FULL-LENGTH PRACTICE TESTS 24

1 1

ENGLISH TEST

35 Minutes—50 Questions

DIRECTIONS: In the five passages that follow, certain words and phrases are underlined and numbered. In the right-hand column, you will find alternatives for each underlined part. In most cases, you are to choose the one that correctly expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is correct, choose "NO CHANGE." In some cases, you will find in the right-hand column a question about the underlined part of the passage. You are to choose the correct answer to the question.

You will also find questions about a section of the passage or the passage as a whole. These questions do not refer to an underlined portion of the passage, but rather are identified by a number or numbers in a box.

For each question, choose the alternative you consider correct and blacken the corresponding oval on your answer document. Read each passage through once before you begin to answer the questions that accompany it. For many of the questions, you must read several sentences beyond the question to determine the answer. Be sure that you have read far enough ahead each time you choose an alternative.

PASSAGE I

Lou Gehrig, All-American

Since their inception in 1913, the New York Yankees have long been regarded as a force in Major League Baseball. Love them or hate them, there is no denying the tradition of excellence that they have leveraged in order$_1$ to win 26 World Series championships, a league record.

1. Which of the following alternatives to the underlined portion would NOT be acceptable?

A. so as
B. as a means
C. so that
D. DELETE the underlined portion.

The Yankees have had many great baseball players$_2$ contribute to the team, but one man stands out for his fortitude and good spirit: Lou Gehrig. Born to poor German immigrants in 1903, Gehrig received no encouragement to pursue baseball as a career. His mother considered business$_3$ a better line of work for her son, wanting him to excel academically, not physically. Gehrig followed her wishes, at least at first. He attended Columbia University, but after only two years, and without a degree, Gehrig left school.

2. **F.** NO CHANGE
G. players;
H. players,
J. players and

3. **A.** NO CHANGE
B. His mother, considering business
C. Business was considered by his mother to be
D. Business considered his mother

However, he did have a job lined up before he withdrew from college. A Yankee scout had seen an intercollegiate game Gehrig played in$_{4}$—coincidentally, on the very day Yankee Stadium first opened to the public in 1923—and immediately signed him to a contract. He played well in his first three years in the majors, but he did not become a true superstar until 1926. He

4. Which of the following alternatives to the underlined portion would be LEAST acceptable?

F. that featured Gehrig
G. that Gehrig played in
H. in which Gehrig played
J. and played Gehrig

broke many, long-standing records,$_{5}$ including those for runs batted in and extra-base hits, and even played in 2,130 consecutive games! His formidable skills and unflinching dedication to the sport interested$_{6}$ his teammates and the fans alike.

5. **A.** NO CHANGE
B. many long-standing records,
C. many, long-standing, records
D. many long-standing records

6. Given that all the choices are true, which one most clearly communicates how positively Gehrig was viewed as a player?

F. NO CHANGE
G. impressed
H. offended
J. confused

[1] The prognosis was a veritable death sentence. [2] Then suddenly, Gehrig's$_{7}$ amazing stamina and talent seemed to

7. **A.** NO CHANGE
B. suddenly Gehrig's
C. suddenly Gehrigs
D. suddenly, Gehrigs

dissipate, leading one sports reporter to speculate$_{8}$ that something was physically wrong with the athlete. [3] Unfortunately, that reporter was right: Gehrig was diagnosed with amyotrophic lateral sclerosis, a degenerative disease that leads to paralysis of both voluntary muscles and involuntary muscles, like those needed to control breathing and swallowing.[9]

8. Which of the following alternatives to the underlined portion would be LEAST acceptable?

F. writer to infer
G. sports reporter to infer
H. writer to speculate
J. sports reporter to imply

9. Which of the following sequences of sentences makes this paragraph most logical?

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

Most people faced with such daunting news would of withdrawn$_{10}$ from society and mourned their fates.

10. **F.** NO CHANGE
G. of withdrew
H. have withdrawn
J. have withdrew

11 However, on the day of

11. At this point, the writer is thinking about adding the following true statement:

> I know when I had to put my dog to sleep when he got cancer, all I could do was cry in my room for days.

Should the writer make this addition here?

A. Yes, because it provides a personal example comparable to the experience Lou Gehrig faced.
B. Yes, because it helps clarify the concept of mourning mentioned in the previous sentence.
C. No, because it detracts from the overall flow of the paragraph by adding irrelevant information.
D. No, because Gehrig did not have cancer.

Gehrig's retirement$_{12}$ from baseball, he delivered one of the most famous speeches of the time. He acknowledged his grim fate but paid tribute to the life-affirming support he'd received from his fans: "The ballplayer who loses his head, who can't keep his cool, is worse than no ballplayer at all."$_{13}$ He spoke highly of the encouragement his fans always provided and proudly proclaimed that, despite his fate, he didn't regret

12. **F.** NO CHANGE
G. Gehrig's retirement,
H. Gehrigs retirement

J. Gehrigs' retirement

13. Given that all the choices are quotations attributed to Gehrig, which one would most effectively support the preceding statement in this sentence?

A. NO CHANGE
B. "They're wishing me luck—and I'm dying."
C. "I don't know if we're going to be successful or not, but we're going to give her a go."
D. "Yet today I consider myself the luckiest man on the face of the earth."

anything in his life or career. He was a man who's$_{14}$ eternal optimism and good spirit lived on as a legacy of hope and kindness for fans everywhere. We would all do well to learn that lesson.

14. **F.** NO CHANGE
G. man whose
H. man, who's
J. man who

Question 15 asks about the preceding passage as a whole.

15. After reviewing this essay, the writer is thinking about deleting its opening phrase—"Since their inception in 1913,"—and revising the capitalization accordingly. Should this phrase be kept or deleted?

A. Kept, because it explains why the New York Yankees have been so successful.

B. Kept, because it establishes when in Yankees' history Gehrig lived and played.

C. Deleted, because it provides information that is presented effectively later in the passage.

D. Deleted, because it does not provide the years in which the Yankees won the World Series.

PASSAGE II

A Quarter for Your Thoughts

Ever since I was a little girl, I could always count on my grandmother to initiate a wonderful field trip. We lived in Virginia and so had immediate access to hundreds of famous places. Nonetheless, she[16] took me to Civil War battlefields, historic homes, national monuments, anywhere that had a story

16. **F.** NO CHANGE

G. She

H. However, she

J. On the contrary, she

to tell. Old lighthouses can be dangerous, with rickety stairs and rotting floorboards.[17]

17. Given that all the choices are true, which one best identifies a personal connection the narrator feels to the locations she visits?

A. NO CHANGE

B. National monuments are especially fun to visit, but the lines can be quite long.

C. Civil War battlefields feel so alive when you walk through them; you almost expect to see a soldier around every corner.
D. The historic homes we visited are so nice they have been featured in decorating magazines.

My love of history has only grown over the years.[18] History was always so real for me, not the dull, dusty stuff other people

18. Given that all the choices are true, which one introduces the subject of this paragraph and reinforces the essay's presentation of the relationship between the narrator and her grandmother?

F. NO CHANGE
G. My grandmother never visited Washington, D.C. until she was in her twenties, even though she lived so close.
H. A proper understanding of history requires extensive reading.
J. My grandmother indulged my love of history and deepened my appreciation for all there is to learn from it.

seemed to think it was. My trips'[19] with my grandmother made me feel as if I were shivering with George Washington at Valley Forge, where the Revolutionary Army endured a brutal winter, or hearing the words to the Gettysburg Address from Abraham

19. **A.** NO CHANGE
B. trip's
C. trips,
D. trips

Lincoln himself. [20] How could that ever be boring?

20. The writer is considering deleting the phrase "where the Revolutionary Army endured a brutal winter" from the preceding

sentence (deleting the comma following the phrase). Should the phrase be kept or deleted?

F. Kept, because it maintains the passage's focus on history.
G. Kept, because it explains the significance of Valley Forge, which might otherwise cause confusion.
H. Deleted, because the narrator has already established her interest in history.
J. Deleted, because the information overstates the severity of the weather during the Revolution.

One day when I was visiting her, my grandmother took out a big, flat box.[21] "This is for you. I thought we could begin a new

21. Given that all the choices are true, which one best introduces the subject of this paragraph?

A. NO CHANGE
B. In my opinion, anything that has happened in the last century isn't history; it's current events.
C. My grandmother originally wanted to be a history teacher.
D. Studying history has really encouraged me in my other studies, too.

project," she told me, handing me a pamphlet to read.[22] The U.S. Mint was starting a project, minting brand new quarters for each of the 50 states bearing images significant and unique to each

22. **F.** NO CHANGE
G. told me to hand her a pamphlet to read.
H. read a pamphlet, telling me to hold it.
J. handed me a pamphlet, holding it.

state's history. The box contained a map of the country, and each$_{23}$ state had a space where we could insert its quarter.

23. **A.** NO CHANGE
B. and when each
C. for which each
D. each

My enthusiasm caused laughter$_{24}$ for a "quarter collection" project, my friends didn't understand my eagerness when I eagerly tromped to the bank every couple of months when a new quarter came out. I was so excited when the first three were released$_{25}$ Delaware, Pennsylvania, and New Jersey. My grandmother and I would insert each quarter in its proper place and look up the story behind each new image we

24. **F.** NO CHANGE
G. Laughing at my enthusiasm
H. So as to laugh about my enthusiasm
J. Finding humor

25. **A.** NO CHANGE
B. released;
C. released:
D. released,

saw. Amusingly,$_{26}$ as time progressed, even my friends liked to look at the growing collection of quarters on my map, asking

26. Which of the following alternatives to the underlined portion would NOT be acceptable?

F. saw. I was amused to see that,
G. saw. To my utter amusement,

H. saw; amusingly,
J. saw, amusingly,

questions and appreciating with admiration$_{27}$ the pristine collection.

27. **A.** NO CHANGE
B. admiring
C. lauding the high estimation of
D. adoring and praising

When the final quarter came out last year, my grandmother, my friends, and I had a small party, we wanted to$_{28}$ celebrate the complete collection. I think it is safe to say that

28. **F.** NO CHANGE
G. party, everyone wanted to
H. party to
J. party, let's

the party was a smashing success.$_{29}$ Now, my grandmother says

29. Given that all the choices are true, which one best makes a connection between the narrator's view of history and that of her friends?

A. NO CHANGE
B. my friends enjoyed themselves at the party.
C. my friends now firmly believe that history can be fun, just like me.
D. my friends are a little less negative about the study of history.

we'll have to start planning to visit all 50 states. I wonder$_{30}$ where we'll go first!

30. Which of the following alternatives to the underlined portion would be LEAST acceptable?

F. am curious
G. am anxious to see
H. am nervous about
J. can't wait to know

PASSAGE III

Aviation Princess

My daughter just turned nine last week. We went to the mall, and I gave her the best gift I could imagine: free rein to pick out anything she wanted and desired to have.$_{31}$ I expected her to pick out some clothes, a new video game, maybe even a

31. **A.** NO CHANGE
B. wanted, so that she could pick out her desire.
C. wanted.
D. wanted and had come to desire.

doll. However, she$_{32}$ insisted the only thing she wanted was a model airplane.

32. Which of the following alternatives to the underlined portion would NOT be acceptable?

F. doll; however, she
G. doll, but she
H. doll however she
J. doll. She

I guess about her request$_{33}$ I shouldn't be surprised. My

33. The best placement for the underlined phrase would be:

A. where it is now.
B. before the word *shouldn't*.
C. after the word *shouldn't*.
D. after the word *surprised* (ending the sentence with a period).

daughter has grown$_{34}$ up in a military household, the pride and joy

34. **F.** NO CHANGE
G. has been growing
H. would have grown
J. had grown

of her overly doting father. He finds it perfectly appropriate $_{35}$ that, from a very early age, she has shared his love of aviation. I'll never forget my utter dismay when he taught her to jump off the

35. Which of the following alternatives to the underlined portion would NOT be acceptable?

A. believes it appropriately
B. believes it appropriate
C. considers it entirely appropriate
D. deems it perfectly appropriate

swing set in our backyard, pretending$_{36}$ she was a pilot and shouting, "Airborne!" I believe she was four at the time, but even

36. **F.** NO CHANGE
G. backyard pretending,
H. backyard; pretending
J. backyard. Pretending

then she would play pilot more than play house.$_{37}$

37. Which of the following alternatives to the underlined portion would NOT be acceptable?

A. house.
B. she would play house.
C. house was.
D. she played house.

Yet$_{38}$ soon stories and pictures of aircraft weren't enough; she wanted to see the real thing. So my husband started taking her to the annual air show at the local military base

38. **F.** NO CHANGE
G. Therefore,
H. Although
J. Instead,

that happens every year.$_{39}$ Most other children her age admired how fast the planes flew or how nicely they were painted, but not

39. **A.** NO CHANGE
B. that takes place each year.
C. which occurs every twelve months.
D. DELETE the underlined portion and end the sentence with a period.

my daughter. [40] She would ask, "Daddy, when are they going to upgrade the avionics system in that F-22 *Raptor*?" or "Do you think unmanned drones will ever be as useful as manned aircraft?" I once overhead her correcting an older gentleman

40. The writer is considering deleting the phrase *other children her age* from the preceding sentence. Should this phrase be kept or deleted?

F. Kept, because it clarifies the types of questions children should be asking at air shows.
G. Kept, because it emphasizes how different the narrator's daughter is from other children her age.
H. Deleted, because it introduces information about aircraft but does not provide enough specific details.
J. Deleted, because it interrupts the flow of passage.

whom[41] was mistaken about the planned retirement date of the

41. **A.** NO CHANGE
B. who
C. which
D. DELETE the underlined portion.

F-15 *Eagle*. I would have been embarrassed about her presumption, if she hadn't been absolute and unequivocal[42] right.

42. **F.** NO CHANGE
G. absolute and unequivocally
H. absolutely and unequivocal
J. absolutely and unequivocally

Of course, my husband has big dreams[43] for his little aviatrix. She is going to be a military pilot, graduating at the

top of her class from the Naval Academy. Then she's going

43. Which of the following alternatives to the underlined portion would be LEAST acceptable?

A. ambitious aims
B. impossible hopes
C. great aspirations
D. impressive plans

to be the individual to$_{44}$ design the next-generation supersonic fighter personally, while lecturing at Harvard about the history of

44. **F.** NO CHANGE
G. to
H. to individually accept a task in order to
J. to take the initiative to

fixed-wing aircraft. Otherwise, how$_{45}$ she's going to fit that in between being a surgeon and the president, I'll never know!

45. **A.** NO CHANGE
B. In contrast, how
C. How
D. Despite this, how

PASSAGE IV

Light Bright, Light Bright: Turn on the Magic of Colored Light

As a child, I used to catch fireflies at dusk when I was$_{46}$ young. I

46. **F.** NO CHANGE
G. when I was a youth.
H. before I grew up.
J. DELETE the underlined portion and end the sentence with a period.

remember feeling a strange excitement which,$_{47}$ looking into my cupped hands, I would see the light grow brighter then dimmer as the fly flitted from one side to the other, trying to find an escape. What I should have felt, however, was amazement at the biological wonder I saw before me: bioluminescence.

47. **A.** NO CHANGE
B. when,
C. in which,
D. DELETE the underlined portion.

Bioluminescence literally means "living light," and$_{48}$ it refers to a strange adaptation found in some organisms. It allows these organisms to create a chemical reaction that generates and emits

48. **F.** NO CHANGE
G. simultaneously,
H. consider that
J. in addition,

light. Even though scientists$_{49}$ know that this light is not intended to be a heat source, they're not totally certain what it is intended to do, either. Theorists hypothesize that organisms use their

49. **A.** NO CHANGE
B. Scientists

C. In fact, scientists
D. Understand that scientists

self-manufactured light <u>for camouflaging</u> <u>themselves</u>,**50** illuminate their surroundings, attract mates and prey, repulse predators, and

50. **F.** NO CHANGE
G. in camouflaging theirselves,
H. to camouflage itself,
J. to camouflage themselves,

even communicate. **51** How the same adaptation can be designed to both attract and repulse, however, is still a matter of contention.

MATHEMATICS TEST

50 Minutes—45 Questions

DIRECTIONS: Solve each problem, choose the correct answer, and then darken the corresponding oval on your answer sheet.

Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

You are permitted to use a calculator on this test. You may use your calculator for any problems you choose, but some of the problems may best be done without using a calculator.

Note: Unless otherwise stated, all of the following should be assumed:

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie in a plane.
3. The word *line* indicates a straight line.
4. The word *average* indicates arithmetic mean.

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1. What is the value of $15 - 3 \times 4 + 8$?

A. 11
B. 17
C. 56
D. 80

2. If $a = 5$ and $b = -2$, what is the value of $3a^2 - 2b$?

F. 61
G. 71
H. 79
J. 83

3. A coffee shop sells lattes for $4.75 each. If Sarah buys 5 lattes, how much does she spend in total?

A. $9.75
B. $19.00
C. $23.75
D. $28.50

4. What is 35% of 80?

F. 24
G. 26
H. 28
J. 30

5. If $7x + 9 = 44$, then $x = ?$

A. 4
B. 5
C. 6
D. 7

6. A train travels at a constant speed of 85 miles per hour. How many miles does the train travel in 3.5 hours?

F. 242.5
G. 255.0
H. 272.5
J. 297.5

7. Which of the following is equivalent to $5(2x - 3) - 4x$?

A. $6x - 15$
B. $6x - 3$
C. $10x - 15$
D. $14x - 15$

8. A square has a perimeter of 48 inches. What is the area of the square, in square inches?

F. 12
G. 144
H. 192
J. 576

9. If 2/3 of a number is 18, what is the number?

A. 12
B. 24
C. 27
D. 36

10. Emma scored 88, 92, 85, and 91 on her first four math tests. What score must she earn on her fifth test to have an average of exactly 90 for all five tests?

F. 90
G. 92
H. 94
J. 96

11. Which of the following is equivalent to $(8x^3y^2)/(4xy)$?

A. $2x^2y$
B. $4x^2y$
C. $2x^3y^2$
D. $4x^3y$

12. The price of a bicycle increased from $240 to $300. What is the percent increase?

F. 20%
G. 25%
H. 30%
J. 60%

13. If $f(x) = 2x - 7$, what is the value of $f(10)$?

A. 3
B. 13
C. 17
D. 27

14. In a bag of 60 candies, 24 are chocolate, 18 are caramel, and the rest are fruit-flavored. What fraction of the candies are fruit-flavored?

F. 1/5
G. 3/10
H. 2/5
J. 3/5

15. For what value of x does $4x - 11 = 2x + 13$?

A. 10
B. 12
C. 14
D. 24

16. A rectangular garden has a length of 18 feet and a width of 12 feet. If the length is increased by 4 feet and the width remains the same, by how many square feet does the area increase?

F. 24
G. 36
H. 48
J. 72

17. If $3(n + 5) = 2(n + 10)$, then $n = ?$

A. 5
B. 8
C. 10
D. 15

18. The sum of two numbers is 47, and their difference is 13. What is the larger of the two numbers?

F. 17
G. 30
H. 34
J. 40

19. Which of the following is equivalent to $x^2 - 9$?

A. $(x - 3)(x - 3)$
B. $(x + 3)(x + 3)$
C. $(x - 3)(x + 3)$
D. $(x - 9)(x + 9)$

20. A recipe that serves 8 people calls for 3 cups of flour. How many cups of flour are needed to make the recipe for 20 people?

F. 5.5
G. 6.0
H. 7.5
J. 8.0

21. If $|2x - 5| = 11$, what is the positive value of x?

A. 3
B. 8
C. 16
D. 22

22. A cylinder has a height of 10 centimeters and a radius of 4 centimeters. What is the volume of the cylinder in cubic centimeters? (Note: $V = \pi r^2 h$)

F. 40π
G. 80π
H. 120π
J. 160π

23. For all $x \neq 0$, $(6x^4 + 9x^2)/(3x) = ?$

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

24. In a class election, candidate A received 45% of the votes, candidate B received 35% of the votes, and candidate C received the remaining 60 votes. How many students voted in total?

F. 200
G. 250
H. 300
J. 350

25. If $g(x) = x^2 + 3x - 5$, what is $g(4)$?

A. 23
B. 27
C. 31
D. 35

26. The average of four numbers is 15. Three of the numbers are 12, 16, and 18. What is the fourth number?

F. 11
G. 13
H. 14
J. 15

27. In the standard (x,y) coordinate plane, what is the midpoint of the line segment with endpoints at (−4, 7) and (6, −3)?

A. (1, 2)
B. (2, 1)
C. (5, 5)
D. (10, 4)

28. If $\sqrt{(5x - 6)} = 4$, then x = ?

F. 2
G. 4.4
H. 8
J. 10

29. A store offers a 30% discount on all items. If a jacket originally costs $75, what is the sale price?

A. $22.50
B. $45.00
C. $52.50
D. $67.50

30. In an arithmetic sequence, the first term is 9 and the common difference is 6. What is the 10th term?

F. 54
G. 57
H. 60
J. 63

31. For the quadratic equation $x^2 - 8x + c = 0$ to have two equal real roots, what must be the value of c?

A. 4
B. 8
C. 12
D. 16

32. A circle has a center at (−2, 5) and a radius of 7 units. Which of the following is the equation of this circle?

F. $(x + 2)^2 + (y - 5)^2 = 7$
G. $(x - 2)^2 + (y + 5)^2 = 7$
H. $(x + 2)^2 + (y - 5)^2 = 49$
J. $(x - 2)^2 + (y + 5)^2 = 49$

33. If 3^(2x) = 81, then x = ?

A. 2
B. 3
C. 4
D. 6

34. The sum of four consecutive even integers is 180. What is the smallest of these integers?

F. 42
G. 43
H. 44
J. 45

35. A triangle has angles measuring 35°, 75°, and x°. What is the value of x?

A. 60
B. 65
C. 70
D. 75

36. If 5^(x+2) = 125, then x = ?

F. 1
G. 2
H. 3
J. 5

37. A deck of cards contains 52 cards: 13 hearts, 13 diamonds, 13 clubs, and 13 spades. If one card is drawn at random, what is the probability that it is either a heart or a diamond?

A. 1/4
B. 1/3
C. 1/2
D. 2/3

38. Which of the following is equivalent to $(2x + 5)(3x - 4)$?

F. $5x^2 + 1$
G. $6x^2 - 20$
H. $6x^2 + 7x - 20$
J. $6x^2 + 23x - 20$

39. A population of bacteria doubles every 3 hours. If there are initially 500 bacteria, how many bacteria will there be after 9 hours?

A. 1,500
B. 2,000
C. 3,000
D. 4,000

40. In a right triangle, one leg measures 15 units and the hypotenuse measures 17 units. What is the length of the other leg, in units?

