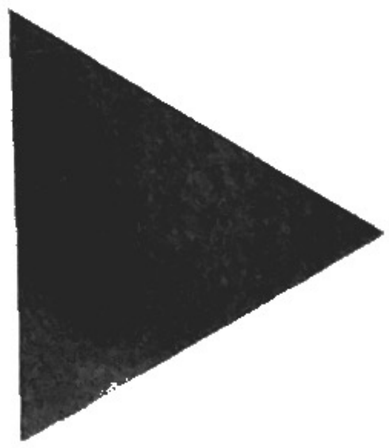
Form 73C

(June 2015)



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If you wish to order a photocopy of your answer document—including, if you took the Writing Test, a copy of your written essay—please use the order form on the inside back cover of this booklet.

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ENGLISH TEST

45 Minutes—75 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 the underlined part. In most cases, you are to choose the one that best 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 best, choose "NO CHANGE." In some cases, you will find in the right-hand column a question about the underlined part. You are to choose the best answer to the question.

You will also find questions about a section of the passage, or about 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 best and fill in 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

What Elephants Learn

Cynthia Moss has been studying elephants, since 1972 (1) when she started the now-famous (2) Amboseli Elephant Research Project in Amboseli National Park in Kenya. An author, lecturer, filmmaker, and a fierce advocate for elephants—which face a daunting array of threats to their survival, from droughts to human encroachment (3) Moss is widely considered an expert on the social behavior of these creatures. [4]

1. **A.** NO CHANGE
   B. elephants, since 1972,
   C. elephants since 1972,
   D. elephants' since 1972

2. **F.** NO CHANGE
   G. more-then-famous
   H. now famously
   J. famously

3. **A.** NO CHANGE
   B. encroachment—
   C. encroachment:
   D. encroachment,

4. At this point, the writer is considering adding the following true statement:

   Humans are among the threats to the animal's survival.

   Should the writer make this addition here?

   F. Yes, because it presents a crucial factor in determining Moss's interest in working with elephants.
   G. Yes, because it introduces the idea that becomes the focus of the rest of the essay.
   H. No, because the essay is focused on elephants and does not otherwise mention a human presence in their lives.
   J. No, because this information is already provided in the paragraph.

A key finding from her intensive, field, studies is the extent to which elephant survival depends on learned behavior. [5]

As Moss has observed, however, a calf must learn how to use its trunk. At first a young elephant will drink by kneeling down at the water's edge and it sipped directly with its mouth. The habit of pulling water into its trunk. Then releasing that water into its mouth develops only after months as if witnessing other elephants doing so. [6] [7] [8] [9]

On occasion, Moss will see a calf stick its trunk into the mouth of its mother and pull out a bit of whatever plant material she is eating. In this way, the calf learns what kinds of vegetation are safe to eat on the savanna, where poisonous plants also grow.

[1] Elephants live in family groups, each one headed by a matriarch. [2] This senior female teaches adolescent females by modeling proper care of younger elephants. [3] One of Moss's most memorable observations in which this regard involved three elephants. [10] [4] These were a matriarch, Echo, and two offspring: Enid, a ten-year-old female, and Ely, also named by Moss. [11] [5] Echo showed Enid how to care for Ely by staying close to him when he was feeding and sleeping and by running to his aid when he signaled his distress. [6] Ely not only overcame his early limitations, but he also grew up to be a confident young bull. [12]

5. **A.** NO CHANGE
   B. intensive field studies
   C. intensive field studies,
   D. intensive, field studies

6. **F.** NO CHANGE
   G. for instance,
   H. as always,
   J. by now,

7. **A.** NO CHANGE
   B. which it sips
   C. and sipping
   D. that sips

8. **F.** NO CHANGE
   G. trunk and then
   H. trunk then by
   J. trunk

9. **A.** NO CHANGE
   B. when witnessing
   C. of witnessing
   D. then witness

10. **F.** NO CHANGE
    G. in this regard
    H. ones that
    J. which

11. **A.** NO CHANGE
    B. a baby male.
    C. an elephant.
    D. the third.

12. **F.** NO CHANGE
    G. he also will have grown
    H. he also had grown
    J. also growing

[7] Ely was born with deformed feet that initially prevented him from walking. [13]

Moss has brought compelling stories and information about elephants is provided to (14) an ever-expanding audience. She hopes others will in turn become advocates for the animals she admires and understands in ways few others do.

13. For the sake of logic and cohesion, the best placement for Sentence 7 would be:
    A. where it is now.
    B. before Sentence 1.
    C. after Sentence 3.
    D. after Sentence 4.

14. F. NO CHANGE
    G. is given by her to
    H. is reaching
    J. to

Question 15 asks about the preceding passage as a whole.

15. Suppose the writer's goal had been to write a brief essay focusing on some aspect of animal behavior in the wild. Would this essay accomplish that goal?
    A. Yes, because the essay focuses on Moss's research on how elephants on the savanna learn to identify their various family members.
    B. Yes, because the essay focuses on elephants on the savanna and some of the behaviors they display, as studied by Moss.
    C. No, because the essay focuses instead on how elephants have evolved in Kenya as compared to how they have evolved in other parts of Africa.
    D. No, because the essay focuses on elephants that Moss studies in zoos around the world.

PASSAGE II

The following paragraphs may or may not be in the most logical order. Each paragraph is numbered in brackets, and question 29 will ask you to choose where Paragraph 2 should most logically be placed.

Ghost Signs

[1]

Seeing remnants (16) of outdoor advertisements from a bygone era, (17) they are called "ghost signs." I search for them on city streets, in town squares, and along country roads. Some are weather-beaten billboards; others are faded murals painted years ago on the sides of old buildings. Whatever words remain (18) *Fruiterer* . . . *Apothecary* . . . *Gramophones* . . . *Pan-Handle Coffee*—are often barely

16. F. NO CHANGE
    G. The sight of remnants
    H. To see remnants
    J. Remnants

17. A. NO CHANGE
    B. era that is no more,
    C. era of another time,
    D. era of times past,

18. F. NO CHANGE
    G. remain—
    H. remain,
    J. remain;

legible, pale fragments of yesterday's consumer culture should strike me as silly or sad. After all, there they are: (19)

advertising products and businesses that no longer exist. (20)

Yet, they themselves survive without apology, with instead, (21) their simple claims and complex colors. The contrast draws me in every time.

[2]

I collect ghost signs. Not the signs themselves, but photos of them. Driving home from school one chilly October evening, my collection got its start. (22) I had made the same drive countless times before, but I had never noticed the sign.

[3]

Then there it was, an ad for "Joe's Café," perched atop a metal pole, which was upright under (23) a cape of kudzu vines. Maybe it was the way the setting sun's illumination of the yellowing plastic. (24)

Maybe it was the small hole, a clue to vandalism (25) or of a hailstorm. Instead, something about the sign (26) touched me. I pulled over. In the twilight, I got out of the car, snapped a picture with my phone, and sent it to some friends. I vowed to return with my camera to better capture the forlorn, luminous beauty of my discovery. Since that dusky evening, I have been happily haunted by ghost signs.

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19. **A.** NO CHANGE
B. that should
C. they should
D. should they

20. **F.** NO CHANGE
G. products and businesses,
H. products, and businesses
J. products: businesses

21. **A.** NO CHANGE
B. apology, with, instead,
C. apology with instead,
D. apology with instead

22. **F.** NO CHANGE
G. Driving home from school one chilly October evening was the beginning of my collection.
H. I started my collection one chilly October evening, driving home from school.
J. The start of my collection came to me driving home from school one chilly October evening.

23. Given that all the choices are accurate, which one echoes a central point the writer makes about ghost signs?

A. NO CHANGE
B. was not what interested me,
C. might have been wood,
D. was disappearing

24. **F.** NO CHANGE
G. illuminating setting sun on
H. sun illuminated the set on
J. setting sun illuminated

25. **A.** NO CHANGE
B. evidence of
C. evidently
D. DELETE the underlined portion.

26. **F.** NO CHANGE
G. On the other hand, something
H. Meanwhile, something
J. Something

[4]

Once in a while, I take a friend with me on my searches. People who know of my fascination will point me to where they think they have seen a ghost sign. Favorite finds include an ad for sliced bread, one for a "modern" motel, and yet another for fountain pen repair services. As fun as it is to have company, my best hunts have been solitude[27] trips. I appreciate the beauty of ghost signs more when I like the signs,[28] am alone.

27. **A.** NO CHANGE
B. solitarily
C. solitaire
D. solo

28. **F.** NO CHANGE
G. I, like, the signs
H. I, like the signs,
J. I like, the signs,

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

29. For the sake of logic and cohesion, Paragraph 2 should be placed:

A. where it is now.
B. before Paragraph 1.
C. after Paragraph 3.
D. after Paragraph 4.

30. Suppose the writer's primary purpose had been to describe starting and enjoying a new hobby. Would this essay accomplish that purpose?

F. Yes, because it presents the event that led to the narrator becoming interested in finding ghost signs and taking photographs of them.
G. Yes, because it describes the narrator's experience of learning from a friend where to find ghost signs and how much fun the search itself can be.
H. No, because it uses negative terms such as *lonely* and *forlorn* to describe the narrator's experience of collecting ghost signs.
J. No, because it instead describes two hobbies—photography and collecting ghost signs—and does not indicate which one gave the narrator more pleasure.

PASSAGE III

Blue Holes of the Bahamas

[1]

The Bahamas, a series of semitropical islands off the southeast coast of the United States, which are[31] home to some of the most unusual geological formations in the world: underwater caves known as blue holes. [A] These

31. **A.** NO CHANGE
B. States, are
C. States are
D. States,

vertical caves were formed over thousands of years, and their cold depths provide abundant clues to the islands' past.

[2]

[32] During the formation process, tiny grains of calcium carbonate separated from the seawater. These grains built up, then compacted, forming the limestone that makes up the islands. [B] Over time, rainwater permeated the porous limestone but was trapped just above sea level, buoyed by the denser seawater below. Jostled back and forth by tides, the layer of slightly acidic, brackish water eroded limestone faster than either rainwater—or seawater—could alone. As the limestone eroded caves formed.

[3]

Over time periods in which the weather changed drastically, sea levels rose and fell by hundreds of feet. This allowed the cave-creating process to be a process that repeated at different depths hundreds of feet apart. The roofs of many caves collapsed, leaving the chambers beneath exposed.

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32. Given that all the following statements are true, which one, if added here, would most effectively introduce the topic of this paragraph?
    - **F.** The Bahamas were formed from calcium carbonate, a component of seawater.
    - **G.** Calcium carbonate, a common rock substance, is also found in seawater.
    - **H.** Much of the land making up the Bahamas is still underwater.
    - **J.** Most types of limestone contain calcium carbonate.

33. **A.** NO CHANGE
    - **B.** are building
    - **C.** will build
    - **D.** build

34. **F.** NO CHANGE
    - **G.** being buoyed because of
    - **H.** it being buoyed by
    - **J.** buoying it was

35. **A.** NO CHANGE
    - **B.** rainwater, or seawater,
    - **C.** rainwater, or seawater
    - **D.** rainwater or seawater

36. **F.** NO CHANGE
    - **G.** limestone, eroded caves
    - **H.** limestone eroded, caves
    - **J.** limestone eroded caves,

37. Which choice most specifically illustrates how long the cave-creating process took?
    - **A.** NO CHANGE
    - **B.** Between ice ages and the more temperate eras that followed them,
    - **C.** During this extended time,
    - **D.** As time passed,

38. **F.** NO CHANGE
    - **G.** repeat again and again at various different depths.
    - **H.** repeat at different depths that varied.
    - **J.** repeat at different depths.

Some of these blue holes open to small contained caves [39] others open to miles-long interconnected tunnels. [40]

[4]

The telltale sign of a blue hole is a circular patch of water striking darker [41] than the water surrounding them. [42] (The darker water indicates greater depth.)

[C] Divers have found the remains of turtles and alligators. Now extinct on [43] the islands, stalactites and stalagmites from a time when the caves were above sea level, and artifacts of early human inhabitants.

[5]

[D] Hundreds of blue holes can be sighted off [44] the Bahamas. So far, most remain unexplored by divers, owing in part to the danger of cave diving. Often the only clue to the mysteries below is the tantalizing sight of dark blue water leading deep into the sea.

39. **A.** NO CHANGE
B. caves that
C. caves;
D. caves,

40. At this point, the writer is considering adding the following true sentence:

> At 663 feet deep, Dean's Blue Hole in Long Island, Bahamas, is a popular cave-diving destination.

Should the writer make this addition here?

F. Yes, because it supports the preceding sentence by providing an example of a blue hole that is very deep.
G. Yes, because it allows the reader to visualize a specific blue hole in the Bahamas.
H. No, because it offers a detail that is unrelated to the paragraph's focus on the cave-creating process.
J. No, because it does not provide an adequate description of Dean's Blue Hole.

41. **A.** NO CHANGE
B. strikingly darker
C. strikingly darkly
D. striking darkly

42. **F.** NO CHANGE
G. these.
H. one.
J. it.

43. **A.** NO CHANGE
B. alligators now. Extinct on
C. alligators now extinct on
D. alligators now extinct. On

44. Which choice most effectively suggests the shape of blue holes as described earlier in the essay?

F. NO CHANGE
G. dot the waters of
H. darken parts of
J. appear in

Question 45 asks about the preceding passage as a whole.

45. The writer wants to add the following sentence to the essay:

> In these depths, fossils and ancient rock formations are incredibly well preserved.

This sentence would most logically be placed at:

A. Point A in Paragraph 1.
B. Point B in Paragraph 2.
C. Point C in Paragraph 4.
D. Point D in Paragraph 5.

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PASSAGE IV

The Walls of Rome

[1]

Rome, founded on the banks of the Tiber River, boasts two ancient walls that, when they were built, surrounded the city. [A] Although both were built as walls intended to defend the city protectively (46) and stood ten meters tall they (47) were erected under different historical circumstances.

[2]

It's (48) thought that the Servian Wall was constructed in the early fourth century BCE and named after Servius Tullius, who was the sixth king of Rome. The eleven-kilometer wall encircled Rome's seven hills and stood entirely on the east side of the Tiber River. [B]

[3]

The Aurelian Wall, (49) built in the late third century CE by the Roman Emperor Aurelian, was more sturdier than (50) the older wall. It was nineteen kilometers long greatly expanded (51) and surrounded the city of Rome as well as a small section of the Tiber's west bank. Erected almost 600 years after the Servian Wall, the Aurelian Wall protected Rome while the army was away, defending the empire's far-flung frontiers from enemy attacks. [C] The massive wall deterred many enemies who might have been tempted to attack Rome during those intervals the city was sparsely defended.

46. **F.** NO CHANGE
G. defensive walls for defending the city
H. walls to provide defensive protection
J. defensive walls

47. **A.** NO CHANGE
B. tall. They
C. tall, they
D. tall; they

48. **F.** NO CHANGE
G. Among historians, its
H. Its'
J. Its

49. **A.** NO CHANGE
B. Wall had been
C. Wall, which,
D. Wall, was

50. **F.** NO CHANGE
G. much sturdier than
H. more sturdier then
J. much sturdier then

51. Which of the following placements for the underlined portion makes it most clear that it was Rome that had expanded?

A. Where it is now
B. After the words *surrounded the*
C. After the word *Rome*
D. After the words *of the*

[4]

[D] The Aurelian Wall featured eighteen large gateways permitting both foot and chariot traffic in and out of the city. In other words, a series of 381 towers and eleven smaller side gates called posterns were evenly spaced along the rest of the wall. Both the posterns and the towers served as defensive positions for protecting Rome. Walkable passages lined the inner side of the wall.

[5]

The Romans used bricks to build the Aurelian Wall.

However, only small portions of the Servian Wall remains, some of which can be seen inside a chain restaurant located beneath Rome's central train station. [57] It could, perhaps, be considered ironic that remnants

52. F. NO CHANGE
G. Therefore, a
H. Instead, a
J. A

53. A. NO CHANGE
B. Both, the posterns and the towers,
C. Both the posterns, and the towers
D. Both the posterns and the towers,

54. Which choice provides the most specific information about how posterns and towers served as defensive positions?
F. NO CHANGE
G. by providing cover for armed guards during an enemy attack.
H. in that they were designed to help Rome repel enemy attacks.
J. by keeping Rome safe from invaders.

55. Given that all the statements are true, which one provides the most effective transition to Paragraph 5?
A. NO CHANGE
B. Today, the Aurelian Wall continues to dominate the Roman landscape.
C. Emperor Aurelian did not survive long enough to see the completion of the Aurelian Wall.
D. Before the Servian and Aurelian Walls were built, ancient Rome was most likely protected by mounds of earth.

56. F. NO CHANGE
G. were remaining,
H. has remained,
J. remain,

57. At this point, the writer is considering adding the following true statement:

To hasten the construction of the Aurelian Wall, existing architectural features, such as aqueducts, were incorporated into the structure.

Should the statement be added here?
A. Yes, because it adds information about the Aurelian Wall that supports the main idea of the paragraph.
B. Yes, because it demonstrates how innovative and practical the Roman engineers were.
C. No, because it provides a detail that interrupts the paragraph's discussion of the Servian Wall in the present day.
D. No, because it provides a level of detail about the wall that is inconsistent with the level of detail in the rest of the essay.

of a wall that once protected the future capital of one of the ancient world's most famous empires are now preserved and recognized as historically significant by archaeologists.

