. **J**
Difficulty: Medium

Category: Conciseness

Getting to the Answer: From a grammatical point of view, there is nothing incorrect here; it's just unnecessarily wordy. "To be remembered," (J), is the most concise answer and therefore correct

MATHEMATICS TEST

1. C. Sarah pays for n notebooks at $3.50 each, costing 3.50n dollars. Her change from a $50 bill is 50 - 3.50n.

2. G. Expand both sides: 5x - 15 = 2x + 12. Subtract 2x from both sides: 3x - 15 = 12. Add 15: 3x = 27. Divide by 3: x = 9.

3. B. Calculate 35% of 180 by multiplying: 0.35 × 180 = 63.

4. H. Let the three consecutive odd integers be n, n+2, and n+4. Their sum is n + (n+2) + (n+4) = 99. Simplify: 3n + 6 = 99, so 3n = 93, and n = 31. The largest integer is n+4 = 35.

5. D. Solve |2x + 7| = 15 by considering both cases. Case 1: 2x + 7 = 15, so 2x = 8, and x = 4. Case 2: 2x + 7 = -15, so 2x = -22, and x = -11.

6. G. From 6:00 AM to 2:00 PM is 8 hours = 2 doubling periods (8 ÷ 4 = 2). Working backwards: at 10:00 AM there were 800 ÷ 2 = 400 bacteria; at 6:00 AM there were 400 ÷ 2 = 200 bacteria.

7. A. Apply the power rule: $(3x^2y^3)^2 = 3^2 \times (x^2)^2 \times (y^3)^2 = 9x^4y^6$.

8. J. If the average of five numbers is 48, their sum is 5 × 48 = 240. The sum of the four known numbers is 42 + 50 + 45 + 51 = 188. The fifth number is 240 - 188 = 52.

9. C. First evaluate $g(4) = 4^2 = 16$. Then f(16) = 3(16) - 7 = 48 - 7 = 41.

10. G. Miles per gallon = total miles ÷ gallons = 285 ÷ 15 = 19 mpg.

11. B. If $3^x = 81$, then x = 4 (since $3^4 = 81$). Therefore 3^(x-2) = 3^(4-2) = $3^2 = 9$.

12. H. Percent increase = (new - old)/old × 100 = (92 - 80)/80 × 100 = 12/80 × 100 = 15%.

13. D. Factor out the common term: $(6x^3 - 9x^2)/3x = 3x(2x^2 - 3x)/3x = 2x^2 - 3x$.

14. F. Substitute a = -2 and b = 3: $(-2)^2 - 2(-2)(3) + (3)^2 = 4 + 12 + 9 = 25$.

15. A. The ratio 7:5 means 7 parts boys and 5 parts girls, total 12 parts. Boys = (7/12) × 120 = 70.

16. J. The slope of a line perpendicular to a line with slope m is -1/m. For m = -3/4, the perpendicular slope is -1/(-3/4) = 4/3.

17. C. If $\log_5(x) = 3$, then $5^3 = x$. Calculate $5^3 = 125$.

18. G. Let width = w, then length = w + 5. Perimeter = 2(w + w + 5) = 70, so 2(2w + 5) = 70, which gives 4w + 10 = 70. Therefore 4w = 60, and w = 15 feet.

19. B. Factor $x^2 - 13x + 42$. Look for two numbers that multiply to 42 and add to -13: -6 and -7. So $(x - 6)(x - 7) = 0$. Both $(x - 6)$ and $(x - 7)$ are factors.

20. H. For inverse variation, $xy = k$. When $x = 5$ and $y = 12$: $k = 5 \times 12 = 60$. When $x = 10$: $10y = 60$, so $y = 6$.

21. D. Solve $4x - 9 \leq 23$. Add 9: $4x \leq 32$. Divide by 4: $x \leq 8$.

22. F. This is a geometric sequence with first term 7 and common ratio 2. The nth term is $7 \times 2^{(n-1)}$. For the 7th term: $7 \times 2^6 = 7 \times 64 = 448$.

23. A. Use the Pythagorean identity: $\sin^2(\theta) + \cos^2(\theta) = 1$. If $\sin(\theta) = 5/13$, then $(5/13)^2 + \cos^2(\theta) = 1$, so $25/169 + \cos^2(\theta) = 1$. Therefore $\cos^2(\theta) = 144/169$, and $\cos(\theta) = 12/13$ (positive for acute angle).

24. J. The mean of x, 2x, and 3x is $(x + 2x + 3x)/3 = 6x/3 = 2x$. If $2x = 24$, then $x = 12$.

25. C. Use the distance formula: $d = \sqrt{[(5-(-3))^2 + (1-7)^2]} = \sqrt{[8^2 + (-6)^2]} = \sqrt{[64 + 36]} = \sqrt{100} = 10$.

26. G. Take the square root of both sides: $x - 5 = \pm 8$. So $x = 5 + 8 = 13$ or $x = 5 - 8 = -3$.

27. B. Let the original number be 100. After 25% increase: $100 \times 1.25 = 125$. After 20% decrease: $125 \times 0.80 = 100$. The result is 100% of the original.

28. H. Factor the numerator: $x^2 - 16 = (x + 4)(x - 4)$. So $(x^2 - 16)/(x - 4) = (x + 4)(x - 4)/(x - 4) = x + 4$.

29. D. If $2^{(3x)} = 64$, recognize that $64 = 2^6$. So $2^{(3x)} = 2^6$, which means $3x = 6$, and $x = 2$.

30. F. Use the formula: sum of interior angles $= (n - 2) \times 180°$. So $(n - 2) \times 180 = 1440$, which gives $n - 2 = 8$, and $n = 10$.

31. A. Matrix multiplication: A × B has element in row 1, column 2 $= (4)(3) + (2)(1) = 12 + 2 = 14$.

32. J. If circumference = 31.4, then $2\pi r = 31.4$, so $r = 31.4/(2 \times 3.14) = 5$. Area $= \pi r^2 = 3.14 \times 25 = 78.5$ in^2.

33. C. The cube root of -216: $\sqrt[3]{(-216)} = -6$ (since $(-6)^3 = -216$).

34. G. If $f(x) = 2x + 1$ and $f^{-1}(11) = y$, then $f(y) = 11$. So $2y + 1 = 11$, which gives $2y = 10$, and $y = 5$.

35. B. The sum of an arithmetic sequence is $S = n/2 \times (2a_1 + (n-1)d)$. With $n = 10$, $a_1 = 5$, $d = 8$: $S = 10/2 \times (2(5) + 9(8)) = 5 \times (10 + 72) = 5 \times 82 = 410$.

36. H. Sums greater than 9 are: 10 (4,6; 5,5; 6,4), 11 (5,6; 6,5), 12 (6,6) = 6 ways out of 36 total. Probability = 6/36 = 1/6.

37. D. Square both sides of $x + 1/x = 5$: $(x + 1/x)^2 = 25$, so $x^2 + 2(x)(1/x) + 1/x^2 = 25$, which gives $x^2 + 2 + 1/x^2 = 25$. Therefore $x^2 + 1/x^2 = 23$.

38. F. Volume of cone = $(1/3)\pi r^2 h$. So $(1/3)\pi r^2(8) = 96\pi$, which gives $(8/3)\pi r^2 = 96\pi$. Divide by π: $(8/3)r^2 = 96$. Multiply by 3/8: $r^2 = 36$, so $r = 6$ cm.