F. 2
G. 4
H. 8
J. 10

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

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

42. For all positive values of x and y, $(x^3y^5)/(x^2y^2) = ?$

F. xy^3
G. x^2y^3
H. xy^4
J. x^5y^7

43. A line passes through the origin and has a slope of −3. Which of the following is the equation of this line?

A. $y = -3x$
B. $y = 3x$
C. $y = -3x + 1$
D. $y = x - 3$

44. The product of three consecutive positive integers is 60. What is the largest of these three integers?

F. 3
G. 4
H. 5
J. 6

45. In a geometric sequence, the first term is 3 and the third term is 12. What is the second term?

A. 4
B. 6
C. 7.5
D. 9

3 3

READING TEST

40 Minutes—36 Questions

DIRECTIONS: There are several passages in this test. Each passage is accompanied by several questions. After reading a passage, choose the best answer to each question and fill in the corresponding oval on your answer document. You may refer to the passages as often as necessary.

Passage I

LITERARY NARRATIVE: This passage is adapted from the novel *Oklahoma Sunrise* by Jack Elwyn Prouty (©2007 Jack Elwyn Prouty).

Rebecca stood and gazed out across the fields, into the unending horizon.

A warm breeze caressed the fields, causing the ears of the wheat to bend homeward, looking for all the world like they were listening to a conversation none but they could hear. The ears bent and bobbed as the breeze eddied about them. She stood, inhaling the fresh and savory scent of the almost-ripe wheat, mixed with the rich scent of the earth. Someone had plowed nearby; the newly uncovered earth always smelled more alive. She could hear bees—there was a hive somewhere not far away—and birds and men, all faintly but as much a part of the image in her mind as was the wheat itself. And underneath everything else, that slight tang in the air that said it would rain soon. Not even a tang, really—almost a feeling but somehow a smell, too.

The evening, just as dusk was falling, was always the best time to visit the fields alone. Earlier in the day there were too many people, and too many chores to do to justify standing silently in the middle of the field. Later it was too still, too quiet. It felt as if the field itself had gone to sleep; not an unpleasant feeling, really, but not the feeling of being embraced by a living, breath-

ing entity that she had wanted today. That she liked best of all.

Of course, the earth hadn't always been a friend to the people that cultivated it. Any farmer knows that there will be good years and bad years, and that sometimes one bad year will follow another and then another, to the point where you wonder if a good year will ever come again. Growing up far away from the soil that had held her people for generations, Rebecca had known all of that. Known how the land had turned on her parents and driven them far from the only home they knew, seeking work on a stranger's land, doing unfamiliar work. Still, she had felt the draw. Even as a child, she had known that someday, she would return. It was in her blood, really. Her great-grandparents had claimed the land as their own, poured their blood, sweat, and tears into it, and turned it from a wild tract of prairie into productive fields of wheat and corn. Her grandparents had inherited the fields, and her parents in their turn had as well. They would have gone to Rebecca next, had her parents been able to hold on to what was theirs. Even when they had left, they had claimed the land as their own and had sworn that they'd return to it someday. Both her mother and father had been prevented

from returning home, but now Rebecca was here in their place, trying to reclaim her family's heritage.

She stood still, thinking about the past and the present, breathing in the heat and the life that surrounded her. The land might not always be kind, but it is always good. She flinched a little bit as a bee landed on her cheek, inspecting this large thing that didn't seem to be a part of the field. She let it explore her face, knowing it would move on once it had ascertained that she was no flower. The feel of the bee's feet tramping across her nose made her want to sneeze but she held her breath, not wanting to frighten it into stinging her.

When the bee ventured on in pursuit of more profitable discoveries, she opened her eyes and gazed out across her fields. They were hers, in truth if not writing, and would one day be hers in every sense. For a moment, her stomach began to clench as her mind turned unwillingly but naturally to the realities of what lay ahead. The loans, the mortgage payments, the possibility of a bad crop ruining all her plans. Firmly, she pushed those thoughts aside. She had acknowledged them before and would acknowledge them again, when she sat before her ledger or reviewed the accounts. This moment was for enjoying the sheer bounty of life, not for fears and numbers. Without the former, she could never face the latter. It was for the warm reality of the growing, breathing crops that she was determined to deal with the men from the bank, to go without new things, and work until her back ached every day, only to get up and do the same the next morning, before the sun was up.

She breathed deeply, trying to take in the strength and life that surrounded her, trying to store it inside herself. This was her people's land; she knew that in her bones. Whatever else might happen, that would not change.

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1. Which of the following statements best expresses Rebecca's feelings during her visit to the fields, as expressed in lines 1–42 ?

A. Overjoyed by the idea of ownership
B. Connected with the land and her heritage
C. Dismayed by her looming financial problems
D. Exhausted and frustrated from hard work

2. The word *that* in line 28 most directly refers to:

F. "someday, she would return" (lines 31–32).
G. "far away from the soil" (lines 26–27).
H. "it would move on once it had ascertained that she was no flower" (lines 48–49).
J. "sometimes one bad year will follow another" (lines 24–25).

3. The main purpose of the information in lines 30–42 is to explain why Rebecca believes that the land is:

A. her rightful heritage, passed down through her family, whose hard work forms the foundation for her claim.
B. an entity unto itself, alive and free, and beyond the control of anyone.
C. not worth the trouble that she and her predecessors have gone to in an attempt to claim it.
D. beautiful, whether wild or cultivated, and filled with creatures that create a harmonious whole.

4. In the first four paragraphs (lines 1–42), the narrator describes all of the following aspects of Rebecca's surroundings EXCEPT the:

F. different scents in the evening air.
G. feel of freshly plowed earth.
H. reason her family had left the area.

J. best time of day to visit the fields.

5. The passage can best be described as a fictional depiction of a woman's impression of the land that:

A. uses rich, suggestive detail to show that the land is a vital and cherished component of her personal life and family heritage.
B. reveals a painful family history and explains why her ancestors had opted to give up all claims on the land.
C. offers metaphors and similes to convey a deeper meaning than the one suggested by the events narrated in the story.
D. explains exactly how one family can lose everything due to circumstances beyond the control of its members.

6. The narrator's statement in lines 62–63 ("Without the former, she could never face the latter") most directly refers back to Rebecca's:

F. opinion about different times of the day and how that changes the atmosphere (lines 15–21).
G. concern about the bee described in the fifth paragraph (lines 43–51).
H. anxiety over financial matters being outweighed by her love of the land (lines 54–61).
J. enjoyment of the scents described in the second paragraph (lines 3–14).

7. One of the main purposes of the last two paragraphs (lines 52–71) is for the narrator to describe Rebecca's attitude towards the land in a way that:

A. explains the importance of the stranger's land that is mentioned previously in the passage.
B. purposefully identifies the mistakes made by Rebecca's parents, referenced earlier in the passage, which Rebecca cannot correct.

C. deepens the reader's understanding of the challenges and rewards the land presents to Rebecca.

D. invites the reader to draw a parallel between Rebecca and the land itself and perhaps the reader as well.

8. The point of view from which the passage is told can best be described as that of a narrator who:

F. is aware of what Rebecca is thinking and feeling.

G. suspects that Rebecca is not sincere in her plans.

H. is personally involved in the events being described.

J. is Rebecca's close relative who didn't move.

9. As it is used in line 34, the word *wild* most nearly means:

A. unconquerable.

B. unrestrained.

C. uncultivated.

D. irrepressible.

10. When Rebecca realized that "a bee landed on her cheek" (line 46), her first response is to:

F. brush it away from her face.

G. feel frightened that it will sting her.

H. hope that it will fly away.

J. flinch, then try not to respond.

Passage II

SOCIAL SCIENCE: This passage is adapted from the article "Illuminating the Dark Ages" by Krista Correa (©2003 Krista Correa).

The period that began with the fall of the Roman Empire in the fifth century and ended with the Renaissance in the fourteenth century has been referred to by many names: the Medieval period, the Middle Ages, and the Dark Ages. The writer Petrarch coined the latter name in the fourteenth century in an attempt to differentiate the culture of Medieval Europe from his own time. The popular conception at that time was that Europe was finally emerging from a cultural wasteland during which much of the ancient learning had been lost; Petrarch, like many other writers and artists of his time, wanted to connect his studies with those of antiquity, rather than those of more recent years. The name stuck, as did the idea that very little of cultural or intellectual importance took place during the years so described.

Recent scholars have begun to challenge that idea, however, asserting that while it is true that certain fields of study did go into decline during the Middle Ages (the term they prefer), other areas flourished. These historians advocate the more neutral term "Middle Ages" because they feel that it more accurately describes the centuries during which Europe began to transition slowly from a Rome-based, empire-dominated system into the modern

states that exist today. According to them, using a negative term like "Dark Ages" serves only to underscore misconceptions about the era. This argument represents a sharp break from the past.

Many scholars have used the term "Dark Ages" to identify the lack of information available about the years between the fall of Rome and the Renaissance. Few written records exist from the early years and the documents that do exist don't always shed a great deal of light on the larger picture of what was happening in Europe. Some scholars, such as William Jordan in his new edition of the *Dictionary of the Middle Ages*, have argued that the term "Dark Ages" needn't be negative—it simply refers to the darkness caused by this lack of information.

That view, however, has been largely discredited. Even when used in a seemingly neutral way, "Dark Ages" has an inherently negative connotation in most people's minds. Moreover, other scholars point out that it is no longer accurate. Research continues to uncover information about the era that allows scholars to gain an ever more accurate idea of what life was like during the Middle Ages, while other research has helped historians gain a better understanding of the evidence they already possessed.

Other scholars have preferred the term "Dark Ages" to describe the decline in learning that they believe to have taken place during this era. These scholars assumed that without the advances of Roman society, learning must have virtually halted. Modern historians such as David Lindberg and Ronald Numbers, however, point out that this view is very far from the truth. Evidence abounds that, although some knowledge was indeed lost, much was retained and that intellectual studies continued throughout the Middle Ages. Their books, such as Lindberg's *Science in the Middle Ages* and Numbers's *Galileo Goes to Jail and Other Myths about Science and Religion*, debunk many popular misconceptions about the Middle Ages, such as that people widely believed the Earth was flat (they didn't) and that they largely abandoned the field of mathematics (they didn't).

The goal of scholars such as Lindberg and Numbers is not to idealize the medieval world, or claim that it was filled with light and learning, but rather to balance the overly pessimistic views that are held by so many even today. No one would seriously dispute that, in some areas, learning did go into a decline after the fall of Rome. What modern medievalists, or medieval

scholars, would point out is that while some areas diminished, others were able to flourish. For example, three-dimensional, realistic art certainly became less common, and the ability to build a self-sustaining dome was lost for hundreds of years. However, symbolic art developed to such a level that a skilled artist could convey an entire legend in a single picture. Architects in the Middle Ages developed the flying buttress along with some of the most intricate stonework ever seen before or since. The key to understanding the Middle Ages is to avoid making assumptions based on prior assertions or possibly biased historians from the past, and to instead look at what was actually created.

Perhaps it is finally time, then, for the term "Dark Ages" to pass out of not only scholarly but also casual speech. If the goal of historical study is to illuminate, not judge, a descriptive yet neutral term like "Middle Ages" might well serve more effectively. In the meantime, medievalists will continue studying the evidence they have in an attempt to understand the era that saw Western European culture transition into the modern era.

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11. Based on the passage, which of the following scholars most directly contributed to the popularity of the term "Dark Ages"?

A. Jordan
B. Lindberg
C. Petrarch
D. Numbers

12. The passage most strongly implies that which of the following activities flourished during the Middle Ages?

F. The construction of free-standing domes
G. Skilled and detailed stonework
H. Three-dimensional, realistic art

J. The field of mathematics

13. The passage indicates that, contrary to the historians with a traditional view of the Middle Ages, scholars today believe the Middle Ages were:

A. a transitional period between the classical era and the modern.
B. an era in which significant scientific discoveries were made.
C. an epoch that suffered a decline in learning, art, and architecture.
D. a time when much of the world lived in ignorance.

14. The passage states that an accurate picture of the Middle Ages will likely develop as a result of:

F. reconsidering existing evidence and discovering new evidence.
G. relying on written documents from the Renaissance.
H. new excavations throughout the European countryside.
J. disregarding all Renaissance accounts.

15. According to the passage, people during the Middle Ages did NOT:

A. keep written documents.
B. study advanced mathematics.
C. know how to carve stone well.
D. believe the world was flat.

16. The main purpose of the first paragraph (lines 1–13) is to:

F. compare the advances of the Renaissance and the classical period with the failings of the Middle Ages.
G. list all of the terms used to describe the period between the fifth and fourteenth century.
H. demonstrate that Petrarch and other writers of the Renaissance lived in a cultural wasteland.

J. introduce the era under discussion and some of the ways it has been described.

17. The passage identifies which of the following as two areas in which learning truly did go into decline during the Middle Ages?

A. Symbolic art and architecture
B. Astronomy and mathematics
C. Dome-building and three-dimensional art
D. Stonework and science

18. It can reasonably be inferred from the first paragraph (lines 1–13) that Renaissance writers such as Petrarch believed that their work would benefit from:

F. association with the classical era.
G. an in-depth study of science.
H. the creation of a well-educated middle class.
J. the new culture of the Renaissance.

19. As it is used in line 5, the word *coined* most nearly means:

A. counterfeited.
B. plagiarized.
C. spent.
D. created.

20. It can reasonably be inferred from the fourth and fifth paragraphs (lines 33–54) that before the work of modern scholars such as Numbers and Lindberg, some scholars tended to see educational pursuits during the Middle Ages as:

F. insignificant.
G. scientific.
H. advanced.

J. well-documented.

Passage III

HUMANITIES: Passage A is adapted from the essay "Much Ado About Shakespeare" by Arthur Coyle Thompson. Passage B is adapted from the essay "No Kidding This Theory Is Looney" by Amanda Combs Truelove.

Passage A by Arthur Coyle Thompson

Since his death, the 17th century playwright William Shakespeare has been considered one of the greatest, if not the greatest, writers in the English language. His many plays have not only shaped the course of the arts and the theater, they may have shaped the way that people in the modern world think of themselves. But when we talk about all that this playwright has done, we cannot help but notice that the playwright himself remains a mystery. Certainly there was a man named William Shakespeare who lived in Stratford-upon-Avon, but could this man, who came from these humble origins, possibly have written all the great works that are attributed to him?

A group of critics and scholars known as the Anti-Stratfordians believe that Shakespeare's authorship of these great plays is nearly impossible. They argue that Shakespeare couldn't have had the education, aristocratic sensibility, or the familiarity with the royal court that pervade his many works. Shakespeare's works were much more likely written by someone, or some group of people, that had these qualities, someone like Shakespeare's contemporary Christopher Marlowe or the English philosopher and statesman Francis Bacon. There are even some who surmise

that Shakespeare's oceanic grasp of the totality of Elizabethan England means that his works could only have come from one source: Queen Elizabeth herself.

According to these Anti-Stratfordians, Shakespeare's sole authorship is the stuff of myth, a belief that has either been lazily accepted since Shakespeare's lifetime or a vast conspiracy to hide the true identity of the author. Because the historical record obviously contains no account of Sir Francis Bacon writing *Hamlet*, for instance, the Anti-Stratfordians rely instead upon what they call a "rhetoric of accumulation." In other words, the Anti-Stratfordians seek to decode Shakespeare's texts for hints as to the author's true identity.

The controversy began in the mid-1800s, when a slew of books and articles began to question Shakespeare's authorship. The first comprehensive theory of alternate authorship was formulated by Delia Bacon, who suggested that the plays were written by a group of authors under the direction of Sir Francis Bacon. The group, according to this theory, was constructed to promote philosophical and political ideas that were too dangerous for any one man to espouse publicly.

Other theories have emerged since. Since the 1920s and the publication of J. Thomas Looney's *Shakespeare Identified*, the second leading candidate has been Edward de Vere, 17th-century Earl of Oxford. The "Oxfordians," as they are known, cite certain passages from *Hamlet* that depict the author as an eccentric aristocrat and poet who had traveled extensively in Italy. Oxford had some poetry of his own, which Looney used to identify parallels with Shakespeare's sonnets and some of his plays.

While it may be impossible for anyone to know for sure, the Anti-Stratfordians nonetheless raise some interesting questions about Shakespeare's authorship and the question of authorship in general. How reasonable is it to think that the average townsman could have written the generation-defining, even language-defining, works for which William Shakespeare has been given credit?

Passage B by Amanda Combs Truelove

Arthur Coyle Thompson asks, "How reasonable is it to think that the average townsman could have written the…works for which William Shakespeare has been given credit?" The answer is simple: it's not reasonable, but that is the nature of genius, especially genius of Shakespeare's magnitude. As difficult as it might be to believe, all evidence points toward William Shakespeare as the sole author of Shakespeare's works. If the authorship of Shakespeare's work was in doubt, why did no one identify this doubt until 200 years after Shakespeare's death? Why did none, not a single one, of Shakespeare's contemporaries speak up? The theater world is a small but collaborative one: if something had been suspicious about the authorship of Shakespeare's plays, someone would certainly have said something.

If anything, the Anti-Stratfordians, whether explicitly or implicitly, have been making a blatantly classist argument. The idea that a man of Shakespeare's level of genius must have come from the upper echelons of society is snobbish at best. All of these Anti-Stratfordians are teachers—do they assume that their most intelligent students are also the wealthiest? In our own age, when the greatest discoveries are made in some eighteen-year-old's

garage, we should see the fallacy in the argument that William Shakespeare "could not have" written his plays. One does not need money, after all, to feel emotions deeply or to observe the behaviors of others. And Shakespeare's work is so powerful, and it continues to resonate today, precisely because of his eloquence in describing the indescribable. One does not need a fluency in Ancient Greek or the natural sciences to read Shakespeare, so why would Anti-Stratfordians suppose that Shakespeare himself must have needed it or that he couldn't have acquired it on his own?

In addition, these Anti-Stratfordians must understand how misleading it is to identify "parallels" in the texts of Shakespeare and the authors whom the Anti-Stratfordians propose. Certainly these texts should have parallel vocabularies: they were written in the same place in the same era! Words like "app" and "iPhone" are spoken all the time: can we really suppose that those who speak them are all the same technological expert?

No, the Anti-Stratfordians must instead resort to accusations of conspiracy and deception. Why, they ask, have generations hidden the real story from us? Why has all the evidence of our claims been destroyed? Well, because the claims of these Anti-Stratfordians amount to what King Lear would've called "an O without a figure." The evidence for an alternate author is tough to find for a simple reason: it doesn't exist.

Questions 21–24 ask about Passage A.

21. Based on the passage, the primary reason that some critics and scholars doubt the identity of the playwright William Shakespeare is that:

A. the most accomplished playwrights in the 16th century were also the most successful and wealthy.
B. a man of Shakespeare's relatively humble station is not likely to have produced works with such breadth.
C. some of the ideas that Shakespeare's plays advanced were too dangerous to appear in novels.
D. some readers in the 19th century wanted to connect the plays of Shakespeare to their own lives.

22. According to Thompson, critics cite Queen Elizabeth as the possible author of Shakespeare's plays because the plays:

F. have unusually strong female characters.
G. demonstrate an intimate knowledge of natural sciences.
H. depict the era of Elizabeth's reign with notable breadth.
J. were popular among dukes and other royalty of the time.

23. Thompson refers to Shakespeare as "the average townsman" (lines 52–53) in order to suggest that Shakespeare:

A. may have been too unsophisticated to have written such sophisticated plays.
B. was active in civic affairs as well as in theatrical ones.
C. was probably too well-liked by his neighbors to be revealed as a fraud.
D. may have disguised himself in his daily life in Stratford-upon-Avon.

24. As it is used in line 21, the word *oceanic* most nearly means:

F. natural.
G. informal.
H. salty.
J. comprehensive.

Questions 25–27 ask about Passage B.

25. Based on Truelove's account, the main reason that Shakespeare's authorship is difficult to understand is that Shakespeare:

A. was only one of many authors who wrote under the name Shakespeare.
B. appeared in the literary world before plays were considered serious works of art.
C. is a genius who cannot be characterized in normal terms.
D. disapproved of royalty and other nobles without sufficient knowledge of how they lived.

26. According to Truelove, the Anti-Stratfordians give a classist account of Shakespeare's authorship in that they:

F. insist that only a royal or noble could have written a good play.
G. assume that literary ability is based on the author's economic class.
H. disapprove of their own low-income students.
J. show that Shakespeare did not earn sufficient royalties from his plays.

27. Truelove critiques arguments against Shakespeare's authorship that are based on "parallels" with other authors' writing by suggesting that:

A. the Anti-Stratfordians have been focusing on the wrong texts in their analysis.
B. the Anti-Stratfordians have not sufficiently spoken of economics in their books and articles.

C. the evidence used for such claims is not as meaningful as Anti-Stratfordians believe.

D. the evidence for Francis Bacon's authorship is far less compelling than the evidence for Edward de Vere's.

Questions 28–30 ask about both passages.

28. One of the most obvious differences between Thompson's and Truelove's points of view is that Thompson:

F. believes the theories of the Anti-Stratfordians, while Truelove is more compelled by the theories of the Oxfordians.

G. criticizes the authors he describes, while Truelove is more interested in finding the merits in Looney's and Bacon's arguments.

H. doubts the claims of the Anti-Stratfordians, while Truelove considers them interesting intellectual exercises.

J. presents a skeptical view on Shakespeare's authorship, while Truelove criticizes such skepticism as misguided.

29. By which of the following means does Truelove disagree with the theories presented in Thompson's passage?

A. Personal attack and intellectual banter

B. Direct response and rhetorical questions

C. Emotional appeal and ironic exaggeration

D. Historical data and archival research

30. Based on the passages, which pair of phrases best compares Thompson's and Truelove's responses to alternative theories of Shakespeare's authorship?

F. Understated approval versus firm neutrality
G. Dramatic appeal versus scholarly debate
H. Staunch advocacy versus tentative support
J. Receptive exploration versus decisive critique

Passage IV

NATURAL SCIENCE: This passage is adapted from the article "Does an Amoeba Have a Choice?" by Wilbur Stewart (©2007 Wilbur Stewart).

The question of how much freedom of choice humans exercise has long vexed scientists. Once the model of humans as the only thinking beings on the planet was abandoned, a new model of humans as higher-level animals took its place as the dominant theory. According to the new theory, certain organisms, such as amoebas and plants, act unconsciously, according to almost mechanical impulses. Other organisms, such as dogs or horses, display a certain level of consciousness combined with instinct. Above them all stand humans—maybe not the only thinking beings but still the most highly evolved, exercising "free will" when determining life choices.

Today, however, scientists are beginning to question that model as well. Could it be that much of what we take for conscious decision-making can actually be accounted for biologically? Are we in truth not all that different from animals that act largely out of instinct? How separate are humans, really, from the rest of the natural world?