58. F. NO CHANGE
G. what was yet to be appointed to the designation of
H. what would in reality become the
J. a would be but not yet

59. Which choice best completes the irony that is set up in the first part of the sentence?
A. NO CHANGE
B. as important relics of Rome's earliest boundaries.
C. within a fast-food restaurant.
D. in such varied locations.

Question 60 asks about the preceding passage as a whole.

60. The writer is considering adding the following statement to the essay:

> The two walls can be thought of as concentric circles emanating from the ancient Roman Forum.

If the writer were to add this statement, it would most logically be placed at:
F. Point A in Paragraph 1.
G. Point B in Paragraph 2.
H. Point C in Paragraph 3.
J. Point D in Paragraph 4.

PASSAGE V

James Forten, Revolutionary Sailmaker

[1]

"I have been taken prisoner for the liberties of my country, and never will prove a traitor to her interests." [A] Before entering a British-run prison during the American Revolution prisoner of war, James Forten, said these words as a patriotic rejection of his British captor's offer to free him and educate him in England.

61. A. NO CHANGE
B. Revolution, prisoner of war James Forten,
C. Revolution, prisoner of war James Forten
D. Revolution prisoner of war, James Forten

[2]

[62] He knew his chance of surviving imprisonment were slim.

62. Which of the following sentences, if added here, would provide the most logical transition from the preceding paragraph to this paragraph?
F. Forten was one of many to serve in the American Revolution.
G. Forten's rejection was risky.
H. Such an offer must have been unusual.
J. Many would later admire Forten's skills as an innovator.

63. A. NO CHANGE
B. chances to surviving
C. chances of surviving
D. chance to survive

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Forten also knew that if released at the war's end or as part of an exchange, he, a free black man, might be captured and sold into slavery as he journeyed home to Philadelphia. Forten not only survived but became one of the most successful businessmen and ardent abolitionists in the United States. [65]

[3]

Forten's rise to prosperity began upon his return home when a sailmaker hired him to design, mend, and sew sails. Forten's knowledge of ships, gained from his experiences as a sailor during the war, paid off. He rose to the position of foreman, and in 1798, Forten bought the sailmaker's business. [B]

[4]

Employing thirty-eight workers, white and black, Forten held his employees to a high standard. Viewed as a professional academy, his business produced skilled apprentices who constructed sails for dozens of vessels. The bulk of Forten's business records was probably lost after the business was sold. [68] Soon, many regarded Forten as the city's premier sailmaker in Philadelphia.

64. F. NO CHANGE
G. exchange: he as
H. exchange—he
J. exchange. He

65. If the writer were to delete the preceding sentence, the paragraph would primarily lose:
A. a description of the tactics Forten used to survive imprisonment and become a successful businessman and abolitionist.
B. a transition from a discussion of the ramifications of Forten's decision to a discussion of his success as a sailmaker and abolitionist.
C. a comparison between Forten's work as a businessman and his role as an abolitionist.
D. an analysis of how Forten transitioned from a prisoner to a businessman and abolitionist.

66. F. NO CHANGE
G. had arose
H. had rose
J. raised

67. A. NO CHANGE
B. workers, whom were
C. workers:
D. workers

68. The writer is considering deleting the preceding sentence. Should the sentence be kept or deleted?
F. Kept, because it establishes a correlation between Forten's business records and the early success of Forten's business.
G. Kept, because it provides evidence to support the claim that Forten employed thirty-eight workers.
H. Deleted, because it blurs the paragraph's focus on the success of Forten's business.
J. Deleted, because it contradicts the idea that Forten had high expectations for his business.

69. A. NO CHANGE
B. foremost leading sailmaker in his native Philadelphia.
C. premier sailmaker in the city of Philadelphia.
D. premier sailmaker.

[5]

A savvy businessman, Forten

supported abolitionist causes. When
70
the War of 1812 closed the port of Philadelphia,

Forten used his profits in real estate and lending to

support his sailmaking enterprise. When the need for

smaller, quicker vessels changed sail design, he adapted.
71
One thing Forten refused to do, however, was fit a slave

ship with sails.

[6]

In fact, historians estimate that the sailmaker

invested over greater than half his fortune in work
72
to abolish slavery. [C] One of the wealthiest men in

Philadelphia, Forten helped finance the *Liberator*, a

powerful abolitionist newspaper. [D] The Revolutionary

War veteran, who served in this war, believed that the
73
United States owed all residents the right to freedom.

70. Given that all the following choices are accurate, which one most effectively provides a transition into the next sentence of the essay?

F. NO CHANGE
G. had fought for his country in the Revolutionary War.
H. donated to such places as schools and hospitals.
J. maintained his business during difficult times.

71. **A.** NO CHANGE
B. smaller, and more
C. smaller, more
D. smaller

72. **F.** NO CHANGE
G. over more than half of his own
H. more than over half of his
J. over half of his

73. **A.** NO CHANGE
B. veteran, cultivating the sails of freedom,
C. veteran, nurturing the road to reform,
D. veteran

Questions 74 and 75 ask about the preceding passage as a whole.

74. The writer is considering adding the following true statement to the essay:

> Writing under a pen name, Forten himself submitted numerous articles and letters, calling for the end of slavery.

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

F. Point A in Paragraph 1.
G. Point B in Paragraph 3.
H. Point C in Paragraph 6.
J. Point D in Paragraph 6.

75. Suppose the writer's primary purpose had been to describe in detail the daily operations of a successful business in the newly formed United States. Would this essay accomplish that purpose?

A. Yes, because it describes how Forten became a successful businessman and how his business survived numerous challenges.
B. Yes, because it describes the historical significance of Forten's business and how the business evolved.
C. No, because it focuses more on Forten as a patriot, businessman, and abolitionist than on the daily workings of his business.
D. No, because it focuses primarily on contrasting Forten's work as an abolitionist with his work as a sailmaker.

END OF TEST 1

STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

MATHEMATICS TEST

60 Minutes—60 Questions

DIRECTIONS: Solve each problem, choose the correct answer, and then fill in the corresponding oval on your answer document.

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.

DO YOUR FIGURING HERE.

1. Which of the following expressions is equivalent to $a(4 - a) - 5(a + 7)$?

A. $-2a - 35$
B. $-2a + 7$
C. $-a^2 - a - 35$
D. $-a^2 - a + 7$
E. $-2a^3 - 35$

2. Which of the following inequalities orders the numbers 0.2, 0.03, and $\frac{1}{4}$ from least to greatest?

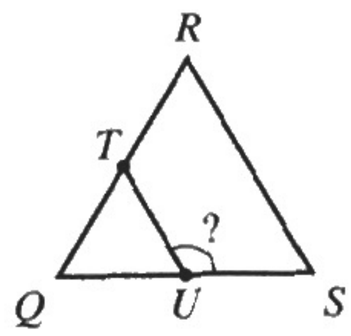
F. $0.2 < 0.03 < \frac{1}{4}$
G. $0.03 < 0.2 < \frac{1}{4}$
H. $0.03 < \frac{1}{4} < 0.2$
J. $\frac{1}{4} < 0.03 < 0.2$
K. $\frac{1}{4} < 0.2 < 0.03$

3. If $x^2 + 4 = 29$, then $x^2 - 4 = ?$

A. 5
B. $\sqrt{21}$
C. 21
D. 25
E. 33

DO YOUR FIGURING HERE.

4. In the figure below, $\triangle QRS$ is equilateral, side $\overline{QR}$ is bisected by T, and side $\overline{QS}$ is bisected by U. What is the degree measure of $\angle TUS$?



F. 60°
G. 90°
H. 120°
J. 135°
K. 150°

5. A line in the standard (x,y) coordinate plane passes through the points $(-3,4)$ and $(2,-5)$. The slope of the line:

A. is positive.
B. is zero.
C. is negative.
D. is undefined.
E. cannot be determined from the given information.

6. The square root of a certain number is approximately 9.2371. The certain number is between what 2 integers?

F. 3 and 4
G. 4 and 5
H. 9 and 10
J. 18 and 19
K. 81 and 99

7. A bag contains 10 pieces of flavored candy: 4 lemon, 3 strawberry, 2 grape, and 1 cherry. One piece of candy will be randomly picked from the bag. What is the probability the candy picked is NOT grape flavored?

A. $\frac{1}{5}$

B. $\frac{1}{4}$

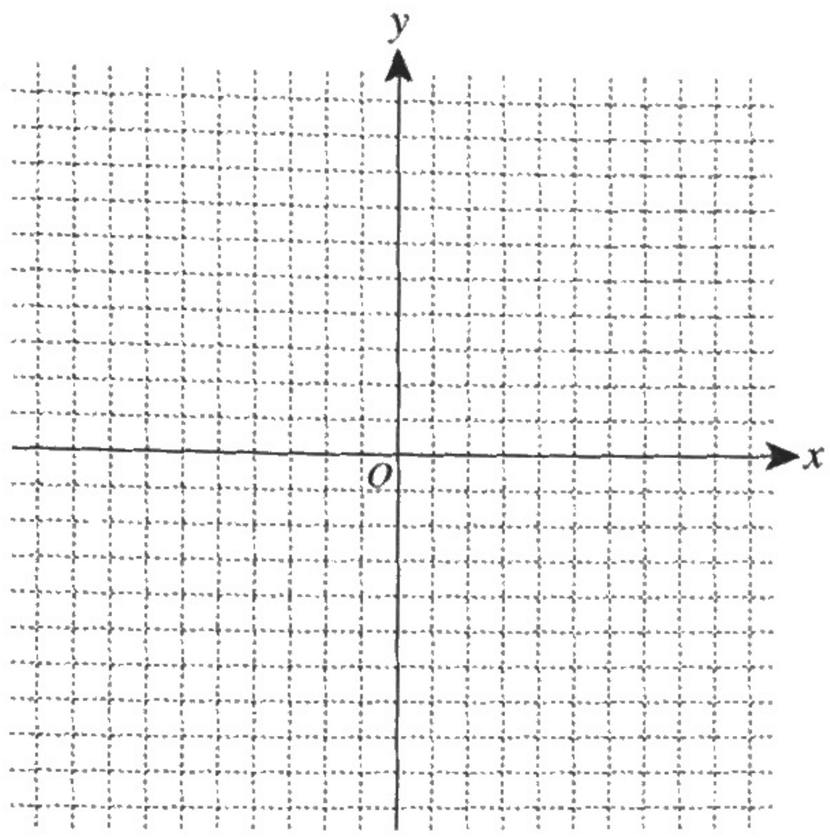
C. $\frac{1}{2}$

D. $\frac{3}{4}$

E. $\frac{4}{5}$

DO YOUR FIGURING HERE.

8. When points A and $B(-3,4)$ are graphed in the standard (x,y) coordinate plane below, the midpoint of $\overline{AB}$ will be $(1,2)$. What will be the coordinates of point A ?



F. $(-7,6)$
G. $(-2,1)$
H. $(-1,3)$
J. $(-1,8)$
K. $(5,0)$

9. Andrea manages a company that currently has 116 customers, which is 8 more than twice the number of customers the company had 1 year ago. How many customers did the company have 1 year ago?

A. 50
B. 54
C. 62
D. 66
E. 100

10. Joseph will have a 200-foot-long fence installed around his yard. The A+ Fence Company charges a \$500.00 fee, plus a set amount per foot of fence. The A+ Fence Company has given Joseph an estimate of \$2,200.00 to install the fence around his yard. What is the set amount per foot of fence?

F. \$ 4.00
G. \$ 4.80
H. \$ 8.50
J. \$11.00
K. \$13.50

11. Which of the following expressions is equivalent to $(3x+6)(2x-1)$?

A. $15x - 6$
B. $15x - 1$
C. $6x^2 - 6$
D. $6x^2 + 9x - 6$
E. $6x^2 + 12x - 6$

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DO YOUR FIGURING HERE.

Use the following information to answer questions 12–14.

Carrie's Chocolate Shop and Tamika's Treat Shop both sell candy in boxes. The table below lists the price (the total amount the customer pays) of each box of candy sold at the shops. For each shop, there is a linear relationship between the price of a box of candies and the number of candies in that box. These are the only numbers of candies that can be purchased at the shops.

Candies per box (n)	Price at Carrie's Chocolate Shop (c)	Price at Tamika's Treat Shop (t)
5	\$1.50	\$2.25
10	\$2.50	\$2.75
15	\$3.50	\$3.25
20	\$4.50	\$3.75
25	\$5.50	\$4.25
30	\$6.50	\$4.75

12. Jeremy has \$10.00 in quarters to spend on candy. What is the maximum number of quarters he would have left after paying for a box of 25 candies at Tamika's Treat Shop?

(Note: Each quarter is worth \$0.25.)

F. 10
G. 17
H. 22
J. 23
K. 30

13. At Tamika's Treat Shop, what is the average price per candy in a box of 20, to the nearest \$0.01 ?

A. \$0.08
B. \$0.19
C. \$0.23
D. \$0.30
E. \$0.45

14. Which of the following equations gives the relationship between the price in dollars, c, and the number of candies, n, in a box of candies at Carrie's Chocolate Shop?

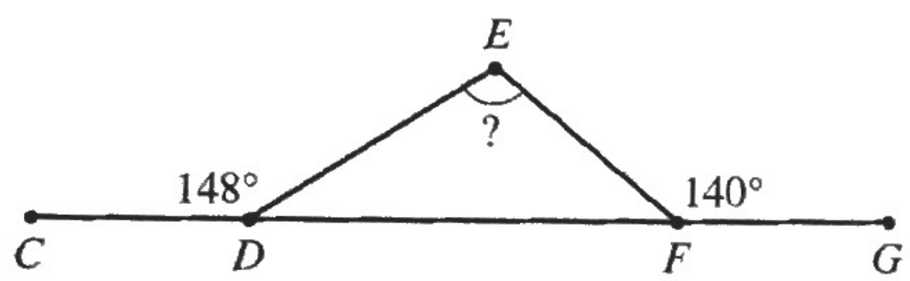
F. $c = 0.2n + 0.5$
G. $c = 0.3n$
H. $c = 0.5n + 1.5$
J. $c = \quad n - 3.5$
K. $c = 1.4n - 5.5$

DO YOUR FIGURING HERE.

15. Mr. Chang made the true statement "At least 1 student in this class is a section leader in the band." Which of the following statements *must* be FALSE?

A. At most 1 student in this class is not a section leader in the band.
B. Most students in this class are section leaders in the band.
C. Every student in this class is a section leader in the band.
D. Some students in this class are not section leaders in the band.
E. No student in this class is a section leader in the band.

16. In the figure below, vertices D and F of $\triangle DEF$ lie on $\overline{CG}$, the measure of $\angle CDE$ is 148°, and the measure of $\angle EFG$ is 140°. What is the measure of $\angle DEF$?



F. 72°
G. 98°
H. 100°
J. 108°
K. 116°

17. A company ships notepads in rectangular boxes that each have inside dimensions measuring 9 inches long, 9 inches wide, and 12 inches tall. Each notepad is in the shape of a cube with an edge length of 3 inches. What is the maximum number of notepads that will fit in 1 closed box?

A. 10
B. 11
C. 12
D. 22
E. 36

18. The function f is defined as $f(x) = -4x^3 - 4x^2$. What is $f(-4)$?

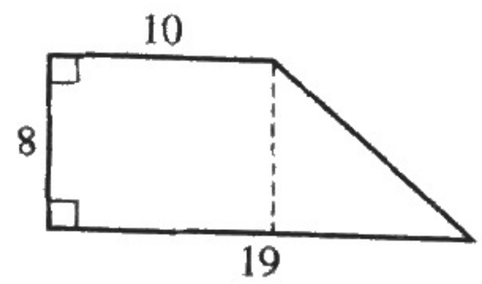
F. −320
G. −192
H. 16
J. 192
K. 320

19. Which of the following (x,y) pairs is the solution for the system of equations $x + 2y = 4$ and $-2x + y = 7$?

A. (−2,3)
B. (−1,2.5)
C. (1,1.5)
D. (2,1)
E. (4,0)

DO YOUR FIGURING HERE.

20. The floor plan of Helena's kitchen is shown in the figure below; the given dimensions are in feet. Helena will install baseboard along the bottom of each wall (shown by solid lines in the floor plan). According to the floor plan, which of the following distances is closest to the perimeter, in feet, of Helena's kitchen?



F. 40
G. 50
H. 60
J. 100
K. 120

21. A 5-inch-by-7-inch photograph was cut to fit exactly into a 4-inch-by-6-inch frame. What is the area, in square inches, of the part of the photograph that was cut off?

A. 2
B. 10
C. 11
D. 12
E. 24

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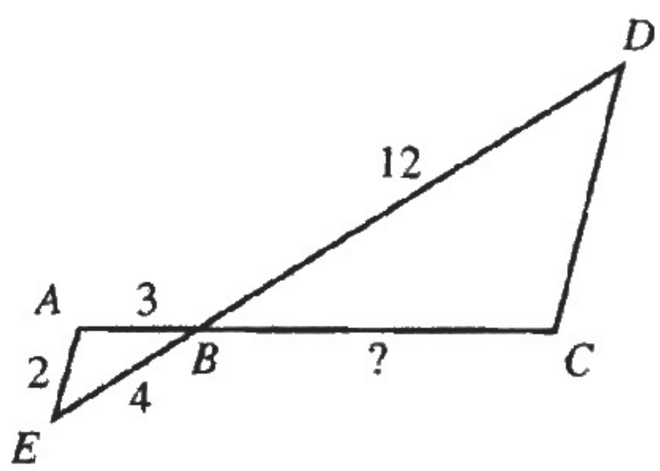
22. In the figure shown below, $\overline{AE} \parallel \overline{DC}$, $\overline{AC}$ and $\overline{DE}$ intersect at B, and the given lengths are in feet. What is the length, in feet, of $\overline{BC}$?



