Sample – For School Use Only

1165D

The ACT® Sample Test Booklet and Answer Document

This is a sample test. It is intended to be used to familiarize students with the content, format, and testing procedures of the ACT® test in advance of taking the ACT. This test will not be scored by ACT, and no derived score may be shared with any agency as an ACT result. Note that sample test scores are only *estimates* of the scores that students will obtain during an actual administration of the ACT.

A sample answer document appears on pages 53 and 54.

This booklet contains tests in English, Mathematics, Reading, and Science. These tests measure skills and abilities highly related to high school course work and success in college. *CALCULATORS MAY BE USED ON THE MATHEMATICS TEST ONLY.*

The questions in each test are numbered, and the suggested answers for each question are lettered. On the answer document, the rows of ovals are numbered to match the questions, and the ovals in each row are lettered to correspond to the suggested answers.

For each question, first decide which answer is best. Next, locate on the answer document the row of ovals numbered the same as the question. Then, locate the oval in that row lettered the same as your answer. Finally, fill in the oval completely. Use a soft lead pencil and make your marks heavy and black. *DO NOT USE INK OR A MECHANICAL PENCIL.*

Mark only one answer to each question. If you change your mind about an answer, erase your first mark thoroughly before marking your new answer. For each question, make certain that you mark in the row of ovals with the same number as the question.

Only responses marked on your answer document will be scored. Your score on each test will be based only on the number of questions you answer correctly during the time allowed for that test. You will NOT be penalized for guessing. *IT IS TO YOUR ADVANTAGE TO ANSWER EVERY QUESTION EVEN IF YOU MUST GUESS.*

You may work on each test ONLY when your test supervisor tells you to do so. If you finish a test before time is called for that test, you should use the time remaining to reconsider questions you are uncertain about in that test. You may NOT look back to a test on which time has already been called, and you may NOT go ahead to another test. To do so will disqualify you from the examination.

Lay your pencil down immediately when time is called at the end of each test. You may NOT for any reason fill in or alter ovals for a test after time is called for that test. To do so will disqualify you from the examination.

Do not fold or tear the pages of your test booklet.

ACT®
P.O. BOX 168
IOWA CITY, IA 52243-0168

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

The Hunt for Morel Mushrooms

[1]

When I close my eyes I see them. They pop up through dead leaves, emerge from under fallen logs, and sprout next to tree stumps. Even indoors, I think I spot them out of the corner of my eye. Basically, I spend every free moment[1] in search of them.

[2]

I'm not talking about imaginary creatures but[2] about deliciously real morel mushrooms—

funny-looking, textured, edible[3] fungi that appear in springtime. These homely ground dwellers inspire their fans to search the woods for hours, intent on finding enough to fry up for dinner. Would it be easier to buy mushrooms at the store? Absolutely. But it wouldn't be as much fun. Once you find your first morel, maybe by a dead

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

- **A.** all my free time
- **B.** appropriate vacation time slots
- **C.** every moment of my leisure time
- **D.** whatever time I can set aside

2.
- **F.** NO CHANGE
- **G.** about, imaginary creatures but
- **H.** about, imaginary creatures, but
- **J.** about imaginary creatures, but,

3. Given that all the choices are true, which one most specifically describes the appearance of a morel mushroom for readers who have never seen one?

- **A.** NO CHANGE
- **B.** earthy, oddly amusing, interesting-looking
- **C.** odorless and unusually shaped
- **D.** sand-colored, cone-shaped, spongelike

elm or in an old apple orchard, a person[4] will be even more determined to find the next one. And the next. And so on.

[3]

Like many morel hunters, I learned from an expert. She invited me along to see firsthand how it's done. I learned even more by reading reputable, detailed field guides about wild mushrooms.[5]

4. **F.** NO CHANGE
G. a morel hunter
H. you
J. DELETE the underlined portion.

5. Given that all the choices are true, which one provides the most relevant and specific information at this point in the essay?

A. NO CHANGE
B. in between trips to and from the woods.
C. to gain the expertise I wanted and needed at this point.
D. very carefully on the topic that pertains to the activity.

That's a crucial part of the preparation to get ready[6] for morel hunting, because often the same woods that yield morels produce poisonous mushrooms, too.

6. **F.** NO CHANGE
G. to make oneself fit
H. of someone planning to be ready
J. DELETE the underlined portion.