The human ability to form lasting romantic bonds is one of the primary proofs given in support of free will. Some theorists argue that remaining with a single partner because of an emo-

tional commitment is clearly unnatural and thus a sign of our higher development: social and emotional needs overpowering a base, animal instinct. Evolutionary biologists, however, have recently uncovered evidence that suggests that working as a pair has many evolutionary advantages that may outweigh the disadvantages. Pair-bonding allows one party to remain behind and guard the offspring while the other seeks food and shelter; it increases the odds that an injured party will be cared for and thus survive; it even increases the chances that offspring will live long enough to mature and become self-sufficient. Moreover, recent research seems to indicate that many of the feelings that humans experience when falling in love are in fact biologically motivated and that other animals finding a mate experience similar physical symptoms.

The truly staggering aspect of this new realization, however, is that it could extend not only to individuals but also to societies as a whole. If humans are instinctual animals, driven by biological imperatives much of the time, then the interplay between cities and even nations might also be open to biological interpretation. After all, governments are composed of humans.

The possible repercussions that such a discovery could have on international relations are truly astonishing. For example, perhaps in time scientists will determine which hormones cause humans to feel friendship, along with a way to administer those hormones to a nation. Decade-long wars could be ended, amicably, in a matter of days.

Still other scientists, mainly chemists and physicists, have asserted that it's not so much that humans are like other animals as that all living things are relatively predictable on a cellular level. Those scientists believe that all human interaction is, on some level, based in the laws of physics. Strange as that may sound at first, it's not as outrageous as it seems. Hormones and other natural chemicals are released in response to some kind of stimulus, causing biological impulses. In order for the body to process those stimuli, however, a whole array of reactions has to take place. At the most basic level, those reactions are caused by cells sending out and responding to electrical impulses. Those electrical impulses become chemical impulses, or neurotransmitters, which eventually trigger biological impulses. All matter is made up of protons, neutrons, and electrons, so by extension,

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31. According to the author of the passage, "free will" describes behavior such as:

A. falling in love by a series of natural and biological processes.
B. the study of pattern behavior to understand criminal behavior.
C. the choice of one mate based on a mutual emotional connection.
D. group efforts by all members of a city to improve that city.

32. Based on the passage, what relationship does the recent discovery described in the third paragraph (lines 30–34) have to the electrochemical theory?

F. It directly supports the electro-chemical theory.
G. It supports another theory that is connected to the electro-chemical theory.
H. It undermines the central claims of the electro-chemical theory.
J. It is unrelated to the electro-chemical theory.

33. The author characterizes scientific contributions to police work as:

A. charming but ultimately useless.
B. mundane but logically unconvincing.
C. alarming but theoretically persuasive.
D. new and potentially helpful.

34. The supporters of the electro-chemical theory claim that humans are like particles in that both:

F. are ultimately driven to action by electrical impulses.
G. are potentially capable of conscious decision-making.
H. can more adequately be understood in groups than individually.
J. respond to outside stimuli without intermediate thought.

35. In terms of where and how frequently they occur, electrical impulses are described by the author of the passage as:

A. possible in humans and animals but not in other types of matter.
B. common to humans, animals, and other types of matter.
C. present in cellular interactions but absent from human interactions.
D. the basis of a theory of group activity for non-human matter.

36. The chemists and physicists define biological impulses as:

F. apparently unconnected to decisions based in free will.
G. apparently central to whether humans exercise free will.
H. the basis for chemical impulses, which in turn cause electrical impulses.

J. caused by chemical impulses, which are caused by electrical impulses.

SCIENCE TEST

40 Minutes–40 Questions

DIRECTIONS: There are several passages in this test. Each passage is followed by several questions. After reading a passage, choose the correct answer to each question and fill in the corresponding oval on your answer document. You may refer to the passages as often as necessary.

You are NOT permitted to use a calculator on this test.

Passage I

The *mean high water* (MHW) of a tidal station is the average height of all high tides at a station over an *epoch* (a specific 19-year period used by the National Ocean Service to calculate official tidal data). The *daily mean high water* is the average of the two high tides in a single day. Tidal heights vary with season, weather conditions, and moon phases. Figure 1 shows the daily mean high water for a two-month period at a station where the MHW is 3.083 feet (37 inches).

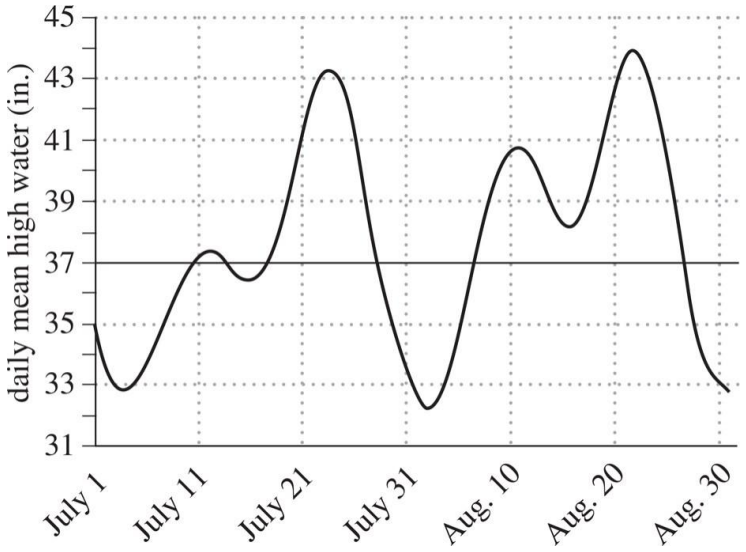

Figure 1

Figure 2 shows how the difference between the *yearly mean high water* (cumulative average of all observed high tides in a given calendar year) and the MHW varied throughout two months at the tidal station.

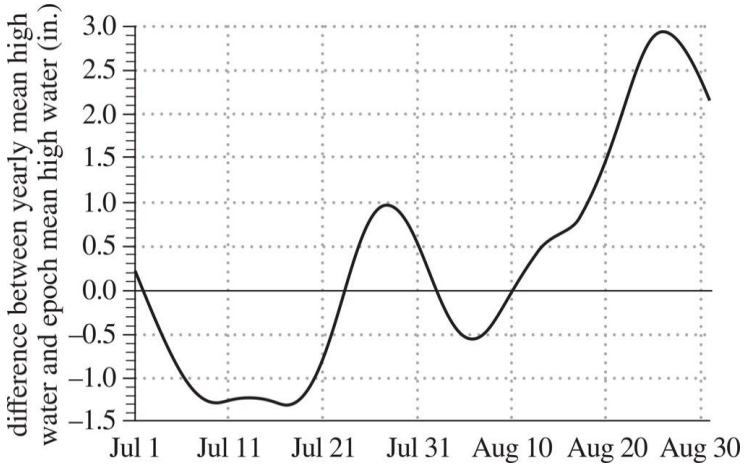

Figure 2

Note: If the difference between yearly mean high water and MHW is positive, the yearly mean high water is above the MHW; if the difference is negative, the yearly mean high water is below the MHW.

1. Based on Figure 2, on how many days in July and August was the yearly mean high water exactly 0.6 inches above the MHW?

A. 2
B. 3
C. 4
D. 5

2. According to Figure 2, on which of the following dates was the yearly mean high water at the station the same as the MHW?

F. July 8
G. July 15
H. July 30
J. August 2

3. During the month of July, was the yearly mean high water more often below the MHW or above the MHW?

A. Below; the difference between yearly mean high water and MHW is more often negative during the month of July.
B. Below; the difference between yearly mean high water and MHW is more often positive during the month of July.
C. Above; the difference between yearly mean high water and MHW is more often negative during the month of July.
D. Above; the difference between yearly mean high water and MHW is more often positive during the month of July.

4. According to Figure 1, on which of the following dates was the daily mean high water higher than the MHW?

F. July 4
G. July 24
H. August 1

J. August 28

5. Based on Figure 2, for approximately how many total days in July and August was the yearly mean high water below the MHW?

A. 7
B. 21
C. 28
D. 42

6. According to Figure 1, the highest daily mean high water in July and August was approximately how much higher than the lowest daily mean high water during this period?

F. 4 in.
G. 7 in.
H. 12 in.
J. 16 in.

Passage II

When grown in industrial wastewater, the alga *Chlorella vulgaris* can convert atmospheric carbon dioxide to organic compounds used to produce biofuels. In an experiment, 7 bioreactors filled with *C. vulgaris* were studied to examine how pH and average solar radiation affected average daily carbon dioxide uptake, U_D, and volume of biofuels produced in the reactor after processing. All the reactors contained the same quantity of algae and were maintained at the same temperature. The table shows the results of the experiment.

Reactor number	pH	Average solar radiation (W/m^2)*	Average U_D † (L)	Volume of biofuel (L)
1	7.0	80	14.8	31.3
2	7.0	120	18.1	38.7
3	7.0	200	22.5	47.0
4	5.1	40	6.7	15.2
5	6.0	40	9.9	21.1
6	6.4	40	11.8	24.9
7	7.0	40	12.3	26.0

* watts per square meter

† U_D = (volume of CO_2 pumped into reactor) – (volume of CO_2 emitted)

7. Based on the table, for which 2 reactors was the average U_D value less than 15 L and the volume of biofuel greater than 25 L ?

A. Reactor 1 and Reactor 4
B. Reactor 1 and Reactor 7
C. Reactor 2 and Reactor 3
D. Reactor 2 and Reactor 6

8. Consider Reactors 1–3. Based on the table, as average solar radiation increased, did average U_D decrease or increase, and did the volume of biofuel decrease or increase?

	average U_D	volume of biofuel
F.	decrease	decrease
G.	decrease	increase
H.	increase	decrease
J.	increase	increase

9. Consider the 4 reactors for which the average U_D values were greater than 12.0 L. What is the order of these reactors from the reactor with the greatest average U_D value to the reactor with the least average U_D value?

A. Reactor 2, Reactor 1, Reactor 7, Reactor 6
B. Reactor 2, Reactor 7, Reactor 3, Reactor 1
C. Reactor 3, Reactor 2, Reactor 1, Reactor 7
D. Reactor 3, Reactor 6, Reactor 2, Reactor 1

10. Based on the table, the volume of biofuel produced by the *C. vulgaris* was approximately how many times as great in Reactor 4 as the volume produced in Reactor 3 ?

F. $\frac{1}{3}$

G. $\frac{1}{2}$

H. 2

J. 3

11. Suppose Reactor 1 was maintained at a temperature of 25°C. What was the temperature at which Reactor 5 was maintained?

A. 5°C
B. 25°C
C. 125°C
D. Cannot be determined from the given information

12. What was the average U_D, in *milliliters* (mL), for a reactor containing algae maintained at a pH of 7.0 and an average solar radiation level of 120 W/m^2 ?

F. 0.0181 mL
G. 18.1 mL
H. 18,100.0 mL
J. 181,000.0 mL

Passage III

Three experiments were conducted to determine the effects of *salinity* (concentration of salt) on 3 properties of water.

Researchers prepared 5 mixtures of freshwater and saltwater, labeled Solutions A–E, as shown in Table 1.

Table 1

Solution	Percent by mass of:	
	freshwater	saltwater
A	100	0
B	80	20
C	50	50
D	20	80
E	0	100

Experiment 1

A polystyrene foam container with a maximum capacity of 200 mL was filled with 100 mL of Solution A and then covered with a polystyrene foam lid through which a thermometer and an electrical heater were inserted into Solution A. The electrical heater was turned on at a constant power of 300 W until the solution was heated to a temperature of 100°C. After all of the water in the solution was converted to steam, the solution's *heat of vaporization* (energy required to convert a substance from the liquid to gas phase) was calculated.

This process was then repeated with Solutions B–E. The results are shown in Table 2.

Table 2

Solution	Heat of vaporization (J/g)
A	2,301
B	2,260
C	2,195
D	2,137
E	2,098

Experiment 2

Another 100 mL of Solution A was transferred into a clean glass beaker.

The beaker was placed inside a plastic dish with 50 mL of acetone and 2 g of solid CO_2. A clean thermometer was placed into the solution. When ice appeared inside the beaker and the temperature shown by the thermometer stopped decreasing, the temperature was recorded as the freezing point of the solution.

This process was then repeated with Solutions B–E. The results are shown in Table 3.

Table 3	
Solution	Freezing point (°C)
A	0.0
B	–0.3
C	–0.6
D	–1.1
E	–1.8

Experiment 3

The beakers used in Experiment 2 were removed from the cold bath. A 200 mL graduated cylinder was placed onto an analytical balance and the

balance was adjusted so that it read 0.000 g. The ice created from Solution A was warmed for 3 min until all of the ice melted, and the liquid was transferred into the graduated cylinder. The new mass was recorded to the nearest 0.001 mg, and the volume was recorded to the nearest 0.1 mL. The density of the liquid was then calculated.

This process was then repeated with the ice created from Solutions B–E. The results are shown in Table 4.

Table 4

Melted ice from Solution:	Density (kg/m^3)
A	998
B	1,012
C	1,037
D	1,059
E	1,076

13. Which of the following is the most likely reason that each solution was placed in a polystyrene foam container in Experiment 1 ?

A. To prevent the solution from freezing
B. To ensure that the solution froze
C. To prevent the solution from absorbing heat other than that from the electrical heater
D. To ensure that the solution absorbed heat other than that from the electrical heater

14. In Experiment 3, the graduated cylinders were filled with:

F. liquid water but not ice.
G. ice but not liquid water.
H. neither liquid water nor ice.

J. both liquid water and ice.

15. Based on the results of Experiment 1, if a solution containing 75% by mass freshwater had been examined in Experiment 1, the heat of vaporization of the solution would most likely have been:

A. less than 2,195 J/g.
B. between 2,195 J/g and 2,260 J/g.
C. between 2,260 J/g and 2,301 J/g.
D. more than 2,301 J/g.

16. Experiment 1 differed from Experiment 2 in which of the following ways?

F. In Experiment 1, a greater volume of each solution was used than in Experiment 2.
G. In Experiment 2, a greater volume of each solution was used than in Experiment 1.
H. In Experiment 1, each solution was brought to a lower temperature than in Experiment 2.
J. In Experiment 2, each solution was brought to a lower temperature than in Experiment 1.

17. According to the results of Experiment 3, would a 10 m^3 volume of Solution B or Solution D have a greater mass?

A. Solution B, because it is more dense.
B. Solution B, because it is less dense.
C. Solution D, because it is more dense.
D. Solution D, because it is less dense.

18. Consider the solution with the highest freezing point in Experiment 2. According to the results of Experiment 3, was the density of this solution greater than, less than, or equal to 1,000 kg/m^3 ?

F. Greater than
G. Less than
H. Equal to
J. Cannot be determined from the given information.

19. Consider the statement "The percent by mass of freshwater in the solution with the *lowest* heat of vaporization was the same as the percent by mass of freshwater in the solution with the melted ice that had the highest density." Do the results of Experiments 1 and 3 support this statement?

A. Yes; 0% by mass freshwater had the lowest heat of vaporization and the highest density.
B. Yes; 50% by mass freshwater had the lowest heat of vaporization and the highest density.
C. No; 0% by mass freshwater had the lowest heat of vaporization but 50% by mass freshwater had the highest density.
D. No; 50% by mass freshwater had the lowest heat of vaporization but 0% by mass freshwater had the highest density.

Passage IV

An electric charge in motion will generate an invisible *magnetic field.* Iron filings are *ferromagnetic*, meaning they become tiny magnets and align themselves to a magnetic field. These filings can be used to represent the magnetic field lines that run from the north to the south poles around a magnet: the closer the lines are, the stronger the magnetic field. Figure 1 shows two patterns of magnetic field lines that form around magnets of different poles: attractive (between two opposite poles) and repulsive (between two identical poles).

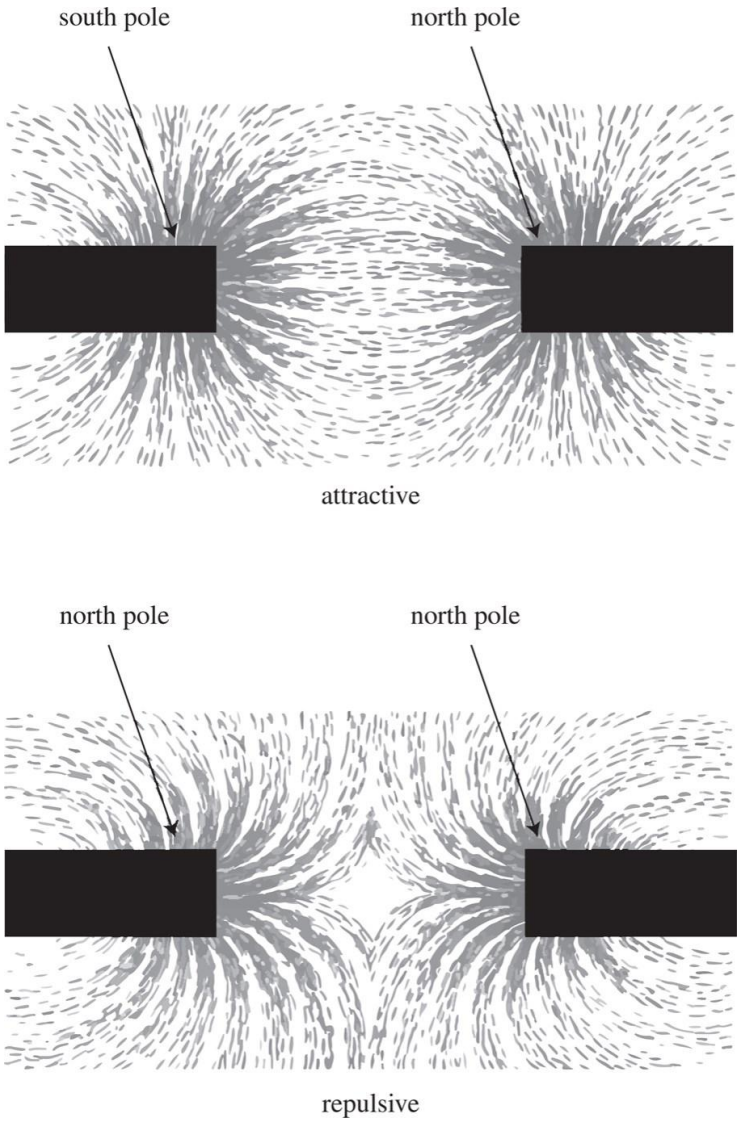

Figure 1

Researchers performed 2 experiments to study the patterns formed when iron filings were exposed to magnets.

Experiment 1

The researchers obtained 7 bar magnets of varying lengths but with the same nickel composition, width of 5.0 cm, and height of 2.0 cm. First, they fixed one of the bar magnets to a flat surface. Then, they performed a trial with each of the 6 remaining magnets using the following procedure: a trial

bar magnet was placed 10.0 cm away from the fixed magnet with the identical poles facing each other and the two magnets were covered with a sheet of paper. Finally, 2.0 grams of iron filings were poured evenly over the piece of paper, and the pattern that developed was observed. The trial magnet was then rotated 180 degrees so the opposite pole was facing the fixed magnet, and the procedure was repeated. The experiment was repeated with both poles of the other 5 trial magnets and the same fixed magnet. Table 1 shows the distance from the center of the trial magnet to the center of the outermost magnetic *field line* for each trial.

Table 1		
Magnet length (cm)	Distance (cm) from center of magnet to center of outermost field line:	
	attractive	repulsive
8.0	10.2	9.1
10.0	12.3	11.1
12.0	13.4	12.7
14.0	17.1	16.5
16.0	18.4	17.8
18.0	20.0	19.3

Experiment 2

The researchers performed 8 more trials with the 14.0 cm trial magnet. In each trial, the magnet was placed 5.0 cm from the fixed magnet, and the procedures used in Experiment 1 were repeated. The magnet was then moved further away from the fixed magnet in 5.0 cm intervals, and the attractive and repulsive patterns were reestablished after each move. Figure

2 shows the results for each trial, as well as a line of best fit for each pattern.

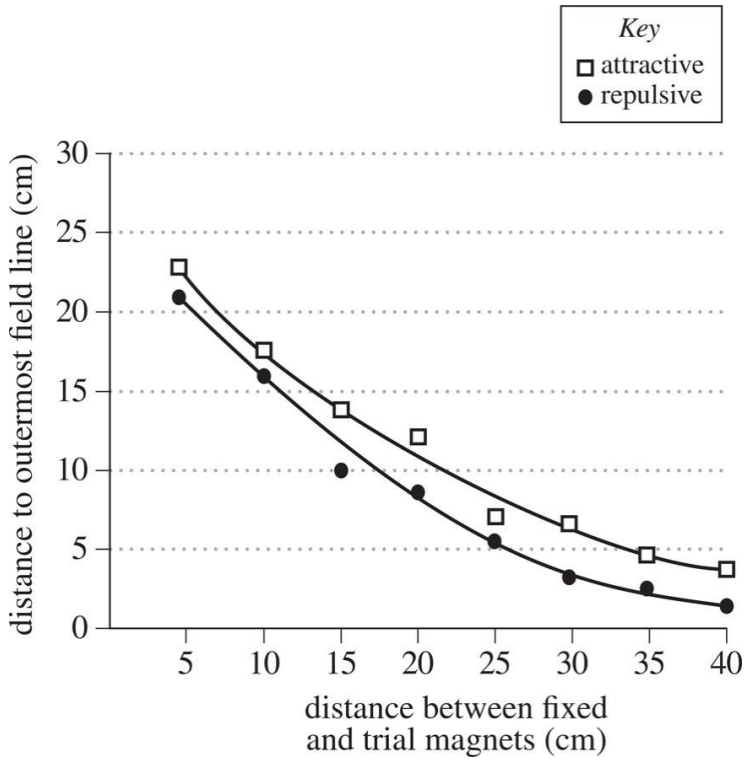

Figure 2

20. Based on the results of Experiment 1, for how many of the magnet lengths tested was the distance from the center of the magnet to the center of the outermost field line for the attractive patterns *less* than that for the repulsive patterns?

F. 0
G. 1
H. 2
J. 5

21. Which of the following questions about either magnet length or magnet distance can be answered by the results of Experiment 2 ? What effect did the:

A. magnet length have on the distance to the outermost field line?
B. magnet length have on the number of field lines?
C. distance between the fixed and trial magnets have on the number of field lines?
D. distance between the fixed and trial magnets have on the distance to the outermost field line?

22. Suppose that in Experiment 2 a trial had been performed with the attractive patterns in which the distance to the outermost field line was 15.0 cm. Based on Figure 2, the distance between the magnets would most likely have been closest to which of the following?

F. 5.0 cm
G. 10.0 cm
H. 14.0 cm
J. 16.0 cm

23. Experiments 1 and 2 differed in which of the following ways? In Experiment 1:

A. 7 magnets were used, whereas in Experiment 2, 2 magnets were used.
B. 7 magnets were used, whereas in Experiment 2, 8 magnets were used.
C. magnet composition was varied and distance to outermost field line was held constant, whereas in Experiment 2, magnet composition was held constant and distance to outermost field line was varied.
D. magnet composition was held constant and distance to outermost field line was varied, whereas in Experiment 2, magnet composition was varied and distance to outermost field line was held constant.