39. A. Simplify each radical: $\sqrt{48} = \sqrt{(16\times3)} = 4\sqrt{3}$; $\sqrt{27} = \sqrt{(9\times3)} = 3\sqrt{3}$; $\sqrt{75} = \sqrt{(25\times3)} = 5\sqrt{3}$. Therefore $4\sqrt{3} - 3\sqrt{3} + 5\sqrt{3} = 6\sqrt{3}$.

40. J. Let n = notebook price and p = pen price. We have $5n + 3p = 23$ and $2n + 3p = 11$. Subtract the second from the first: $3n = 12$, so $n = 4$.

41. C. For exactly one real solution, the discriminant must equal zero: $k^2 - 4(1)(25) = 0$, so $k^2 = 100$, and $k = \pm10$. From the choices, $k = 10$.

42. G. After 1 year: $8{,}000 \times 1.15 = 9{,}200$. After 2 years: $9{,}200 \times 1.15 = 10{,}580$.

43. B. If $\tan(A) = 3/4$ (opposite/adjacent), use Pythagorean theorem to find hypotenuse: $h^2 = 3^2 + 4^2 = 25$, so $h = 5$. Therefore $\sin(A)$ = opposite/hypotenuse = 3/5.

44. H. Use binomial expansion: $(2x - 1)^4$. The term with x^3 is $C(4,3)(2x)^3(-1)^1 = 4 \times 8x^3 \times (-1) = -32x^3$. The coefficient is -32.

45. D. Vertex form: $y = a(x - 3)^2 - 4$. Using point (1, 0): $0 = a(1 - 3)^2 - 4$, so $0 = 4a - 4$, which gives $4a = 4$, and $a = 1$.

READING TEST

1. Suggested Passage Map notes:
   ¶1: Rosemary (R) - 87 yrs old

   ¶2: R's youngest grandson V seems lazy

   ¶3: R appalled by V's explanation of "gut" class

   ¶4-9: R's father had forbidden her to go to school, wonders what could have been

1. **A**

   Difficulty: Low

   Category: Inference

   Getting to the Answer: The author writes that Rosemary "had decided long ago that growing old was like slowly turning to stone; you couldn't take anything for granted,"(lines 16–18), that the memory of her childhood was "still painful as an open wound," (line 54), and that she "wondered what life would have been like if her father had not been waiting at the bottom of the stairs that day" (lines 76–78). The writer indicates sympathy for an elderly woman whose life had not gone as she had wished, a match for (A). Choice B is opposite of the information; the author does not use any words that indicate anger at Rosemary. Rosemary may be disappointed by her nephew's "gut" classes, but that's not the same as the author being disappointed in Rosemary, C, and there is no suggestion that the author is confused, as in D, by the narrator.

2. **H**

   Difficulty: Medium

   Category: Inference

   Getting to the Answer: Rosemary's unease with Victor's behavior is broadly in response to what she perceives as his laziness, but *laziness* isn't an answer choice. Choice J may be tempting, but Victor isn't unable to get out of bed, he's unwilling to. The third paragraph does specifically talk about something he had said that had "disturbed" her —his willingness to take an easy class, which matches (H). There is no evidence that Victor plans to drop out, so F is not correct, and her upbringing is never discussed with him, so G is incorrect.

3. **D**

   Difficulty: Medium

   Category: Inference

   Getting to the Answer: The answer is strongly implied in the passage. The third paragraph notes that Rosemary wanted to go to high school a er finishing grammar school. Her father would not permit her to go, so she had to spend time "with animals and rough farmhands for company instead of people her own age," (D). Choice B is flatly contradicted by the third paragraph, which indicates that Rosemary wanted to go to high school, not college. Choices A and C make inferences that are not supported by the passage.

4. **G**

   Difficulty: Medium

   Category: Inference

   Getting to the Answer: Lines 16–17 say that Rosemary "had decided long ago that growing old was like slowly turning to stone." This sentiment suggests that she is resigned to the physical problems that accompany old age. *Acceptance*, (G), therefore, is correct. *Sadness*, F, and *resentment*, H, are too negative in tone, while *optimism*, J, is too positive. Rosemary, in short, isn't at all emotional about the aging process.

5. **A**

   Difficulty: Low

   Category: Detail

   Getting to the Answer: Rosemary's interest in crossword puzzles is discussed in the opening sentences of the first paragraph. She does them for two reasons: to pass the time and to keep her mind active, (A). The other choices distort details in the first and second paragraphs. Choice B plays on Rosemary's happiness at still being able to write at age 87, C plays on her need to consult an atlas to look up the Swiss river, and D plays on her experience of "an expanded sense of time" as she grows older.

6. **G**

Difficulty: Medium

Category: Vocab-in-Context

Getting to the Answer: The second paragraph describes, among other things, Rosemary's ability to keep "present and past tense intermingling in her mind," which the author infers is a function of her old age. As it is used in the paragraph, *expanded* means "made more extensive," which matches (G). Since *expanded* doesn't necessarily mean "better," F is out of scope. An unfurled flag is certainly expanded, but doesn't make sense in the passage, making choice H incorrect. Choice J is opposite; to abridge means to shorten or restrict.

7. **B**

Difficulty: High

Category: Function

Getting to the Answer: In the lines that precede the mention of Victor's "shiny new car," Rosemary considers his easy upbringing and that her "grandson behaved as if he had never done a chore in his life" (lines 38–39). In other words, Victor's car is a symbol of his generation, which has had a much easier time getting through life than did Rosemary's. This contrast is exactly what (B) states. Choice A is incorrect on two counts: Rosemary's parents—her father anyway—can't be described as generous, and her parents have nothing to do with Victor's car, which was a gi from Victor's parents. Similarly, while

Rosemary seems to feel that Victor's future prospects are bright, C, and that his life lacks hardship, D, neither has anything to do with his car.

8. **G**

   Difficulty: Medium

   Category: Detail

   Getting to the Answer: Paragraph 3 says that Rosemary is disturbed by Victor's dismissive attitude toward his education. She doesn't like the idea that his only reason for taking a course is that he can pass it. In contrast to Victor's attitude, Rosemary, in her youth, was eager to continue her education, (G). Choices F and J refer to details from the wrong paragraphs, while H introduces an issue that the passage never tackles.

9. **C**

   Difficulty: Medium

   Category: Function

   Getting to the Answer: A few lines before Rosemary recalls what it was like growing up on the farm, the passage says that "Rosemary o en experienced an expanded sense of time, with present and past tense intermingling in her mind," (C). Choice D, on the other hand, alludes to recollections from the wrong paragraphs. Choices A and B distort details in Paragraph 2.

10. **F**

    Difficulty: Low

    Category: Function

    Getting to the Answer: The reference to Victor's bright future comes at the end of Paragraph 2, which precedes Rosemary's opinion: "if he (Victor) ever got out of bed." It's clear from the text that it's Rosemary, (F), who thinks that he has a good future. The passage never says what Victor thought about his own future, G, nor does it say what his parents thought about his future, H. And it's extremely unlikely that Victor and Rosemary's father, J, were even alive at the same time.

2. ## *Passage II*

    Passage A

    ¶1: Sherman Antitrust Act (SAA) 1st to fight econ. monopolies

    ¶2: many politicians felt gov't should stay out of econ.

    ¶3: by late 1800s, SAA needed to protect consumers

    Passage B

    ¶1: author believes altering gov't = positive reform

    ¶2: FDR is example of modern liberal econ reg.