F. 6
G. 8
H. 9
J. 10
K. 11

23. Given that $x \leq 4$ and $x + y \geq 5$, what is the LEAST value that y can have?

A. −9
B. −1
C. 0
D. 1
E. 9

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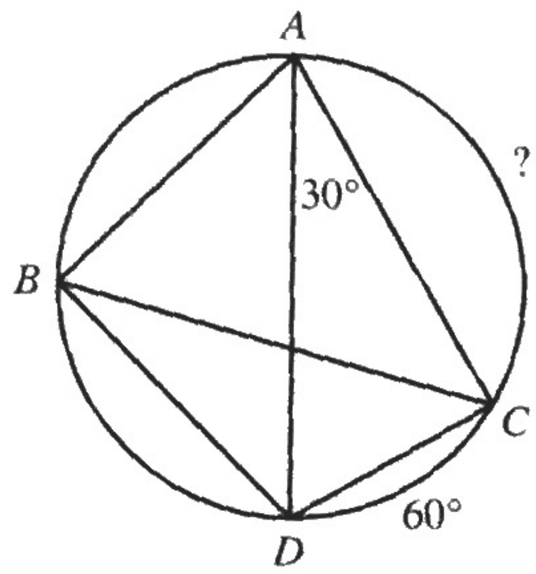
DO YOUR FIGURING HERE.

24. The circle shown below has diameter $\overline{AD}$, and points B and C lie on the circle. The measure of $\angle CAD$ is 30°, and the measure of minor arc $\overset{\frown}{CD}$ is 60°. What is the measure of minor arc $\overset{\frown}{AC}$?



F. 75°
G. 90°
H. 105°
J. 120°
K. 150°

25. One caution sign flashes every 4 seconds, and another caution sign flashes every 10 seconds. At a certain instant, the 2 signs flash at the same time. How many seconds elapse until the 2 signs next flash at the same time?

A. 6
B. 7
C. 14
D. 20
E. 40

26. For all nonzero values of a and b, the value of which of the following expressions is *always* negative?

F. $a - b$
G. $-a - b$
H. $|a| + |b|$
J. $|a| - |b|$
K. $-|a| - |b|$

27. Graphed in the same standard (x,y) coordinate plane are a circle and a parabola. The circle has radius 3 and center (0,0). The parabola has vertex (−3,−2), has a vertical axis of symmetry, and passes through (−2,−1). The circle and the parabola intersect at how many points?

A. 0
B. 1
C. 2
D. 3
E. 4

28. 40% of 250 is equal to 60% of what number?

F. 150
G. 160
H. $166\frac{2}{3}$
J. 270
K. 375

DO YOUR FIGURING HERE.

29. Which of the following inequalities is equivalent to $-2x - 6y > 2y - 4$?

A. $x < -4y + 2$
B. $x > -4y + 2$
C. $x < 2y + 2$
D. $x < 4y + 2$
E. $x > 4y + 2$

30. For an angle with measure α in a right triangle, $\sin \alpha = \frac{40}{41}$ and $\tan \alpha = \frac{40}{9}$. What is the value of $\cos \alpha$?

F. $\frac{9}{41}$

G. $\frac{41}{9}$

H. $\frac{9}{40}$

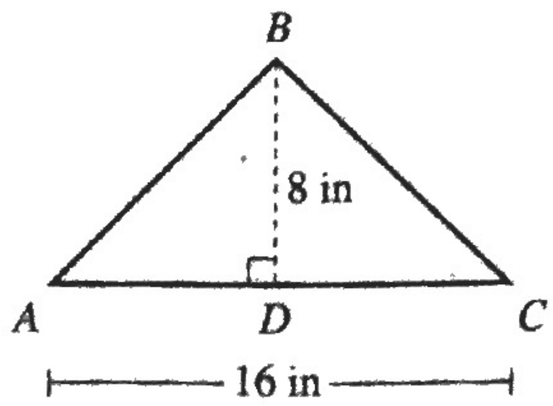
J. $\frac{9}{\sqrt{1{,}519}}$

K. $\frac{9}{\sqrt{3{,}281}}$

31. The perimeter of rectangle $ABCD$ is 96 cm. The ratio of the side lengths AB:BC is 3:5. What is the length, in centimeters, of $\overline{AB}$?

A. 6
B. 18
C. 30
D. 36
E. 60

32. For $\triangle ABC$ shown below, base $\overline{AC}$ has a length of 16 inches and altitude $\overline{BD}$ has a length of 8 inches. The area of a certain square is equal to the area of $\triangle ABC$. What is the length, in inches, of a side of the square?

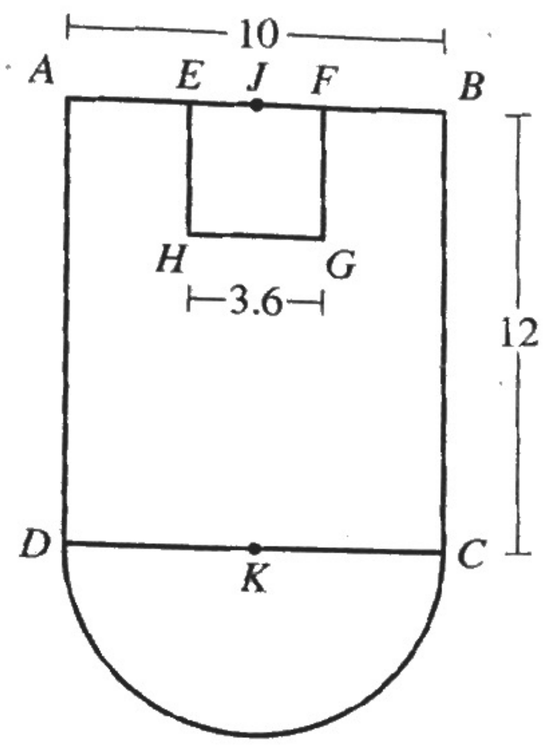


F. 6
G. 8
H. 12
J. 16
K. 32

DO YOUR FIGURING HERE.

Use the following information to answer questions 33–36.

In the figure shown below, $ABCD$ is a rectangle, $EFGH$ is a square, and $\overline{CD}$ is the diameter of a semicircle. Point K is the midpoint of $\overline{CD}$. Point J is the midpoint of both $\overline{AB}$ and $\overline{EF}$. Points E and F lie on $\overline{AB}$. The 3 given lengths are in meters.



33. The length of $\overline{EH}$ is what percent of the length of $\overline{AD}$?

A. 15.6%
B. 30%
C. 36%
D. 43.2%
E. 50%

34. What is the length, in meters, of $\overline{JD}$?

F. 13
G. 15.6
H. 17
J. $\sqrt{44}$
K. $\sqrt{244}$

35. What is the length, in meters, of arc $\overset{\frown}{CD}$?

A. 2.5π
B. 5π
C. 6.25π
D. 10π
E. 25π

36. The figure will be placed in the standard (x,y) coordinate plane so that K is at the origin, $\overline{AB}$ is parallel to the x-axis, and 1 meter equals 1 coordinate unit. Which of the following values could be the y-coordinate of H ?

F. 1.8
G. 3.6
H. 8.4
J. 10
K. 12

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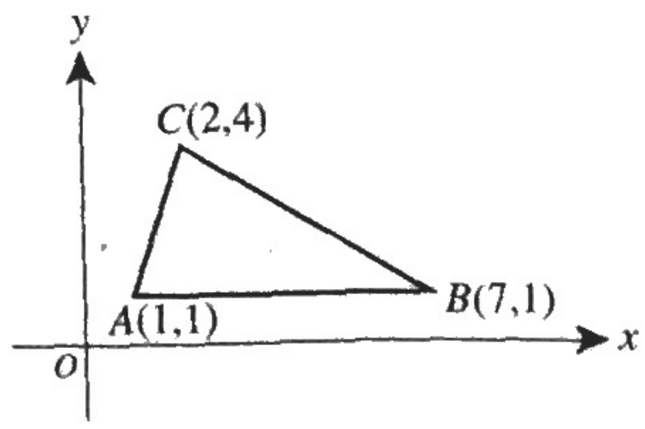
DO YOUR FIGURING HERE.

37. What is the length, in coordinate units, of the altitude from C to $\overline{AB}$ in $\triangle ABC$ shown in the standard (x,y) coordinate plane below?



A. 3
B. 5
C. 6
D. $\sqrt{10}$
E. $\sqrt{13}$

38. At a local post office, on average, 3 customers are in line when the post office closes each day. The probability, P, that exactly n customers are in line when the post office closes can be modeled by the equation $P = \frac{3^n e^{-3}}{n!}$. Given that $e^{-3} \approx 0.05$, which of the following values is closest to the probability that exactly 2 customers are in line when the post office closes?

F. 0.08
G. 0.11
H. 0.15
J. 0.23
K. 0.45

39. What is the amplitude of the function $f(x) = \frac{1}{2}\cos(3x + \pi)$?

A. $\frac{1}{3}$
B. $\frac{1}{2}$
C. $\frac{3}{2}$
D. 2
E. 3

DO YOUR FIGURING HERE.

40. A sphere with radius x inches has a volume of 12 cubic inches. What is the value of x ?

(Note: The volume of a sphere with radius r is $\frac{4}{3}\pi r^3$.)

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

G. $\frac{3}{\pi}$

H. $\sqrt[3]{\frac{9}{\pi}}$

J. $\sqrt[3]{\frac{16}{\pi}}$

K. $\sqrt[3]{9\pi}$

41. For 20 quiz scores in a typing class, the table below gives the frequency of the scores in each score interval. Which score interval contains the median of the scores?

Score interval	Frequency
96–100	3
91–95	1
86–90	3
81–85	4
76–80	9

A. 96–100
B. 91–95
C. 86–90
D. 81–85
E. 76–80

42. The angle of elevation to the top of a tree from a spot on level ground 50 feet from the base of the tree is 40°. Which of the following is closest to the height of the tree, in feet?

(Note: $\sin 40° \approx 0.64$, $\cos 40° \approx 0.77$, $\tan 40° \approx 0.84$)

F. 32
G. 38
H. 42
J. 60
K. 65

43. After visiting Florida State University during spring break, Francisco rents a car for 2 days to travel around Florida. He has \$255 to spend on car rental for the 2 days. Sea Horse Car Rental charges \$50 per day and \$0.25 per mile. Ocean Blue Car Rental charges \$60 per day and \$0.20 per mile. Which company, if either, allows him to travel more miles for the 2 days, and how many miles more?

(Note: Taxes are already included in the rental charges.)

A. Sea Horse, 20
B. Ocean Blue, 55
C. Ocean Blue, 100
D. Sea Horse, 135
E. Francisco would get the same maximum number of miles from each company.

DO YOUR FIGURING HERE.

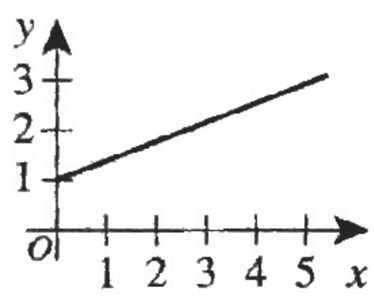
44. The table below gives experimental data values for variables x and y. Theory predicts that y varies directly with x. Based on the experimental data, which of the following values is closest to the constant of variation?

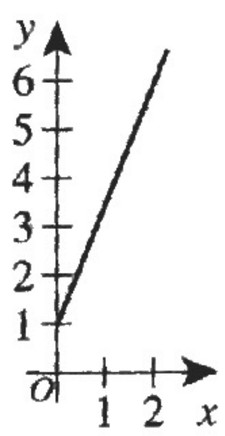
(Note: The variable y varies directly with the variable x provided that $y = kx$ for some nonzero constant k, called the *constant of variation*.)

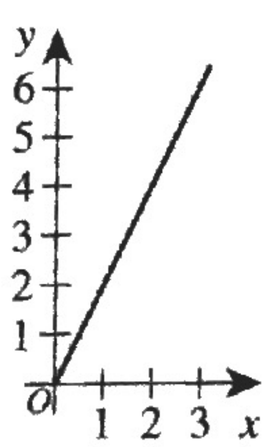
x	y
2.75	0.140
8.50	0.425
14.75	0.750
16.75	0.850
21.00	1.050

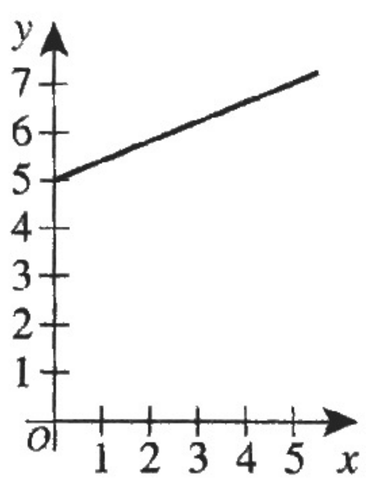
F. −2.61
G. 0.05
H. 3.61
J. 15.90
K. 20.00

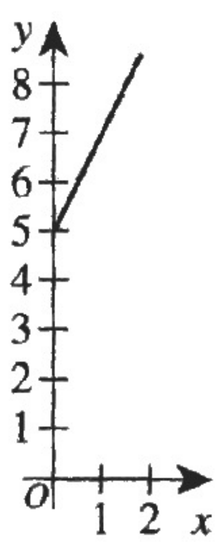
45. During a snowstorm, the relationship between the depth of accumulated snow, y inches, and the elapsed time, x hours, was modeled by the equation $2x - 5y = -5$. One of the following graphs in the standard (x,y) coordinate plane models the equation for positive values of x and y. Which one?

A.


B.


C.


D.


E.


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DO YOUR FIGURING HERE.

46. Diana is baking bread, and the original recipe calls for $1\frac{1}{2}$ teaspoons of yeast and $2\frac{1}{2}$ cups of flour. Diana will use the entire contents of a packet that contains $2\frac{1}{4}$ teaspoons of yeast and will use the same ratio of ingredients called for in the original recipe. How many cups of flour will Diana use?

F. $1\frac{7}{8}$

G. $3\frac{1}{4}$

H. $3\frac{1}{2}$

J. $3\frac{3}{4}$

K. 4

47. For all nonzero values of x, $\frac{12x^6 - 9x^2}{3x^2} = ?$

A. $4x^3 - 3x$
B. $4x^3 - 3$
C. $4x^4 - 9x^2$
D. $4x^4 - 3x$
E. $4x^4 - 3$

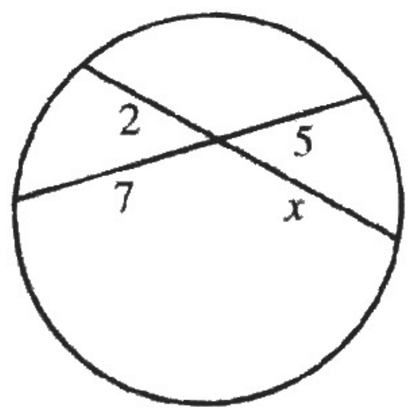
48. Four matrices are given below.

$$W = \begin{bmatrix} 1 & 2 \\ 5 & 8 \end{bmatrix} \quad X = \begin{bmatrix} 3 & 9 \\ 7 & 4 \end{bmatrix} \quad Y = \begin{bmatrix} 1 & 3 & 7 \\ 4 & 2 & 6 \end{bmatrix} \quad Z = \begin{bmatrix} 5 & 8 \\ 2 & 9 \\ 3 & 7 \end{bmatrix}$$

Which of the following matrix products is undefined?

F. WX
G. WY
H. YZ
J. XW
K. XZ

49. A circle, 2 chords, and some lengths, in centimeters, are shown in the figure below, which is not drawn to scale. What is the value of x ?



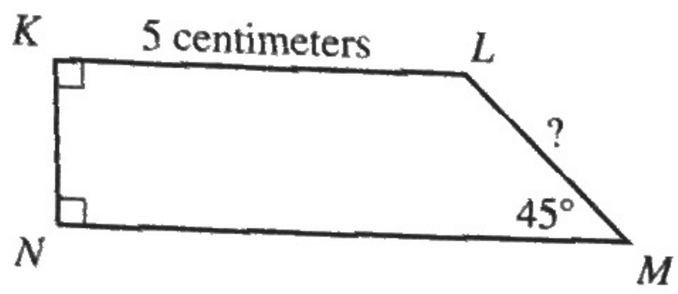
(Note: When two chords intersect, the product of the lengths of the segments of one chord equals the product of the lengths of the segments of the other chord.)

A. 10
B. 13.5
C. 14
D. 17.5
E. 19

DO YOUR FIGURING HERE.

50. If the area of $KLMN$ in the figure below is 12 square centimeters, what is the length, in centimeters, of $\overline{LM}$?

F. $2\sqrt{2}$
G. $5\sqrt{2}$
H. $6\sqrt{2}$
J. $2\sqrt{3}$
K. $\frac{12}{5}\sqrt{3}$



51. A teacher assigns each of her 18 students a different integer from 1 through 18. The teacher forms pairs of study partners by using the rule that the sum of the pair of numbers is a perfect square. Assuming the 9 pairs of students follow this rule, the student assigned which number *must* be paired with the student assigned the number 1 ?