24. Based on the results of Experiment 1, for the magnet with a length of 16.0 cm, what was the difference between the distance to the

outermost field line for the attractive patterns and the distance between the fixed and trial magnets in Experiment 1 ?

F. 7.8 cm
G. 8.4 cm
H. 17.8 cm
J. 18.4 cm

25. Magnets come in many different shapes and sizes depending on the purpose they serve. One common magnet shape is a *horseshoe magnet*, a U-shaped magnet with north and south poles pointed in the same direction. Suppose that, for a trial magnet with a length of 8.0 cm set 10.0 cm away from a fixed horseshoe magnet, the distance to the outermost field line of the magnetic field is 1.4 times the same distance if a fixed bar magnet was used. Based on the results of Experiment 1, what would the distance to the outermost field line most likely be with the attractive patterns?

A. 9.1 cm
B. 10.2 cm
C. 12.7 cm
D. 14.3 cm

26. A student claimed that the greater the length of the trial magnet, the more *field lines* in the magnetic field for a certain type of magnetic force. Is this claim supported by the results for the repulsive patterns from Experiment 1 ?

F. Yes; as the magnet length was increased, the distance to the outermost field line for the repulsive patterns increased.
G. Yes; as the magnet length was increased, the distance to the outermost field line for the repulsive patterns decreased.
H. No; as the magnet length was increased, the distance to the outermost field line for the repulsive patterns increased.

J. No; as the magnet length was increased, the distance to the outermost field line for the repulsive patterns decreased.

Passage V

A horse's base coat color is determined by a single gene with 2 alleles: *red* and *black*. If an allele for each color is present, only the dominant color is expressed. In addition, a base coat color can be diluted by the cream gene, C, which also has two alleles: C^{Cr} for cream and C^{N} for non-cream. Palomino horses have golden coats that are produced by a red base coat with cream dilution.

A horse breeder provided 3 veterinary scientists a genealogy diagram of his horses showing the inheritance of the palomino coat (see Figure 1). The base coat color and presence or absence of palomino coloring are shown for each horse, numbered 1–28. Based on the horse breeder's diagram, each scientist offered an explanation regarding the inheritance pattern of palomino coloring.

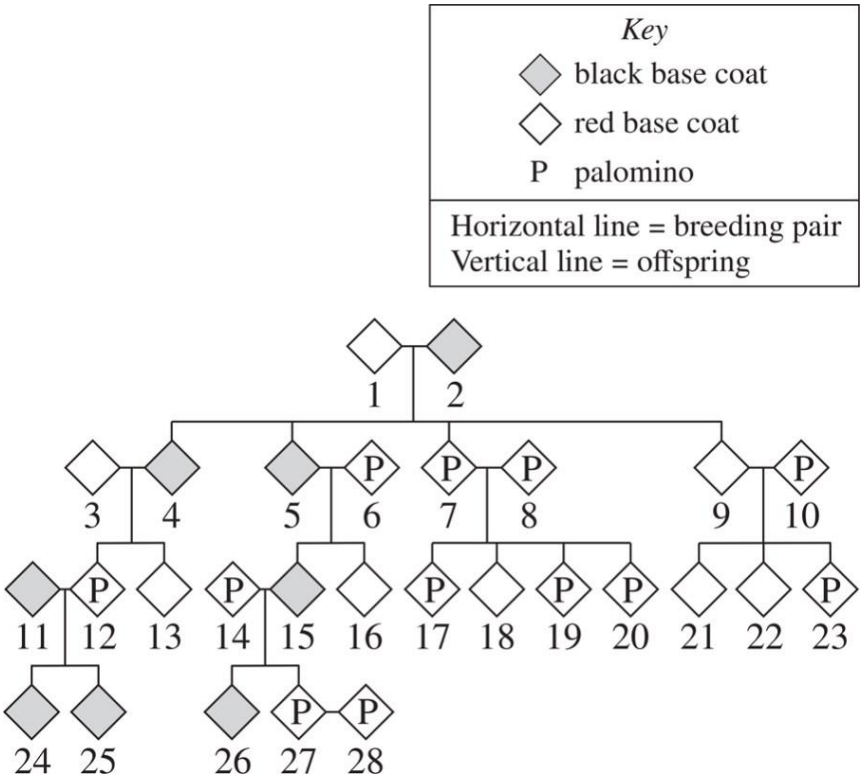

Figure 1

Scientist 1

All horses with at least one copy of the *red* allele will have a red base coat color, and all horses with at least one copy of the C^{Cr} allele will have cream dilution to their base coat. Therefore, all horses with palomino coloring inherited at least one *red* allele and at least one C^{Cr} allele. Table 1 shows the possible C genotypes with red and black base coats and indicates whether the horse will have palomino coloring.

Table 1

Base coat color	Gene C genotype	Coloring
Red	C^NC^N	not palomino
	$C^{Cr}C^N$	palomino
	$C^{Cr}C^{Cr}$	palomino
Black	C^NC^N	not palomino
	$C^{Cr}C^N$	not palomino
	$C^{Cr}C^{Cr}$	not palomino

Note: Red base coat horses can have the genotype *red*/*red* or *red*/*black*, while black base coat horses must be *black*/*black*.

Scientist 2

The red coat color requires two *red* alleles to be present in a horse, but the cream gene will be expressed in any horse with at least one C^{Cr} allele. Therefore, all palomino horses inherited two copies of the *red* allele and 1 or 2 copies of the C^{Cr} allele.

Scientist 3

Both the red base coat color and the cream dilution require two copies of the respective alleles to be present. Therefore, all horses with palomino coloring inherited two copies of the *red* allele and two copies of the C^{Cr} allele.

27. Which scientist, if any, would be likely to predict that Horse 12 has the C genotype of $C^{N}C^{N}$?

A. Scientist 1
B. Scientist 2
C. Scientist 3
D. None of the scientists

28. Which of the following tables is most consistent with Scientist 2's explanation for the C genotypes that produce palomino coloring in horses with red base coats?

F.

Gene C genotype	Coloring
$C^{N}C^{N}$ $C^{Cr}C^{N}$ $C^{Cr}C^{Cr}$	not palomino palomino palomino

G.

Gene C genotype	Coloring
$C^{N}C^{N}$ $C^{Cr}C^{N}$ $C^{Cr}C^{Cr}$	not palomino not palomino palomino

H.

Gene C genotype	Coloring
$C^N C^N$	palomino
$C^{Cr} C^N$	not palomino
$C^{Cr} C^{Cr}$	not palomino

J.

Gene C genotype	Coloring
$C^N C^N$	palomino
$C^{Cr} C^N$	palomino
$C^{Cr} C^{Cr}$	not palomino

29. Which of Scientist 1 or Scientist 2 implied that red base coats are dominant to black base coats?

A. Scientist 1, because Scientist 1 stated that horses must inherit two copies of the *red* allele to have a red base coat.
B. Scientist 1, because Scientist 1 stated that horses with only one copy of the *red* allele will have a red base coat.
C. Scientist 2, because Scientist 2 stated that horses must inherit two copies of the *red* allele to have a red base coat.
D. Scientist 2, because Scientist 2 stated that horses with only one copy of the *red* allele will have a red base coat.

30. Suppose that Horse 27 and Horse 28 produce a large number of offspring, all with red base coats. Based on Scientist 3's explanation, approximately what proportion of their offspring would be expected to be palomino?

F. $\frac{1}{2}$ of the offspring

G. $\frac{3}{4}$ of the offspring

H. All of the offspring

J. Cannot be determined from the given information

31. Based on Scientist 1's explanation, does a horse with a single *red* allele and the Gene C genotype $C^{Cr}C^{N}$ have a red or black base coat, and is the horse palomino?

A. Black; yes
B. Black; no
C. Red; yes
D. Red; no

32. Which of the scientists proposed an inheritance pattern in which the breeding of two black base coat horses could result in offspring with a red base coat?

F. Scientist 1 only
G. Scientist 3 only
H. Scientist 1 and 2 only
J. Scientist 2 and 3 only

33. Consider Horses 7 and 8 and their offspring. Does this portion of the horse breeder's diagram more support the explanation of Scientist 2 or Scientist 3 ?

A. Scientist 2; this portion of the diagram suggests that the C^{Cr} allele that dilutes red to palomino is dominant.
B. Scientist 2; this portion of the diagram suggests that the C^{Cr} allele that dilutes red to palomino is recessive.
C. Scientist 3; this portion of the diagram suggests that the C^{Cr} allele that dilutes red to palomino is dominant.

D. Scientist 3; this portion of the diagram suggests that the C^{Cr} allele that dilutes red to palomino is recessive.

Passage VI

The bacterium *Streptomyces griseus* can be cultured to produce *streptomycin* (an antibiotic whose effectiveness increases with concentration). Researchers examined the effects of glucose supplementation and pH on the production of streptomycin by three different strains of *S. griseus*—S4, S5, and S6.

Study

Researchers separated 60 mg of S4 spores into 4 equal portions, and each portion was placed into a culture solution inside one of 4 petri dishes, color-coded with red, blue, green, and yellow labels, respectively. The procedure was repeated with strains S5 and S6, using 4 separate color-coded petri dishes for each strain. Each petri dish was kept at a constant temperature of 27°C. After placing the spores, researchers added a glucose solution to all the red and green petri dishes. Immediately afterwards, 0.05 g potassium bicarbonate was added to all the red and blue petri dishes to make the pH of the solution alkaline. The green and yellow petri dishes were kept at a neutral pH. Table 1 shows, for each label of petri dish, whether the bacteria were supplemented with glucose and the pH of the culture solution after the potassium bicarbonate was added.

Table 1

Petri dish label color	Glucose supplementation	pH of culture solution
red	glucose added	alkaline
blue	no glucose added	alkaline
green	glucose added	neutral
yellow	no glucose added	neutral

After 5 days, each petri dish was heated to 50°C and a mixture of methanol and acetone was added to stop bacterial growth and extract the

streptomycin. The solution from each petri dish was then filtered into a separate test tube, and the contents of each test tube were then purified through column chromatography. The concentration of streptomycin, in micrograms of purified streptomycin per milliliter of culture solution (μg/mL), was calculated for each strain in each set of experimental conditions. Table 2 shows the results of the experiment.

Table 2		
Strain	Label color	Streptomycin concentration (μg/mL)
S4	red blue green yellow	215 93 118 76
S5	red blue green yellow	101 21 44 5
S6	red blue green yellow	198 56 102 33

34. The *S. griseus* with the least effective antibacterial properties was likely which strain grown in which petri dish?

F. The S4 strain grown in the red-labeled petri dish, because it had the highest streptomycin concentration.

G. The S4 strain grown in the red-labeled petri dish, because it had the lowest streptomycin concentration.

H. The S5 strain grown in the yellow-labeled petri dish, because it had the highest streptomycin concentration.

J. The S5 strain grown in the yellow-labeled petri dish, because it had the lowest streptomycin concentration.

35. The effectiveness of an antibiotic can be reported as *zone of inhibition* (ZOI). For solutions of streptomycin, the higher the streptomycin concentration, the larger the ZOI. Based on the results of the experiment for S4 in the petri dishes without added glucose, would the ZOI likely have been larger for the solutions in the petri dishes with neutral or alkaline pH?

A. Neutral; the streptomycin concentration in the red-labeled petri dishes was higher than in the green-labeled petri dishes.

B. Neutral; the streptomycin concentration in the blue-labeled petri dishes was higher than in the yellow-labeled petri dishes.

C. Alkaline; the streptomycin concentration in the red-labeled petri dishes was higher than in the green-labeled petri dishes.

D. Alkaline; the streptomycin concentration in the blue-labeled petri dishes was higher than in the yellow-labeled petri dishes.

36. Consider the statement "For a given strain of *S. griseus* grown with glucose supplementation, the streptomycin concentration produced by bacteria grown in neutral solution is generally higher than that produced by bacteria grown in alkaline solution." Are the results of the experiment for S6 consistent with this statement?

F. No, because the streptomycin concentration in the red-labeled petri dishes was higher than that in the green-labeled petri dishes.

G. No, because the streptomycin concentration in the blue-labeled petri dishes was higher than that in the yellow-labeled petri dishes.

H. Yes, because the streptomycin concentration in the red-labeled petri dishes was higher than that in the green-labeled petri dishes.

J. Yes, because the streptomycin concentration in the blue-labeled petri dishes was higher than that in the yellow-labeled petri dishes.

37. Assume that 1 mL of glucose solution was added to each of the petri dishes that was supplemented with glucose in the experiment. Suppose additional petri dishes color-coded with orange labels containing 2 mL of the same concentration glucose solution had been included in the experiment. Immediately after the addition of glucose, 0.05 g of potassium bicarbonate was added to each of these dishes. The results are shown in the following table.

Strain	Streptomycin concentration (μg/mL)
S4	239
S5	135
S6	210

Based on the table, how did the streptomycin concentration in the petri dishes change as the amount of glucose solution decreased from 2 mL to 1 mL to 0 mL? For each strain, the streptomycin concentration:

A. increased only.
B. decreased only.
C. remained constant.
D. increased, then decreased.

38. For each of the 3 *S. griseus* strains, which petri dishes were most likely to serve as a control for the effect of glucose supplementation on bacteria grown in an alkaline solution?

F. The red-labeled petri dishes
G. The blue-labeled petri dishes
H. The green-labeled petri dishes
J. The yellow-labeled petri dishes

39. Based on the description of the study, what amount of *S. griseus* spores was placed in each petri dish?

A. 4 mg **B.** 15 mg **C.** 60 mg
D. Cannot be determined from the given information

40. Assume that the petri dishes used to grow the S5 strain contained 5 mL of culture solution each. The mass, in micrograms, of purified streptomycin produced from the red-labeled petri dish used to grow the S5 strain was closest to which of the following?

F. 20 µg **G.** 100 µg **H.** 500 µg **J.** 2,000 µg

Answers and Explanations

ENGLISH TEST

1. **C**

   Note the question! The question asks which option *would NOT be acceptable* to replace the underlined portion. Cross out NOT and decide Yes/No for each option; then choose the odd one out. Connecting words are changing in the answer choices, so the question is testing consistency. The part before the underlined portion contains the words *the tradition of excellence that they have leveraged*, and the part after the underlined portion contains the words *to win 26 World Series championships*. Choices (A) and (B) are both consistent with the cause-and-effect relationship indicated by *in order to*: (A) utilizes the correct idiom *so as to*, and (B) utilizes the correct idiom *as a means to*. Mark (A) and (B) as Yes. Choice (C) uses an incorrect idiom, so mark (C) as No. The correct idiom is *so that*, and the word *to* after the underlined portion makes the idiom incorrect. Choice (D) deletes the underlined portion and is also consistent with the passage since the word *to* after the underlined portion indicates the same cause-and-effect relationship as (A) and (B). Mark (D) as Yes. Choice (C) is the odd one out. The correct answer is (C).

2. **F**

   Punctuation is changing in the answer choices, so the question is testing STOP and GO punctuation. Use the Vertical Line Test, and identify the ideas as complete or incomplete. Draw the vertical line between the words *players* and *contribute*. The phrase *The Yankees have had many great baseball players* is a complete idea, and the phrase *contribute to the team* is an incomplete idea. To connect a complete idea to an incomplete idea, GO or HALF-STOP punctuation is needed. A lack of punctuation is GO punctuation, so keep (F) and (J). The semicolon is STOP punctuation, so eliminate (G). The comma is GO punctuation, but there is no reason to include a comma after *players*, so eliminate (H). Compare (F) and (J). Choice (J) contains the

word *and*, which is used to connect words of the same part of speech and changes the meaning of the sentence, suggesting the Yankees *contribute to the team* rather than the players. The word *players* is a noun, and the word *contribute* is a verb, so *and* is not needed. Eliminate (J). The correct answer is (F).

3. **A**

Subjects and verbs are changing in the answer choices, so the question is testing complete sentences. Determine which answer choice would produce a complete sentence. The sentence needs a subject that clarifies what is a *better line of work* for Gehrig. Eliminate (D) because *his mother* is not a line of work. The sentence also needs a verb tense that is consistent with the phrase *wanting him to excel academically* after the underlined portion. Eliminate (B) because it would require the word *and* in order for both verbs to be in the same tense and it makes the sentence incomplete. Compare (A) and (C). Choices (A) and (C) both convey the same information, but (A) is in active voice and (C) is in passive voice. Since active voice is more concise than passive voice, eliminate (C). The correct answer is (A).

4. **J**

Note the question! The question asks which option *would be LEAST acceptable* to replace the underlined portion. Cross out LEAST and decide Yes/No for each option, and then choose the odd one out. The order of the words is changing in the answer choices, so the question is testing consistency with a modifier. The non-underlined portion contains the phrase *an intercollegiate game*. Gehrig is the one who played in the game, so the modifier should directly reference Gehrig's participation in the game. Choices (F) and (G) both use the word *that* to indicate that Gehrig played in the game. Mark (F) and (G) as Yes. Choice (H) uses the words *in which* to reference the game. Mark (H) as Yes, since it displays the same consistency as (F) and (G). Choice

(J) uses the words *and played* to reference the Yankee scout. This is the only answer choice not consistent with the passage, so mark (J) as No. Choice (J) is the odd one out. The correct answer is (J).

5. **B**

Commas are changing in the answer choices, so the question is testing comma rules. The phrase *long-standing* is necessary information, so it does not need a comma before or after. Eliminate (A) because it contains a comma before the phrase, and eliminate (C) because it contains commas before and after the phrase. The phrase *including those for runs batted in and extra-base hits* is unnecessary information, so it needs a comma before and after. Eliminate (D) because it lacks a comma before the phrase. The correct answer is (B).

6. **G**

Note the question! The question asks which option *most clearly communicates how positively Gehrig was viewed as a player*. Check each answer choice to see whether it is positive or negative. Keep (F) because *interested* could be positive. Keep (G) because *impressed* is positive. Eliminate (H) and (J) because both *offended* and *confused* indicate a negative view of Gehrig. Compare (F) and (G). Eliminate (F) because (G) is more strongly positive. The correct answer is (G).

7. **A**

Apostrophes are changing in the answer choices, so the question is testing apostrophe usage. When used with a noun on the ACT, the apostrophe indicates possession. In this sentence, *Gehrig* possesses *amazing stamina and talent*, and because *Gehrig* is singular, the apostrophe should be placed before the *s*. Therefore, the apostrophe is needed. Eliminate (C) and (D) because they do not contain the apostrophe. Compare (A) and (B). The phrase *then suddenly* is

unneeded information, so a comma is needed after the phrase. Eliminate (B). The correct answer is (A).

8. **J**

Note the question! The question asks which option *would be LEAST acceptable* to replace the underlined portion. Cross out LEAST and decide Yes/No for each option, and then choose the odd one out. Vocabulary is changing in the answer choices, so this question is testing word choice. The underlined portion contains the phrase *sports reporter to speculate*. Choices (F) and (G) use the word *infer* to replace *speculate. Infer* and *speculate* are synonyms, so mark (F) and (G) as Yes because both are consistent with the passage. Choice (H) uses the word *writer* to replace *sports reporter*. A sports reporter could be referred to as a writer, so mark (H) as Yes, since it is also consistent with the passage. Choice (J) uses the word *imply* to replace *speculate*. *Imply* and *speculate* have different meanings, so mark (J) as No because it is not consistent with the passage. Choice (J) is the odd one out. The correct answer is (J).

9. **D**

Note the question! The question asks for the *most logical* sequence of sentences in the paragraph, so it's testing consistency. Look for a clue in one sentence that indicates what idea that sentence needs to come before or after. Sentence 3 begins by saying *Unfortunately, that reporter was right*, so it must follow a sentence that introduces the reporter. Only Sentence 2 discusses a *sports reporter*. Therefore, Sentence 3 should directly follow Sentence 2. Eliminate (B) since it says Sentence 2 follows Sentence 3, and eliminate (C) because Sentence 3 does not directly follow Sentence 2. Sentence 1 says *The prognosis was a veritable death sentence*, so it must follow a sentence discussing an illness or disease. Only Sentence 3 discusses a disease: *amyotrophic lateral sclerosis*. Therefore, Sentence 1 should follow

Sentence 3. Eliminate (A) because it says that Sentence 3 follows Sentence 1. The correct answer is (D).

10. **H**

Connecting words are changing in the answer choices, so the question is testing consistency. The part before the underlined portion contains the word *would*. The correct verb phrase is *would have*, not *would of*. Eliminate (F) and (G) because they do not contain the word *have*. The word *have* requires the verb to be in the past participle form *withdrawn*, not *withdrew*. Eliminate (J) because it uses the word *withdrew* instead of *withdrawn*. The correct answer is (H).

11. **C**

Note the question! The question asks whether the statement should be added, so it's testing consistency. If the content of the new sentence is consistent with the ideas surrounding it, then it should be added. The paragraph discusses how Gehrig lived after his diagnosis. The new sentence discusses a personal experience of the author, so it is not consistent with the ideas in the text; the sentence should not be added. Eliminate (A) and (B). Keep (C) because it states that the new sentence is irrelevant. Eliminate (D) because it doesn't state that the new sentence is inconsistent with the text. The correct answer is (C).

12. **F**

Apostrophes are changing in the answer choices, so the question is testing apostrophe usage. When used with a noun on the ACT, the apostrophe indicates possession. In this sentence, *Gehrig* possesses his *retirement*. Therefore, the apostrophe is needed, and because *Gehrig* is singular, the apostrophe should be placed before the *s*. Eliminate (H) because it does not contain the apostrophe. Eliminate (J) because the apostrophe is after the *s*, which indicates a plural noun. Compare (F)

and (G). There is no reason to include a comma after *retirement*, so eliminate (G). The correct answer is (F).

13. **D**

Note the question! The question asks which quotation would support the preceding sentence, which says that Gehrig *paid tribute to the life-affirming support he'd received*. Check each answer choice to see whether it reflects Gehrig paying tribute to his fans. Eliminate (A) because a ballplayer who *can't keep his cool* does not reflect Gehrig's tribute to his fans. Eliminate (B) because although it discusses that Gehrig is dying from his illness, it does not explain how he viewed or was affirmed by the fans' well-wishes. Eliminate (C) because it does not reflect Gehrig's tribute to his fans. Choice (D) says Gehrig considers himself to be the *luckiest man on the face of the earth*, and this could convey that Gehrig appreciates his fans despite his diagnosis. The correct answer is (D).

14. **G**

Pronouns are changing in the answers, so the question is testing consistency of pronouns. A pronoun must be consistent in number and case with the noun it is replacing. The pronoun refers to the noun *man*, which is singular and possesses the *eternal optimism and good spirit*. To be consistent, the pronoun in the answer choice must also be singular and demonstrate possession. Eliminate (F) and (H) because *who's* is a contraction meaning "who is." Keep (G) because *whose* is possessive. Eliminate (J) because *who* is not possessive. The correct answer is (G).