¶3: gov’t must adapt to changing needs

11. **B**

    Difficulty: High

    Category: Detail

    Getting to the Answer: Use evidence in the passage and your own common sense to form a prediction before looking at the answer choices. The passage states that these revisions were written by “pro-business Eastern senators,” and that these revisions worked to weaken the effectiveness of the Act. Choice (B) is correct; the pro-business senators resisted the purpose of the bill. Choice A is a misused detail; Social Darwinism is not discussed until the next paragraph, and the author makes no direct connection between it and the revisions. Choice C is a distortion; there is evidence of “debate,” because the bill got rewritten, but there is no evidence that the debate took a long time. Choice D is extreme; the author is only discussing this bill, not the nature of all Congressional legislation at that time.

12. **H**

    Difficulty: High

    Category: Function

    Getting to the Answer: Remember to keep straight the opinion of the author and other opinions cited in the passage. The trust leaders used the theory of Social Darwinism to explain why it was natural for them

to have monopolies. The author must have included this in order to explain how some people justified the existence of monopolies. Choice (H) is correct; this matches your prediction. Choice F is a distortion; this is what the monopolists thought, not what the author thinks. Choice G is out of scope; the author is not exploring what kind of corporations survived, except to the extent that monopolists artificially stifled competition. Choice J is out of scope; the author is discussing a specific instance, not exploring the general "influence" of science on policy.

13. **B**

    Difficulty: Medium

    Category: Inference

    Getting to the Answer: When a question stem refers you to a section of the passage but does not provide enough information to make a prediction, it is o en helpful to take a quick scan through the passage before looking at the answer choices. The third paragraph states that laissez-faire policies created monopolies that had many negative effects. Many people objected to this, which eventually led to the Sherman Antitrust Act and other similar measures. Choice (B) fits with the description of the many negative effects of the trusts. Choice A is extreme; there is not enough evidence in the passage to use the word *all*. Choice C is a misused detail; this idea comes from Passage B. The author of Passage A never states that it was necessary; maybe there were other ways to handle the situation. Choice D is a distortion; the

author would argue that all businesses, even big trusts like Standard Oil, could compete freely a er the act.

14. **J**

    Difficulty: Medium

    Category: Function

    Getting to the Answer: Because the answer is in the passage, you should be able to move quickly through Detail questions, saving time for those you find more difficult. Read in the immediate vicinity of the given reference. The prior sentence states that Roosevelt used "government funds for the first time" in "intentional deficit spending." The sentence a er the reference points out that this "ushered in the modern era of liberal economic regulation . . . " The Act is an example of active manipulation of the economy by the government, which matches (J). Choice F is a misused detail; Passage A, not Passage B, refers to antitrust acts. Choice G is opposite; the passage states that "this act signaled the end of the laissez-faire economics era . . . " Choice H is opposite; the author says that the Agricultural Adjustment Act helped boost the nation out of the Great Depression.

15. **B**

    Difficulty: Medium

    Category: Detail

Getting to the Answer: The author discusses Franklin D. Roosevelt in the second and third paragraphs. The author quotes Roosevelt as saying that he must "'reform democracy in order to save it'" (lines 82–83), then describes Roosevelt taking action to end the Depression by instituting deficit spending and "deliberate manipulation of the national economy" (line 99), including paying farmers to produce less. This information matches (B). Choice A is not only opposite but also relevant only to Passage A. Choice C is out of scope, since Passage B has no reference to the Sherman Antitrust Act (and even if it did, it can be assumed that Roosevelt would favor it.) Choice D is also opposite; Roosevelt abandoned the traditional idea of a balanced budget to pour government monies into the economy as a way of relieving the Great Depression.

16. **H**

Difficulty: Medium

Category: Function

Getting to the Answer: Opposite choices can be tricky if you do not take the time to read carefully. Many people, including the "conservative capitalist economists," felt that the economy would naturally rise and fall and that the government should not interfere in that process. The author then goes on to state that Roosevelt felt the economy would not naturally recover, and so he instituted policies and spent money to fix it. The author feels that Roosevelt was right to do so. (The author says that Roosevelt's success was "undeniable.") The author explains the viewpoint of the "conservative capitalist

economists" in order to then argue that they were wrong and that Roosevelt was right in working to change the economy. Choice (H) fits nicely with the sentiments of the author. Choice F is opposite; Roosevelt took the opposite view from the "conservative capitalist economists." Choice G is opposite; the viewpoint of the "conservative capitalist economists" was in direct contradiction to policies like the Agricultural Adjustment Act. Choice J is a misused detail; this does not come up until the final paragraph.

17. **B**

    Difficulty: Medium

    Category: Detail

    Getting to the Answer: Watch out for choices that only apply to one of the Paired Passages. Both passages refer to economic reform. Passage A talks about preventing monopolies and trusts, and Passage B speaks in more general terms about spending money to pull the nation out of the Great Depression. Look for something that deals with government intervention in the economy. Choice (B) is mentioned in both passages. Choice A is opposite; both authors seem to agree that some degree of governmental control is necessary. Choice C is a misused detail; this only appears in Passage A. Choice D is a misused detail; this only appears in Passage B.

18. **G**

    Difficulty: Medium

Category: Inference

Getting to the Answer: When you are trying to infer how one author would react to an idea in another passage, look for a concept that the author specifically addresses. The author of Passage B argues that it is o en a good idea for the government to intervene in the economy. Therefore, he would probably not accept the argument that something should continue to exist simply because it is the most natural state of affairs. Choice (G) is correct; this fits with Author B's view of laissez-faire economic policy. Choice F is out of scope; we do not know how the author of Passage B feels about the theory of Social Darwinism. Choice H is opposite; this viewpoint is what Author B is arguing against. Choice J is a distortion; Author B never mentions monopolies.

19. **B**

Difficulty: Low

Category: Detail

Getting to the Answer: Use the passages to research your answer. It is tough to make a specific prediction here, so jump into the answer choices and compare each one against the passages. Choice (B) is correct; Passage B mentions Roosevelt's plan to "pump-prime" the depressed American economy through government deficit spending. Choice A is opposite; this appears in Passage A but not Passage B. Choice C is opposite; this is from Passage A, not Passage B. Choice D is opposite; this appears in both passages.

20. **J**

    Difficulty: High

    Category: Detail

    Getting to the Answer: In the third paragraph of Passage A, the author cites many negative consequences of laissez-faire policies and the trusts and monopolies that arose from these policies. In the third paragraph of Passage B, the author states that the Agricultural Adjustment Act "signaled the end of the laissez-faire economics era." These details match (J). Choice F is opposite; Passage A describes how laissez-faire policies negatively affected consumers, and Passage B states that the laissez-faire era ended by the end of the 19th century. Choice G includes misused details that are mentioned in each passage but do not address the question. Choice H is out of scope; Roosevelt's presidential legacy is not discussed.

3. Suggested Passage Map notes:

    ¶1: philosophes = Enlightenment ideas

    ¶2: influenced by Newton, Locke, English inst.

    ¶3: Newton: reason and nature compatible

    ¶4: Locke: human beings malleable

    ¶5: English inst.: individual freedom

¶6: philosophe Voltaire = ex. of Enlightenment ideas

21. **C**
    Difficulty: Medium

    Category: Inference

    Getting to the Answer: This question asks for a description of the philosophes, so it's back to the first two paragraphs. Lines 13–15 say that they took the ideas of others and popularized them. The first sentence of the second paragraph (lines 20–23) goes on to state that they "developed the philosophy of the Enlightenment and spread it to much of the educated elite in Western Europe (and the American colonies)." Thus, (C) is correct. Choices B and D are contradicted by information in the first paragraph, which states that the philosophes were generally neither professors nor scientists. Choice A, on the other hand, is too narrow in scope: true, the philosophes were influenced by Locke, but they were also influenced by Newton and English institutions.