[4]

[7] Every spring, there's a contest where I live in northern Minnesota to see who can find the most morels, this[8] year, I'm going to enter. Last year, one participant found over 3,000 morels becoming my[9] hero. And he's willing to talk with me about this hobby we are both passionate about. Luckily, I know what question *not* to ask. You never ask morel hunters where they made their biggest find. Keeping silent about your favorite spots,[10] is part of the mystique of this glorious pastime.

7. Which of the following statements, if added here, would provide the most effective transition from Paragraph 3 to Paragraph 4?

A. There were many field guides to choose from.
B. I love the texture that morels add to a meal.
C. Outdoor activities offer so many rewards.
D. Now I want to put my knowledge to work.

8. **F.** NO CHANGE
G. morels this
H. morels. This
J. morels, because this

9. **A.** NO CHANGE
B. morels. He's my
C. morels, what a
D. morels, my

10. **F.** NO CHANGE
G. silent, about your favorite spots
H. silent, about your favorite spots,
J. silent about your favorite spots

[5]

Mostly, finding morels requires two things in particular. Smaller and paler then the average pinecone, a morel blends perfectly into its natural surroundings. However, you can look right at one and not see it. Morels fool everyone, even the experts, that's probably why the saying goes that the best place to look for morels is directly behind you.

11. Given that all the choices are true, which one provides the most specific information?

A. NO CHANGE
B. demonstrating two skills.
C. patience and concentration.
D. expertise in this hobby.

12. **F.** NO CHANGE
G. more pale then
H. paler than
J. pale than

13. **A.** NO CHANGE
B. it's
C. their
D. there

14. **F.** NO CHANGE
G. You
H. On the other hand, you
J. Back and forth, you

15. **A.** NO CHANGE
B. experts. That's
C. experts say, that's
D. experts and

PASSAGE II

The Amazing Monarch Migration

The orange and black monarch butterfly, which is the most easiest recognized and striking butterfly species in North America. Monarchs are particularly fascinating because they are one of the few migratory butterfly species in North America.

[1] In the fall, as daylight and temperatures decrease, migrating monarchs begin their long journey south, an extended flight. [2] Many

16. **F.** NO CHANGE
G. butterfly
H. butterfly that
J. butterfly,

17. **A.** NO CHANGE
B. most easy
C. easiest
D. most easily

18. **F.** NO CHANGE
G. south, which is far-reaching.
H. south.
J. south, which encompasses many miles.

monarchs, west of the Rocky Mountains migrate
19

to the southern California coast, where they
20

overwinter in eucalyptus groves. [3] Besides, most
21

monarchs, millions of them across the United States and
22
Canada—migrate as many as three thousand miles to Oyamel fir forests near Mexico City. [4] Monarchs have smaller bodies and insufficiently developed nervous
23
systems than migratory birds. [5] The features of birds that help them accomplish their long migrations are aerodynamic design, acute vision, and the ability to
24
regulate their body temperature and maintain energy.
24
[6] Monarchs lack these features, and yet, in a way that defies explanation, they travel up to eighty miles in a day. 25

For decades, scientists have studied this phenomenon, hoping to learn how monarchs are able to fly such distances. Researchers have tagged migrating monarchs to study their flight patterns, and they've hiked to the overwintering sites
26
on the Mexican Plateau, where twenty thousand monarchs are sometimes found clustered on a single Oyamel fir bough.

Scientists are starting to learn more about the monarch's life cycle. When
27
monarchs that don't migrate to Mexico live only four to six weeks;
28
the migrating generations live at least eight months.

19. **A.** NO CHANGE
B. monarchs west of the Rocky Mountains,
C. monarchs west, of the Rocky Mountains,
D. monarchs west of the Rocky Mountains

20. **F.** NO CHANGE
G. there
H. while
J. DELETE the underlined portion.

21. **A.** NO CHANGE
B. However,
C. Finally,
D. Therefore,

22. **F.** NO CHANGE
G. monarchs—
H. monarchs;
J. monarchs

23. **A.** NO CHANGE
B. less
C. more insufficient
D. inadequate

24. **F.** NO CHANGE
G. and regulating body temperature and maintaining energy with their ability.
H. with their body temperature regulation and energy maintenance ability.
J. and the regulation of body temperature and their ability to maintain energy.

25. The writer would like to divide this paragraph into two in order to signal the shift in focus from monarchs' migrating habits to the differences between monarchs and migratory birds. To accomplish this goal, the best place to start the new paragraph would be at the beginning of Sentence:
A. 2.
B. 3.
C. 4.
D. 5.