15. **B**

Note the question! The question asks whether the phrase should be deleted, so it's testing consistency. If the content of the phrase is

consistent with the ideas surrounding it, then it should be kept. The passage discusses Lou Gehrig's journey throughout his baseball career before and after a terminal diagnosis. The phrase includes *since their inception in 1913*, so it provides information about a point in time and is consistent with the ideas in the text; the sentence should not be deleted. Eliminate (C) and (D). Eliminate (A) because the year in which the Yankees were successful did not directly cause the Yankees to be successful. Keep (B) because it is consistent with the purpose of the phrase. The correct answer is (B).

16. **G**

Transitions are changing in the answer choices, so the question is testing consistency with transitions. Look at the previous sentence to determine how the two ideas are related. The previous sentence explains that the author lived near many *famous places*, and this sentence explains that the author visited many of these places with her grandmother. The second sentence is adding detail to the prior one, so these sentences agree. Eliminate (F), (H), and (J) because all three choices include a contrasting transition. Keep (G) because the lack of transition implies that the sentences directly relate to each other, which is the correct relationship between them. The correct answer is (G).

17. **C**

Note the question! The question asks which sentence *identifies a personal connection the narrator feels to the locations she visits*. Check each answer choice to see whether it refers to a personal connection. Eliminate (A) and (B) because descriptions of a lighthouse and national monuments are not personal connections. Keep (C) because an opinion of the impact of *Civil War battlefields* is a personal connection. Eliminate (D) because explaining how the

historic homes ended up *featured in decorating magazines* is not a personal connection. The correct answer is (C).

18. **J**

Note the question! The question asks which sentence *introduces the subject of this paragraph and reinforces the essay's presentation of the relationship between the narrator and her grandmother*. Check each answer choice to see whether it fulfills the purpose stated in the question. Eliminate (F) because a *love of history* does not refer to the narrator's grandmother. Eliminate (G) because although it does mention the narrator's grandmother, there is no reference to their relationship. Eliminate (H) because an *understanding of history* does not refer to the narrator's grandmother. Keep (J) because it explains how the narrator's *grandmother indulged* the narrator's *love of history*, which reflects their relationship. The correct answer is (J).

19. **D**

Apostrophes are changing in the answer choices, so the question is testing apostrophe usage. When used with a noun on the ACT, the apostrophe indicates possession. In this sentence, the *trips* are not possessing anything. Therefore, the apostrophe is not needed. Eliminate (A) and (B) because both contain an apostrophe. Compare (C) and (D). There is no reason to use a comma after *trips*, so eliminate (C). The correct answer is (D).

20. **G**

Note the question! The question asks whether the phrase should be deleted, so it's testing consistency. If the content of the new sentence is not consistent with the ideas surrounding it, then it should be deleted. The paragraph discusses how the narrator's trips with her grandmother influenced her love of history. The phrase *where the*

Revolutionary Army endured a brutal winter is used to describe *Valley Forge*, so it is consistent with the ideas in the text; the sentence should be kept. Eliminate (H) and (J). Eliminate (F) because the passage's focus is on the narrator's love for history. Keep (G) because the phrase explains why Valley Forge is historically significant. The correct answer is (G).

21. **A**

Note the question! The question asks which sentence *introduces the subject of this paragraph*. The paragraph discusses a coin collection for each of the 50 states. Check each answer choice to see whether it introduces this collection. Keep (A) because it references *a big, flat box* that contains the map used to display the coins. Eliminate (B), (C), and (D) because none of these references the coin collection. The correct answer is (A).

22. **F**

Subjects and verbs are changing in the answer choices, so the question is testing complete sentences. Determine which answer choice would produce a complete sentence. The sentence needs something that clarifies who is saying *I thought we could begin a new project*. Keep (F) because it specifies that the grandmother is speaking to the narrator. Eliminate (G) because it says the narrator's grandmother told her to do something, not that she spoke the previous statement. Eliminate (H) because it says the grandmother is reading from the pamphlet. Eliminate (J) because it says the narrator's grandmother handed her the pamphlet while still holding it. The correct answer is (F).

23. **A**

Connecting words are changing in the answer choices, so the question is testing consistency and complete sentences. Determine which answer choice would produce a complete sentence. Notice that the answer choices change around a comma, and some of the words after the comma are FANBOYS, so use the Vertical Line Test. Draw two vertical lines around the word *and*, and identify the ideas before and after as complete or incomplete. The phrase *The box contained a map of the country* is a complete idea, and the phrase *each state had a space where we could insert its quarter* is a complete idea. To connect two complete ideas, HALF-STOP or STOP punctuation is needed. Keep (A) because a comma + *and* is STOP punctuation. Eliminate (D) because a comma without a FANBOYS word is GO punctuation. Though (B) and (C) have a FANBOYS word following the comma, both include an extra word before *each*, which makes the second part of the sentence incomplete. A comma + FANBOYS can only connect two complete ideas, so eliminate (B) and (C). The correct answer is (A).

24. **G**

The order of the words is changing in the answer choices, so the question is testing consistency with a modifier. The underlined portion contains part of a modifier that ends with *for a "quarter collection" project*. The modifier describes an action done by the narrator's friends, so the phrase that begins the modifying phrase should include a verb. Eliminate (F) and (H) because they do not begin with a verb. Compare (G) and (J). The word after the underlined portion is *for*. Keep (G) because it utilizes the correct idiom *enthusiasm for*. Eliminate (J) because it uses the incorrect idiom *finding humor for* instead of *finding humor in*. The correct answer is (G).

25. **C**

Punctuation is changing in the answer choices, so the question is testing STOP and GO punctuation. Use the Vertical Line Test, and identify the ideas as complete or incomplete. Draw the vertical line between the words *released* and *Delaware*. The phrase *I was so excited when the first three were released* is a complete idea, and the phrase *Delaware, Pennsylvania, and New Jersey* is an incomplete idea. To connect a complete idea to an incomplete idea, HALF-STOP or GO punctuation is needed. A lack of punctuation is GO punctuation, so keep (A). The semicolon is STOP punctuation, so eliminate (B). The colon is HALF-STOP punctuation, so keep (C). The comma is GO punctuation, but there is no reason to use a comma after the word *released*, so eliminate (D). Compare (A) and (C). The three states listed in the second phrase are an explanation of *the first three* identified in the first phrase, so a colon is needed. The correct answer is (C).

26. **J**

Note the question! The question asks which option *would NOT be acceptable* to replace the underlined portion. Cross out NOT and decide Yes/No for each option, and then choose the odd one out. Punctuation is changing in the answer choices, so the question is testing STOP and GO punctuation. Use the Vertical Line Test, and identify the ideas as complete or incomplete. Draw the vertical line between the words *saw* and *amusingly*. The phrase *My grandmother and I would insert each quarter in its proper place and look up the story behind each new image we saw* is a complete idea, and the phrase *Amusingly, as time progressed, even my friends liked to look at the growing collection of quarters on my map* is also a complete idea. To connect two complete ideas, STOP or HALF-STOP punctuation is needed. The period is STOP punctuation, and the statements after the period in (F) and (G) preserve the meaning of *Amusingly*. Mark (F) and (G) as Yes because they both are consistent with the passage. The

semicolon is also STOP punctuation, so mark (H) as Yes because it is also consistent with the passage. The comma is GO punctuation, so mark (J) as No because it is not consistent with the passage. Choice (J) is the odd one out. The correct answer is (J).

27. **B**

Vocabulary is changing in the answer choices, so this question is testing word choice. The four choices are all grammatically correct and mean the same thing, so choose the most concise one. The correct answer is (B).

28. **H**

Commas and the phrase after *party* are changing in the answer choices, so the question is testing comma rules. Notice that commas are used to connect ideas in most choices, so consider when commas can connect ideas. A comma can connect two complete ideas if it's followed by a FANBOYS word, and it can connect anything except for two complete ideas if it's not followed by a FANBOYS word. Use the Vertical Line Test, and identify the ideas as complete or incomplete. Draw the vertical line after the word *party*. The phrase *When the final quarter came out last year, my grandmother, my friends, and I had a small party* is a complete idea, and the phrase *we wanted to celebrate the complete collection* is a complete idea. A comma not followed by a FANBOYS word cannot connect two complete ideas, so eliminate (F). Choices (G) and (J) alter the second part of the sentence, but in both cases, the second part is still a complete idea. Eliminate (G) and (J) because each uses a comma without a FANBOYS word to connect two complete ideas. Keep (H) because it makes the second part of the sentence incomplete, and thus no punctuation is needed. The correct answer is (H).

29. **C**

Note the question! The question asks which sentence *best makes a connection between the narrator's view of history and that of her friends*. Check each answer choice to see whether it relates the narrator's opinion to her friends' viewpoints. Eliminate (A) and (B) because neither the *success* of nor the enjoyment at *the party* indicates a *view of history*. Keep (C) because the narrator's friends' opinions are referenced in relation to the narrator's own opinions. Eliminate (D) because, while it mentions the narrator's friends' opinions, it does not compare them to the narrator's opinions. The correct answer is (C).

30. **H**

Note the question! The question asks which option *would be LEAST acceptable* to replace the underlined portion. Cross out LEAST and decide Yes/No for each option, and then choose the odd one out. Vocabulary is changing in the answer choices, so this question is testing word choice. The underlined portion contains the phrase *wonder*. Choice (F) uses the words *am curious* and (J) uses the words *can't wait to know* to replace *wonder*. Mark (F) and (J) as Yes because both choices mean the same thing as *wonder*. Compare (G) and (H). Choice (G) uses the words *am anxious to see* and (H) uses the words *am nervous about* to replace *wonder*. The word *wonder* conveys that the narrator is excited about the next state she will visit. Mark (G) as Yes because *anxious* can refer to a positive emotion, so (G) is consistent with the passage. Mark (H) as No because *nervous* is typically negative, so (H) is not consistent with the passage. Choice (H) is the odd one out. The correct answer is (H).

31. **C**

Vocabulary is changing in the answer choices, so this question is testing word choice. Since *want* and *desire* have the same meaning in

context, the four choices are all grammatically correct and mean the same thing. Choose the most concise one. The correct answer is (C).

32. **H**

Note the question! The question asks which option *would NOT be acceptable* to replace the underlined portion. Cross out NOT and decide Yes/No for each option, and then choose the odd one out. Punctuation is changing in the answer choices, so the question is testing STOP and GO punctuation. Use the Vertical Line Test, and identify the ideas as complete or incomplete. Draw the vertical line between the words *doll* and *however*. The phrase *I expected her to pick out some clothes, a new video game, maybe even a doll* is a complete idea, and the phrase *However, she insisted the only thing she wanted was a model airplane* is also a complete idea. To connect two complete ideas, STOP or HALF-STOP punctuation is needed. The semicolon is STOP punctuation, so (F) is consistent with the passage. A comma + *but* is STOP punctuation, so (G) is also consistent with the passage. Mark (F) and (G) as Yes. A lack of punctuation is GO punctuation, so mark (H) as No because it is not consistent with the passage. The period is STOP punctuation, so mark (J) as Yes because it is consistent with the passage. Choice (H) is the odd one out. The correct answer is (H).

33. **D**

Note the question! The question asks where the phrase *about her request* should be placed in a sentence, so it's testing consistency. Look for a clue in the sentence to determine what idea the phrase needs to come before or after. The word *about* indicates that the phrase should immediately follow something referencing the *request*. Eliminate (A) because the word *guess* is not referencing the *request*. Eliminate (B) because the narrator is not referencing the word *request*. Eliminate (C) because the word *shouldn't* is not referencing the

request. Keep (D) because the *surprised* is referencing the *request*. The correct answer is (D).

34. **F**

Verbs are changing in the answer choices, so the question is testing consistency of verbs. The answer choices are in different tenses, so look for a clue in the sentence or surrounding sentences to identify the appropriate tense. The beginning of the passage says *My daughter just turned nine last week*, so the underlined portion refers to an event that began happening in the past and is still happening. It needs a tense that indicates that the growing up is still happening. Keep (F) and (G) because both use the present-tense verb *has*. Eliminate (H) because *would have* is not the correct tense. Eliminate (J) because *had* is in past tense. Compare (F) and (G). Both could work, but (F) is more concise and does not use an *-ing* verb, so eliminate (G). The correct answer is (F).

35. **A**

Note the question! The question asks which option *would NOT be acceptable* to replace the underlined portion. Cross out NOT and decide Yes/No for each option, and then choose the odd one out. Vocabulary is changing in the answer choices, so this question is testing word choice. The underlined portion contains the phrase *finds it perfectly appropriate*. Choice (A) uses the adverb *appropriately* in place of *appropriate*. Adverbs describe verbs or adjectives. *Appropriate* is an adjective that refers to a noun, the daughter's *love of aviation*, so an adverb is not consistent with the passage. Mark (A) as No. Choice (B) removes the adverb *perfectly* from the phrase, but the sentence is still grammatically correct and has the same meaning. Mark (B) as Yes. Choices (C) and (D) both preserve the meaning of the underlined portion, so mark both as Yes. Choice (A) is the odd one out. The correct answer is (A).

36. **F**

Punctuation is changing in the answer choices, so the question is testing STOP and GO punctuation. Use the Vertical Line Test, and identify the ideas as complete or incomplete. Draw the vertical line between the words *backyard* and *pretending*. The phrase *I'll never forget my utter dismay when he taught her to jump off the swing set in our backyard* is a complete idea, and the phrase *pretending she was a pilot and shouting "Airborne!"* is an incomplete idea. To connect a complete idea to an incomplete idea, HALF-STOP or GO punctuation is needed. The comma is GO punctuation, so keep (F). A lack of punctuation is GO punctuation, so keep (G). The semicolon is STOP punctuation, so eliminate (H). The period is STOP punctuation, so eliminate (J). Compare (F) and (G). The phrase *pretending she was a pilot and shouting "Airborne!"* is a separate idea from the idea before it, so it needs a comma before. Eliminate (G) because it doesn't have a comma before this phrase. The correct answer is (F).

37. **C**

Note the question! The question asks which option *would NOT be acceptable* to replace the underlined portion. Cross out NOT and decide Yes/No for each option, and then choose the odd one out. Vocabulary is changing in the answer choices, so this question is testing word choice. The underlined portion contains the phrase *play house*. Choice (A) removes the word *play*, but it is still consistent with the passage because it mirrors the structure used earlier in the sentence. Mark (A) as Yes. Choice (B) adds the words *she would play*, but it is still consistent with the passage because it mirrors the structure used earlier in the sentence. Mark (B) as Yes. Choice (C) uses *than* to compare *play pilot* to *house was*. This is not consistent with the passage because it does not mirror the structure used earlier in the sentence. Mark (C) as No. Choice (D) uses *she played house* to

replace the underlined phrase. This is also consistent with the passage because the narrator is describing a time from the past. Mark (D) as Yes. Choice (C) is the odd one out. The correct answer is (C).

38. **F**

Transitions are changing in the answer choices, so the question is testing consistency with transitions. Look at the previous sentence to determine how the two ideas are related. The previous sentence describes how the narrator's daughter enjoyed pretending to be a pilot, and this sentence explains that, at a certain point, pretending wasn't good enough. The two ideas disagree, so an opposite-direction transition is needed. Keep (F) because *yet* implies a contrast between the two ideas and suggests that the idea in the first sentence was once true, but it did not remain true. Eliminate (G) because *therefore* implies that pretending to be a pilot caused the narrator's daughter to want to see real airplanes, and there is no cause-and-effect relationship mentioned in the passage. Eliminate (H) because *although* makes the first part of the sentence incomplete, which does not work with the semicolon later on. Eliminate (J) because *instead* suggests that the second idea happened in place of the first idea, or that the narrator's daughter did not pretend to play pilot. The correct answer is (F).

39. **D**

Vocabulary is changing in the answer choices, so this question is testing word choice. There is also the option to DELETE; consider this choice carefully as it's often the correct answer. The three choices —*happens every year, takes place every year*, and *occurs every 12 months*—basically mean the same thing. The sentence already uses the word *annual*, so there's no need to repeat the idea. The phrase should be deleted to make the sentence more concise. The correct answer is (D).

40. **G**

Note the question! The question asks whether the phrase should be deleted, so it's testing consistency. If the content of the new sentence is not consistent with the ideas surrounding it, then it should be deleted. The paragraph discusses how the narrator's daughter's questions about aircraft differed from those of other children. The phrase *other children her age* is consistent with the ideas in the text; the sentence should be kept. Eliminate (H) and (J). Eliminate (F) because the passage makes a claim about only the types of questions that are asked and not the types of questions that *should* be asked. Keep (G) because it states that the phrase compares the narrator's daughter to other children. The correct answer is (G).

41. **B**

Pronouns are changing in the answer choices, so the question is testing clarity with pronouns. Determine whom or what the pronoun refers to, and choose an answer that makes the meaning 100% clear. The subject is *an older gentleman*, so the pronoun must refer to the gentleman. Eliminate (C) because *which* refers to an object instead of a person. Eliminate (D) because the meaning of the sentence changes if the pronoun is removed. Compare (A) and (B). The pronoun *whom* is used when it could be replaced by "him" or "her," and the pronoun *who* is used when it could be replaced by "he" or "she." The sentence could be rewritten as "he" *was mistaken about the planned retirement date of the F-15 Eagle*, so the appropriate pronoun is *who*. Eliminate (A). The correct answer is (B).

42. **J**

Vocabulary is changing in the answer choices, so this question is testing word choice. The underlined portion contains the phrase *absolute and unequivocal*. The words *absolute* and *unequivocal* are

both describing how *right* the narrator's daughter was. *Right* is an adjective describing the narrator's daughter, and words describing adjectives must be adverbs. Eliminate (F) because neither word is in adverb form. Eliminate (G) because *absolute* is not in adverb form. Eliminate (H) because *unequivocal* is not in adverb form. The correct answer is (J).

43. **B**

Note the question! The question asks which option *would be LEAST acceptable* to replace the underlined portion. Cross out LEAST and decide Yes/No for each option, and then choose the odd one out. Vocabulary is changing in the answer choices, so this question is testing word choice. Determine what meaning of the underlined portion would be consistent with the sentence. The underlined portion contains the phrase *big dreams*. Choice (A) uses the phrase *ambitious aims*. The word *ambitious* is synonymous with *big* and *aims* is synonymous with *dreams*, so (A) is consistent with the passage. Mark (A) as Yes. Choice (B) uses the phrase *impossible hopes. Hopes* is synonymous with *dreams*, but *impossible* does not mean the same thing as *big*, so (B) is not consistent with the passage. Mark (B) as No. Choice (C) uses the words *great aspirations*, and (D) uses the words *impressive plans*. The words *great* and *impressive* are both synonyms for *big*, and the words *aspirations* and *plans* are both synonyms for *dreams*. Both (C) and (D) are also consistent with the passage, so mark both as Yes. Choice (B) is the odd one out. The correct answer is (B).

44. **G**

Vocabulary is changing in the answer choices, so this question is testing word choice. The four choices are all grammatically correct and mean the same thing, so choose the most concise one. The correct answer is (G).

45. **C**

Transitions are changing in the answer choices, so the question is testing consistency with transitions. Look at the previous sentence to determine how the two ideas are related. The previous sentence describes some of the narrator's husband's goals for his daughter, and this sentence gives examples of equally lofty goals for the narrator's daughter. The relationship between the two sentences is a continuation of the idea that the narrator's husband has lofty goals in mind for his daughter. Eliminate (A), (B), and (D) because all three choices use a contrasting transition, but the second sentence is building upon the prior one. Keep (C) because the lack of transition implies that the sentences directly relate to each other, which is the correct relationship between them. The correct answer is (C).

46. **J**

Vocabulary is changing in the answer choices, so this question is testing word choice. There is also the option to DELETE; consider this choice carefully as it's often the correct answer. The three choices —*when I was young, when I was a youth*, and *before I grew up*— basically mean the same thing. The sentence already uses the phrase *as a child*, so there's no need to repeat the idea. The phrase should be deleted to make the sentence more concise. The correct answer is (J).

47. **B**

Pronouns are changing in the answer choices, so the question is testing clarity with pronouns. Determine whom or what the pronoun refers to, and choose an answer that makes the meaning 100% clear. The subject is *a strange excitement*, so the pronoun must refer to this moment of excitement. Eliminate (A) and (C) because *which* refers to an object instead of a moment in time. Eliminate (D) because it

creates a sentence with just a comma between two complete ideas. Keep (B) because *when* refers to time. The correct answer is (B).

48. **F**

Punctuation and word choice are changing in the answer choices, so the question is testing complete sentences. Use the Vertical Line Test, and identify the ideas as complete or incomplete. Draw the vertical line after the word *light*. The phrase *Bioluminescence literally means "living light"* is a complete idea, and the phrase *it refers to a strange adaptation found in some organisms* is also a complete idea. To connect two complete ideas, STOP or HALF-STOP punctuation is needed. A comma with a FANBOYS word is STOP punctuation, so keep (F). A comma is GO punctuation, so eliminate (G) and (J). No punctuation is also GO punctuation, so eliminate (H). The correct answer is (F).

49. **A**

Transitions are changing in the answer choices, so the question is testing consistency with transitions. Look at the ideas in the sentence to determine how the two ideas are related. The first idea is that *this light is not intended to be a heat source*, and the second idea is that scientists are *not totally certain what it is intended to do*. The relationship between the two ideas is a contrast between what scientists do and do not know about bioluminescence. Keep (A) because it uses a contrasting transition. Eliminate (B) and (D) because the lack of transitions in these choices does not support the contrast implied by the two ideas. Eliminate (C) because the transition implies that the sentences directly relate to each other instead of contrasting. The correct answer is (A).

50. **J**

Pronouns and connecting words are changing in the answer choices, so the question is testing consistency of pronouns. A pronoun must be consistent in number with the noun it is replacing. The pronoun refers to the noun *organisms*, which is plural. To be consistent, the pronoun in the answer choice must also be plural. Eliminate (G) because *theirselves* is the incorrect plural form of *themselves*, and eliminate (H) because *itself* is singular. Compare (F) and (J). The correct idiom is *use to*, so eliminate (F) because it uses the word *for* instead of *to*. The correct answer is (J).

MATHEMATICSTEST

1. A. Follow order of operations: multiply first ($3 \times 4 = 12$), then calculate left to right ($15 - 12 + 8 = 11$).

2. H. Substitute $a = 5$ and $b = -2$: $3(5)^2 - 2(-2) = 3(25) + 4 = 75 + 4 = 79$.

3. C. Multiply the price per latte by the number of lattes: $\$4.75 \times 5 = \$23.75$.

4. H. Convert 35% to a decimal (0.35) and multiply by 80: $0.35 \times 80 = 28$.

5. B. Subtract 9 from both sides: $7x = 35$. Divide by 7: $x = 5$.

6. J. Multiply speed by time: $85 \times 3.5 = 297.5$ miles.

7. A. Distribute the 5: $10x - 15 - 4x$. Combine like terms: $6x - 15$.

8. G. If the perimeter is 48 inches, each side is $48 \div 4 = 12$ inches. Area $= 12^2 = 144$ square inches.

9. C. Set up the equation: $(2/3)x = 18$. Multiply both sides by 3/2: $x = 18 \times (3/2) = 27$.

10. H. The sum of all five tests must be $90 \times 5 = 450$. Current sum: $88 + 92 + 85 + 91 = 356$. Fifth test score: $450 - 356 = 94$.