22. **F**
    Difficulty: Medium

    Category: Inference

    Getting to the Answer: This author says the philosophes "were rightly considered philosophers," (line 5), that they were intellectuals, and that they "developed the philosophy of the Enlightenment and spread

it to much of the educated elite in Western Europe (and the American colonies)" (lines 20–23). The author seems to admire these people and acknowledge their influence on the educated world, matching (F). Choice G is the opposite of the author's opinion, and H seems to criticize the philosophes for basing their thinking on the previous ideas of "Newton, Locke, and English institutions" (lines 26–27). Choice J is contradicted by the statement that the philosophes "were rightly considered philosophers" (line 5).

23. **D**
    Difficulty: Medium

    Category: Detail

    Getting to the Answer: The answer to a question that contains a line reference is found in the lines around that reference. Locke's idea that "schools and social institutions could . . . play a great role in molding the individual" comes up right a er his belief that humans are shaped by their experiences, (D). Choice A is contradicted by lines 44–47, while B and C distort details in the fourth paragraph.

24. **H**
    Difficulty: High

    Category: Inference

    Getting to the Answer: Your passage map should have pointed you to the third paragraph, where Newton is discussed. This paragraph says

that Newton believed that "the universe [was]…originally set in motion by God," Option I, and that "the universe operates in a mechanical and orderly fashion," Option III. However, this paragraph doesn't say that Newton believed that "human reason is insufficient to understand the laws of nature," Option II; if anything, it implies just the opposite. Choice (H), Options I and III only, is correct.

25. **D**

    Difficulty: Medium

    Category: Detail

    Getting to the Answer: Lines 54–56 reveal that it was Locke who questioned the notion that "revelation was a reliable source of truth." Thus, you're looking for a work written by him, so you can immediately eliminate A, *Letters on the English*, and C, *Elements of the Philosophy of Newton*, both of which were authored by Voltaire. The remaining two works, *Second Treatise of Civil Government*, B, and *Essay Concerning Human Understanding*, (D), were both written by Locke; but *Second Treatise of Civil Government*, B, is a political, not a philosophical, work, so it can be eliminated as well. That leaves (D) as the correct answer.

26. **G**

    Difficulty: Medium

    Category: Inference

Getting to the Answer: The first sentence of Paragraph 4 states that Locke "agreed with Newton but went further." Specifically, Locke also thought that the human mind was subject to "the mechanical laws of the material universe" (lines 41–43), (G). The other choices distort details in the third and fourth paragraphs.

27. **D**

Difficulty: Medium

Category: Detail

Getting to the Answer: The philosophes—as the fi h paragraph shows—were greatly influenced by an England that allowed more individual freedom, was more tolerant of religious differences, and was freer of traditional political institutions than other countries, particularly France. Indeed, the philosophes wanted other countries to adopt the English model. Thus (D), Options I, II, and III, is correct.

28. **G**

Difficulty: High

Category: Inference

Getting to the Answer: This question also asks about England, so refer back to the fi h paragraph. In the second-to-last sentence of the paragraph, the philosophes cite England's political stability and prosperity as evidence that England's system worked. The last sentence of the paragraph goes on to say that the philosophes

"wanted to see in their own countries much of what England already seemed to have" (lines 74–75). Choice (G), therefore, is correct. Choice F, on the other hand, flatly contradicts the gist of the fi h paragraph. Finally, H and J distort details from the wrong part of the passage.

29. **D**

Difficulty: Medium

Category: Vocab-in-Context

Getting to the Answer: *Mordant* is a word the author uses to describe Voltaire's humor in the sixth paragraph. Think about the other words the author uses to describe Voltaire: *versatile*, *sparkling*, *outspoken*. Consider also that Voltaire was imprisoned, then exiled because of his criticism of church and state. Now go back to the phrase "mordant wit." Given the context, this must mean something about a sarcastic, critical humor. Biting, choice (D), is another word with the same meaning, and it is correct. Choice A is opposite. The author states that Voltaire offended both church and state, so there were specific, not random targets. Choice B confuses the word *intelligentsia* (highly educated people) with Voltaire's intelligence, and C is opposite of the correct meaning.

30. **J**

Difficulty: Medium

Category: Function

Getting to the Answer: The notion that the philosophes were "more literary than scientific" appears in the middle of the first paragraph. A few lines further down, the paragraph furnishes a list of the types of literary works produced by the philosophes, so (J) is correct. The passage never mentions any "political change," F, nor does it compare the literary outputs of Newton and Voltaire, G. Finally, H is out because the philosophes were not scientists.

4. Suggested Passage Map notes:

    ¶1: 65 mil yrs ago - mass extinction

    ¶2: 1980 - Alverezes' asteroid theory

    ¶3: research supports theory + additional meteor strikes

    ¶4: moon surface info also supports theory

    ¶5: trad. bio/geo resisted theory

31. **D**
    Difficulty: Low

    Category: Detail

    Getting to the Answer: This question emphasizes the importance of reading all the choices before selecting one. The second paragraph tells us that the Alvarezes believe conditions created by the impact of a

meteorite led to mass extinctions, making (D) correct. The impact of the asteroid, A, caused great damage, but it didn't do "most of the harm"—see the third sentence. Processes like B and C are the explanations of the traditional scientists.

32. **H**

    Difficulty: High

    Category: Inference

    Getting to the Answer: To fully accept the validity of a theory, scientists require verifiable and repeatable evidence. Until that is available, scientists are correct in continuing to challenge the theory and pursuing their own research into it. This makes choice (H) correct. Keep in mind that the question is about traditionalists, meaning that the alternative view must be that of the Alvarezes. The traditionalists' arguments are given only briefly, and the author clearly believes the Alvarezes have added something valuable to the study of mass extinctions, but the traditional view has not been proven wrong conclusively, as in F. And as the last paragraph indicates, traditionalists have produced their own theories to account for new evidence, such as iridium's reaching the Earth's surface via volcanic activity, as in J. Choice G is a distortion; the traditionalists were not skeptical about iridium itself, but of the Alvarezes' explanation of its origin.

33. **C**

    Difficulty: Medium

Category: Vocab-in-Context

Getting to the Answer: As it is used in the sentence, *enrichment* means "increase in amount." It wouldn't make sense for the Earth to have wealth, A, improvement, B, or reward, D, of iridium.

34. **F**
Difficulty: Low

Category: Global

Getting to the Answer: The arguments of Alvarez-theory opponents are given in the last paragraph: no crater, iridium comes from the Earth's core, and the Alvarezes are only physicists. If sufficient iridium deposits come from the Earth's core in lava flows, (F), Alvarez supporters can't rely on them as evidence of meteorite impact. The Alvarezes didn't say extinctions never occurred without asteroid impacts, G, or that all meteorites contain iridium, H. Choice J contradicts one of the arguments against the Alvarezes, not their opponents.

35. **D**
Difficulty: Medium

Category: Inference

Getting to the Answer: In the first sentence of the second paragraph, the author calls the Alvarez theory important. The bulk of the passage

explains and supports this theory, so (D) is correct. The implication is that the author believes the Alvarezes were on the right track, so we want a positive answer. Choices A and C are negative, and B is neutral.

36. **G**

    Difficulty: High

    Category: Detail

    Getting to the Answer: According to the information in the second paragraph, soil displacement was the immediate result of a meteorite's impact; it "blotted out" the sun, which reduced temperatures and caused plants to die, which matches (G). All of the other answer choices are in the correct order.