A. 16
B. 15
C. 9
D. 8
E. 3

52. Given that $(x + 2)$ and $(x - 1)$ are factors of the quadratic expression below, what are the values of a and b ?

$$x^2 + (a + 2)x + a + b$$

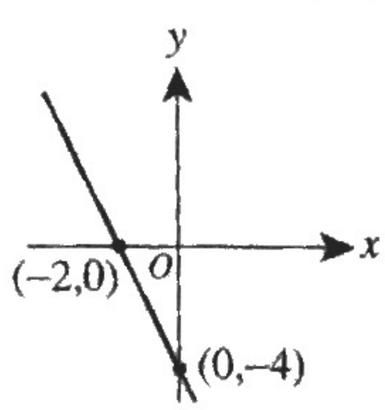
	a	b
F.	−4	5
G.	−3	1
H.	−3	5
J.	−1	3
K.	−1	−1

53. The height above the ground, h units, of an object t seconds after being thrown from the top of a building is given by the equation $h = -2t^2 + 10t + 48$. An equivalent factored form of this equation shows that the object:

A. starts at a point 2 units off the ground.
B. reaches a maximum height of 3 units.
C. reaches a maximum height of 8 units.
D. reaches the ground at 3 seconds.
E. reaches the ground at 8 seconds.

54. In the standard (x,y) coordinate plane below, the line through the points $(-2,0)$ and $(0,-4)$ is graphed. Which of the following values is the slope of any line that is in this plane and is perpendicular to the graphed line?

F. −2
G. −1
H. −0.5
J. 0.5
K. 1



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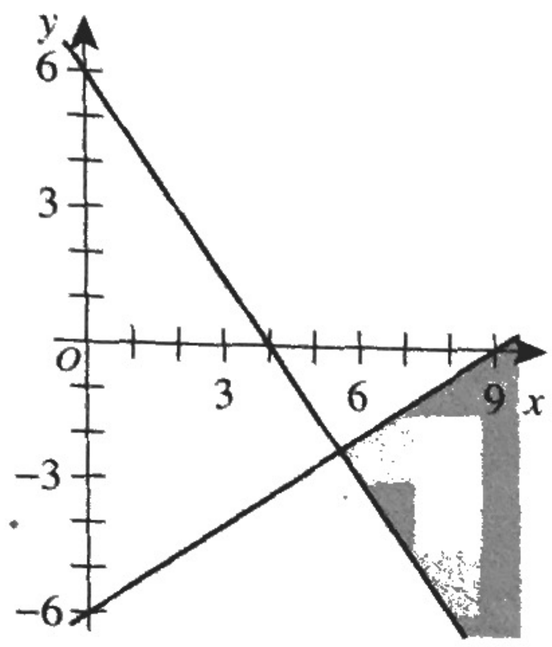
DO YOUR FIGURING HERE.

55. The shaded portion of the graph in the standard (x,y) coordinate plane below represents the solution set of one of the following systems of linear inequalities. Which one?



A. $y \leq \frac{2}{3}x - 6$ and $y \geq -\frac{3}{2}x + 6$

B. $y \geq \frac{2}{3}x - 6$ and $y \geq -\frac{3}{2}x + 6$

C. $y \geq \frac{2}{3}x - 6$ and $y \leq -\frac{3}{2}x + 6$

D. $y \leq \frac{3}{2}x - 6$ and $y \geq -\frac{2}{3}x + 6$

E. $y \geq \frac{3}{2}x - 6$ and $y \leq -\frac{2}{3}x + 6$

56. Whenever j and k are positive integers such that $(\sqrt{3})^j = 27^k$, what is the value of $\frac{j}{k}$?

F. $\frac{1}{6}$

G. $\frac{3}{2}$

H. 3

J. 4

K. 6

57. A finite arithmetic sequence has 7 terms, and the first term is $\frac{3}{4}$. What is the difference between the mean and the median of the 7 terms?

A. 0

B. $\frac{3}{4}$

C. $\frac{4}{3}$

D. 3

E. 4

DO YOUR FIGURING HERE.

58. In the circle with center D shown below, the length of radius $\overline{CD}$ is 4 cm, the length of $\overline{BC}$ is 1 cm, and $\overline{BC}$ is perpendicular to radius $\overline{AD}$ at B. When $\angle ADC$ is measured in degrees, which of the following expressions represents the length, in centimeters, of $\widehat{AC}$?

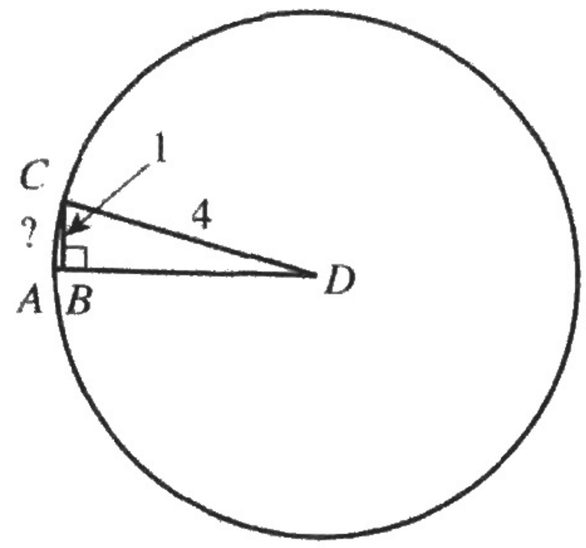
F. $\frac{\pi}{45}\left(\sin^{-1}\left(\frac{1}{4}\right)\right)$

G. $\frac{\pi}{45}\left(\cos^{-1}\left(\frac{1}{4}\right)\right)$

H. $\frac{2\pi}{45}\left(\sin^{-1}\left(\frac{1}{4}\right)\right)$

J. $\frac{2\pi}{45}\left(\cos^{-1}\left(\frac{1}{4}\right)\right)$

K. $\frac{2\pi}{45}\left(\tan^{-1}\left(\frac{1}{4}\right)\right)$



59. Which of the following linear equations gives the vertical asymptote for the graph of $y = \frac{201x + 202}{203x + 204}$ in the standard (x,y) coordinate plane?

A. $x = -\frac{201}{203}$

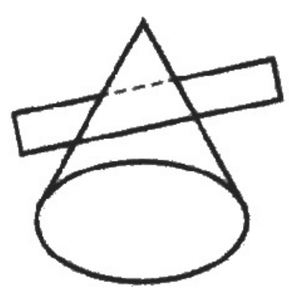
B. $x = -\frac{202}{201}$

C. $x = -\frac{202}{204}$

D. $x = -\frac{204}{203}$

E. $x = -\frac{403}{407}$

60. A right circular cone is intersected by a plane that is not parallel to the base and does not intersect the base or vertex, as shown in the figure below. One of the following figures shows the shape of the intersection. Which figure is it?



F.

G.

H.

J.

K.

END OF TEST 2

STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

DO NOT RETURN TO THE PREVIOUS TEST.

READING TEST

35 Minutes—40 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 *A Map of Home* by Randa Jarrar (©2008 by Randa Jarrar).

I don't remember how I came to know this story, and I don't know how I can possibly still remember it. On August 2, the day I was born, my *baba* (father) stood at the nurses' station of St. Elizabeth's Medical Center of Boston with a pen between his fingers and filled out my birth certificate. He had raced down the stairs seconds after my birth, as soon as the doctor had assured him that I was all right. While filling out my certificate, Baba realized that he didn't know my sex for sure but that didn't matter; he'd always known I was a boy, had spoken to me as a boy while I was in Mama, and as he approached the box that contained the question, NAME OF CHILD, he wrote with a quivering hand and in his best English cursive, Nidal (strife; struggle). It was not my grandfather's name, and Baba, whose name is Waheed and who was known during his childhood as Said, was the only son of the family, so the onus of renaming a son after my grandfather fell squarely upon his shoulders. It was an onus he brushed off his then-solid shoulders unceremoniously, like a piece of lint or a flake of dandruff; these are analogies my grandfather would the next day angrily pen in a letter sent from Jenin to Boston.

When he'd filled out the entire form, Baba regally relayed it to the nurse, who he remembers was called Rhonda. Then Baba, in flip-flops, turned around and raced up the white-tiled hallway, bypassed the elevator, ran up the three floors to the maternity ward, and burst into the birthing room.

"How is my queen?" said Baba, caressing my mother's face.

"She's lovely," Mama said, thinking he meant me, "and eight whole pounds, the buffalo! No wonder my back was so . . . " Baba's brow furrowed, and Mama couldn't finish her complaint, because, eager to correct his mistake, Baba was already out the door and running down the white-tiled hallway, past new mothers and their red-faced babies, past hideous robes in uncalled-for patterns, bypassing the elevator, and sliding down the banister of the staircase. He raced on, screaming for Rhonda, where is Rhonda, help me, Rhonda, an outcry that provided the staff with three weeks' worth of laughter.

Rhonda emerged with the birth certificate in hand, and Baba, who is not usually known for laziness, grabbed a pen and added at the end of my name a heavy, reflexive, feminizing, possessive, cursive "I."

Moments later, Mama, who had just been informed of my *nom de guerre*, got out of bed and walked us to the elevator, the entire time ignoring my baba, who was screaming, "Nidali is a beautiful name, so unique, come on Ruz, don't be so rash, you mustn't be walking, you need to rest!"

Mama must not have fought long, or who knows: maybe she went to the nurses' station and talked to Rhonda, and maybe Rhonda told her that the birth certificate was already sent out—that Mama would have to go to the office of the City of Boston clerk and see the registrar of vital statistics, where they keep the birth *and* death certificates—and maybe Mama, who is the most superstitious of all humans (even more than Baba, and to that she'll attest) shuddered at the thought of taking me, a newborn, through the heat and the Boston traffic to a place where, she must've imagined, people went to fill out death certificates, and she must've further imagined that going on such a trip, to such a place, would surely bring about my death—because I still have my name.

Whenever I imagined Baba running out just after my birth and sliding through the hallways like a movie star, I knew he must have embellished. Baba liked to do that: tell stories that were impossible but true all at once, especially if those stories made him look like a rock star. This is because he used to be a writer and was now an architect. Our little apartment was filled with blueprints and plastic models of houses instead of notebooks and poetry: a reality that filled him with great sadness. So Baba put that sadness into these stories.

Mama liked to expose him when he told such stories; she was his paparazzo, his story-cop. This was because she was the true rock star: a musician who no longer played music. Our house was filled with Baba's blueprints and plastic models of houses and with my schoolwork and toys and dolls and a hundred half pairs of socks instead of a piano: a reality that filled her with great sadness.

I knew from the beginning that home meant embellishing, and that's why I loved school. Teachers were there; they taught us facts based on reality.

1. The point of view from which the passage is told is best described as that of:
   A. a first person narrator who re-creates a story about her parents and the birth of their first child, events which happened before the narrator was born.
   B. a first person narrator who offers insight into characters' thoughts and relates actions mainly from a time she was too young to remember.
   C. an omniscient third person narrator who relates the thoughts and actions of several characters.
   D. a limited third person narrator who relates events most closely from the perspective of Nidali.

2. The narrator mentions a piece of lint and a flake of dandruff primarily to:
   F. imply that the narrator's grandfather didn't value family traditions.
   G. provide examples of movements Baba made while filling out the birth certificate.
   H. emphasize the importance of naming the baby after the baby's grandfather.
   J. illustrate the casual way in which the narrator's father ignored a tradition.

3. Based on the passage, Mama's reaction to learning the name Baba gave the baby can best be described as:
   A. disapproval followed by resignation.
   B. annoyance followed by amusement.
   C. embarrassment followed by outrage.
   D. shock followed by resentment.

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4. The sequence of actions described in the seventh paragraph (lines 54–68) can best be characterized as:
   F. Baba's exaggerated account of Mama's trip to the office of the City of Boston clerk.
   G. a scenario the narrator imagines could have happened.
   H. the story of how Nidali got her name from Mama's point of view.
   J. a memory that the narrator shares to reveal more about her personality.

5. The narrator concludes that Mama didn't go to the office of the City of Boston clerk based on the fact that:
   A. Baba believed it would be unlucky to change a baby's name at that point.
   B. going there would've required taking the baby out in a severe winter storm.
   C. Mama had a tendency to change her mind quickly.
   D. the narrator still has the name Nidali.

6. In line 78, the phrase *these stories* most nearly refers to:
   F. the conflicting stories about the origins of Nidali's name.
   G. Baba's notebooks and poetry.
   H. the embellished tales Baba liked to tell.
   J. the narrator's accounts of her family's time in Boston.

7. According to the passage, which of the following emotions do Baba and Mama share regarding their professional lives?
   A. Pride
   B. Anxiety
   C. Sadness
   D. Contentment

8. Of the following characters, which one does the narrator describe as the most superstitious?
   F. Mama
   G. Baba
   H. Nidali
   J. Rhonda

9. The narrator most strongly suggests that Mama does which of the following when Baba tells stories?
   A. Yawns and rolls her eyes in mock boredom
   B. Goes about her business and ignores him
   C. Chimes in with exaggerations and white lies
   D. Corrects him about the accuracy of details

10. In the passage, the narrator makes which of the following distinctions?
   F. Home is a place of embellished stories, whereas school is a place of facts and reality.
   G. Mama is a true rock star, whereas Baba is an amateur musician.
   H. Being an architect made Baba happy, whereas being a writer made him miserable.
   J. Writing requires great imagination, whereas playing music requires great skill.

Passage II

SOCIAL SCIENCE: Passage A is adapted from the book *Seabiscuit: An American Legend* by Laura Hillenbrand (©2001 by Laura Hillenbrand). Passage B is adapted from the article "The Flop Heard Round the World" by Peter Carlson (©2007 by The Washington Post).

Passage A by Laura Hillenbrand

The horseless carriage was just arriving in San Francisco, and its debut was turning into one of those colorfully unmitigated disasters that bring misery to everyone but historians. Consumers were staying away from the "devilish contraptions" in droves. In San Francisco in 1903, the horse and buggy was not going the way of the horse and buggy.

For good reason. The automobile, so sleekly efficient on paper, was in practice a civic menace, belching out exhaust, kicking up storms of dust, becoming hopelessly mired in the most innocuous-looking puddles, and tying up horse traffic. Incensed local lawmakers responded with monuments to legislative creativity. The laws of at least one town required automobile drivers to stop, get out, and fire off Roman candles every time horse-drawn vehicles came into view. Massachusetts tried and, fortunately, failed to mandate that cars be equipped with bells that would ring with each revolution of the wheels. In some towns police were authorized to disable passing cars with ropes, chains, and wires. San Francisco didn't escape the legislative wave. Bitter local officials pushed through an ordinance banning automobiles from all tourist areas, effectively exiling them from the city.

Nor were these the only obstacles. The asking price for the cheapest automobile amounted to twice the $500 annual salary of the average citizen—some cost three times that much—and all that bought you was four wheels, a body, and an engine. "Accessories" like bumpers, carburetors, and headlights had to be purchased separately. Navigation was a nightmare. The first of San Francisco's road signs were only just being erected, hammered up by an enterprising insurance underwriter who hoped to win clients by posting directions into the countryside, where drivers retreated for automobile "picnic parties" held out of the view of angry townsfolk.

The first automobiles imported to San Francisco had so little power that they rarely made it up the hills. The grade of Nineteenth Avenue was so daunting for the engines of the day that watching automobiles straining for the top became a local pastime.

Passage B by Peter Carlson

In the mid-1950s, Ford Motor Company was building not one, not two, but 18 varieties of Edsel, including a convertible and a station wagon. The designers came up with some interesting ideas. They created a push-button transmission and put it in the middle of the steering wheel, where most cars have a horn. And they fiddled with the front end: Where other cars had horizontal chrome grilles, the Edsel would have a vertical chrome oval in its grille. It was new! It was different!

Unfortunately, it didn't work. It couldn't suck in enough air to cool the engine. "They had to keep opening up that oval to get more air in there," says Jim Arnold, who was a trainee in Edsel's design shop. "And it didn't look as good."

Edsel didn't have its own assembly lines, so the cars were produced in Ford and Mercury plants, which caused problems. Every once in a while, an Edsel would roll past workers who were used to Mercurys or other Fords. Confused, they sometimes failed to install all the parts before the Edsel moved on down the line. Cars without parts can be a problem, of course, but other aspects of the Edsel juggernaut worked perfectly—the hype, for instance. The Edsel PR team touted the glories of the cars, but wouldn't let anybody see them. When they finally released a photo, it turned out to be a picture of . . . the Edsel's hood ornament. And hundreds of publications actually printed it!

On September 4, 1957, proclaimed by Ford as E-Day, nearly 3 million Americans flocked to showrooms to see the Edsel. Unfortunately, very few of them bought the Edsel. "We couldn't even get people to drive it," says C. Gayle Warnock, Edsel's public relations director. "They just didn't like the car. They just didn't like the front end."

But styling was hardly the worst problem. Oil pans fell off, trunks stuck, paint peeled, doors failed to close and the much-hyped "Teletouch" push-button transmission had a distressing tendency to freeze up. People joked that Edsel stood for "Every day something else leaks."

Another major problem was caused by bad luck: The Edsel was an upscale car launched a couple months after a stock market plunge caused a recession. Sales of all premium cars plummeted.

Before E-Day, Edsel's hypemeisters promised to sell 200,000 cars the first year. Actually, they sold 63,110. Sales dropped below 45,000 the second year. And only 2,846 of the 1960 models sold before Ford pulled the plug.

Questions 11–13 ask about Passage A.