11. A. Divide coefficients: $8 \div 4 = 2$. Subtract exponents for x: $x^{3-1} = x^2$. Subtract exponents for y: $y^{2-1} = y^1$. Result: $2x^2y$.

12. G. Find the increase: $300 - 240 = 60$. Divide by original price: $60 \div 240 = 0.25 = 25\%$.

13. B. Substitute $x = 10$: $f(10) = 2(10) - 7 = 20 - 7 = 13$.

14. G. Fruit-flavored candies: $60 - 24 - 18 = 18$. Fraction: $18/60 = 3/10$.

15. B. Subtract $2x$ from both sides: $2x - 11 = 13$. Add 11: $2x = 24$. Divide by 2: $x = 12$.

16. H. Original area: $18 \times 12 = 216$ square feet. New area: $22 \times 12 = 264$ square feet. Increase: $264 - 216 = 48$ square feet.

17. A. Expand both sides: $3n + 15 = 2n + 20$. Subtract $2n$: $n + 15 = 20$. Subtract 15: $n = 5$.

18. G. Let the numbers be x and y where $x > y$. We have $x + y = 47$ and $x - y = 13$. Add the equations: $2x = 60$, so $x = 30$.

19. C. Factor the difference of squares: $x^2 - 9 = x^2 - 3^2 = (x - 3)(x + 3)$.

20. H. Set up proportion: $3/8 = x/20$. Cross multiply: $8x = 60$. Divide by 8: $x = 7.5$ cups.

21. B. The equation $|2x - 5| = 11$ gives two solutions: $2x - 5 = 11$ or $2x - 5 = -11$. For the positive value: $2x - 5 = 11$, so $2x = 16$, and $x = 8$.

22. J. Use $V = \pi r^2 h$ with $r = 4$ and $h = 10$: $V = \pi(4)^2(10) = \pi(16)(10) = 160\pi$.

23. A. Separate the fraction: $(6x^4)/(3x) + (9x^2)/(3x) = 2x^3 + 3x$.

24. H. Candidate C received $100\% - 45\% - 35\% = 20\%$ of votes. If $20\% = 60$ votes, then $100\% = 60 \div 0.20 = 300$ votes.

25. A. Substitute $x = 4$: $g(4) = 4^2 + 3(4) - 5 = 16 + 12 - 5 = 23$.

26. H. Sum of four numbers: $15 \times 4 = 60$. Sum of three known numbers: $12 + 16 + 18 = 46$. Fourth number: $60 - 46 = 14$.

27. A. Midpoint formula: $((x_1 + x_2)/2, (y_1 + y_2)/2) = ((-4 + 6)/2, (7 + (-3))/2) = (2/2, 4/2) = (1, 2)$.

28. G. Square both sides: $5x - 6 = 16$. Add 6: $5x = 22$. Divide by 5: $x = 4.4$.

29. C. Calculate 30% of \$75: $0.30 \times 75 = \$22.50$. Subtract from original: $75 - 22.50 = \$52.50$.

30. J. Use the formula $a_n = a_1 + (n - 1)d$. The 10th term: $a_{10} = 9 + (10 - 1)(6) = 9 + 54 = 63$.

31. D. For equal real roots, the discriminant must be zero: $b^2 - 4ac = 0$. Here: $(-8)^2 - 4(1)(c) = 0$, so $64 - 4c = 0$, giving $c = 16$.

32. H. Standard form: $(x - h)^2 + (y - k)^2 = r^2$. With center $(-2, 5)$ and radius 7: $(x - (-2))^2 + (y - 5)^2 = 7^2$, which is $(x + 2)^2 + (y - 5)^2 = 49$.

33. A. Rewrite 81 as a power of 3: $81 = 3^4$. So $3^{(2x)} = 3^4$, meaning $2x = 4$, and $x = 2$.

34. F. Let the integers be n, $n + 2$, $n + 4$, $n + 6$. Their sum: $n + (n + 2) + (n + 4) + (n + 6) = 180$, which gives $4n + 12 = 180$. Subtract 12: $4n = 168$. Divide by 4: $n = 42$.

35. C. The sum of angles in a triangle is 180°: $35 + 75 + x = 180$. Simplify: $110 + x = 180$. Subtract 110: $x = 70$.

36. F. Rewrite 125 as a power of 5: $125 = 5^3$. So $5^{(x+2)} = 5^3$, meaning $x + 2 = 3$, and $x = 1$.

37. C. Favorable outcomes (hearts or diamonds): $13 + 13 = 26$. Total outcomes: 52. Probability: $26/52 = 1/2$.

38. H. Use FOIL: First: $2x \times 3x = 6x^2$. Outer: $2x \times (-4) = -8x$. Inner: $5 \times 3x = 15x$. Last: $5 \times (-4) = -20$. Combine: $6x^2 + 7x - 20$.

39. D. The bacteria double 3 times in 9 hours (every 3 hours). After 3 hours: $500 \times 2 = 1{,}000$. After 6 hours: $1{,}000 \times 2 = 2{,}000$. After 9 hours: $2{,}000 \times 2 = 4{,}000$.

40. H. Use the Pythagorean theorem: $a^2 + b^2 = c^2$. Substitute: $15^2 + b^2 = 17^2$. Calculate: $225 + b^2 = 289$. Subtract: $b^2 = 64$. Take the square root: $b = 8$.

41. B. Use the Pythagorean identity: $\sin^2(\theta) + \cos^2(\theta) = 1$. Substitute $\cos(\theta) = 5/13$: $\sin^2(\theta) + (5/13)^2 = 1$. Simplify: $\sin^2(\theta) + 25/169 = 1$. Subtract: $\sin^2(\theta) = 144/169$. Take the square root (positive for acute angle): $\sin(\theta) = 12/13$.

42. F. Subtract exponents: $x^{(3-2)} = x^1 = x$ and $y^{(5-2)} = y^3$. Result: xy^3.

43. A. A line through the origin with slope m has equation $y = mx$. With $m = -3$, the equation is $y = -3x$.

44. H. Test consecutive integers: $3 \times 4 \times 5 = 60$. The largest is 5.

45. B. In a geometric sequence, the nth term is $a_n = a_1 \times r^{(n-1)}$. We have $a_1 = 3$ and $a_3 = 12$. So $12 = 3 \times r^2$, giving $r^2 = 4$, and $r = 2$ (taking positive value). The second term is $a_2 = 3 \times 2 = 6$.

READING TEST

1. **B**

   This reasoning question asks for a description of *Rebecca's feelings during her visit to the fields*. Read the paragraphs in the given line reference. Lines 3–14 include positive imagery, such as *a warm breeze caressed the fields* and *the fresh and savory scent* of the wheat. Lines 15–16 say, *The evening, just as dusk was falling, was always the best time to visit the fields alone*, and the paragraph goes on to say that she liked *the feeling of being embraced by a living, breathing entity*. Lines 30–42 state that Rebecca had *felt the draw* of the land and that she was here *trying to reclaim her family's heritage*. Eliminate answers that do not match this answer from the passage. Choice (A) may be tempting, but it is incorrect because *overjoyed* is too strong to describe Rebecca's feelings: in lines 22–30, she indicates that there can be bad years on the farm. Additionally, Rebecca is not focused purely on *ownership* in those lines, but rather on her connection to the land. Eliminate (A). Keep (B) because it matches the answer from the passage. Eliminate (C) because it is too negative to match the tone of the passage. Furthermore, although the text indicates that Rebecca's family struggled in the past, there is no indication that Rebecca faces *looming financial problems* now. Eliminate (D) because it uses words from the passage but doesn't match what the passage says: although lines 22–30 indicate that working the land can be challenging, this answer choice does not capture the positive tone conveyed in the rest of the window for the question. The correct answer is (B).

2. **J**

This reasoning question asks what the word *that* refers to, as used in line 28. Read a window around the given line reference. Lines 23–28 state, *Any farmer knows that there will be good years and bad years, and that sometimes one bad year will follow another and then another, to the point where you wonder if a good year will ever come again… Rebecca had known all of that*. The word *that* refers to the facts that were stated previously: that there will be both good and bad years and that sometimes one bad year will follow another. Eliminate answers that do not match this answer from the passage. Eliminate (F) because although this answer is stated in the passage, it answers the wrong question: *someday, she would return* is mentioned after the word *that* and is not what the word refers to. Eliminate (G) because the phrase *far away from the soil* describes where Rebecca grew up; it does not describe what Rebecca knew. Choice (H) is not mentioned in the window for the question: it comes from another part of the passage and is not related to the phrase *Rebecca had known all of that*. Eliminate (H). Choice (J) matches the answer from the passage, so keep it. The correct answer is (J).

3. **A**

This reasoning question asks what lines 30–42 are intended to convey about what *Rebecca believes about the land*. Read a window around the given line reference. Lines 32–36 state that Rebecca's *great-grandparents had claimed the land as their own, poured their blood, sweat, and tears into it*, and passed it down to Rebecca's parents. Lines 41–42 indicate that Rebecca intends to *reclaim her family's heritage*. Eliminate answers that do not match this answer from the passage. Keep (A) because it matches the answer from the passage. Eliminate (B) because the window for this question does not include evidence that the land is *beyond the control of* anyone. Eliminate (C) because the text states that Rebecca intends to reclaim the land; therefore, she does not believe that it is *not worththe trouble* to claim

it. Eliminate (D) because the text gives no indication that the land is *filled with creatures*. The correct answer is (A).

4. **G**

This referral question asks which aspect of *Rebecca's surroundings* is NOT mentioned within the first four paragraphs. When a question asks what is **not** mentioned in the text, eliminate answers that are mentioned. Eliminate (F) because the scents are described in lines 6–14: Rebecca inhales *the fresh and savory scent of almost-ripe wheat*, the smell of the *earth*, and the smell of coming *rain*. Keep (G) because there is no mention of how the plowed earth *feels* (only its *smell* is mentioned). Eliminate (H) because lines 28–29 state that *the land had turned on her parents and driven them far from the only home they knew*. Eliminate (J) because the *best time to visit the fields alone* is described in lines 15–16. The correct answer is (G).

5. **A**

This reasoning question asks how the *passage can best be described*. Because this is a general question, it should be done after all the specific questions. Look for the Golden Thread. The passage describes the land and plants as if they were living things: for example, lines 3–5 say that *a warm breeze caressed the fields, causing the ears of the wheat to bend homeward, looking for all the world like they were listening to a conversation none but they could hear*. Lines 18–20 say, *It felt as if the field itself had gone to sleep*. Then, the passage describes Rebecca's family's history with the land and Rebecca's feeling of commitment to it. For example, lines 69–70 state, *This was her people's land; she knew that in her bones*. Therefore, the passage can be described as Rebecca's vivid description of land that is connected to her and her family. Eliminate answers that do not match this answer from the passage. Keep (A) because it matches the answer from the passage. Eliminate (B)

because her family does not give up its claim on the land; rather, lines 38–40 state that even when her parents left, *they had claimed the land as their own*. Choice (C) may seem plausible, but the comparisons used in the passage support the meaning *suggested by the events narrated in the story*; there is no indication of another, deeper meaning. Eliminate (C). Eliminate (D) because, although the passage briefly mentions why the family had to leave the land, it does not go into detail about *exactly* why nor does it indicate that the family *lost everything*. Additionally, (D) does not reflect Rebecca's positive impressions of the land nor her commitment to reclaim it. The correct answer is (A).

6. **H**

This reasoning question asks what the lines *Without the former, she could never face the latter* refer back to. Read a window around the given line reference. Lines 61–62 state, *This moment was for enjoying the sheer bounty of life, not for fears and numbers*. Therefore, the *former* refers to the phrase *enjoying the sheer bounty of life*, and the *latter* refers to the phrase *fears and numbers*. The phrase *the sheer bounty of life* refers to the fact that Rebecca has regained her family's land, which she loves. Lines 53–55 support this: *she opened her eyes and gazed out across her fields. They were hers, in truth if not writing, and would one day be hers in every sense*. The *fears and numbers* are described in lines 55–59: *her stomach began to clench as her mind turned…to the realities of what lay ahead. The loans, the mortgage payments, the possibility of a bad crop ruining all her plans*. Therefore, the *former* is Rebecca's connection with the land, while the *latter* is Rebecca's financial concerns. Eliminate answers that do not match this answer from the passage. Choices (F), (G), and (J) mention details from other parts of the passage; none of them matches the answer from the passage, and they are not mentioned in the window

for the question. Eliminate (F), (G), and (J). Keep (H) because it matches the answer from the passage. The correct answer is (H).

7. **C**

This reasoning question asks what the description of *Rebecca's attitude toward the land* in the last two paragraphs is intended to convey. Read the last two paragraphs. In lines 52–71, Rebecca ponders both negative and positive aspects of owning the land. She worries about *loans, mortgage payments*, and a *bad crop ruining all her plans*, but she chooses to focus on the *warm reality of the growing, breathing crops*. Eliminate answers that do not match this answer from the passage. Eliminate (A) because the *stranger's land* (mentioned in line 30) is land where Rebecca's parents worked, not the land that is described in the last two paragraphs. This answer uses words from the passage but does not match what the passage says. Eliminate (B) because the passage does not identify *mistakes* that Rebecca's parents made. Furthermore, the passage suggests that Rebecca is determined to reclaim the land, so the statement that she *cannot correct* past mistakes is not supported. Choice (C) matches the answer from the passage, as it includes both *challenges and rewards* presented by the land. Choice (D) may be tempting because a story can do this, but there is no such parallel drawn in this passage; eliminate (D). The correct answer is (C).

8. **F**

This reasoning question asks about the narrator's *point of view*. Because this is a general question, it should be done after all the specific questions. Look for the Golden Thread. Throughout the passage, the narrator describes Rebecca's thoughts and feelings. Eliminate answers that do not match this answer from the passage. Keep (F) because it matches the answer from the passage. Eliminate (G) because the narrator gives no indication that Rebecca is *not*

sincere about her plans. Eliminate (H) because there is no evidence that the narrator is *personally involved* in these events; in fact, it's unlikely that the narrator is another person involved, since the narrator knows Rebecca's thoughts and feelings. For the same reason, eliminate (J)—a *relative* would not have the kind of insight into Rebecca's private thoughts and feelings that the narrator shows. The correct answer is (F).

9. **C**

This Vocabulary in Context question asks what the word *wild* most nearly means as it is used in line 34. Go back to the text, find the word *wild*, and cross it out. Carefully read the surrounding text to determine another word or phrase that would fit in the blank based on the context. Lines 32–35 state that Rebecca's great-grandparents turned the *wild* prairie into *productive fields of wheat and corn*. Therefore, *wild* could be replaced with "not producing crops." Eliminate answers that do not match this answer from the passage. *Unconquerable* means "not able to be conquered," which doesn't match "not producing crops." In fact, the text indicates that Rebecca's great-grandparents turned the land into productive fields, so this answer is contradicted. Eliminate (A). *Unrestrained* means "uncontrolled," and *irrepressible* means "impossible to control." Neither of these matches "not producing crops," so eliminate (B) and (D). *Uncultivated* matches "not producing crops," so keep (C). Choices (A), (B), and (D) are all possible meanings of *wild*, but they don't answer the question that was asked about the meaning of the word in context. The correct answer is (C).

10. **J**

This referral question asks for Rebecca's *first response* when she realized that *a bee landed on her cheek*. Read a window around the given line reference. Lines 45–51 state that Rebecca *flinched a little*

bit as a bee landed on her cheek, and that the feeling of the bee on her face *made her want to sneeze but she held her breath*, *not wanting to frighten it into stinging her*. Eliminate answers that do not match this answer from the passage. Eliminate (F) because Rebecca does not *brush* the bee *away from her face*. Eliminate (G), which uses words from the passage but doesn't match what the passage says. Although the text says that Rebecca did not want to frighten the bee into *stinging* her, it also says that she *let it explore her face, knowing it would move on*, indicating that she was calm, not afraid. Eliminate (H) because, although the text describes Rebecca *knowing* the bee would *move on*, it does not describe her as hoping that the bee will fly away. Keep (J) because it matches the answer from the passage. The correct answer is (J).

11. **C**

This referral question asks which scholar *most directly contributed to the popularity of the term "Dark Ages."* Work backwards and use lead words from the answers to find the window for this question. *Petrarch* is mentioned in the first paragraph; lines 4–13 indicate that *Petrarch coined* the name "Dark Ages" and that the *name stuck*. Therefore, Petrarch directly contributed to the popularity of the name *Dark Ages*. Keep (C). William *Jordan* is mentioned in line 29; lines 29–32 indicate that in a book he wrote recently, Jordan *argued that the term "Dark Ages" needn't be negative*. Although he supported the use of the term *Dark Ages*, the term had already been popularized by Petrarch, so Jordan did not contribute as directly to the term's popularity as Petrarch did. Eliminate (A). David *Lindberg* and Ronald *Numbers* are mentioned in lines 45–46; lines 43–46 state that Lindberg and Numbers pointed out that learning did not stop during the Middle Ages. Lindberg and Numbers argued against using the term *Dark Ages*, so they did not contribute to its popularity. Eliminate (B) and (D). The correct answer is (C).

12. **G**

This referral question asks which activity flourished during the Middle Ages. Work backwards and use lead words from the answers to find the window for this question. The lead words *dome*, *stonework*, and *three-dimensional, realistic art* all appear in lines 62–68. Lines 62–64 state that during the Middle Ages, *three-dimensional, realistic art became less common, and the ability to build a self-sustaining dome was lost for hundreds of years*. Eliminate (F) and (H). Lines 66–68 state, *Architects in the Middle Ages developed…some of the most intricate stonework seen before or since*. This indicates that *stonework* flourished during the Middle Ages, so keep (G). *Mathematics* appears in line 54; lines 49–54 indicate that the idea that people *abandoned the field of mathematics* during the Middle Ages is a misconception, but the text does not indicate that the field of mathematics flourished during this time, so eliminate (J). The correct answer is (G).

13. **A**

This referral question asks what *scholars today* believe about the Middle Ages, in contrast with *historians with a traditional view of the Middle Ages*. There is not a good lead word in this question, so work the question later. Lines 1–13 explain that, beginning in the 14th century, a *popular conception* of the Medieval period in Europe was that *very little of cultural or intellectual importance took place during* that time. Lines 14–21 state that today, *scholars have begun to challenge that idea*, and that they *advocate the more neutral term "Middle Ages" because they feel that it more accurately describes the centuries during which Europe began to transition…into the modern states that exist today*. Eliminate answers that do not match this answer from the passage. Keep (A) because it matches the answer from the passage. Choice (B) may be tempting, but it goes beyond what is stated about the recent scholars' beliefs. The scholars

discussed in the passage note that some *areas flourished* during the Middle Ages, but they do not mention *significant scientific discoveries*. Eliminate (B). Choices (C) and (D) describe beliefs that contradict the views of the recent scholars discussed in the passage. The views in these two answers are more in keeping with the traditional view of the Medieval period as the *Dark Ages*. Therefore, although (C) and (D) include ideas that are mentioned in the passage, they answer the wrong question. Eliminate (C) and (D). The correct answer is (A).

14. **F**

This referral question asks what will likely result in the development of *an accurate picture of the Middle Ages*. There is not a good lead word in this question (the phrase *Middle Ages* appears throughout the passage), so work the question later. Lines 36–40 state, *Research continues to uncover information about the era that allows scholars to gain an ever more accurate idea of what life was like during the Middle Ages, while other research has helped historians gain a better understanding of the evidence they already possessed*. Eliminate answers that don't match this answer from the passage. Choice (F) mentions *reconsidering existing evidence*, which matches *gain a better understanding of the evidence they already possessed*. It also mentions *discovering new evidence*, which matches *[r]esearch continues to uncover information about the era*. Keep (F). Eliminate (G) because *written documents from the Renaissance* are not mentioned in the window for the question, and the first two paragraphs indicate that the author disagrees with Renaissance writers' views about the Middle Ages. Choice (H), *new excavations* in the *European countryside*, is a plausible way that researchers could study the Middle Ages, but the passage doesn't mention *new excavations*. The answer is not supported by the passage, so eliminate (H). Eliminate (J) because it goes beyond what is stated in the

passage: the author disagrees with the Renaissance writers discussed in the first paragraph, but the passage doesn't suggest that researchers should disregard *all Renaissance accounts*. The correct answer is (F).

15. **D**

The question asks what was NOT characteristic of *people during the Middle Ages*. When a question asks what is **not** supported by the text, eliminate answers that are supported. Eliminate (A) because lines 26–29 mention *written records* from the Middle Ages, which indicates that people during the Middle Ages did *keep written documents*. Although the passage says that *few* written records from that period exist now, that does not necessarily mean that people at that time did not typically keep written records; it simply means that few have survived to the present day. Eliminate (B) because lines 49–54 indicate that *mathematics* was not abandoned during the Middle Ages. Eliminate (C) because lines 66–68 indicate that *intricate stonework* was created during the Middle Ages. Keep (D) because lines 59–64 indicate that people in the Middle Ages did **not** widely believe that *the Earth was flat*. The correct answer is (D).

16. **J**

This reasoning question asks for the *main purpose of the first paragraph*. Read the first paragraph. Lines 1–4 introduce the *period that began with the fall of the Roman Empire* and *ended with the Renaissance* and state that this time has been called the *Medieval Period, the Middle Ages, and the Dark Ages*. Lines 4–13 describe how the name *Dark Ag*es was created: Petrarch, a Renaissance writer, created the name in order to *differentiate the culture of Medieval Europe from his own time* and to *connect his studies with those of antiquity*. Eliminate answers that don't match this answer from the passage. Choice (F) is mentioned in the passage, but it answers the wrong question: it describes Petrarch's goal, rather than the purpose of

the paragraph. Eliminate (F). Eliminate (G) because the passage does not indicate that the three terms listed are *all of the terms* used to describe the Medieval period. Choice (H) uses words from the passage but doesn't match what the passage says: the text states that during the Renaissance, the *popular conception* of the Middle Ages was that it was a *cultural wasteland*. It does not say that *writers of the Renaissance lived in a cultural wasteland*. Eliminate (H). Keep (J) because it matches the answer from the passage. The correct answer is (J).