SCIENCE TEST

Passage I

1. **D**

   Difficulty: Low

   Category: Data—Detail & Interpretation

   Getting to the Answer: Finding the answer to this question depends on locating the appropriate part of Table 1. There are 2 rows in the table that refer to *Lagerstroemia* 'Natchez' grown at a latitude of 28 degrees. (Ignore the row containing *Lagerstroemia* 'Natchez' grown at a latitude of 33 degrees.) Reading across the 2 rows, you can see that the plants have heights of 8.6 and 7.6 meters. Both of these values are greater than 7.5 meters tall, so (D) presents the most reasonable expectation for the height of an adult plant of the same variety.

2. **G**

   Difficulty: Low

   Category: Data—Detail & Interpretation

   Getting to the Answer: Flowering growth is represented by the *y*-axis of Figure 1. The slope of the line indicates the rate of increase for flowering growth, so you should look for the segment that has the steepest positive slope. According to the figure, flowering growth increases only slightly in the Juvenile and Adult phases, and it decreases during the Death phase. The only phase containing a large increase in flowering growth, indicated by a steep upward slope, is the Intermediate phase, (G).

3. **B**

   Difficulty: Low

   Category: Data—Detail & Interpretation

   Getting to the Answer: This question merely requires you to read the table accurately. The 4 varieties mentioned in the answer choices typically grow to heights of 2.4, 6.4, 4.6, and 4.9 meters, respectively. Choice (B) has the greatest adult height, making it correct.

4. **F**

   Difficulty: Medium

   Category: Data—Detail & Interpretation

   Getting to the Answer: Take a look at Table 1 and examine the information given about each plant variety. Of the two varieties with data about growth in soil and organic compost, *Lagerstroemia indica* 'Catawba' reaches a typical height of 2.7 meters while *Lagerstroemia fauriei* 'Kiowa' grows to 8.3 meters tall, which means H can safely be eliminated. *Lagerstroemia* 'Chickasaw' only includes data for when it is grown in soil alone (with a typical height of 0.9 meters), but the passage offers no reason to suspect that adding organic compost would triple its growth, so G can be eliminated too. *Lagerstroemia* 'Natchez' also has no data about growth with organic compost, but it consistently reaches heights of more than double the desired value when grown at 28 degrees of latitude, allowing J to be eliminated as well. *Lagerstroemia indica* 'Catawba' is the only variety that comes close to a height of 3 meters, so (F) is correct.

5. **D**

   Difficulty: Medium

   Category: Thinking Like a Scientist—Evaluating Hypotheses

   Getting to the Answer: To answer this question, simply compare the statement in each choice to the information in Figure 1—only 1 choice should agree closely with the data. Choice A cannot be correct since the rate of increase for flowering growth (the slope of the curve) changes in each phase. Choices B and C don't match the data either— the curve tapers upward slightly during the Juvenile phase, indicating neither a sharp increase nor a decrease but rather a gradual increase in flowering growth. Choice (D) is correct: Figure 1 shows that flowering growth remains relatively low until the onset of the Intermediate phase.

6. **J**

   Difficulty: Medium

   Category: Experiments—Synthesizing Data

   Getting to the Answer: The introductory paragraph states that Table 1 includes a plant's typical adult height—for *Lagerstroemia indica* 'Potomac,' that height is 4.6 meters. The question asks about a "*Lagerstroemia indica* 'Potomac' shrub that is almost 5 meters tall," which would almost certainly be an adult since it is close to the typical height from the table. To find the trend for its flowering growth, look at the adult phase in Figure 1. The flowering growth rate increases only slightly during the beginning of the adult phase and then plateaus, meaning that the general trend is for flowering growth to stay about the same during this phase. Choice (J) is thus correct.

Passage II

7. **B**

   Difficulty: Low
   Category: Data—Detail & Interpretation

   Getting to the Answer: Radiation energy emitted can be found in Table 2. Simply look up the value for the Isotope B row and the Daughter column. The radiation emitted by the daughter nucleus for Isotope B is 2.1 MeV, as in (B).

8. **H**

   Difficulty: Medium

   Category: Data—Inference & Calculation

   Getting to the Answer: Look at Table 1 to determine the decay reaction Isotope C underwent during each generation. The parent and daughter nuclei both underwent alpha decay, but the granddaughter nucleus did not decay further. According to the passage, alpha decay involves the emission of 2 neutrons and 2 protons. Since Isotope C underwent alpha decay twice, $2 \times 2 = 4$ neutrons were emitted. The correct answer is (H).

9. **B**

   Difficulty: Medium

   Category: Data—Inference & Calculation

Getting to the Answer: Compare the values for Isotope G to the values of Isotopes A—F in Table 2. Isotope G (6.2 MeV and 0.7 MeV) is most similar to Isotope E (6.0 MeV and 1.8 MeV), which underwent alpha and then beta decay. Alternatively, compare Table 1 to Table 2 to determine the range of radiation energy emitted for alpha and beta decay. Radiation energy emitted from alpha decay ranges from 5.0 to 6.8 MeV, and from beta decay, it ranges from 0.1 to 2.1 MeV. For Isotope G, 6.2 MeV (parent) falls between 5.0 and 6.8 MeV and 0.7 MeV (daughter) falls between 0.1 and 2.1 MeV. Hence, the particles emitted during decay of the parent and of the daughter are most likely alpha and beta, respectively. The correct answer is (B).

10. **J**

    Difficulty: Medium

    Category: Data—Detail & Interpretation

    Getting to the Answer: The second paragraph of the passage states that when an isotope is stable, it no longer emits radiation. According to Table 1, the daughter and granddaughter of Isotope F did not emit alpha or beta particles. Thus, Isotope F was stable a er 1 generation. The correct answer is (J). Isotopes C and E became stable a er 2 generations, and Isotope A did not become stable and continued to decay a er 3 generations.

11. **A**

    Difficulty: Medium

    Category: Data—Inference & Calculation

Getting to the Answer: Look at Table 1 to determine which particle was emitted from the parent nucleus for Isotope A. According to the table, the parent underwent alpha decay. Alpha decay as defined in the third paragraph of the passage results in the emission of an alpha particle, which consists of 2 protons and 2 neutrons. Atomic mass is the sum of protons and neutrons, as noted in the first paragraph. If 2 protons and 2 neutrons were emitted, the atomic mass of the daughter nucleus would be 4 less than that of the parent, as in (A).

12. **J**

    Difficulty: Medium

    Category: Data—Inference & Calculation

    Getting to the Answer: Refer to Table 2 to determine the total radiation energy emitted over 3 generations for Isotopes A, E, and F. For Isotope A, the total energy of the 3 generations is 5.4 + 5.7 + 6.3 = 17.4 MeV. The total radiation energy emitted for Isotope E is 6.0 + 1.8 = 7.8 MeV. The total radiation energy for Isotope F is 1.4 MeV. Thus, the appropriate ranking for energy emitted from least to greatest is Isotope F, Isotope E, and Isotope A. The correct answer is (J). Watch out for trap answer F, which ranks the isotopes from greatest to least energy emitted.

13. **C**

    Difficulty: High

    Category: Data—Inference & Calculation

Getting to the Answer: During the first decay in the question stem, the atomic mass decreases by 4 (from 212 to 208) and the atomic number decreases by 2 (from 83 to 81), which indicates alpha decay. During the second decay, the atomic mass does not change but the atomic number increases by 1 (from 81 to 82), which indicates beta decay. Look at Table 1 to see which isotope underwent first alpha decay and then beta decay. Only Isotope E matches that series. Choice (C) is thus correct.