26. **F.** NO CHANGE
G. site's
H. sites'
J. sites,

27. **A.** NO CHANGE
B. If
C. While
D. So that

28. **F.** NO CHANGE
G. weeks and
H. weeks, and while
J. weeks,

After becoming reproductively active in the spring, monarchs that have migrated begin their return journey. They lay their eggs on milkweed plants along the way and then die. Their offspring hatch, feed on the milkweed, and the migration is eventually continued. [29]

Researchers know they have much to learn, but with the help of new tracking devices and Internet technology that makes data available worldwide, they are ready to move ahead. [30]

29. **A.** NO CHANGE
B. continuing the migration is eventual.
C. eventually continue the migration.
D. continuing eventually the migration.

30. Which choice would best conclude the sentence and support one of the main points of the essay?
F. NO CHANGE
G. they are excited about learning how to use these new research tools.
H. they hope to solve the mysteries of the monarch migration.
J. they look forward to collaborating with other researchers who are more knowledgeable in the mysteries of monarch migration.

PASSAGE III

The following paragraphs may or may not be in the most logical order. Each paragraph is numbered in brackets, and question 45 will ask you to choose where Paragraph 3 should most logically be placed.

Yo-Yos Spinning through Time

[1]

Historians speculate that one of the world's oldest toys is the yo-yo, though they know for sure that the oldest toy is the doll. [31] Drawings of objects [32] adorn ancient Greek vases and the walls of Egyptian temples, if [33] written mention of yo-yos goes back to the fifth century B.C.

31. **A.** NO CHANGE
B. yo-yo, but it is hard to know for sure, considering the yo-yo's history.
C. yo-yo, though no one is certain why some ancient yo-yos were made out of terra cotta, a fragile clay.
D. yo-yo.

32. **F.** NO CHANGE
G. that call attention to objects that look something like the toy that I have just mentioned
H. that include objects that almost slightly resemble yo-yos
J. of objects resembling yo-yos

33. **A.** NO CHANGE
B. and
C. since
D. because

[2]

While many cultures had their variations of the yo-yo, the American version can be traced to the Philippines, where yo-yos have been a national pastime for centuries.[34] In fact, the name *yo-yo* is a Tagalog word that translates as[35] "come back." In the 1920s Pedro Flores, a Filipino immigrant, introduced the toy in the United States and[36] soon started a yo-yo manufacturing company in California. Flores's design was different because the yo-yo's string wasn't tied to the axle of the toy, but rather looped around it. This allowed a skilled handler to make the toy spin at the end of its string, or "sleep."

[3]

Yo-yo technology really progressed substantially by making[37] a leap forward in the 1970s when designers added weighted rims so the toy would spin for a longer time. In 1980, another innovation led to the development of the "yo-yo with a brain," which featured a spring-loaded mechanism that caused the yo-yo to return to its owner's hand.

34. Given that all the choices are true, which one provides the most effective evidence of the long history of enthusiasm for the yo-yo in the Philippines?

F. NO CHANGE
G. have been a popular hobby for years.
H. were carved out of fine wood or animal horns.
J. resembled a toy that was popular in ancient China.

35. **A.** NO CHANGE
B. by
C. with
D. from

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

F. States. Flores
G. States, and he
H. States; he
J. States he

37. **A.** NO CHANGE
B. advanced as a result of progressively making
C. jumped ahead and made
D. made

[4]

The American craze for the toy <u>began</u> (38) when the entrepreneur Donald Duncan saw a demonstration of Flores's new yo-yo. Noticing the large crowd <u>who</u> (39) watched, Duncan quickly realized the yo-yo's potential. Flores sold his yo-yo company and all rights to Duncan in <u>1932, after deciding</u> (40) that he was more interested in teaching people how to handle yo-yos than he was in manufacturing them. Duncan immediately launched an elaborate national advertising campaign to promote the toy. He also sent Duncan Yo-Yo Professionals around the country, <u>demonstrating</u> (41) tricks and sponsoring contests. [42] Millions of the toys were sold.

[5]

In 1985, this most ancient of <u>toys, went</u> (43) into space. Astronauts aboard the space <u>shuttle *Discovery*</u> (44) demonstrated that while a yo-yo would spin in a near-zero gravity environment, it refused to sleep.