17. **C**

This referral question asks for areas *in which learning truly did go into declineduring the MiddleAges*, according to the passage. Look for the lead words *learning* and *decline* to find the window for the question. Lines 58–64 indicate that *in some areas, learning did go into a decline after the fall of Rome*; these lines also give two examples: *three-dimensional, realistic art* and *the ability to build a self-sustaining dome*. Eliminate answers that don't match this answer from the passage. Choice (A) includes references that are mentioned in the window, but they answer the wrong question. Lines 64–68 indicate that *symbolic art* and some aspects of *architecture* were highly developed during the Middle Ages, but the question asks for areas that went into *decline*, so eliminate (A). Eliminate (B) because lines 49–54 indicate that the study of *mathematics* was not abandoned during the Middle Ages. Keep (C) because it matches the answer from the passage. Eliminate (D) because lines 66–68 indicate that *some of the most intricate stonework ever seen before or since* was developed during the Middle Ages. The correct answer is (C).

18. **F**

This reasoning question asks what *Renaissance writers such as Petrarch* thought *their work would benefit from*, based on the first

paragraph. Read the first paragraph. Lines 9–11 state that *Petrarch, like many other writers…of his time, wanted to connect his studies with those of antiquity*. Eliminate answers that don't match this answer from the passage. Keep (F) because it matches the answer from the passage: *antiquity* and the *classical era* are both ways of describing the same period. Neither (G) nor (H) is mentioned in the window for the question; eliminate (G) and (H). Eliminate (J) because the paragraph states that Petrarch wanted to relate his studies to those of antiquity; it does not say that he thought his work would benefit from *the new culture of the Renaissance*. The correct answer is (F).

19. **D**

This Vocabulary in Context question asks what the word *coined* means as used in line 5. Go back to the text, find the word *coined*, and cross it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context. Lines 1–6 list some of the different names for the Middle Ages and state that Petrarch *coined* one of the terms. Therefore, *coined* must mean something like "invented." *Counterfeited* means "copied with the intention to deceive;" it does not match "invented," so eliminate (A). *Plagiarized* means "presented another's words as one's own"; it does match "invented," so eliminate (B). *Spent* does not match "invented," so eliminate (C). *Created* matches "invented," so keep (D). The correct answer is (D).

20. **F**

This reasoning question asks what the fourth and fifth paragraphs suggest about how some scholars viewed *educational pursuits during the Middle Ages*, *before the work of modern scholars such as Numbers and Lindberg*. Read the fourth and fifth paragraphs. Lines 41–46 indicate that some scholars believed that *learningmust have virtually halted* during the Middle Ages, before *Lindberg* and

Numbers showed that this view was incorrect. Eliminate answers that don't match this answer from the passage. Keep (F) because the description of educational pursuits as *insignificant* is supported by the phrase *learningmust have virtually halted*. Eliminate (G) and (H) because the description of educational pursuits as *scientific* and *advanced* is contradicted by the statement that scholars believed learning *virtually halted*. Eliminate (J) because the passage does not discuss scholars' beliefs about education being *well-documented*. The correct answer is (F).

21. **B**

This referral question refers to Passage A and asks for *the primary reason that some critics and scholars doubt the identity of the playwright William Shakespeare*. There is not a good lead word in this question (the word *Shakespeare* appears throughout the passage), so work the question later. Lines 12–23 outline the reasons that a *group of critics and scholars…believe that Shakespeare's authorship of these great plays is nearly impossible*. The arguments include the claim that *Shakespeare couldn't have had the education, aristocratic sensibility, or the familiarity with the royal court that pervade his many works* and that Shakespeare was not a likely source for the *oceanic grasp of the totality of Elizabethan England* demonstrated in the plays attributed to him. Eliminate answers that do not match this answer from the passage. Eliminate (A) because the passage does not discuss other *accomplished playwrights* of Shakespeare's time who were also *successful and wealthy*. Keep (B) because it matches the answer from the passage: Shakespeare's *relatively humble station* matches the claim that Shakespeare lacked *aristocratic sensibility* and *familiarity with the royal court*, and works of *such breadth* matches the *oceanic grasp of the totality of Elizabethan England*. Choice (C) uses words from the passage but does not match what the passage says: the passage indicates that some scholars believe that the ideas in

Shakespeare's plays *were too dangerous for any one man to espouse publicly*, but it does not say that the ideas *were too dangerous to appear in novels*. Eliminate (C). Choice (D) may be tempting because the passage mentions that *Delia Bacon* proposed that Shakespeare's plays were written under the direction of *Sir Francis Bacon*—a person who shares her last name. However, the passage does not directly support the idea that *readers* wanted to *connect the plays of Shakespeare to their own lives*. Furthermore, this answer is only connected to one person mentioned in the passage and doesn't answer the question about *the primary reason* for the doubts of *critics and scholars*. Eliminate (D). The correct answer is (B).

22. **H**

This referral question asks why *critics cite Queen Elizabeth as the possible author of Shakespeare's plays*. Look for the lead words *Queen Elizabeth* to find the window for the question in Passage A. Lines 20–23 indicate that some critics believe that *Shakespeare's oceanic grasp of the totality of Elizabethan England means that his works could only have come from one source: Queen Elizabeth herself*. In other words, Shakespeare's plays demonstrate a broad knowledge about England during the time that Elizabeth was queen, and some critics believe that kind of knowledge could have belonged only to someone with the queen's perspective. Eliminate answers that don't match this answer from the passage. Eliminate (F) because the passage does not discuss the *female characters* in Shakespeare's plays. Eliminate (G) because the passage does not mention the *natural sciences*. Keep (H) because it matches the answer from the passage. Eliminate (J) because the passage does not discuss the popularity of Shakespeare's plays among *royalty*. The correct answer is (H).

23. **A**

This reasoning question asks why *Thompson refers to Shakespeare as "the average townsman."* Read a window around the given line reference. In lines 49–55, Thompson says that *the Anti-Stratfordians…raise some interesting questions about Shakespeare's authorship*. Then he asks, *How reasonable is it to think that the average townsman could have written the…works for which William Shakespeare has been given credit*? Earlier in the passage, Thompson discusses the Anti-Stratfordians' belief that *Shakespeare couldn't have had the education, aristocratic sensibility, or the familiarity with the royal court that pervade his many works* (lines 12–16). Therefore, the reference to Shakespeare as *the average townsman* reflects uncertainty about whether Shakespeare was educated and aristocratic enough to have written the plays attributed to him. Eliminate answers that don't match this answer from the passage. Choice (A) matches the answer from the passage, so keep it. Choice (B) mentions that Shakespeare *was active in civic affairs*, but the passage does not discuss Shakespeare's involvement in *civic affairs*. Eliminate (B). Choice (C) states that Shakespeare was *too well liked by his neighbors to be revealed as a fraud*, but the passage does not discuss Shakespeare's *neighbors*. Eliminate (C). Choice (D) states that Shakespeare *may have disguised himself*, but the passage does not suggest this. Eliminate (D). The correct answer is (A).

24. **J**

This Vocabulary in Context question asks what the word *oceanic* means in line 21. Go back to the text, find the word *oceanic*, and cross it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context. Lines 21–22 mention Shakespeare's understanding *of the totality of Elizabethan England*, so *oceanic* could be replaced with "complete." *Natural* does not match "complete," so eliminate (F). *Informal* does not match "complete," so eliminate (G). *Salty* does not match "complete," so eliminate (H).

Comprehensive matches "complete," so keep (J). The correct answer is (J).

25. **C**

This reasoning question asks why it is *difficult to understand* that Shakespeare is the sole author of his works, according to the author of Passage B. There is not a good lead word for this question, so work the question later. In lines 56–60, the author indicates that *it's not reasonable* to think that Shakespeare wrote the plays that are credited to him, but says, *that is the nature of genius, especially genius of Shakespeare's magnitude*. In other words, it's difficult to understand how an ordinary person could have written Shakespeare's plays, but Shakespeare was a genius, not an ordinary person. Choice (A) states that Shakespeare *was only one of many authors who wrote under the name Shakespeare*. Although the author of Passage A discusses this theory, the question is about Passage B. Eliminate (A). Eliminate (B) because Truelove never discusses a time *before plays were considered serious works of art*. Choice (C) matches the answer from the passage, so keep it. Eliminate (D) because Truelove does not state that Shakespeare *disapproved of royalty and other nobles*. The correct answer is (C).

26. **G**

This referral question asks why Truelove believes that *the Anti-Stratfordians give a classist account of Shakespeare's authorship*. Look for the lead word *classist* to find the window for this question in Passage B. Lines 69–72 state that the *Anti-Stratfordians…have been making a blatantly classist argument. The idea that a man of Shakespeare's level of genius must have come from the upper echelons of society is snobbish at best*. In other words, their account is *classist* because they assume that a man of Shakespeare's genius must have an upper-class background. Eliminate answers that don't match this

answer from the passage. Choice (F) uses words from the passage but doesn't match what the text says. In fact, the author would disagree with this statement. Eliminate (F). Keep (G) because it matches the answer from the passage. Choice (H) uses words from the passage but doesn't match what the passage says. Though Truelove questions the Anti-Stratfordians' beliefs about their students' wealth and intelligence, she never states that the Anti-Stratfordians *disapprove* of their *low-income students*. Eliminate (H). Eliminate (J) because the passage does not mention *royalties*. The correct answer is (G).

27. **C**

This reasoning question asks what faults Truelove points out about arguments that are based on *"parallels"* between Shakespeare's writing and the writing of other authors. Look for the lead word *parallels* to find the window for the question in Passage B. Lines 85–91 indicate that it is *misleading* to *identify "parallels"* between *the texts of Shakespeare* and other authors. Truelove argues that these parallels are very likely because Shakespeare and the other authors *lived in the same place in the same era*. In other words, the *"parallels"* are not effective support for the Anti-Stratfordians' argument. Eliminate answers that don't match this answer from the passage. Eliminate (A) because Truelove doesn't critique the Anti-Stratfordians' choice of *texts*, just their methodology. Eliminate (B) because the passage does not discuss *economics*. Keep (C) because it matches the answer from the passage. Eliminate (D) because Truelove does not compare the evidence about *Bacon* and *de Vere*. The correct answer is (C).

28. **J**

This reasoning question asks for a difference between *Thompson's and Truelove's points of view*. Because this question asks about both passages, it should be done after the questions that ask about each

passage individually. Consider the Golden Thread of each passage. In Passage A, Thompson discusses the Anti-Stratfordians' theory that Shakespeare did not write the plays that are attributed to him, and states that *the Anti-Stratfordians…raise some interesting questions about Shakespeare's authorship*. Passage A identifies the *Oxfordians* as one particular group of Anti-Stratfordians. Therefore, Thompson believes that the Anti-Stratfordians' (and Oxfordians') theories are interesting and worth exploring. In Passage B, Truelove states, *as difficult as it might be to believe, all evidence points toward William Shakespeare as the sole author of Shakespeare's works*. In other words, Truelove disagrees with the Anti-Stratfordians (and the Oxfordians). Eliminate answers that misrepresent either passage. Eliminate (F) because Truelove is not compelled by *the theories of the Oxfordians*. Eliminate (G) because Thompson does not *criticize* the authors he discusses, and Truelove does not believe that *Looney's and Bacon's arguments* hold any *merit* at all. Eliminate (H) as it mixes up the viewpoints of Thompson and Truelove. Keep (J) because it matches the answer from the passage. The correct answer is (J).

29. **B**

This reasoning question asks how Truelove went about disagreeing with the theories Thompson presented. Because this question asks about both passages, it should be done after the questions that ask about each passage individually. Eliminate answers that misrepresent either passage. Choice (A) states that Truelove uses *personal attacks*, but Truelove does not attack those she disagrees with personally; instead, she attacks their theories. Eliminate (A). Choice (B) is supported by the passage: Passage B begins with a *direct response* that explicitly mentions Arthur Coyle Thompson. Passage B also includes many *rhetorical questions*, including lines 62–65, lines 72–74, and lines 90–91. Keep (B). Eliminate (C) because Truelove's arguments are logical, rather than *emotional*, and Passage B doesn't include any

examples of *exaggeration*. Eliminate (D) because Truelove uses neither *historical data* nor *archival research* to make her argument. The correct answer is (B).

30. **J**

This reasoning question asks for the best comparison of Thompson's and Truelove's views on *the alternative theories of Shakespeare's authorship*. Because this question asks about both passages, it should be done after the questions that ask about each passage individually. Consider the Golden Thread of each passage. In Passage A, Thompson states that *the Anti-Stratfordians nonetheless raise some interesting questions about Shakespeare's authorship*. The Anti-Stratfordians believe that Shakespeare did not write the plays he is credited with, so Thompson believes the theories of alternative authorship are interesting and worth looking into. In Passage B, Truelove states, *as difficult as it might be to believe, all evidence points toward William Shakespeare as the sole author of Shakespeare's works*. In other words, Truelove does not believe the claims about alternative authorship of Shakespeare's plays. Eliminate answers that misrepresent either passage. Eliminate (F) because Truelove firmly disagrees with the theories; she does not show *neutrality*. Eliminate (G) because Thompson does not use *dramatic appeal* in his response. Eliminate (H) because it misrepresents both passages: Thompson is open to the theories, but is not a *staunch* (strong) advocate for them, and Truelove disagrees with the theories. Keep (J) because it matches the answer from the passage. The correct answer is (J).

31. **C**

This referral question asks what *behavior* is described as *free will* in the passage. Look for the lead words *free will* to find the window for this question. Lines 18–19 identify the *human ability to form lasting*

romantic bonds as an example of *free will*. Eliminate answers that don't match this answer from the passage. Choice (A) is mentioned in the passage, but it answers the wrong question. The passage indicates that scientists are beginning to question the model of free will, and lines 30–34 indicate that *falling in love* may actually be *biologically motivated*. This is offered as evidence against free will, rather than as an example of free will. Eliminate (A). Choice (B) is not mentioned in the window for the question: the discussion of *trying to identify patterns* for the purposes of c*riminal pursuit* appears in the last paragraph and is not an example of *free will*. Eliminate (B). Choice (C) matches the answer from the passage, so keep it. Eliminate (D) because *group efforts* to *improve a city* are not mentioned in the passage. The correct answer is (C).

32. **G**

This reasoning question asks how the *recent discovery* in lines 30–34 is related to the e*lectro-chemical theory*. Look for the lead words *electro-chemical theory* to find the first window for the question. Lines 50–51 describe a theory that *all human interaction is, on some level, based in the laws of physics*. Lines 57–63 describe the *electro-chemical theory*—the idea that *electrical impulses* in the human body *become chemical impulses…which eventually trigger biological impulses*. Then, read a window around lines 30–34. These lines state that *recent research* suggests that *falling in love* is *biologically motivated*. Therefore, the *recent discovery* supports the theory that all human behavior (such as *falling in love*) is *based in the laws of physics*. This theory, in turn, is connected to the electro-chemical theory, which explains how the laws of physics underlie biological impulses. Eliminate answers that don't match this answer from the passage. Choice (F) is incorrect because the *recent discovery* does not support the *electro-chemical theory* directly. Instead, it supports a theory that is related to the electro-chemical theory. Eliminate (F).

Choice (G) matches the answer from the passage, so keep it. Choice (H) is incorrect because both the new research and the *electro-chemical theory* incorporate the idea that human behavior has roots in biology. Eliminate (H). Since the research has a clear link to the *electro-chemical theory*, eliminate (J). The correct answer is (G).

33. **D**

This referral question asks how *the author characterizes scientific contributions to police work*. Look for the lead word *police* to find the window for the question. Lines 71–78 discuss the *increasing involvement of scientists in the arena of criminal pursuit*. This paragraph indicates that *police* departments now bring in scientists to *identify patterns* and that the scientists *help solve the cases*. Eliminate answers that don't match the answer from the passage. Eliminate (A) and (B) because the author says that the scientists *help solve the cases*; therefore, their contributions are not characterized as *useless* or *unconvincing*. Eliminate (C) because there is no indication that the help from scientists is *alarming*, and the research is applied to case work, so it is not only *theoretically persuasive*. Choice (D) matches the answer from the passage. The correct answer is (D).

34. **F**

This referral question asks how *humans are like particles*, according to *supporters of the electro-chemical theory*. Look for the lead words *electro-chemical theory* and *particles* to find the window for the question. According to lines 59–65, *all matter reacts to electrical impulses* and *advocates of the electro-chemical theory claim that… [h]uman interaction can be compared to the interaction between particles*. Therefore, advocates of the electro-chemical theory claim that both humans and particles react to electrical impulses. Eliminate answers that don't match this answer from the passage. Choice (F) matches the answer from the passage, so keep it. Eliminate (G)

because, while it is true that humans are *capable of conscious decision-making*, the passage does not indicate that particles are. Furthermore, *conscious decision-making* is not mentioned in the window for the question. Choice (H) uses words from the passage but doesn't match what the passage says: *group interactions* between humans are mentioned, but there is no evidence that humans are better understood *in groups than individually*. Eliminate (H). Choice (J) uses words from the passage but doesn't match what the passage says: the passage discusses responses to *stimuli*, but it does not indicate that humans respond to stimuli *without intermediate thought*. Eliminate (J). The correct answer is (F).

35. **B**

This referral question asks how *electrical impulses* are described by the author *in terms of where and how frequently they occur*. Look for the lead words *electrical impulses* to find the window for the question. Lines 59–61 indicate that *all matter reacts to electrical impulses on some level*. Eliminate answers that don't match this answer from the passage. Since the passage states that *electrical impulses* affect *all matter*, eliminate (A). Choice (B) matches the answer from the passage, so keep it. Like (A), (C) does not include *all matter*. Lines 63–66 state that *human interaction can be compared to the interaction between different particles*; therefore, the author includes humans in *all matter*. Eliminate (C). Eliminate (D) because it includes only *non-human matter*, rather than *all matter*. The correct answer is (B).

36. **J**

This referral question asks how *chemists and physicists define biological impulses*. Look for the lead words *chemists and physicists* and *biological impulses* to find the window for the question. The *chemists and physicists* first mentioned in line 47 believe that *electrical impulses become chemical impulses…which eventually*

trigger biological impulses (lines 57–59). Eliminate answers that don't match this answer from the passage. *Free will* is not mentioned in the window for the question; the *chemists and physicists* don't state whether *biological impulses* are connected to *free will*, so eliminate both (F) and (G). Choice (H) uses words from the passage but doesn't match what the passage says: it reverses the causes and effects described in the text. Eliminate (H). Choice (J) matches the answer from the passage, so keep it. The correct answer is (J).

SCIENCE TEST

1. **B**

   The question asks for the number of days for which the *yearly mean high water* was *exactly 0.6 inches above the MHW*, based on Figure 2. Look at Figure 2. The figure shows the *difference between yearly mean high water and epoch mean high water* on the vertical axis. The numbers on that axis include a positive 0.6 and a negative 0.6. Read the note below the figure to determine the meaning of these values. The note states that *if the difference is positive*, the *yearly mean high water is above the MHW*. Therefore, positive 0.6 inches is the value needed to answer the question. Find positive 0.6 inches on the vertical axis; then draw a horizontal line from there to the right edge of the figure. The line will intersect the curve 3 times, meaning that there are three occurrences of this exact difference. The correct answer is (B).

2. **J**

   The question asks for the date on which the *yearly mean high water* was *the same as the MHW*, based on Figure 2. Look at Figure 2. The figure shows the *difference between yearly mean high water and epoch mean high water* on the vertical axis and dates on the horizontal axis. Read the note below the figure to determine the meaning of the values on the vertical axis. The note states that *if the difference is positive*, the *yearly mean high water is above the MHW*, and *if the difference is negative, the yearly mean high water is below the MHW*. Therefore, only at a value of 0 on the vertical axis will the yearly mean high water be the same as the MHW. Look at each date in the answer choices to determine if the difference on that date was 0. On July 8, the difference was negative. Eliminate (F). On July 15, the difference was negative. Eliminate (G). On July 30, the difference was positive. Eliminate (H). On August 2, the difference was 0. The correct answer is (J).

3. **A**

The question asks if the *yearly mean high water* was *more often below or above the MHW* for the month of July. The *difference between yearly mean high water and epoch mean high water* is shown on the vertical axis in Figure 2. The horizontal axis shows the dates, and the month of July is on the left half of the figure. The curve has mostly negative values for the difference during July. Eliminate (B) and (D) because they indicate that the difference is *more often positive*. Read the note below the figure to determine the meaning of the values on the vertical axis. The note states that *if the difference is negative, the yearly mean high water is below the MHW*. Eliminate (C) because it indicates that the yearly mean high water is more often *above* the MHW. The correct answer is (A).

4. **G**

The question asks for the date on which the *daily mean high water* was *higher than the MHW*, based on Figure 1. Look at Figure 1. The figure shows the *daily mean high water* in inches on the vertical axis and dates on the horizontal axis. The value of the MHW is not given on the figure, so read the description above the figure. The text indicates that the *MHW is 3.083 feet*, or *37 inches*. The figure is in inches, so find 37 on the vertical axis. This value is at the darker gridline. Look for each date in the answer choices to determine if the daily mean high water on that date was greater than 37 inches. On July 4, the daily mean high water value was approximately 33 inches. Eliminate (F). On July 24, the daily mean high water value was approximately 43 inches, so keep (G). On both August 1 and August 28, the daily mean high water value was well below 37 inches. Eliminate (H) and (J). The correct answer is (G).

5. **C**

The question asks for the approximate number of days during July and August that the *yearly mean high water* was *below the MHW*, based on Figure 2. The figure shows the *difference between yearly mean high water and epoch mean high water* on the vertical axis and dates on the horizontal axis. Read the note below the figure to determine the

meaning of the values on the vertical axis. The note states that *if the difference is negative, the yearly mean high water is below the MHW*. Therefore, only dates with negative values for the difference should be counted. The first period with negative values begins on July 2 or July 3 and goes until about July 23. This covers 20 to 21 days, and there is another period that also has negative values. Since the total number of days must be more than 21, eliminate (A) and (B) because those numbers are too small. The next period with negative values begins on August 2 or August 3 and goes until August 10. This adds 7 or 8 more days to the total, which is now somewhere between 28 and 29 days. The correct answer is (C).

6. **H**

The question asks how much higher the *highest daily mean high water* value was than the *lowest daily mean high water* value in *July and August*, based on Figure 1. Look at Figure 1. The figure shows the *daily mean high water* in inches on the vertical axis and dates on the horizontal axis. The highest value for the daily mean high water occurs around August 22 and is approximately 44 inches. The lowest value for the daily mean high water occurs around August 2 and is approximately 32 inches. Subtract 32 from 44 for a difference of 12 inches. The correct answer is (H).

7. **B**

The question asks for the 2 reactors that had an *average* U_D *value less than 15 L* and for which *the volume of biofuel* was *greater than 25 L*, based on the table. The table shows that the reactors with an *average* U_D *value* below 15 L were Reactors 1, 4, 5, 6, and 7. Eliminate (C) and (D) because they include Reactor 2, whose *average* U_D *value* of 18.1 L is above 15 L. Reactor 1 is listed in both of the remaining answers, so determine the volume of biofuel for Reactors 4 and 7 instead. For Reactor 4, the volume of biofuel was 15.2 L, and for Reactor 7, the volume of biofuel was 26.0 L. Eliminate (A), as 15.2 L is less than 25 L. The correct answer is (B).