Passage III

14. **H**
    Difficulty: Medium

    Category: Experiments—Design & Methodology

    Getting to the Answer: The independent variable is the quantity that is manipulated by researchers and that impacts the dependent variable (or variables) that the researchers measure. Table 2 and the description for Experiment 3 both indicate that the experiment studied how levels of UV-B light varied based on the time of day during which they were measured. The time of day is thus the independent variable, and (H) is correct. Choice F is incorrect because Experiment 3 only considered UV-B levels. Choice G is incorrect because UV-B level was the dependent variable in Experiment 3, the one that the researchers measured. Choice J is incorrect because Experiment 3 was limited to a single season, the summer.

15. **B**

Difficulty: Medium

Category: Experiments—Synthesizing Data

Getting to the Answer: To answer this question, begin by considering the trends that are revealed by the experimental results. The results of Experiment 1 indicate that UV-A levels are greater during the summer and at higher elevations, while the results of Experiment 2 show that UV-A levels are lower the more time has passed a er the sun has been directly overhead. Choice (B) is correct because living in an area with shorter summers and longer winters would mean fewer days with higher UV-A levels and more days with lower UV-A levels. Choice A is incorrect because there is no suggestion in the passage of an inverse relationship between UV-A levels and UV-B levels—if anything, the results of Experiment 2 suggest a direct relationship since levels of both decrease 2 hours a er the sun is directly overhead. Choice C is the opposite of (B) and would likely result in greater UV-A levels. Choice D is incorrect because windows that filter out UV-B light would not necessarily filter out UV-A light as well.

16. **G**

Difficulty: Low

Category: Data—Detail & Interpretation

Getting to the Answer: Essentially, this question is asking how UV-B levels change from when the sun is overhead, in the middle of the day,

to when it is low on the horizon, near the end of the day. Experiments 2 and 3 both investigate the relationship between time of day and UV-B levels, though it is probably easier to see this relationship in Experiment 3. According to Table 2, UV-B levels decrease every hour a er the sun is directly overhead, so you should predict that UV-B levels will be lower when the sun is low on the horizon. This corresponds to (G).

17. **C**

    Difficulty: Medium

    Category: Data—Inference & Calculation

    Getting to the Answer: The question stem asks you to predict how UV-C light would behave if it acted like UV-A and UV-B light did in the experiments from the passage. Here, it's a good idea to examine the answer choices to narrow down what data from the passage will be relevant. Choices A and B concern the change in UV levels from year to year, but this was not investigated in any of the experiments, so both choices can be eliminated. The remaining choices concern the relative UV levels when the sun is directly overhead, so consider the findings from Experiments 2 and 3, which investigated this directly. In Experiment 2, both UV-A and UV-B levels were higher when the sun was directly overhead, while in Experiment 3, the highest UV-B levels were recorded at that time as well. Thus, if UV-C light behaved in the same way, its levels would be higher when the sun is directly overhead, as stated in (C).

18. **J**

    Difficulty: Low

    Category: Data—Detail & Interpretation

    Getting to the Answer: While working on previous questions, you should have found that both UV-A and UV-B are higher when the sun is overhead and lower at later times of day, as reflected in the results from Experiments 2 and 3. That means that both levels *decrease* as the number of hours a er the sun is overhead *increases*. Choice (J) is the only choice that captures these relationships accurately.

19. **D**

    Difficulty: Medium

    Category: Data—Inference & Calculation

    Getting to the Answer: This question may look complex, but the mention of UV-A levels, the summer, and measuring 30 minutes a er the sun is overhead all point to the design of Experiment 1, particularly the information in the second half of Table 1. Since the elevation mentioned in the question stem is higher than all of those in the table, and because UV-A levels increase with greater elevation, predict that the levels of UV-A in this community will be higher than all of the values in the “Summer” portion of Table 1. Only (D) matches this prediction.

20. **F**
Difficulty: Low

Category: Data—Inference & Calculation

Getting to the Answer: Experiment 2 investigated the change in UV-B levels over time at an elevation of 2,000 meters during winter. According to the description of that experiment, the UV-B measurement when the sun is directly overhead is 48 mJ/cm^2, and a er 2 hours, it is 42 mJ/cm^2. The only answer choice that has a value between 42 mJ/cm^2 and 48 mJ/cm^2 is (F). Choice J is a trap because it reflects the value of UV-B a er 1 hour in the summer, as listed in Table 2.

Passage IV

21. **C**
Difficulty: Medium

Category: Data—Inference & Calculation

Getting to the Answer: The question is asking you to predict a result for circumstances that were not tested in the original experiment, so look for the trend in Experiment 1's results. According to Table 1, every 2 cm added to *r* results in an additional 4 or 5 rpm for the precession rate, so the relationship between *r* and precession rate is direct and roughly linear. Thus, a gyroscope with an *r* of 9 cm should have a precession rate that is halfway between the precession rates for gyroscopes with *r* values of 8 cm and 10 cm, which are 19 rpm and 24

rpm, respectively. Halfway between those values is 21.5 rpm, which corresponds to (C).

22. **G**

    Difficulty: Low

    Category: Data—Detail & Interpretation

    Getting to the Answer: The results of Experiment 1 are presented in Table 1, so look for the general trend there. As the *r* value increases, so does the precession rate. Since *r* is a measure of how far the center of gravity is from the surface, (G) accurately reflects the direct relationship between these 2 quantities. Choices H and J are incorrect because Experiment 1 did not vary the distance of the center of gravity from the axis of rotation.

23. **C**

    Difficulty: Medium

    Category: Experiments—Synthesizing Data

    Getting to the Answer: To answer this question, you don't have to figure out the exact shape of the graph—just enough to distinguish it from the incorrect answer choices. The results of Experiment 2 consistently show a decrease in precession rate as spin rate increases, with no sign in Table 2 of this trend reversing. This best fits with (C), which also shows the precession rate (*y*-axis) decreasing as the spin rate (*x*-axis) increases. Choice A shows an initial increase in precession

rate before it decreases, which is not supported by the data in the table. Choice B shows the opposite trend—precession rate increasing as spin rate increases. Choice D shows an initial decrease in precession rate, but the subsequent increase is not supported by the data in Table 2.

24. **F**
    Difficulty: Medium

    Category: Thinking Like a Scientist—Evaluating Hypotheses

    Getting to the Answer: To test a hypothesis about precession rate and the acceleration due to gravity, the scientist would have to measure the precession rate at multiple locations that varied with respect to this quantity. The question tells you that gravitational acceleration decreases as distance from the Earth increases. Thus, one way to test this hypothesis would be to measure gyroscopes at different distances from Earth, which matches (F). Choice G would not provide any new data because a satellite at the exact same distance would experience the same gravitational acceleration as was encountered in Experiment 3. Choice H is incorrect because nothing in the passage or question stem indicates that orbital direction has an impact on acceleration due to gravity. Choice J would more or less replicate Experiment 2, which revealed nothing about the effect of gravitational acceleration on precession.

25. **C**
    Difficulty: High

Category: Experiments—Synthesizing Data

Getting to the Answer: In order to answer this question, you'll need to relate 3 quantities together: *r*, spin rate, and precession rate. So start working on this question by considering the information revealed in Tables 1 and 2. Table 1 relates *r* and precession rate for a fixed spin rate, while Table 2 relates spin rate and precession rate for a fixed *r*, which you're told in the question stem is equal to 6 cm. Call the fixed spin rate used in Experiment 1 *s*. Based on Table 1, when the spin rate is *s* and *r* is 6 cm, the precession rate is 14 rpm. Now, to find the value of *s*, just look for a matching precession rate in Table 2. When *r* is 6 cm (as it is for all of the entries in Table 2, according to the question stem) and the precession rate is 14 rpm, the spin rate is 750 rpm. So, you can conclude that *s*, the spin rate from Experiment 1, is 750 rpm, which matches (C).