11. Which of the following statements about automobiles in San Francisco in 1903 is best supported by Passage A?

A. They were affordable for the average citizen but unpopular nevertheless.
B. They were used more by tourists for sightseeing purposes than by citizens for practical purposes.
C. They failed to capture the public imagination in spite of huge public relations efforts.
D. They were considered a public nuisance by all but a small segment of the population.

12. Which of the following terms in Passage A is used more figuratively than literally?

F. Puddles (line 11)
G. Monuments (line 13)
H. Bells (line 18)
J. Hills (line 39)

13. The purpose of the quotation marks around the word *accessories* in line 29 is most likely to:

A. suggest that the features were actually essentials.
B. indicate that the word appeared in legal documents.
C. emphasize that the word was widely misunderstood.
D. clarify that inexpensive automobiles had some luxury features.

Questions 14–17 ask about Passage B.

14. Which of the following statements best captures how Passage B characterizes the failure of the Edsel?

F. It happened gradually and went unnoticed at the time by the public.
G. It happened quickly despite promising initial sales.
H. It was on a huge scale, occurred swiftly, and was a public event of sorts.
J. It occurred when other automakers were doing well and therefore embarrassed Ford all the more.

15. The statement in lines 43–45 is typical of Passage B in the way it:

A. contrasts data about the Edsel with data about other cars of the 1950s.
B. conveys the obligation that Ford executives felt to involve consumers in the design of the Edsel.
C. combines an industry perspective on the Edsel with that of the typical consumer.
D. suggests the entire Edsel enterprise was marked by extremes.

16. Which of the following events referred to in Passage B occurred first chronologically?

F. E-Day ended.
G. The stock market plunged.
H. Edsel sales dropped below 45,000.
J. Edsel sales reached 2,846.

17. As it is used in the passage, the term *premium cars* (line 86) serves primarily as a:

A. reference to what Edsels have become now that they are valued antiques.
B. name for a type of car that was ushered in by the makers of the Edsel.
C. label for a category of cars that the makers of the Edsel intended it to belong to.
D. derisive term used sarcastically by Edsel owners who were disappointed in their purchase.

Questions 18–20 ask about both passages.

18. A similarity between the two passages is that they both:

F. examine their topics from a significant distance of time.
G. reveal the author's professional background as a way of lending credibility to the text.
H. assert that automobiles have contributed little that is worthwhile to society.
J. incorporate information about traffic and road conditions into a discussion of automobile design.

19. An element of Passage A that is not present in Passage B is a reference to what aspect of the automobile culture?

A. Related legislation
B. Public opinion
C. Economics
D. Quotations from industry experts

20. If publicity experts had been assigned to build enthusiasm for the cars mentioned in Passage A using the methods described in Passage B, the experts would most likely have first released photos to the press that showed:

F. cars going up Nineteenth Avenue in San Francisco.
G. a single detail such as a gleaming headlight or a polished door handle.
H. the meticulous work done along the assembly line to ensure the quality of the new car.
J. an attractive young couple smiling as they enjoy a car ride past horses grazing in pastures.

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Passage III

HUMANITIES: This passage is adapted from the article "Winslow Homer: His Melancholy Truth" by John A. Parks (©2006 by VNU Business Media).

The images in the paintings of Winslow Homer epitomize a peculiarly American 19th-century world. Through Homer's eyes, it is a world in which people live in close contact with nature and natural forces, a world where landscape and ocean are viewed not as a paradise but as powers and presences that can be enjoyed and whose threats can sometimes be overcome. And, particularly in his later paintings, it is a world imbued with a stark and melancholy atmosphere.

In 1867, two of Homer's canvases were chosen to hang at the Great Exposition in Paris. The artist spent 10 months in the city, which later proved to have a profound effect on his art. A large display of Japanese prints was exhibited in the same building as his own paintings, and the process of simplification that it revealed and the wealth of pictorial invention it provided made a deep impression on the artist. The influence of Japanese art on Homer's painting was immediately apparent upon his return to the United States. The weakness of earlier compositions is replaced by a boldness and lucidity in which simple shapes are massed into powerful designs.

Although Homer's work of the 1870s gained strength, the artist continued to paint his genre subjects: tourist scenes, schoolchildren, and farm life. It wasn't until 1881, however, that he found the subject matter that would inspire him most. In that year, for reasons unknown, Homer went to England, where he elected to spend the summer at the town of Tynemouth on the coast of the North Sea. It is possible that he was searching for a town filled with the type of tourists and bathers that made his paintings of the Jersey shore successful back home. But Tynemouth was also a community of fishermen who wrested their livelihood from the dangerous and unpredictable waters of the North Sea. Moreover, the light and weather in that part of the world, so much farther north than Atlantic City, is much gloomier and more dramatic than that of the Jersey coast. It was there that Homer became enthralled by the dramas of the people who make their living from the ocean: the fishermen's wives staring out to sea as they wait for their men, the launch of the lifeboat to rescue sailors from a foundering ship, the agonizingly fragile fishing boats being tossed on angry waves. Here at last was a subject matter that matched the artist's deepest feelings. The dynamic and dangerous relationship between human activity and natural forces exposed in this setting would occupy Homer for many years to come. On his return to America he elected to leave New York and relocate to the rural town of Prouts Neck, Maine.

The legend of Winslow Homer is that he left New York civilization to become a recluse on the coast of Maine for the last 25 years of his life. In reality, the property at Prouts Neck—which included a large, rambling hotel building—was purchased by his brother Charles for the whole extended Homer family. The artist also built a studio with an ocean view just yards away from the family house so throughout the summers he could enjoy the company of his father, his brothers and their wives, as well as the year-round guests of the many local people whose friendship he valued. Homer continued to travel frequently, spending parts of the winter in the Caribbean. But the artist always lived alone, and when he was working, which was the large part of most of his days, he could be extremely short-tempered when interrupted.

The sea outside his window now inspired the artist to create what came to be known as his greatest paintings. The Maine coast is extremely rocky and prone to monstrous gales that—at their most powerful—can whip up the waves to 40 or 50 feet. Screaming winds can rip across the breakers, creating long horizontal trails of spray. Homer rendered this sea with all the understanding of a painter who knows to simplify and synthesize. In paintings such as *Eastern Point* and *Cannon Rock* the construction of the water has been reorganized into clear graphic shapes and strong directional lines that echo the Japanese printmaking that had such a lasting effect on his work. The rocks in the paintings are massed into powerful, almost flat, designs and the brushing has become energetic, as though feeding from the physical strength of the ocean. These paintings take on an abstract grandeur that has justly made them famous. They remain, however, haunting evocations of the eternal power of the ocean.

21. The main purpose of the passage is to:

- **A.** describe an artist's most famous painting and the experience that inspired it.
- **B.** explore the relationship between the natural world and the fine arts.
- **C.** provide an overview of an artist's career and important influences on that artist's work.
- **D.** describe the work of artists who epitomized a peculiarly American nineteenth-century world.

22. It can reasonably be inferred from the passage that which of the following scenes would most likely be the subject of a painting created by Homer late in his life?

- **F.** A family strolling along the boardwalk in Atlantic City
- **G.** A fishing boat being violently pitched about on a stormy ocean
- **H.** A farm nestled in the idyllic countryside
- **J.** A tourist sipping coffee at a Parisian café

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23. Based on the passage, the way Homer depicted shapes in his early work and the way he depicted them in his later work is best described as shifting from:
    A. weak to powerful.
    B. sharp to rounded.
    C. dark to light.
    D. uplifting to melancholy.

24. According to the passage, Homer felt fascination for the subjects that inspired him at Tynemouth for a:
    F. short time; Homer soon abandoned them for the genre subjects he'd been painting previously.
    G. short time; Homer found little commercial success painting those subjects.
    H. long time; Homer regularly returned to Tynemouth to paint.
    J. long time; Homer continued to be inspired by what he saw there for years.

25. According to the passage, the paintings that Tynemouth inspired Homer to create mainly featured:
    A. scenes of tourists and sunbathers enjoying the beach.
    B. the interplay between the sea and the lives of fishermen and their families.
    C. the dynamic struggle between farmers and the powerful forces of nature.
    D. the soothing yet dramatic beauty of the North Sea and its rocky shoreline.

26. The passage most strongly suggests that the main turning point in the development of Homer as an artist was his:
    F. discovery of subject matter that profoundly inspired him.
    G. sense of accomplishment at having paintings displayed at the Great Exposition.
    H. decision to spend winters in the Caribbean, where he was inspired by the sea.
    J. rejection of the belief that the world was stark and melancholy.

27. The author characterizes the immediate effect of experiences in Paris upon Homer's work as:
    A. subtle; Homer continued to paint simple shapes and powerful designs but used more color.
    B. dramatic; Homer's work became bolder and clearer.
    C. imperceptible; Homer's work didn't change until several years later.
    D. significant; Homer abandoned the subjects he'd been painting before his time in Paris.

28. The main idea of the last paragraph is that:
    F. Homer's paintings of the Maine coast exhibit the culmination of his artistic skills.
    G. Homer's paintings of the sea evoke the grandeur of the human spirit in the natural world.
    H. the most effective way to depict water in a painting is to use graphic shapes and directional lines.
    J. viewing two of Homer's famous paintings of the sea had a lasting effect on the author.

29. The author speculates that Homer may have chosen to go to Tynemouth because he:
    A. wanted to return to the place that had originally inspired him to be a painter.
    B. expected to be able to work better without the distractions he struggled with in Paris.
    C. needed a break from the overcrowded Jersey coast.
    D. hoped to find the kinds of subjects he had depicted in some of his earlier popular paintings.

30. The passage states that in Prouts Neck, Homer could be irritable when:
    F. his paintings weren't selling well.
    G. storms prevented him from painting outdoors.
    H. the sea was too rough to go boating.
    J. he was interrupted while painting.

Passage IV

NATURAL SCIENCE: This passage is adapted from the article "Worlds Apart: Seeking New Earths" by Timothy Ferris (©2009 by National Geographic Society).

It took humans thousands of years to explore our own planet and centuries to comprehend our neighboring planets, but nowadays new worlds are being discovered every week. To date, astronomers have identified more than 370 "exoplanets," worlds orbiting stars other than the sun. Many are strange. There's an Icarus-like "hot Saturn" 260 light-years from Earth, whirling around its parent star so rapidly that a year there lasts less than three days. Circling another star 150 light-years out is a scorched "hot Jupiter," whose upper atmosphere is being blasted off to form a gigantic, comet-like tail. Three benighted planets have been found orbiting a pulsar—the remains of a once mighty star shrunk into a spinning atomic nucleus the size of a city—while untold numbers of worlds have evidently fallen into their suns or been flung out of their systems to become "floaters" that wander in eternal darkness.

Amid such exotica, scientists are eager for a hint of the familiar: planets resembling Earth, orbiting their stars at just the right distance—neither too hot nor too cold—to support life as we know it. No planets quite like our own have yet been found, presumably because they're inconspicuous. To see a planet as small and dim as ours amid the glare of its star is like trying to see a firefly in a fireworks display; to detect its gravitational influence on the star is like listening for a cricket in a tornado. Yet by pushing technology to the limits, astronomers are rapidly approaching the day when they can find another Earth and interrogate it for signs of life.

Only 11 exoplanets, all of them big and bright and conveniently far away from their stars, have as yet had their pictures taken. Most of the others have been detected by using the spectroscopic Doppler technique, in which starlight is analyzed for evidence that the star is being tugged ever so slightly back and forth by the gravitational pull of its planets. In recent years astronomers have refined the Doppler technique so exquisitely that they can now tell when a star is pulled from its appointed rounds by only one meter a second—about human walking speed. That's sufficient to detect a giant planet in a big orbit, or a small one if it's very close to its star, but not an Earth at anything like our Earth's 93-million-mile distance from its star. The Earth tugs the sun around at only one-tenth walking speed, or about the rate that an infant can crawl; astronomers cannot yet prize out so tiny a signal from the light of a distant star.

Another approach is to watch a star for the slight periodic dip in its brightness that will occur should an orbiting planet circle in front of it and block a fraction of its light. At most a tenth of all planetary systems are likely to be oriented so that these mini-eclipses, called transits, are visible from Earth, which means that astronomers may have to monitor many stars patiently to capture just a few transits. The French COROT satellite, now in the third and final year of its prime mission, has discovered seven transiting exoplanets, one of which is only 70 percent larger than Earth.

The United States' Kepler satellite is COROT's more ambitious successor. Launched from Cape Canaveral in March 2008, Kepler is essentially just a big digital camera with a .95-meter aperture and a 95-megapixel detector. It makes wide-field pictures every 30 minutes, capturing the light of more than 100,000 stars in a single patch of sky between the bright stars Deneb and Vega. Computers on Earth monitor the brightness of all those stars over time, alerting humans when they detect the slight dimming that could signal the transit of a planet.

Because that dimming can be mimicked by other phenomena, such as the pulsations of a variable star or a large sunspot moving across a star's surface, the Kepler scientists won't announce the presence of a planet until they have seen it transit at least three times—a wait that may be only a few days or weeks for a planet rapidly circling close to its star but years for a terrestrial twin. By combining Kepler results with Doppler observations, astronomers expect to determine the diameters and masses of transiting planets. If they manage to discover a rocky planet roughly the size of Earth orbiting in the habitable zone—not so close to the star that the planet's water has been baked away, nor so far out that it has frozen into ice—they will have found what biologists believe could be a promising abode for life.

31. Which of the following descriptions best reflects the way the passage is organized?

- **A.** It raises the question of whether exoplanets exist and then presents to an equal extent arguments on both sides.
- **B.** It focuses first on the search for planets, then sharpens that focus to the search for planets like our own.
- **C.** It defines planets, first those in Earth's solar system and then those familiar mostly to astronomers.
- **D.** It refers to mythology, then moves to a technical description of those exoplanets the size of Earth or smaller.

32. The passage makes use of both technical terms and:

- **F.** rhetorical questions.
- **G.** figurative language.
- **H.** excerpts from the writings of astronauts.
- **J.** excerpts from the writings of ancient astronomers.

33. As it is used in line 18, the term *such exotica* refers to:
    A. the sophisticated equipment used to locate previously unidentified planets.
    B. the contents of our solar system, in particular the planets Jupiter and Saturn.
    C. overblown claims about planets far from Earth.
    D. planets and solar systems vastly unlike Earth and its solar system.

34. What is the main idea of the second paragraph (lines 18–30)?
    F. Recently discovered exoplanets have disappointed scientists.
    G. Some exoplanets were once thought to be stars at the center of solar systems.
    H. Some recently discovered exoplanets spin on their axis at the same speed that Earth spins on its axis.
    J. Planets that resemble Earth are extremely hard to detect.

35. The passage's description of the spectroscopic Doppler technique indicates that it is a method used to identify the:
    A. intensity of light reaching Earth from a planet outside Earth's solar system.
    B. effect of a planet's gravitational pull on the sun the planet is orbiting.
    C. speed at which a planet rotates on its axis.
    D. distance between an exoplanet and its former sun.

36. According to the passage, in order to confirm a possible planet using the Kepler method, scientists look for:
    F. evidence of water both as a solid and a liquid on the supposed planet.
    G. an uninterrupted light originating from the supposed planet.
    H. identical results in images of the same location taken 24 hours apart.
    J. three occurrences of a slight dimming in a star that strongly indicates a planet's presence.

37. According to the passage, at the time the passage was written, how many exoplanets had had their picture taken?
    A. 370
    B. 95
    C. 11
    D. 0

38. According to the passage, which of the following is a capability of the Kepler?
    F. It can capture the light of more than 100,000 stars in a single patch of sky.
    G. It can determine the distance between an exoplanet and its star.
    H. It can travel up to 150 light-years away from Earth.
    J. It can determine the surface features of planets well enough to indicate the presence of water.

39. In the passage, Deneb and Vega are identified as:
    A. stars at the edges of the area examined by the Kepler.
    B. planets that are only 70 percent larger than Earth.
    C. scientists pioneering in the field of planet searching.
    D. former stars whose traveling light is still visible.

40. According to the passage, what do scientists expect to determine about any given transiting planet by combining Kepler results with Doppler observations?
    F. The length of its year
    G. Its distance from its sun
    H. Its diameter and mass
    J. Its distance from Earth

END OF TEST 3

STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

DO NOT RETURN TO A PREVIOUS TEST.