8. **J**

The question asks for the effect on the *average* U_D and the *volume of biofuel* in *Reactors 1–3* as the *average solar radiation increased*. Note the trends in the table. For Reactors 1–3, the average U_D increases as the average solar radiation increases. Eliminate (F) and (G) because they indicate that the average U_D decreases as the average solar radiation increases. For Reactors 1–3, the volume of biofuel increases as the average solar radiation increases. Eliminate (H) because it indicates that the volume of biofuel decreases as the average solar radiation increases. The correct answer is (J).

9. **C**

The question asks for the list that gives the reactors with *average* U_D *values greater than 12.0 L* in order from *greatest average* U_D *value* to *least average* U_D *value*. Look at the table to determine which reactors had average U_D values that were greater than 12.0 L. Those reactors were Reactors 1, 2, 3, and 7. Eliminate (A) and (D) because they include Reactor 6, which had an *average* U_D *value* of 11.8 L. Of the reactors with an *average* U_D *value* greater than 12.0 L, the one with the *greatest average* U_D *value* is Reactor 3 at 22.5. This reactor should be first in the list from greatest to least. Eliminate (B) which lists Reactor 2 first. The correct answer is (C).

10. **F**

The question asks for a comparison of the volumes of biofuel produced in Reactor 3 and Reactor 4. Look at the table to find these values. For Reactor 3, the volume of biofuel was 47.0 L, and for Reactor 4, the volume of biofuel was 15.2 L. The question asks for the volume in Reactor 4 compared to the volume in Reactor 3. Since the value for Reactor 4 was smaller than that for Reactor 3, the volume in Reactor 4 is a fraction of the volume in Reactor 3. Eliminate (H) and (J) because they are not fractions with a value less than 1. The value of 15.2 is approximately one-third the value of 47.0. The correct answer is (F).

11. **B**

The question asks for the temperature at which *Reactor 5 was maintained* if *Reactor 1 was maintained at a temperature of 25°C*. The table does not provide any information about the temperatures at which the reactors were maintained, so look at the description of the experiment for a reference to temperature. The introductory paragraph states that all the reactors *were maintained at the same temperature*. Therefore, if Reactor 1 was maintained at 25°C, then Reactor 5 was also maintained at 25°C. The correct answer is (B).

12. **H**

The question asks for the *average* U_D value, *in milliliters*, of a reactor with a *pH of 7.0* and *an average solar radiation level of 120 W/m*^{2}. Look at the table to find the reactor that meets these conditions. Reactors 1, 2, 3, and 7 had a pH of 7.0, and of these, only Reactor 2 had an average solar radiation of 120 W/m^2. For Reactor 2, the average U_D value was 18.1 L. This is not the value in milliliters, which will be greater than 18.1, so eliminate (F) and (G). There are 1,000 mL in each liter, so multiply 18.1 by 1,000 to find that the average U_D value in Reactor 2 is 18,100 mL. The correct answer is (H).

13. **C**

The question asks for the *most likely reason that each solution was placed in a polystyrene foam container in Experiment 1*. Use the information in the passage and POE. The passage states that a *thermometer and an electrical heater* are being used, and the solutions are being *heated to a temperature of 100°C*. The passage also states that the *heat of vaporization* was calculated after *all of the water in the solution was converted to steam*. Therefore, the answer should reference capturing heat or the steam. Freezing is not mentioned in the passage or the table, so eliminate (A) and (B). When performing an

experiment, scientists usually want to control all variables possible. Eliminate (D) because it implies that an outside source of heat would be desired, and this would add an additional variable. The correct answer is (C).

14. **F**

The question asks what the *graduated cylinders were filled with* in *Experiment 3*. Use the information in the passage and POE. The passage states that *the ice created from Solution A was warmed for 3 min until all of the ice melted*, *and the liquid was transferred into the graduated cylinder*. Therefore, only liquid was added to the graduated cylinder. Eliminate (G) and (J) as they both incorrectly state that ice was added to the graduated cylinders. Eliminate (H) because it says no liquid was added to the graduated cylinders. The correct answer is (F).

15. **B**

The question asks for the *heat of vaporization of* a solution containing *75% by mass freshwater* in Experiment 1. The results of Experiment 1 are shown in Table 2. Determine the relationship between the *percent by mass* of the solutions and the *heat of vaporization* in Table 2. Use the *freshwater* column in Table 1 to determine the *percent by mass* of each solution. Solution B has a *percent by mass* of 80%, and Solution C has a *percent by mass* of 50%, so the new solution should fall in between these two. As *percent by mass* decreases from 80% to 50%, the *heat of vaporization* also decreases 2,260 J/g to 2,195 J/g. Since there is a direct relationship between *percent by mass* and *heat of vaporization*, the *heat of vaporization* should fall between 2,195 J/g and 2,260 J/g. The correct answer is (B).

16. **J**

The question asks for the difference between Experiment 1 and Experiment 2. Use the information in the passage and POE. In Experiment 1, the passage states that *100 mL of Solution A* was added to the container. In Experiment 2, the passage states that *another 100 mL of Solution A* was transferred to the beaker. Eliminate (F) and (G) as they both incorrectly state that the volume was different between the two experiments. In Experiment 1, the passage states that *the solution was heated to a temperature of 100°C*. In Experiment 2, the passage states that the solutions were decreased to the *freezing point*, which ranged from 0°C to –1.8°C depending on the solution. Eliminate (H) because it states that *the solution* was *brought to a lower temperature* in Experiment 1 than in Experiment 2. The correct answer is (J).

17. **C**

The question asks whether a sample of Solution B or Solution D of the same volume would have a *greater mass*. Begin by examining Table 4 and looking at the density for Solution B and Solution D. Solution B had a density of 1,012 kg/m^3 and Solution D had a density of 1,059 kg/m^3, which is greater than Solution B's density. Eliminate (A) and (D), which both incorrectly state that Solution B had the higher density. To choose between the remaining answers, outside knowledge is necessary: density is mass divided by volume. For two solutions with the same volume, the solution with the larger density will have the larger mass. Therefore, Solution D has a larger mass than Solution B. Eliminate (B), which says Solution B has the larger mass. The correct answer is (C).

18. **G**

The question asks how the density of the *solution with the highest freezing point in Experiment 2* compares to *1,000 kg/m^3*. The results of Experiment 2 are shown in Table 3. Solution A had the highest

freezing point at 0°C. Information about density is shown in Table 4. Solution A had a density of 998 kg/m^3, which is less than 1,000 kg/m^3. The correct answer is (G).

19. **A**

The question asks if *the results of Experiments 1 and 3 support* the statement that *the percent by mass of freshwater in the solution with the lowest heat of vaporization was the same as the percent by mass of freshwater in the solution with the melted ice that had the highest density*. The results of Experiment 1 are shown in Table 2. Solution E had the lowest *heat of vaporization* at 2,098 J/g. The results of Experiment 3 are shown in Table 4. Solution E also had the highest density at 1,076 kg/m^3. The statement is supported; eliminate (C) and (D). Information about the *percent by mass of freshwater* is shown in Table 1. Solution E had 0% by mass of freshwater. Eliminate (B) because it incorrectly states that Solution E had 50% by mass of freshwater. The correct answer is (A).

20. **F**

The question asks for the number of *magnet lengths* for which the *distance from the center of the magnet to the center of the outermost field line* is less for the *attractive patterns* than for the *repulsive patterns*, based on Experiment 1. The results of Experiment 1 are shown in Table 1. For each magnet length, compare the distance in the attractive column to the distance in the repulsive column. For each of the given magnet lengths, the value in the attractive column is greater than the value in the repulsive column. Therefore, there were 0 magnet lengths for which the distance was less for attractive than repulsive. The correct answer is (F).

21. **D**

The question asks for a question about the *magnet length or magnet distance* that can be answered *by the results of Experiment 2*. The results of Experiment 2 are shown in Figure 2. In Figure 2, the axis labels are *distance between fixed and trial magnets* on the horizontal axis and *distance to outermost field line* on the vertical axis. Therefore, the experiment must show the relationship between these two variables. Eliminate (A) and (B) because they refer to *magnet length*, which is not one of the variables. Eliminate (C) because it refers to *the number of field lines*, which is not one of the variables. The correct answer is (D).

22. **H**

The question asks what the *distance between the magnets* would have been for an *attractive* pattern and a distance of *15.0 cm* to the *outermost field line* in Experiment 2. The results of Experiment 2 are shown in Figure 2. Look for the data for the distance to the outermost field line of 15.0 cm, which is on the vertical axis. The figure shows two lines, with attractive patterns represented by the open squares. The horizontal gridline at 14.0 cm intersects the line of best fit for attractive patterns between the marks for 10.0 and 15.0 cm on the horizontal axis. Therefore, the distance between the magnets must be between 10.0 and 15.0 cm. Eliminate (F), (G), (J). The only value between 10.0 and 15.0 cm is 13.0 cm. The correct answer is (H).

23. **A**

The question asks for a difference between Experiment 1 and Experiment 2. Each answer begins with a description of Experiment 1. The description of Experiment 1 states that *researchers obtained 7 bar magnets of varying lengths but with the same nickel composition*. Eliminate (C), which indicates that the metal composition was varied in Experiment 1. Now, check the description of Experiment 2. Experiment 2 used the 14.0 cm trial magnet from Experiment 1 and

the same fixed magnet. Eliminate (D) because it incorrectly indicates that magnet composition varied in Experiment 2. Eliminate (B) because only two magnets were used in Experiment 2: the 14.0 cm trial magnet and the fixed magnet. The correct answer is (A).

24. **G**

The question asks for the difference between two distances, the *distance to the outermost field line for the attractive patterns* and the *distance between the fixed and trial magnets* for a magnet with a length of *16.0 cm* showing *attractive* patterns in Experiment 1. The results of Experiment 1 are shown in Table 1. For the magnet length of 16.0 cm and an attractive pattern, the distance from the center of the magnet to the center of the outermost field line was 18.4 cm. Table 1 does not include information about the distance between the fixed and trial magnets, so read the description of Experiment 1. The text states that a *trial bar magnet was placed 10.0 cm away from the fixed magnet*. Therefore, the difference between the distances is 18.4 – 10.0 = 8.4 cm. The correct answer is (G).

25. **D**

The question asks for the likely *distance to the outermost field line* for a magnet with a *length of 8.0 cm* that is *10.0 cm away from a fixed horseshoe magnet* and showing *attractive patterns*, based on Experiment 1. The question states that this distance for a horseshoe magnet is *1.4 times the same distance if a fixed bar magnet was used*. The results of Experiment 1 are in Table 1. For a magnet with a length of 8.0 cm and showing attractive patterns, the distance to the outermost field line is 10.2 cm. This value is for a bar magnet placed 10.0 cm away from the fixed magnet. Multiply this value by 1.4 to get the distance for a magnet placed 10.0 cm away from a horseshoe magnet. The numbers are not easy to multiply without a calculator, so estimate. The value of 10.2 can be rounded down to 10, so the

distance must be slightly greater than 10 × 1.4 = 14 cm. Eliminate (A), (B), and (C). Only 14.3 cm is close to 14 cm. The correct answer is (D).

26. **F**

The question asks if the results of Experiment 1 support the claim that the *greater the length of the trial magnet, the more* field lines *in the magnetic field for a certain type of magnetic force*. The results of Experiment 1 are shown in Table 1. Table 1 does not refer to the number of field lines, but it does show the relationship between magnet length and distance to outermost field line as discussed in the answer choices. For attractive patterns, as the magnet length increases, so does the distance. The same relationship holds true for repulsive patterns. Eliminate (G) and (J) because they state that the distance *decreased* as the magnet length *increased*. To decide between (F) and (H), read the description of Experiment 1 to see if it mentions the number of field lines. There is no mention there of the number of field lines, either. It would make sense, though, that a longer magnet, which has a greater distance to the outermost field lines, would have more field lines. Eliminate (H). The correct answer is (F).

27. **D**

The question asks which scientist *would be likely to predict that Horse 12 has the C genotype of* C^NC^N. Information about Horse 12 is shown in Figure 1. Horse 12 is a palomino horse. The allele C^N is used for non-cream, so a genotype of C^NC^N would mean that Horse 12 has no cream (C^{Cr}) alleles. Eliminate any scientist that says palomino horses would have any C^{Cr} alleles. According to Scientist 1, *all horses with palomino coloring inherited at least one red allele and at least one* C^{Cr}. Therefore, Scientist 1 would not agree that Horse 12 has a genotype of C^NC^N; eliminate (A). According to Scientist 2, *all*

palomino horses inherited…1 or 2 copies of the C^{Cr} allele; eliminate (B). According to Scientist 3, *all horses with palomino coloring inherited…two copies of the C^{Cr} allele*; eliminate (C). The correct answer is (D).

28. **F**

The question asks which table is *most consistent with Scientist 2's explanation for the C genotypes that produce palomino coloring in horses with red base coats*. According to Scientist 2, *all palomino horses inherited two copies of the red allele and 1 or 2 copies of the C^{Cr} allele*. Eliminate (H) and (J) because both incorrectly show that a horse without any C^{Cr} alleles will be palomino. Eliminate (G) because it shows that the genotype $C^{Cr}C^{N}$ would not be palomino, which contradicts Scientist 2's claim that 1 copy of the C^{Cr} allele is sufficient to produce palomino coloring. The correct answer is (F).

29. **B**

The question asks whether Scientist 1 or Scientist 2 *implied that red base coats are dominant to black base coats*. Scientist 1 states that *all horses with at least one copy of the red allele will have a red base coat*, while Scientist 2 states that *the red coat color requires two red alleles*. Eliminate (A) and (D) because they incorrectly state the reverse of what each scientist said. In addition, the first paragraph of the passage states that *only the dominant color is expressed* when *an allele for each color is present*. Since Scientist 1 believes that a horse with an allele for each color will have a red base coat, Scientist 1 is implying that *red* is the dominant color. Eliminate (C) because it incorrectly states that Scientist 2 is the one who implied *that red base coats are dominant*. The correct answer is (B).

30. **H**

The question asks *what proportion of* the offspring between Horse 27 and Horse 28 *would be expected to be palomino*, according to Scientist 3. Information about Horse 27 and Horse 28 is shown in Figure 1. Horse 27 and Horse 28 are both palomino horses. According to Scientist 3, *all horses with palomino coloring inherited two copies of the* red *allele and two copies of the* C^{Cr} *allele*. If both Horse 27 and Horse 28 only have the *red* and C^{Cr} alleles, then they can only pass on the *red* and C^{Cr} alleles to their offspring. Therefore, *all of the offspring* will also be palomino. The correct answer is (H).

31. **C**

The question asks if *a horse with a single red allele and the Gene C genotype of* $C^{Cr}C^{N}$ has *a red or black base coat* and is *palomino*, according to Scientist 1. According to Scientist 1, *all horses with at least one copy of the red allele will have a red base coat color*. Eliminate (A) and (B) because they incorrectly state that the horse will have a *black* base coat color. Now refer to Table 1, which shows that Scientist 1 believes a red base coat horse with the Gene C genotype of $C^{Cr}C^{N}$ will be palomino. Eliminate (D). The correct answer is (C).

32. **J**

The question asks which scientist *proposed an inheritance pattern in which the breeding of two black base coat horses could result in offspring with a red base coat*. Each scientist shows up in more than one answer, so start with Scientist 1. According to Scientist 1, *all horses with at least one copy of the red allele will have a red base coat color*. The only way for a horse to have a black coat is to have two copies of the black allele. If both parents have only black alleles, it is impossible to pass on a red allele to offspring. Eliminate (F) and (H) because both include Scientist 1. Scientist 3 is included in both

remaining answers, so check Scientist 2. According to Scientist 2, *the red coat color requires two red alleles to be present in a horse*. Therefore, it is possible for the black horses to have one copy of the red allele but display a black coat color due to the dominant black allele. If the black horses have one copy of the red allele, it is possible they could both pass on the red allele to an offspring and produce a red base coat. Eliminate (G) because it doesn't include Scientist 2. The correct answer is (J).

33. **A**

The question asks if *Horses 7 and 8 and their offspring* offer more support to the *explanation of Scientist 2 or Scientist 3*. Information about Horse 7, Horse 8, and their offspring is shown in Figure 1. Horse 7 and Horse 8 are both palomino horses, and out of the four offspring, three are palomino and the fourth has a red base coat but is not palomino. According to Scientist 3, *both the red base coat color and the cream dilution require two copies of the respective alleles to be present*. Therefore, Horse 7 and Horse 8 would be able to pass on only red and cream alleles and all offspring would have two copies of the red and cream alleles and be palomino. Since Horses 7 and 8 produced a non-palomino offspring, Scientist 3's explanation is not supported. Eliminate (C) and (D) because they both incorrectly state that this portion of the diagram supports Scientist 3 more. According to Scientist 2, *all palomino horses inherited two copies of the red allele* and *at least one C^{Cr} allele*. Therefore, all of the offspring would inherit two copies of the red allele, but each parent could pass on either a C^{Cr} or a C^{N} allele. Some of the offspring could inherit the C^{N} allele from each parent and would then not be palomino. This is supported by the diagram. If horses need only one C^{Cr} allele to be palomino, this suggests that the C^{Cr} allele is dominant; eliminate (B). The correct answer is (A).

34. **J**

The question asks for the petri dish that contained the strain of *S. griseus* that had the *least effective antibacterial properties*. The tables do not provide any information about *antibacterial properties*, so look at the description of the experiment for a reference to these properties. The introductory paragraph states that *streptomycin* is an antibiotic cultured from the bacterium *Streptomyces griseus*. The passage states that the *effectiveness* of streptomycin *increases with concentration*. Therefore, the strain of *S. griseus* with the lowest concentration of streptomycin will have the least antibacterial properties. Eliminate (F) and (H) because they refer to dishes with the *highest streptomycin concentration*. Streptomycin concentration is shown in Table 2, so look at Table 2. Table 2 shows that the lowest concentration of streptomycin was the S5 strain grown in the yellow petri dish. Eliminate (G) because it refers to S4 in the red dish. The correct answer is (J).

35. **D**

The question asks if the *zone of inhibition* for *S4 in the petri dishes without added glucose* would have been *larger for the solutions in the petri dishes with neutral or alkaline pH*. The question states that *the higher the streptomycin concentration, the larger the* zone of inhibition. Information about whether glucose is added or not is shown in Table 1. The petri dish labeled blue represents an *alkaline* pH with *no glucose added*, and the petri dish labeled yellow represents a *neutral* pH with *no glucose added*. Eliminate (A) and (C) because they incorrectly compare the red- and green-labeled petri dishes. Compare the *streptomycin concentration* of these two petri dishes. Information about *streptomycin concentration* is shown in Table 2. In the *S4* row, the blue (alkaline) petri dish had a *streptomycin concentration* of 93 μg/mL, and the yellow (neutral)

petri dish had a *streptomycin concentration* of 76 µg/mL. Therefore, the *alkaline* petri dish had a larger concentration; eliminate (B). The correct answer is (D).

36. **F**

The question asks if the *results of the experiment for S6* are consistent with the statement that *a given strain of S. griseus grown with glucose supplementation* in a *neutral solution is generally higher than that produced by bacteria grown in alkaline solution*. Information about whether glucose is added or not is shown in Table 1. The petri dish labeled red represents an *alkaline* pH with *glucose added*, and the petri dish labeled green represents a *neutral* pH with *glucose added*. Eliminate (G) and (J) because they incorrectly compare the blue- and yellow-labeled petri dishes. Compare the *streptomycin concentration* of these two petri dishes. Information about *streptomycin concentration* is shown in Table 2. In the *S6* row, the red (alkaline) petri dish had a *streptomycin concentration* of 198 µg/mL, and the green (neutral) petri dish had a *streptomycin concentration* of 102 µg/mL. Therefore, the *neutral* petri dish did not have a larger concentration; eliminate (H). The correct answer is (F).

37. **B**

The question asks how the *streptomycin concentration in the petri dishes* changed *as the amount of glucose solution decreased from 2 mL to 1 mL to 0 mL*, based on a table provided in the question. The question states that the petri dishes with added glucose in the experiment had *1 mL of glucose solution added*. The question also provides a data table for orange-labeled petri dishes with *2 mL of the same concentration glucose solution* added. The question also states that the orange-labeled petri dishes also had 0.05 g of potassium bicarbonate added, which means they are alkaline. In order to examine how the streptomycin concentration changed as glucose changed,

examine only the dishes in which the other conditions were the same. Refer to Table 1 first. The red and blue petri dishes are alkaline, as are the orange dishes, so these are the three colors that should be compared for each strain. Information about *streptomycin concentration* is shown in Table 2 and the table in the question. The orange-labeled (2 mL of glucose solution) petri dish in the S4 strain had a *streptomycin concentration* of 239 μg/mL, the red-labeled (1 mL of glucose solution) petri dish in the S4 strain had a *streptomycin concentration* of 215 μg/mL, and the blue-labeled (0 mL of glucose solution) petri dish in the S4 strain had *streptomycin concentration* of 93 μg/mL. Therefore, the *streptomycin concentration* for the S4 strain *decreased only* as the amount of added glucose decreased from 2 mL to 0 mL. The S5 and S6 strains show a similar trend. The correct answer is (B).

38. **G**

The question asks which dish likely served as a *control for the effect of glucose supplementation on bacteria grown in an alkaline solution* for each of the *3 S. griseus strains*. *Glucose supplementation* and *alkaline* are listed in Table 1, so look at Table 1. Table 1 shows that the dishes with the red and blue labels were alkaline. Eliminate (H) and (J) because these are not alkaline. Of the two alkaline petri dishes, the dish with the red label had glucose added and the dish with the blue label did not. A control in an experiment is one that does not receive the experimental treatment, so the blue-labeled dishes with no glucose added served as the control. The correct answer is (G).

39. **B**

The question asks for the amount of *S. griseus spores* placed in each petri dish. The table does not provide any information about the amount of spores in each dish, so look at the description of the experiment for a reference to spores. The passage states that

researchers separated 60 mg of S4 spores in 4 equal portions, and each portion was placed…inside one of 4 petri dishes. Dividing 60 mg into 4 portions results in an amount of 15 mg per dish. The correct answer is (B).

40. **H**

The question asks for the *mass, in micrograms* of *streptomycin* produced in the *red-labeled petri dish* containing *S5* if the dish contained *5 mL of culture solution*. *Streptomycin concentration* is shown in Table 2 in terms of micrograms of purified streptomycin per milliliter of culture solution (μg/mL), so look at Table 2. Table 2 shows that the red-labeled petri dish with Strain S5 had a streptomycin concentration of 101 micrograms per milliliter of culture. Since there are 5 milliliters, multiply 101 by 5 to get approximately 500 micrograms. The correct answer is (H).