26. **G**

Difficulty: High

Category: Experiments—Design & Methodology

Getting to the Answer: This question is effectively asking you to identify a variable that the researcher needed to control (that is, to keep constant) to ensure useful results in Experiment 2. The question stem says to assume that the results of Experiment 1 were not taken into account during Experiment 2's design, which suggests that the relevant variable is precisely the one that was manipulated during Experiment 1. According to the description of Experiment 1, the

gyroscopes “differed only in the distance (*r*) from the gyroscope’s center of gravity to the surface.” As Table 1 reveals, different *r* values produced different precession rates. This helps to explain why the scientist “used a gyroscope of fixed size” in Experiment 2: if the scientist had used gyroscopes with varying *r* values while also altering their spin rates, some of the precession rates measured would have differed from those found in Table 2—and this would have made it impossible to isolate the effect of changing spin rate on precession rate. Because using gyroscopes of various sizes would have altered the results of Experiment 2, (G) is correct. Choices F, H, and J all concern quantities that are not investigated in any of the experiments discussed in the passage.

27. **B**

Difficulty: High

Category: Experiments—Design & Methodology

Getting to the Answer: Always keep in mind that a well-designed experiment should involve manipulating only the variable being tested while keeping other quantities constant. To investigate the effects of gyroscope mass, you need to find a way to vary mass without changing other properties of the gyroscope, such as its size and shape. A fixed size and shape means a fixed volume, and the only way to alter the mass of an object without altering its volume is to alter its density, meaning its ratio of mass to volume. This can be done by using different materials that differ in density—for example, a gyroscope made of a denser metal like lead would have a greater mass than a

gyroscope (of the same size and shape) made of a less dense metal like aluminum. Choice (B) is thus correct. Choice A is not specific enough to be correct: although gyroscopes from different companies could potentially have different masses, they might also differ in size and shape. Choice C would involve altering the acceleration due to gravity—and thus the weight—of the gyroscopes, but weight is different from mass (weight is equal to mass times the acceleration due to gravity). Choice D would test the effect of *r* on precession rate (as was investigated in Experiment 1), not the effect of mass.

Passage V

28. **H**

Difficulty: Low

Category: Thinking Like a Scientist—Evaluating Hypotheses

Getting to the Answer: The two theories differ on the details, but both describe how water droplets in clouds come together in some way until they become too heavy and fall to the ground. If there were an insufficient number of water droplets in a cloud, they would not be able to coalesce enough to form large water droplets (as in the first theory) or to evaporate to replace the water vapor that deposits onto miniature ice crystals (as in the second theory). According to either theory, no precipitation would form without enough water droplets, so (H) is correct. Choices F and G are incorrect because F would lead to precipitation in the first theory and G would lead to precipitation in the second. Choice J would lead to precipitation according to either,

because the first theory involves large water drops that are too heavy while the second theory involves heavy ice crystals.

29. **B**

Difficulty: Medium

Category: Thinking Like a Scientist—Evaluating Hypotheses

Getting to the Answer: The major point of difference between the 2 theories concerns what actually forms in the clouds to become precipitation. According to the Collision-and-Coalescence Theory, large water drops become precipitation, while the Ice Crystal Theory maintains that precipitation results from the formation of ice crystals. Water drops are liquid but ice crystals are solid, meaning precipitation forms as 2 different phases of matter under the 2 theories, as in (B). Choices A, C, and D are incorrect because they concern aspects of precipitation that are not addressed in either theory as described in the passage.

30. **F**

Difficulty: Medium

Category: Thinking Like a Scientist—Evaluating Hypotheses

Getting to the Answer: The first theory described in the passage maintains that rainfall occurs a er large water drops are formed from the repeated collision and coalescence of smaller droplets. According to this theory, rainfall is more likely to occur if more droplets coalesce,

and more droplets are likely to coalesce if more of them collide. Consequently, a greater rate of collision translates to a higher probability of rainfall, making (F) correct. Choice G is incorrect because a variable rate could mean fewer collisions and therefore less coalescence and fewer raindrops, reducing the likelihood of rain. Choice H is incorrect because cold temperatures are necessary for the Ice Crystal Theory but not for the Collision-and-Coalescence Theory. Choice J is incorrect because the description of the theory in the passage does not address the time between rainfalls.

31. **B**

    Difficulty: Medium

    Category: Thinking Like a Scientist—Evaluating Hypotheses

    Getting to the Answer: The Collision-and-Coalescence Theory maintains that water drops fall to the ground once they become "too heavy to remain suspended in the cloud." Similarly, the Ice Crystal Theory holds that "ice crystals quickly become too heavy to remain suspended in the air and fall to the ground." Thus, both theories agree that precipitation is the result of entities that are too heavy to stay suspended, so if a weather balloon discovers that there are many of these large entities within a cloud, it is highly likely that precipitation will soon follow. Choice (B) is correct. Choice A is incorrect because only the second theory concerns impurities in the air, while C is incorrect because only the first theory discusses colliding water droplets. Choice D is incorrect because the downward motion of entire clouds is not addressed in either theory as described in the passage.

32. **H**

Difficulty: Medium

Category: Thinking Like a Scientist—Evaluating Hypotheses

Getting to the Answer: According to the Ice Crystal Theory as described in the passage, precipitation is the result of the formation of ice crystals that become so heavy they can no longer be suspended in the air. For this process to begin, water droplets in the cloud must "freeze around tiny impurities in the air to form miniature ice crystals." Thus, air impurities play a crucial role in the production of precipitation. A city that produces more of these impurities could be expected to have higher rates of precipitation according to the Ice Crystal Theory, precisely as is suggested in (H). Choices F and G cannot be correct because the description of the Ice Crystal Theory mentions neither thunder-and-lightning storms nor atmospheric density. Choice J is incorrect because it suggests an opposite result: less air pollution would lead to fewer impurities in the air, which would mean fewer ice crystals forming and less precipitation.

33. **C**

Difficulty: High

Category: Thinking Like a Scientist—Evaluating Hypotheses

Getting to the Answer: The question asks you to find a statement that makes the Collision-and-Coalescence Theory more likely to be true than the Ice Crystal Theory. Assess each answer choice individually

and eliminate any that fail to provide the appropriate support. The Ice Crystal Theory requires that water droplets “freeze around tiny impurities in the air to form miniature ice crystals.” In this theory, fewer impurities means fewer crystals, which means less rainfall and other precipitation—so eliminate A for supporting the Ice Crystal Theory. The Ice Crystal Theory also maintains that “water droplets evaporate to maintain a constant level of water vapor,” so B is more consistent with it than with the Collision-and-Coalescence Theory, meaning B can be eliminated too. According to the Ice Crystal Theory, ice crystals that eventually become precipitation form a er “tiny droplets in clouds rise to a point in Earth’s atmosphere where the temperature is lower than the freezing point of water.” However, if precipitation could form in clouds at higher temperatures, then precipitation could occur without the formation of ice crystals, which directly contradicts the Ice Crystal Theory. Moreover, this would be consistent with the Collision-and-Coalescence Theory, which only requires the presence of liquid water droplets for precipitation. Choice (C) supports the Collision-and-Coalescence Theory while weakening the Ice Crystal Theory, so it must be correct. This is confirmed by evaluating D, which is incorrect because only the Ice Crystal Theory depends on water’s changing between phases of matter.