SCIENCE TEST

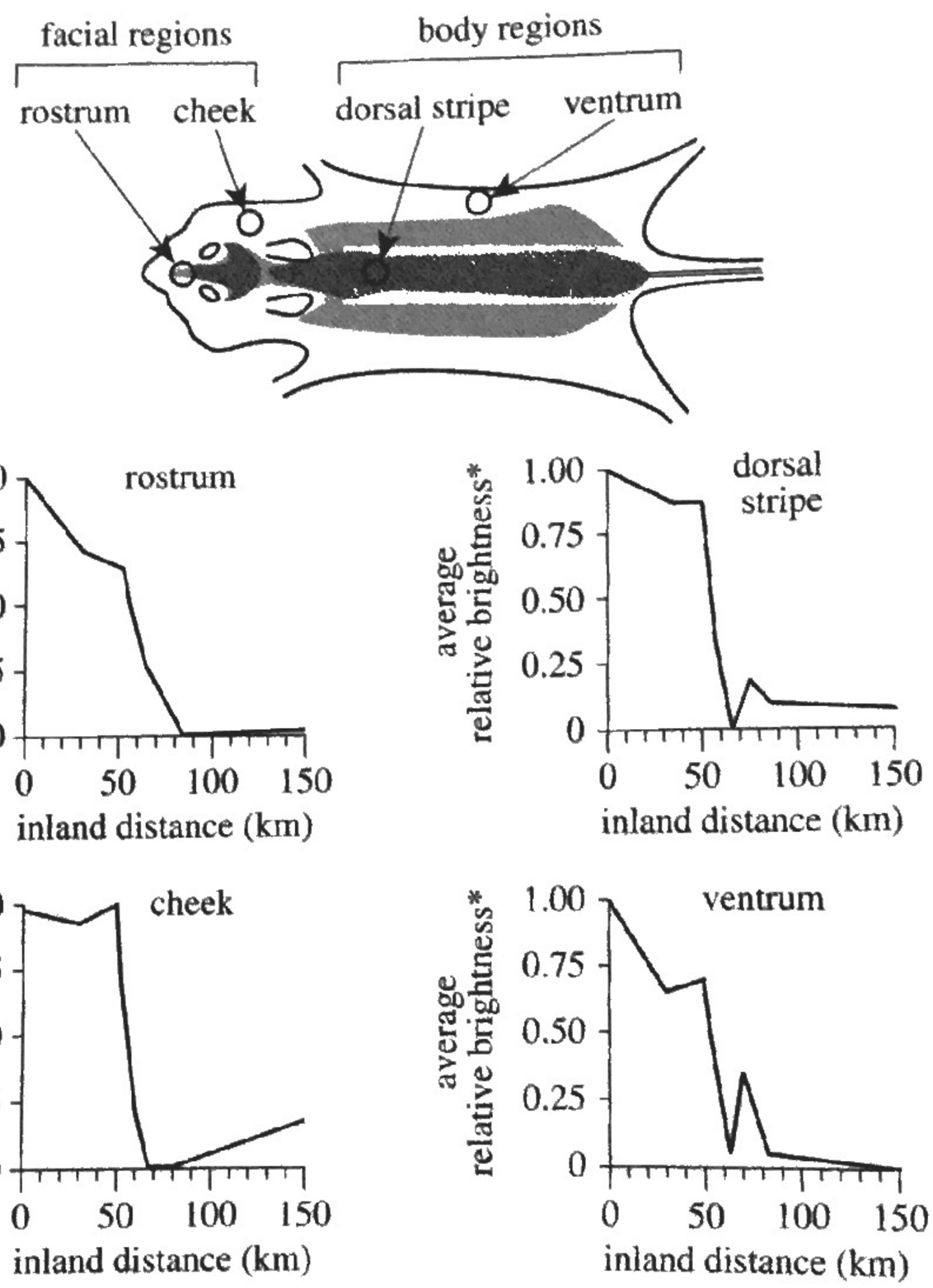
35 Minutes—40 Questions

DIRECTIONS: There are several passages in this test. Each passage is followed 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.

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

Passage I

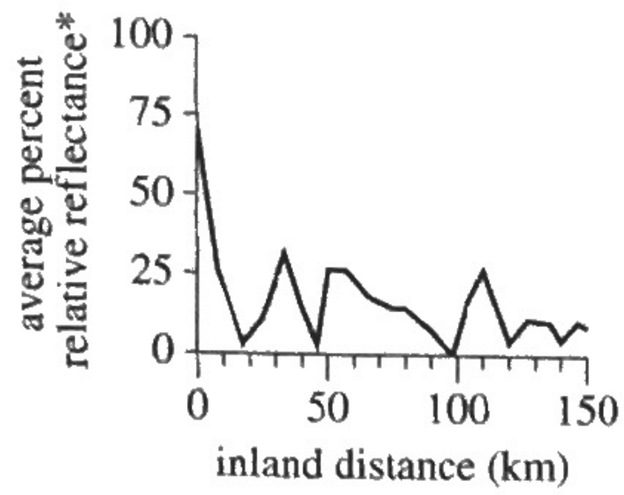
In a study of fur pigmentation in deer mice, *Peromyscus polionotus*, scientists compared the brightness of the fur of mice from populations located different distances directly inland from a coastal site. Figure 1 shows the 2 facial regions and the 2 body regions at which the fur of each mouse was evaluated (on a scale from 0 to 1.00) with respect to its brightness. Figure 1 also shows how, for each of the 4 regions, average relative brightness varied with inland distance.



*For each facial or body region, the darkest fur pigmentation was assigned a brightness value of 0, and the lightest fur pigmentation was assigned a brightness value of 1.00.

Figure 1

Figure 2 shows how the average brightness of surface soil samples, given as the average percent relative reflectance, varied with inland distance.



*compared to a standard that was assigned 100% reflectance

Figure 2

Figures 1 and 2 adapted from Lynne M. Mullen and Hopi E. Hoekstra. "Natural Selection Along an Environmental Gradient: A Classic Cline in Mouse Pigmentation." ©2008 by The Author(s).

1. Based on Figure 2, on average, where was the brightest surface soil found?
   - **A.** At the coastal site
   - **B.** 50 km inland
   - **C.** 100 km inland
   - **D.** 150 km inland

2. According to Figure 1, the average relative brightness of the dorsal stripe was 0.25 at an inland distance that was closest to which of the following?
   - **F.** 20 km
   - **G.** 40 km
   - **H.** 60 km
   - **J.** 80 km

3. According to Figure 1, the greatest change in the average relative brightness of the fur on the rostrum occurred between which of the following inland distances?
   - **A.** 0 km and 25 km
   - **B.** 25 km and 50 km
   - **C.** 50 km and 75 km
   - **D.** 100 km and 125 km

4. Based on Figure 1, on average, was the fur pigmentation on the ventrum of *P. polionotus* lighter or darker 150 km inland than it was at the coastal site?
   - **F.** Lighter, because the average relative brightness 150 km inland was greater.
   - **G.** Lighter, because the average relative brightness 150 km inland was less.
   - **H.** Darker, because the average relative brightness 150 km inland was greater.
   - **J.** Darker, because the average relative brightness 150 km inland was less.

5. Which of the following statements best explains the geographic variation in the fur pigmentation of *P. polionotus* ? At any given inland distance, the more closely the fur pigmentation of a *P. polionotus* mouse matches the soil, the:
   - **A.** less likely the mouse will be found by a predator, and thus the less likely it will pass its fur pigmentation traits to its offspring.
   - **B.** less likely the mouse will be found by a predator, and thus the more likely it will pass its fur pigmentation traits to its offspring.
   - **C.** more likely the mouse will be found by a predator, and thus the less likely it will pass its fur pigmentation traits to its offspring.
   - **D.** more likely the mouse will be found by a predator, and thus the more likely it will pass its fur pigmentation traits to its offspring.

6. Based on Figure 2, on average, was the surface soil at the coastal site lighter or darker than the standard that was used for the comparison?
   - **F.** Lighter; the average percent relative reflectance of the soil at the coastal site was 100%.
   - **G.** Lighter; the average percent relative reflectance of the soil at the coastal site was less than 100%.
   - **H.** Darker; the average percent relative reflectance of the soil at the coastal site was 100%.
   - **J.** Darker; the average percent relative reflectance of the soil at the coastal site was less than 100%.

Passage II

A high concentration of *dissolved nickel* (Ni^{2+}) in wastewater is an environmental concern. Students studied the removal of Ni^{2+} from wastewater, using an aqueous Ni^{2+} solution as a model of wastewater.

In water, hydroxide (OH^-) reacts with Ni^{2+} to form nickel hydroxide monohydrate [$Ni(OH)_2 \cdot H_2O$]. The balanced chemical equation for this reaction is

$$Ni^{2+} + 2OH^- + H_2O \rightarrow Ni(OH)_2 \cdot H_2O$$

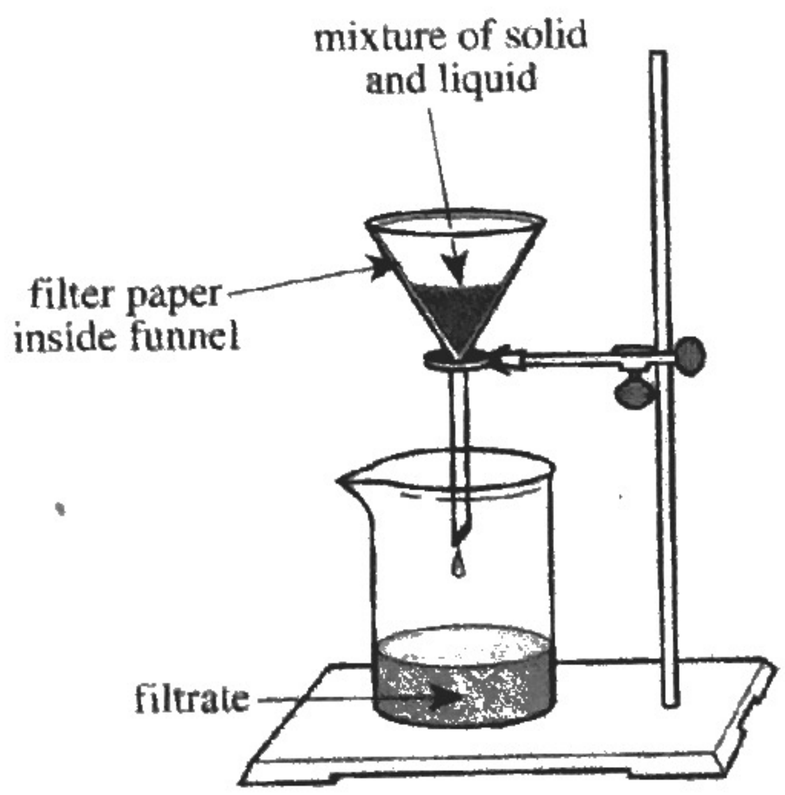
Because the monohydrate is a solid, it can be filtered from the solution. Some of the solid will eventually dissolve if it is left in contact with the solution.

The students did 2 experiments to study how reaction time and filtration method affected the removal of Ni^{2+} from the aqueous Ni^{2+} solution.

Experiment 1

In each of Trials 1–3, Steps 1–4 were performed:

1. Thirty-two mL of aqueous 1.0 mole/L OH^- solution and 260 mL of aqueous 0.060 mole/L Ni^{2+} solution were poured into the same flask.
2. The mixture was stirred at 22°C for 10 min, 3 days, or 7 days.
3. Solid monohydrate was recovered by *standard filtration* (see Figure 1).



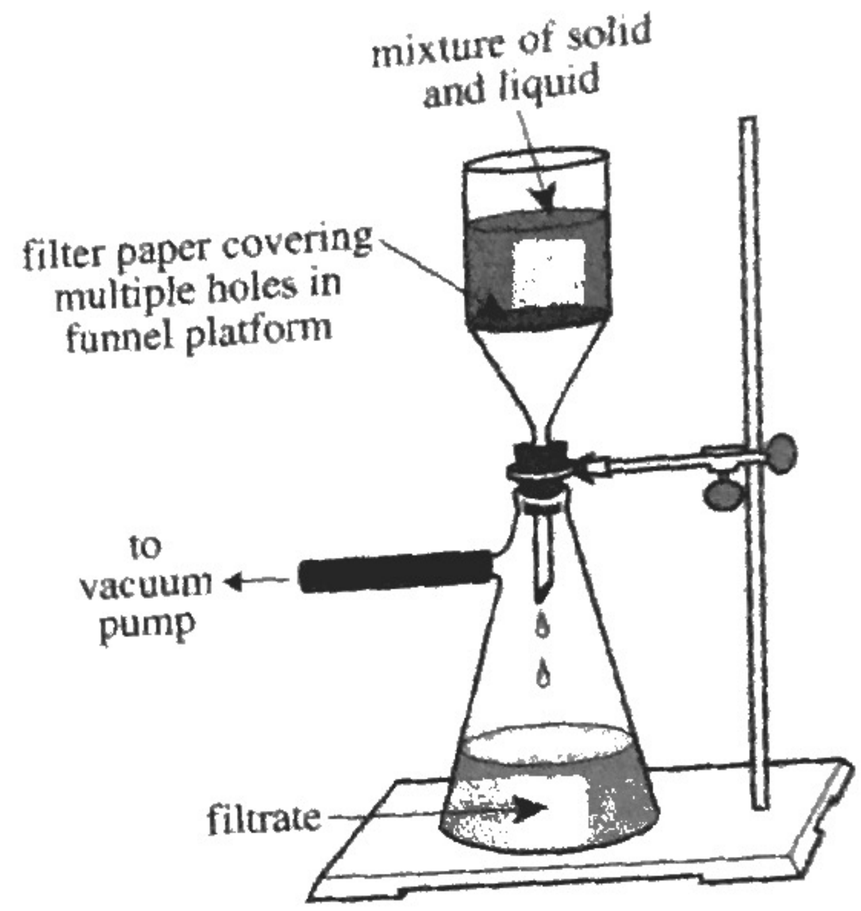
standard filtration

Figure 1

4. The *concentration of Ni^{2+} in the filtrate*, CNF, was determined, in milligrams of Ni^{2+} per kilogram of solution (mg/kg).

Experiment 2

In each of Trials 4–6, Steps 1–4 in Experiment 1 were performed except that in Step 3, solid monohydrate was recovered by *vacuum filtration* (see Figure 2).



vacuum filtration

Figure 2

The results of Experiments 1 and 2 are shown in Table 1.

Table 1

Experiment	Trial	Reaction time	CNF (mg/kg)
1	1	10 min	6
	2	3 days	39
	3	7 days	42
2	4	10 min	58
	5	3 days	69
	6	7 days	73

Table 1 adapted from K. Blake Corcoran, Brian E. Rood, and Bridget G. Trogden, "Chemical Remediation of Nickel(II) Waste: A Laboratory Experiment for General Chemistry Students." ©2010 by Division of Chemical Education, Inc., American Chemical Society.

7. If a reaction time of 2 days had been tested in Experiment 1, the CNF would most likely have been:
   A. less than 6 mg/kg.
   B. between 6 mg/kg and 39 mg/kg.
   C. between 39 mg/kg and 42 mg/kg.
   D. greater than 42 mg/kg.

8. Based on the results of Experiments 1 and 2, what combination of reaction time and filtration method resulted in the lowest concentration of dissolved nickel in the filtrate?

	reaction time	filtration method
F.	10 min	standard
G.	7 days	standard
H.	10 min	vacuum
J.	7 days	vacuum

9. Was the net force exerted on the mixture in the funnel more likely greater in Trial 3 or in Trial 6 ?

A. Trial 3, because the filtration apparatus was connected to a vacuum pump.
B. Trial 3, because the filtration apparatus was not connected to a vacuum pump.
C. Trial 6, because the filtration apparatus was connected to a vacuum pump.
D. Trial 6, because the filtration apparatus was not connected to a vacuum pump.

10. In each trial, the students performed which of the following chronological sequences of steps?

F. Measuring the CNF; recovering the solid by filtration; mixing the Ni^{2+} and the OH^- solutions
G. Mixing the Ni^{2+} and the OH^- solutions; recovering the solid by filtration; measuring the CNF
H. Recovering the solid by filtration; measuring the CNF; mixing the Ni^{2+} and the OH^- solutions
J. Recovering the solid by filtration; mixing the Ni^{2+} and the OH^- solutions; measuring the CNF

11. A student predicted that when solid monohydrate is recovered by vacuum filtration, a greater CNF will result for a reaction time of 3 days than for a reaction time of 10 min. Do the data in Table 1 support this prediction?

A. No; Trial 1 had a greater CNF than did Trial 2.
B. No; Trial 5 had a greater CNF than did Trial 4.
C. Yes; Trial 1 had a greater CNF than did Trial 2.
D. Yes; Trial 5 had a greater CNF than did Trial 4.

12. In how many of the 6 trials was nickel hydroxide monohydrate recovered by standard filtration after OH^- and Ni^{2+} had been allowed to react for at least 3 days?

F. 1
G. 2
H. 4
J. 6

13. Based on the balanced chemical equation in the passage, as 6 OH^- ions are consumed, how many formula units of $Ni(OH)_2 \cdot H_2O$ are produced?

A. 3
B. 6
C. 12
D. 18

Passage III

Star formation begins with the gravitational collapse of matter in an interstellar gas cloud. A *protostar* (forming star) affects gas in the surrounding portions of the cloud in 2 ways:

- The protostar's gravitational field attracts gas, causing the gas to *accrete* (accumulate onto the protostar).
- *Radiation pressure* (RP) associated with the protostar's emissions causes gas to be pushed away from the protostar, inhibiting accretion.

Star formation ends when the effect of RP overcomes that of gravity. At that point, the protostar can no longer gain mass by accretion and is considered a fully formed star.

Three scientists debate whether the maximum mass that a protostar can reach by accretion is great enough to account for the most massive stars observed.

Scientist 1

The effect of RP is uniform in all directions around a protostar. As a result, the maximum mass that a protostar can reach by accretion is 20 M_S (1 M_S = mass of the Sun). Any further increase in mass requires at least 1 *stellar merger* (the combination of 2 or more fully formed stars into 1). Because stars tend to form in clusters, stellar mergers are likely.

Scientist 2

Scientist 1 is correct that stellar mergers are likely. However, because a protostar rotates about its axis, a disk of gas forms in the plane of the protostar's equator. This reduces the effect of RP in that plane, allowing gas from the disk to readily accrete. As a result, the maximum mass that a protostar can reach by accretion is 40 M_S. Any further increase in mass requires at least 1 stellar merger.

Scientist 3

Stellar mergers are very unlikely given the vast distances between stars, even within clusters. Scientist 2 is correct about the formation and the effect of the disk. In addition, a protostar produces bubble-like regions of radiation that increase the effect of RP near the protostar's poles, promoting the flow of gas into the disk. As a result, accretion continues until the surrounding portions of the cloud are nearly depleted of gas. Therefore, the maximum mass that a protostar can reach by accretion is limited only by the amount of available gas.

14. Relative to the center of the protostar, does gravity more likely accelerate gas particles inward or outward, and does RP more likely accelerate gas particles inward or outward?

	gravity	RP
F.	inward	inward
G.	inward	outward
H.	outward	inward
J.	outward	outward

15. Based on Scientist 2's argument, do gas particles more likely accrete near the equator or near the poles of a protostar with a disk?

A. Near the equator, because the effect of RP is increased there.
B. Near the equator, because the effect of RP is reduced there.
C. Near the poles, because the effect of RP is increased there.
D. Near the poles, because the effect of RP is reduced there.

16. Detailed surveys of star clusters in and near the Milky Way have yielded no evidence of stellar mergers having occurred at any time during the galaxy's history. These results are *inconsistent* with the argument(s) of which scientist(s)?

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

17. One of the most massive stars known is Eta Carinae, which has an approximate mass of 120 M_S. Based on the arguments of Scientists 1, 2, and 3, respectively, what is the *minimum* number of stars, each formed entirely by accretion, that would have been required to form Eta Carinae?

	Scientist 1	Scientist 2	Scientist 3
A.	5	3	1
B.	5	4	2
C.	6	3	1
D.	6	4	2

18. When the effect of RP overcomes that of gravity, a star is said to have "emerged from its envelope," because that is the first time the star is directly observable from outside the cloud. An observation of which of the following stars emerging from its envelope would support Scientist 2's argument but weaken Scientist 1's argument?

F. A 15 M_S star
G. A 20 M_S star
H. A 30 M_S star
J. A 50 M_S star

19. Scientists 2 and 3 agree that a disk forms around a protostar as a result of the protostar's:

A. motion.
B. emission of radiation.
C. location within a star cluster.
D. merger with another star.

20. Which of the scientists, if any, would be likely to agree that the Sun could have formed entirely by accretion?

F. Scientist 1 only
G. Scientist 3 only
H. Scientists 1, 2, and 3
J. None of the scientists

Passage IV

Two studies were done to examine how the proportion of *vermicompost* (feces from earthworms) in a particular potting soil affects the *yield* of each of 2 plant species: *Solanum lycopersicum* (a tomato plant) and *Capsicum annuum* (a pepper plant). The yield of a plant species is the mass of fruit produced per plant of the species.

Six different mixtures (Mixtures 1–6) were prepared according to the percents listed in Table 1.

Table 1

Mixture	Percent by volume of: vermicompost	Percent by volume of: potting soil
1	0	100
2	20	80
3	40	60
4	60	40
5	80	20
6	100	0

Study 1

Equal amounts of Mixtures 1–6 were distributed among thirty-six 2 L pots in the following manner: 1.5 kg of Mixture 1 was put into each of 6 pots, 1.5 kg of Mixture 2 was put into each of 6 other pots, 1.5 kg of Mixture 3 was put into each of 6 other pots, and so on. Then, 3 *S. lycopersicum* seeds were added to each pot. For the next 158 days, all the pots received equal amounts of water and light. On Day 28 of the 158 days, all the seedlings that had emerged were removed from the pots with the exception of a single seedling in each pot. On Day 158, the yield of the remaining plant in each pot was measured. The average yield of the plants grown in each mixture was then calculated. The results are shown in Figure 1.

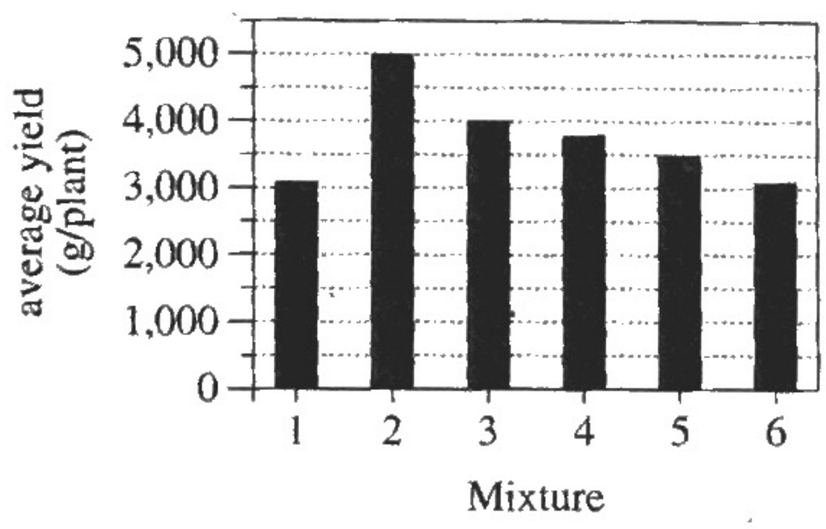


Figure 1

Figure 1 adapted from Rola M. Atiyeh et al., "Influence of Earthworm-Processed Pig Manure on the Growth and Yield of Greenhouse Tomatoes." ©2000 by Elsevier Science Ltd.

Study 2

The procedures of Study 1 were repeated, except that 5 *C. annuum* seeds instead of 3 *S. lycopersicum* seeds were added to each pot, the pots received water and light for 149 days instead of 158 days, seedling removal occurred on Day 42 of the 149 days, and plant yield was measured on Day 149. The results are shown in Figure 2.

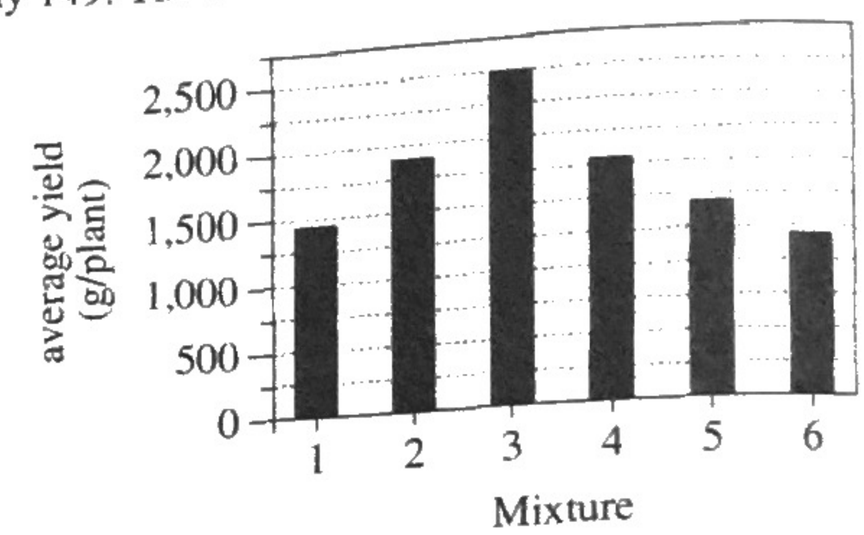


Figure 2

Figure 2 adapted from Norman Q. Arancon et al., "Effects of Vermicomposts Produced from Food Waste on the Growth and Yields of Greenhouse Peppers." ©2004 by Elsevier Science Ltd.

21. In both studies, as the percent by volume of vermicompost increased from 0% through 100%, the average yield:

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

22. In Study 1, which of the following mixtures was most likely intended to serve as a control for the effect of vermicompost on plant yield?

F. Mixture 1
G. Mixture 2
H. Mixture 4
J. Mixture 5

23. Suppose that in Study 1, average yield had been calculated in *kilograms* per plant (kg/plant) instead of g/plant. The average yield for Mixture 5 would have been:

A. 1.45 kg/plant.
B. 3.50 kg/plant.
C. 14.5 kg/plant.
D. 35.0 kg/plant.

24. Which of the factors listed below were the same in Study 2 as they were in Study 1 ?

I. Number of pots used per mixture
II. Length of time needed to perform the study
III. Volume of each pot

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

25. Is the statement "Tomato plants require a *lower* proportion of vermicompost in the potting soil to achieve maximum yield than do pepper plants" consistent with the results of Studies 1 and 2 ?

A. Yes; in Study 1, the greatest average yield was attained with Mixture 2, whereas in Study 2, the greatest average yield was attained with Mixture 3.
B. Yes; in Study 1, the greatest average yield was attained with Mixture 3, whereas in Study 2, the greatest average yield was attained with Mixture 2.
C. No; in Study 1, the greatest average yield was attained with Mixture 2, whereas in Study 2, the greatest average yield was attained with Mixture 3.
D. No; in Study 1, the greatest average yield was attained with Mixture 3, whereas in Study 2, the greatest average yield was attained with Mixture 2.

26. In a 2 L pot, the presence of more than one plant can negatively affect the growth of all the plants in the pot, due to competition among the plants. What action was taken in the studies to prevent competition among the plants?

F. Only one seed was planted per pot.
G. Only one seedling was planted per pot.
H. After an initial period of growth, all but one seed was removed from each pot.
J. After an initial period of growth, all but one seedling was removed from each pot.

27. *S. lycopersicum* and *C. annuum* required water and light for the process represented by which of the following expressions?

A. Water + light → glucose + oxygen + carbon dioxide
B. Glucose + water + light → oxygen + carbon dioxide
C. Oxygen + water + light → glucose + carbon dioxide
D. Carbon dioxide + water + light → glucose + oxygen

Passage V

A *cathode-ray tube* (CRT) is a sealed, evacuated glass tube with a filament at one end and a fluorescent screen at the other end (see Figure 1).

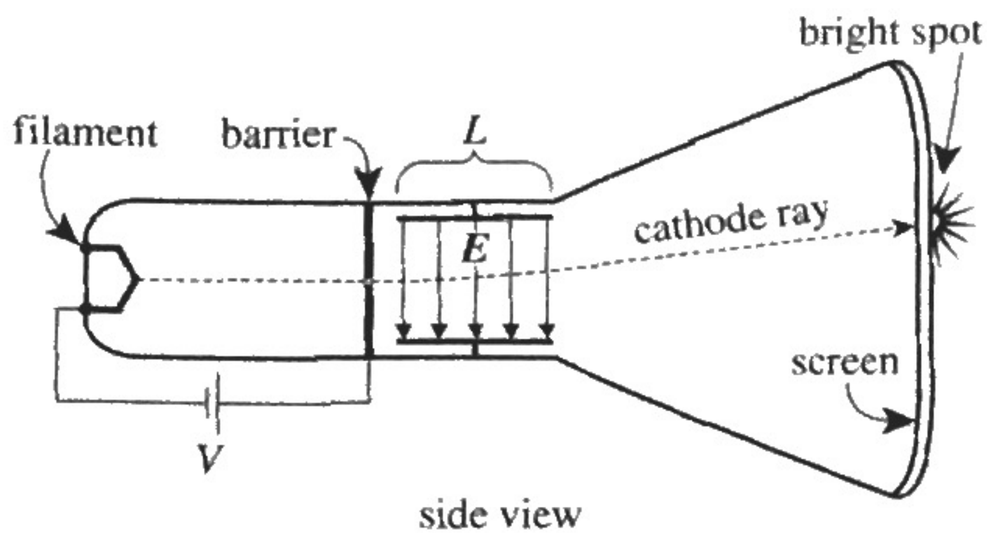


Figure 1

Figure 1 adapted from David Halliday, Robert Resnick, and Jearl Walker, *Fundamentals of Physics*, 9th ed. ©2011 John Wiley & Sons, Inc.

When heated, the filament emits cathode rays that are accelerated by an electric potential, V, toward a barrier having a pinhole. Beyond the barrier are 2 conducting plates, each of length L, that have an electric field, $\boldsymbol{E}$, between them. (The direction of $\boldsymbol{E}$ can be upward or downward; in Figure 1, it is downward.) Any rays that pass through the pinhole travel through the field and strike the screen, producing a bright spot of visible light.

A group of students performed 3 studies on various CRTs, each of which had a ruler taped to the outer surface of the screen (see Figure 2) to measure a spot's vertical location, y (in centimeters, cm).

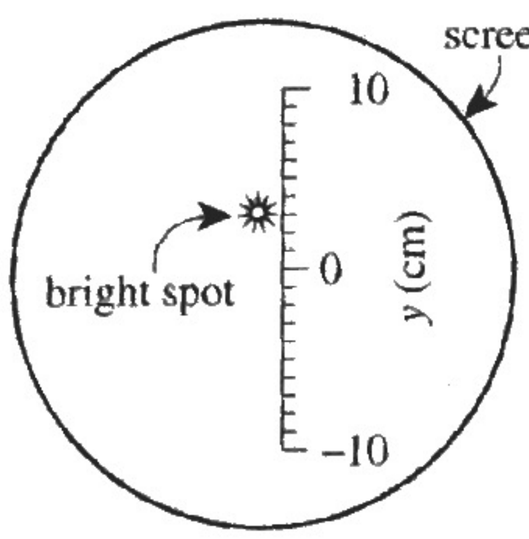


Figure 2

Study 1

The students obtained a CRT having $L = 2.5$ cm. They set V to 1.0 kilovolt (kV), varied both the direction and the magnitude (in newtons per coulomb, N/C) of $\boldsymbol{E}$, and recorded the resulting values of y (see Table 1).

Table 1

Trial	$\boldsymbol{E}$ direction*	$\boldsymbol{E}$ magnitude (N/C)	y (cm)
1	↑	1.0×10^4	−3.2
2	↑	2.0×10^4	−6.3
3	↑	3.0×10^4	−9.5
4	↓	1.0×10^4	3.2
5	↓	2.0×10^4	6.3
6	↓	3.0×10^4	9.5

*↑ = upward
↓ = downward

Study 2

Using the CRT from Study 1, the students set the magnitude of $\boldsymbol{E}$ to 1.0×10^4 N/C, varied V, and recorded the resulting values of y (see Table 2).

Table 2

Trial	V (kV)	y (cm)
7	0.5	6.3
8	1.0	3.2
9	1.5	2.1
10	2.0	1.6
11	2.5	1.3

Study 3

The students obtained various CRTs, each having a different L. For each CRT, they set V to 1.0 kV, set the magnitude of $\boldsymbol{E}$ to 1.0×10^4 N/C, and recorded the resulting value of y (see Table 3).

Table 3

Trial	L (cm)	y (cm)
12	1.5	−2.0
13	2.0	−2.6
14	2.5	−3.2
15	3.0	−3.8
16	3.5	−4.4

28. Studies 1 and 2 differed in which of the following ways? In Study 1, the students determined how the spot's location varied with:

F. electric potential, whereas in Study 2, they determined how the spot's location varied with the magnitude and direction of the electric field.
G. plate length, whereas in Study 2, they determined how the spot's location varied with electric potential.
H. the magnitude and direction of the electric field, whereas in Study 2, they determined how the spot's location varied with electric potential.
J. plate length, whereas in Study 2, they determined how the spot's location varied with the magnitude and direction of the electric field.

29. Suppose that the students had performed a trial in Study 2 in which y was 2.6 cm. The value of V in this trial would most likely have been:

A. less than 1.0 kV.
B. between 1.0 kV and 1.5 kV.
C. between 1.5 kV and 2.0 kV.
D. greater than 2.0 kV.

30. Figure 2 could serve as an illustration of the result(s) of which trial(s)?

F. Trial 1 only
G. Trial 8 only
H. Trials 1 and 4 only
J. Trials 4 and 8 only

31. Based on the results of Study 1, in which direction did $\boldsymbol{E}$ most likely point in Study 2, and in which direction did $\boldsymbol{E}$ most likely point in Study 3 ?

	Study 2	Study 3
A.	↑	↑
B.	↑	↓
C.	↓	↑
D.	↓	↓

32. Once a CRT is sealed, it cannot be reopened. However, because both V and $\boldsymbol{E}$ are controlled from the outside, a CRT can be used repeatedly under varying conditions. Based on the descriptions of Studies 1–3, what is the *minimum* number of different CRTs that the students required to complete the 3 studies?

F. 1
G. 5
H. 11
J. 16

33. Suppose that the students had performed a trial in which the cathode rays traveled all the way from the filament to the screen in a straight-line path, striking the screen at $y = 0$ cm. Based on the results of Studies 1 and 2, which of the following statements about V and the magnitude of $\boldsymbol{E}$ in this trial would have been true?

A. V was zero but the magnitude of $\boldsymbol{E}$ was nonzero.
B. V was nonzero but the magnitude of $\boldsymbol{E}$ was zero.
C. Both V and the magnitude of $\boldsymbol{E}$ were zero.
D. Both V and the magnitude of $\boldsymbol{E}$ were nonzero.

34. In a CRT, $\boldsymbol{E}$ is generated by building up equal and opposite electric charges on the 2 conducting plates. Suppose that cathode rays are negatively charged. If $\boldsymbol{E}$ is directed downward as shown in Figure 1, which conducting plate is more likely the negatively charged plate?

F. The top plate, because charges of like sign are attracted to each other.
G. The top plate, because charges of like sign are repelled from each other.
H. The bottom plate, because charges of like sign are attracted to each other.
J. The bottom plate, because charges of like sign are repelled from each other.

Passage VI

For gas atoms in a state of random motion, the *mean free path*, λ, is the average distance a gas atom will travel between collisions with other gas atoms. This distance depends upon the diameter of the gas atom, d, the volume of the gas, V, and the number of atoms of the gas, N. Table 1 lists the name, symbol, and value of d (in nanometers, nm) for each of 4 gases. Figure 1 shows, for each gas, at 293 kelvins (K), how λ (in nm) varies with V (in liters, L) in a sample with $N = 6 \times 10^{23}$ atoms of the gas. Figure 2 shows, for each gas, at 293 K, how λ varies with N in a sample with $V = 25$ L.