34. **H**

    Difficulty: High

    Category: Thinking Like a Scientist—Evaluating Hypotheses

Getting to the Answer: Because the question asks for the *least* likely outcome, use process of elimination to remove any answer choices that seem likely to happen in the Ice Crystal Theory. According to the passage, in the final stage of the theory, "ice crystals quickly become too heavy to remain suspended in the air and fall to the ground, o en melting again in the warmer temperatures near the ground to form rain." Choice F closely reflects this account, so eliminate it. Similarly, it makes sense that in slightly colder temperatures, the ice crystals might melt only partially; therefore, G can be eliminated too. Choice (H) seems unlikely to occur in the Ice Crystal Theory because water drops do not fall from the cloud (as they do in the Collision-and-Coalescence Theory); only ice crystals fall from the cloud, so don't eliminate this choice just yet. Choice J is not mentioned directly in the passage, but the Ice Crystal Theory maintains that some water droplets become water vapor (moving from liquid to gas) even though the temperature is so cold; so it is plausible that small ice crystals sometimes turn back into water droplets (moving from solid to liquid). Thus, J should be eliminated and (H) should be recognized as the correct answer.

Passage VI

35. **C**

Difficulty: Medium

Category: Data—Detail & Interpretation

Getting to the Answer: The question asks you to identify the trend between *e* and *r* for any value of *n*. If you look at Table 1, you'll see that

n can be either 2, 3, or 4. Start by looking at the *n* = 2 data. As the values of *e* increase from 4 to 7, the values of *r* decrease steadily from 9.1 to 5.7. In other words, the 2 variables are inversely related. Next, look at the *n* = 3 data—the same inverse relationship holds, as it does for the *n* = 4 data. Choice (C), then, is the correct answer.

36. **F**

Difficulty: Medium

Category: Data—Detail & Interpretation

Getting to the Answer: This question requires you to extrapolate for a value that doesn't appear in Table 1, so use the trends in the data to make a prediction. You saw in the previous question that for a given value of *n*, higher values of *e* yield lower values of *r*, and vice versa. For *n* = 2, the lowest value of *e* given is 4, with a corresponding *r* of 9.1×10^{-11} m. If the trend continues as expected, you can predict that a lower *e* of 3 would have a higher value for *r*. Choice (F) is correct because it's the only value of *r* greater than 9.1×10^{-11} m.

37. **C**

Difficulty: High

Category: Data—Detail & Interpretation

Getting to the Answer: While having background knowledge in chemistry could potentially help here, there is enough information directly in the passage to answer this question. The opening paragraph

of the passage describes electrons as “negatively charged particles,” so anything that removes electrons would decrease an atom’s negative charge. According to the second paragraph, the ionization energy is the “energy in electron volts (eV) required to remove one electron from the atom’s outer shell.” Thus, applying energy to an atom could allow for the removal of an electron, which would decrease the atom’s negative charge. Choice (C) is therefore correct. Choice A is incorrect because, for a given *n*, smaller *r* values are associated with larger *e* values, meaning greater numbers of negatively-charged electrons in the outer shell. Choice B is incorrect because the passage offers no information about the impact of forming chemical bonds on the negative charge in an atom. Choice D is incorrect because shells contain electrons and adding more shells would only add more negative charge.

38. **J**

Difficulty: Medium

Category: Data—Detail & Interpretation

Getting to the Answer: This question asks you to examine the trend between the number of electrons in an atom’s outer shell (*e*) and electronegativity (*c*) when the value of *n* is fixed. Look for the trend between *e* and *c* for each value of *n* separately. For $n = 2$, *c* increases as *e* increases. Eliminate H because it doesn’t contain $n = 2$. For $n = 3$, *c* again increases as *e* increases. Eliminate F because it doesn’t contain $n = 3$. For $n = 4$, once again, *c* increases as *e* increases. Because the trend holds for all the values of *n* in the table, the correct answer must be (J).

39. **D**

Difficulty: Medium

Category: Data—Detail & Interpretation

Getting to the Answer: According to the passage, the "energy in electron volts (eV) required to remove one electron from the atom's outer shell" is the ionization energy, symbolized in Table 1 by *I*. As can be seen by examining the table, the *n* values listed in the answer choices correspond to the outer shell for each element, so answering this question merely requires finding the highest value of *I* in Table 1. The *I* values for Si, Cl, C, and F are 8.2, 13.0, 11.2, and 17.4, respectively. Of these, 17.4, the value for F, is greatest, so the correct answer is (D).

40. **F**

Difficulty: Medium

Category: Data—Detail & Interpretation

Getting to the Answer: According to the passage, Pauling units are the units of measurement for electronegativity, which is represented by the variable *c* in Table 1. N and Cl share a *c* value of 3.0, Si and Ge share a *c* value of 1.8, and C and S share a *c* value of 2.5. The elements As and Se have the same value for *I*, but *c* is 2.0 for As and 2.4 for Se. So (F) is correct.

WRITING TEST

Model Essay

Below is an example of what a high-scoring essay might look like. Notice the author states her position clearly in the introductory paragraph and supports that position with evidence in the following paragraphs. This essay also uses transitions, some advanced vocabulary, and an effective "hook" to draw in the reader.

"Be cool; stay in school," is the type of saying that may sound silly to high school students. Even though that phrase isn't really sophisticated, it does provide very wise advice. Attending school is incredibly important, and some people argue that unexcused absences should be reported to the police. Other people want focus on treating the underlying causes of truancy rather than doling out harsh punishments. Still others think that schools should provide alternative instruction options for students who have trouble getting to school on a regular basis. All three options have the same goal, which is to help students most at risk for missing school, and I think that schools should incorporate the best parts of all three approaches into their truancy-reduction policies.

The idea of having a police record because I skipped school is extremely scary and would certainly prevent me from missing school. If students know that their school will report them to the police after a specific number of unexcused absences, they will be more likely to find a way to get to school. Teenagers don't always do the right thing because it's a good idea but rather because not doing the right thing will get them in a lot of trouble. For example, many high school students turn in their assignments on time because they don't want teachers to deduct points for late

submissions. The fear of consequence can promote good behavior in both homework habits and school attendance.

While avoiding a harsh consequence is a good reason to get to school, it's sometimes not compelling enough for students who are struggling with issues that make attending school very difficult. The best way to increase attendance for these students is to address the underlying problems. If students have transportation trouble, schools should help coordinate carpools and bus schedules. School counselors should be available to help students who have social issues or violence concerns. As for lack of interest, schools can offer before- and after-school activities such as intramural sports and social clubs to give students a reason to stay throughout the day.

Even with the best efforts, some students will invariably struggle with attendance. For those students, schools should offer as many opportunities for them to complete their coursework as possible. It is in society's best interest to facilitate education, especially for at-risk youth. Now that technology allows students to learn from nearly anywhere, schools should offer students the option to study remotely. Students will benefit from a high school diploma, of course, and they will be able to say that their teachers did everything they could to give them the best chance at a good life.

Attending school isn't just about learning facts. The school environment provides students with the opportunity to learn how to employ necessary social skills, collaborate with peers, and communicate effectively. The only way for students to develop these skills is to actually attend school.

Every measure should be taken to reduce truancy, including the threat of a criminal record, the mitigation of underlying causes, and the option to pursue alternative instruction. That way, students don't have to just take our "be cool; stay in school" word for it — they'll show up because, really, with all those measures in place, how could they not?

You can evaluate your essay and the model essay based on the following criteria:

- Is the author's own perspective clearly stated?
- Does the body of the essay assess and analyze each perspective?
- Is the relevance of each paragraph clear?
- Does the author start a new paragraph for each new idea?
- Is each sentence in a paragraph relevant to the point made in that paragraph?
- Are transitions clear?
- Is the essay easy to read? Is it engaging?
- Are sentences varied?
- Is vocabulary used effectively?
- Is college-level vocabulary used?