Table 1

Gas	Symbol	d (nm)
Neon	Ne	0.076
Argon	Ar	0.142
Krypton	Kr	0.176
Xenon	Xe	0.216

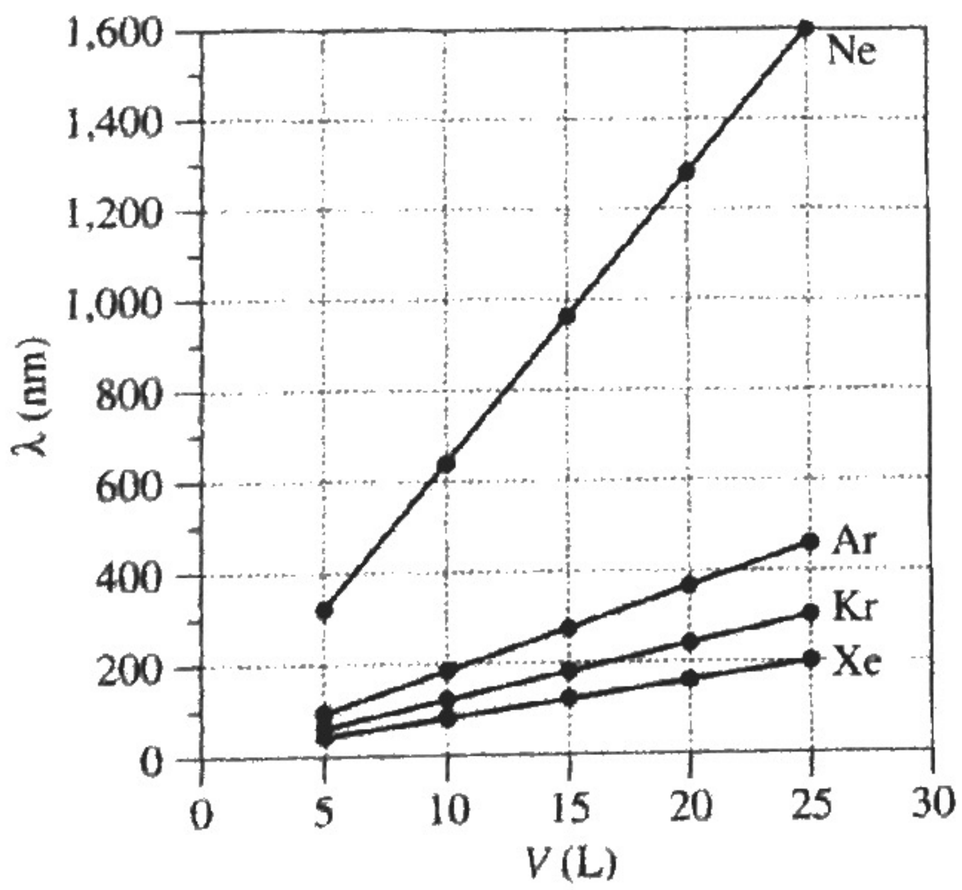


Figure 1

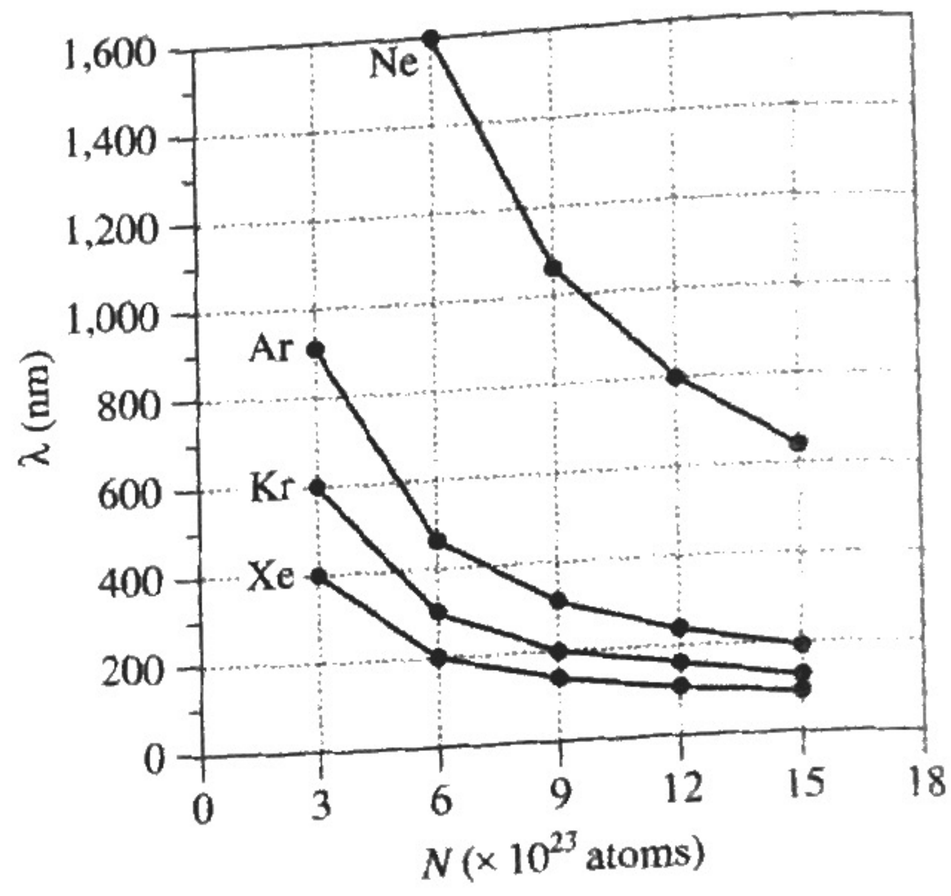


Figure 2

35. According to Figure 2, what is the order of gas samples from shortest λ to longest λ for $N = 15 \times 10^{23}$ atoms?

A. Ne, Ar, Kr, Xe
B. Ne, Kr, Ar, Xe
C. Xe, Ar, Kr, Ne
D. Xe, Kr, Ar, Ne

36. According to Figure 2, doubling the Ne sample size from 6×10^{23} atoms to 12×10^{23} atoms effectively multiplies λ for Ne by a factor of:

F. $\frac{1}{4}$.
G. $\frac{1}{2}$.
H. 2.
J. 4.

37. Consider 2 Kr samples at 293 K, each with $N = 6 \times 10^{23}$ atoms, but one with $V = 25$ L and the other with $V = 50$ L. Based on Figure 1, λ for the 50 L sample would most likely be how many times as great as λ for the 25 L sample?

A. $\frac{1}{4}$
B. $\frac{1}{2}$
C. 2
D. 4

38. Based on Figure 1, for the Xe and Ar gas samples with $V = 20$ L, compared to λ for Xe, approximately how much longer is λ for Ar ?

F. 50 nm
G. 100 nm
H. 150 nm
J. 200 nm

39. The *collision frequency* is defined as the number of collisions between gas atoms per second. Consider the 5 L and 25 L Xe samples represented in Figure 1. Assuming the Xe atoms have the same average speed in both samples, in which sample would the collision frequency more likely be higher?

A. In the 5 L sample; Xe atoms in the 5 L sample travel, on average, shorter distances between collisions and therefore collide more often.
B. In the 5 L sample; Xe atoms in the 5 L sample travel, on average, longer distances between collisions and therefore collide more often.
C. In the 25 L sample; Xe atoms in the 25 L sample travel, on average, shorter distances between collisions and therefore collide more often.
D. In the 25 L sample; Xe atoms in the 25 L sample travel, on average, longer distances between collisions and therefore collide more often.

40. For a particular sample of radon (Rn) gas in a 25 L container at 293 K, λ is approximately 320 nm. If d for Rn is 0.240 nm, then, based on Table 1 and Figure 2, approximately how many Rn atoms are most likely in this sample?

F. Less than 6×10^{23}
G. Between 6×10^{23} and 9×10^{23}
H. Between 9×10^{23} and 12×10^{23}
J. More than 12×10^{23}

END OF TEST 4

STOP! DO NOT RETURN TO ANY OTHER TEST.

Explanation of Procedures Used to Obtain Scale Scores from Raw Scores

On each of the four tests on which you marked any responses, the total number of correct responses yields a raw score. Use the table below to convert your raw scores to scale scores. For each test, locate and circle your raw score or the range of raw scores that includes it in the table below. Then, read across to either outside column of the table and circle the scale score that corresponds to that raw score. As you determine your scale scores, enter them in the blanks provided on the right. The highest possible scale score for each test is 36. The lowest possible scale score for any test on which you marked any responses is 1.

Next, compute the Composite score by averaging the four scale scores. To do this, add your four scale scores and divide the sum by 4. If the resulting number ends in a fraction, round it off to the nearest whole number. (Round down any fraction less than one-half; round up any fraction that is one-half or more.) Enter this number in the blank. This is your Composite score. The highest possible Composite score is 36. The lowest possible Composite score is 1.

ACT Test 73C	Your Scale Score
English	_____
Mathematics	_____
Reading	_____
Science	_____
Sum of scores	_____
Composite score (sum ÷ 4)	_____

NOTE: If you left a test completely blank and marked no items, do not list a scale score for that test. If any test was completely blank, do not calculate a Composite score.

Scale Score	Raw Scores				Scale Score
	Test 1 English	Test 2 Mathematics	Test 3 Reading	Test 4 Science	
36	74-75	59-60	40	39-40	36
35	71-73	57-58	39	38	35
34	70	56	38	37	34
33	69	55	37	36	33
32	68	54	36	35	32
31	66-67	53	35	34	31
30	65	51-52	34	—	30
29	64	49-50	33	33	29
28	62-63	47-48	32	32	28
27	60-61	44-46	31	31	27
26	58-59	41-43	29-30	29-30	26
25	55-57	39-40	28	27-28	25
24	52-54	36-38	27	25-26	24
23	49-51	34-35	25-26	23-24	23
22	46-48	32-33	24	21-22	22
21	44-45	30-31	22-23	20	21
20	41-43	29	21	18-19	20
19	39-40	27-28	19-20	16-17	19
18	37-38	24-26	17-18	15	18
17	35-36	21-23	16	14	17
16	32-34	17-20	15	12-13	16
15	29-31	13-16	13-14	11	15
14	26-28	11-12	12	10	14
13	24-25	9-10	10-11	9	13
12	22-23	7-8	9	8	12
11	19-21	6	7-8	7	11
10	17-18	5	6	6	10
9	14-16	4	5	5	9
8	12-13	—	—	4	8
7	10-11	3	4	3	7
6	8-9	2	3	—	6
5	6-7	—	—	2	5
4	5	1	2	—	4
3	3-4	—	1	1	3
2	2	—	—	—	2
1	0-1	0	0	0	1

Explanation of Procedures Used to Obtain Scale Subscores from Raw Scores

For each of the seven subscore areas, the total number of correct responses yields a raw score. Use the table below to convert your raw scores to scale subscores. For each of the seven subscore areas, locate and circle either the raw score or the range of raw scores that includes it in the table below. Then, read across to either outside column of the table and circle the scale subscore that corresponds to that raw score. As you determine your scale subscores, enter them in the blanks provided on the right. The highest possible scale subscore is 18. The lowest possible scale subscore is 1.

If you left a test completely blank and marked no items, do not list any scale subscores for that test.

ACT Test 73C — **Your Scale Subscore**

English

Usage/Mechanics _____

Rhetorical Skills _____

Mathematics

Pre-Algebra/Elementary Algebra _____

Intermed. Algebra/Coord. Geometry _____

Plane Geometry/Trigonometry _____

Reading

Social Studies/Sciences _____

Arts/Literature _____

Scale Subscore	Raw Scores							Scale Subscore
	Test 1 English		Test 2 Mathematics			Test 3 Reading		
	Usage/ Mechanics	Rhetorical Skills	Pre-Algebra/ Elem. Algebra	Inter. Algebra/ Coord. Geometry	Plane Geometry/ Trigonometry	Social Studies/ Sciences	Arts/ Literature	
18	38-40	35	23-28	18-20	18	20	20	**18**
17	36-37	34	22	17	—	18-19	19	**17**
16	34-35	32-33	21	16	16-17	17	18	**16**
15	33	29-31	20	14-15	15	16	17	**15**
14	32	27-28	18-19	12-13	13-14	14-15	16	**14**
13	30-31	25-26	17	11	12	13	15	**13**
12	28-29	22-24	16	9-10	10-11	11-12	14	**12**
11	26-27	20-21	14-15	8	9	10	13	**11**
10	23-25	17-19	13	7	7-8	9	11-12	**10**
9	21-22	15-16	11-12	6	5-6	7-8	10	**9**
8	19-20	13-14	9-10	4-5	4	6	9	**8**
7	17-18	11-12	7-8	3	—	5	8	**7**
6	14-16	9-10	5-6	—	3	4	7	**6**
5	12-13	7-8	4	2	2	3	5-6	**5**
4	9-11	5-6	3	—	—	2	4	**4**
3	7-8	4	2	1	1	—	2-3	**3**
2	4-6	2-3	1	—	—	1	1	**2**
1	0-3	0-1	0	0	0	0	0	**1**

Form 20H
ACT Writing Test Prompt
(June 2015)

Lawmakers are considering whether a universal rating system should be created that would rate all foods according to how healthy they are. In such a system, food would be scored with an overall "healthiness rating" based on factors such as the amount of calories, fat, and protein the food contains. Some lawmakers support creating a food rating system because they think such ratings would make it easier for consumers to choose healthier foods. Other lawmakers do not support creating a food rating system because they think such a system would damage the profits of the companies that make or sell less healthy foods. In your opinion, should a food rating system be created that would rate all foods according to how healthy they are?

In your essay, take a position on this question. You may write about either one of the two points of view given, or you may present a different point of view on this question. Use specific reasons and examples to support your position.

ACT Resource Links

ACT Online Practice Tests: https://www.crackab.com/act/

※ **ACT English Practice Tests:**

https://www.crackab.com/act/english/

※ **ACT Math Practice Tests:**

https://www.crackab.com/act/math/

※ **ACT Reading Practice Tests:**

https://www.crackab.com/act/reading/

※ **ACT Science Practice Tests:**

https://www.crackab.com/act/science/

ACT Grammar: https://www.crackab.com/act/grammar/

ACT Real Past Papers Download:

https://www.crackab.com/act-downloads/

Digital SAT & New SAT Practice Tests:

https://www.cracksat.net

Real SAT Tests Download:

http://www.cracksat.net/sat-downloads/

AP Exams Practice Tests:

https://www.crackap.com

https://www.apstudy.net

07/15/15

ACT ASSESSMENT TEST INFORMATION RELEASE REPORT
TEST DATE = 06/15 TEST FORM = 73C TEST CENTER = 24587

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            ITEM            1 1111111112 2222222223 3333333334 4444444445 5555555556 6666666667 77777
          NUMBER   1234567890 1234567890 1234567890 1234567890 1234567890 1234567890 1234567890 12345

ENGLISH
CORRECT ANSWER     CFBJBGCGCG BFDJBJAGBF BHDJBJDHAF BFAFDHBJCH BJCGCJCFAG BJAGBJCFCF CGCFBFAHDJ AJDJC
YOUR ANSWER        ++D+++++++ ++++++++++ A++F++++++ ++C++F++++ ++++++++++ ++++++++++ ++++++++++ +++H+
SUBSCORE           UUURURUURU RURURURUUU UURUURUURR URURUURRUR UUURRRUUUU URURRURRRR URUURUURRR URRRR

MATHEMATICS
CORRECT ANSWER     CGCHCKEKBH DJBFEJEJAG CHDJDKCHAF BGBFBHAJBH DHBGAJEKDF BKEJAKAFDF
YOUR ANSWER        ++++++++++ ++++++++++ ++++++++++ ++++++++++ E+++++++++ D++++++H++
SUBSCORE           AAATGAAGAA AAAAGTTGGT TTGTAAGAAT TTATTGGATA ATAGGAGGTT AAAGGGGTGT

READING
CORRECT ANSWER     BJAGDHCFDF DGAHDGCFAG CGAJBFBFDJ BGDJBJCFAH
YOUR ANSWER        ++++++++++ C++G+++H++ +++++++G++ ++++A+++++
SUBSCORE           LLLLLLLLLL SSSSSSSSSS LLLLLLLLLL SSSSSSSSSS

SCIENCE
CORRECT ANSWER     AHCJBJBFCG DGAGBHCHAH DFBGAJDHBJ CGBJDGCJAF
YOUR ANSWER        ++++++++++ +H++++++BG ++++++++++ +F++A+++++
```

1st Row: Correct responses to the items on the ACT tests.

2nd Row: Your Responses:
- A plus (+) indicates your response was correct.
- A letter (A through K) is the response you chose, if your answer was incorrect.
- A dash (-) indicates you omitted the item.
- An asterisk (*) indicates you gridded more than one response.

3rd Row: If the test includes subscores, one of the letters below indicates the category to which each item belongs:

English: U = Usage/Mechanics
R = Rhetorical Skills
Math: A = Pre-Algebra/Elementary Algebra
G = Intermediate Algebra/Coordinate Geometry
T = Plane Geometry/Trigonometry
Reading: S = Social Studies/Sciences
L = Arts/Language

PLUS WRITING TEST FORM: 20H
1st RATER: 05 2nd RATER: 05

The ACT®