38. **F.** NO CHANGE
G. begins
H. begun
J. had began

39. **A.** NO CHANGE
B. whom
C. whose
D. who's

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

F. 1932, after his decision
G. 1932. He had decided
H. 1932, upon deciding
J. 1932. Deciding

41. **A.** NO CHANGE
B. in order to demonstrate
C. who demonstrated
D. yet demonstrating

42. If the writer were to delete the preceding sentence, the essay would primarily lose information that:

F. proves Duncan was uncertain what would be the best way to promote the yo-yo.
G. reveals how quickly demonstrations by Duncan Yo-Yo Professionals gained popularity.
H. illustrates one creative strategy that Duncan used to promote the yo-yo.
J. suggests how Duncan Yo-Yo Professionals were chosen for the job.

43. **A.** NO CHANGE
B. toys went
C. toys had went
D. toys, had gone

44. **F.** NO CHANGE
G. shuttle, *Discovery;*
H. shuttle *Discovery,*
J. shuttle, *Discovery*

Question 45 asks about the preceding passage as a whole.

45. For the sake of the logic and coherence of this essay, Paragraph 3 should be placed:

A. where it is now.
B. before Paragraph 1.
C. before Paragraph 2.
D. before Paragraph 5.

PASSAGE IV

Swimming in Open Water

Immersed in the icy water off the Antarctic Peninsula, Lynne Cox wasn't sure if she could accomplish her goal to be the first person to swim a mile through the glacier-strewn sea. At forty-five, she would of been training for (46) two years for this event, which (47) she hoped her preparations would pay off.

Cox grew up swimming in the cold lakes of New Hampshire (48) and Maine. When she was fifteen, she broke the men's and women's record's (49) for swimming the English Channel by finishing the twenty-seven-mile swim in less than ten hours. [50]

She could swim in (51) open water and had swum across the Cook Strait in New Zealand, around the Cape of Good Hope at the southern tip of Africa, and across Lake Titicaca from Bolivia to Peru.

46. **F.** NO CHANGE
G. had
H. have
J. had to of

47. **A.** NO CHANGE
B. and
C. then
D. DELETE the underlined portion.

48. **F.** NO CHANGE
G. cold, lakes of New Hampshire
H. cold lakes, of New Hampshire
J. cold, lakes of New Hampshire,

49. **A.** NO CHANGE
B. records
C. records'
D. records,

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

> At its widest, the English Channel spans a distance of 150 miles.

Should the writer make this addition here?

F. Yes, because it reinforces the point that Cox swam a great distance across the English Channel.
G. Yes, because it provides a logical transition to the rest of the paragraph.
H. No, because the English Channel is only one place that Cox had swum before going to Antarctica.
J. No, because it is irrelevant to the focus of the essay at this point.

51. Given that all the choices are true, which one best conveys Cox's attitude toward swimming and helps bring into focus the kind of swimming that appeals to her?

A. NO CHANGE
B. loved the challenge of
C. had racked up many miles in
D. astounded many by her swimming feats in

[1] Cox is fortunate that she has a natural tolerance for cold temperatures, but swimming the Antarctic—in water only slightly above freezing—demanded serious preparation. [2] This athlete studied how Antarctic animals adapt to the frigid environment. [3] Penguins' double layer of feathers acts as insulation, so she grew her hair long and piled it under her swim cap. [4] Antarctic seals rely on body fat for warmth, so Cox gained twelve pounds, it was weight (52) that she hoped would keep her warm in the icy water. (53)

52. **F.** NO CHANGE
G. she put on weight
H. she gained it so
J. weight

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

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

In November 2002, a crew of (54) physicians, sailors, and expedition experts, Cox headed for Neko Harbor on the Antarctic Peninsula. There she dove into water chilled by melting glaciers and began to swim. Without proper training, she would have been in peril. (55)

54. **F.** NO CHANGE
G. a crew made up of
H. with a crew of
J. DELETE the underlined portion.

55. The writer wants to end this paragraph with a physical detail about the swim that emphasizes that Cox was in a harsh environment. Given that all the choices are true, which one best accomplishes the writer's purpose?

A. NO CHANGE
B. Her amazing feat was described in a feature article in *The New Yorker* magazine.
C. Bits of ice brushed against her arms and legs.
D. Photographs of her in her goggles, swim cap, and bathing suit appeared in a national publication.

Her initial fatigue and exhaustion (56) turned into exhilaration as she moved through water that was clearer and blue as (57) any she'd swum in before. For a moment at the end, she considered going even farther. Cox knew, however, that the longer she stayed in the water, the

56. **F.** NO CHANGE
G. exhaustion
H. exhaustion that left her feeling fatigued
J. exhausting fatigue

57. **A.** NO CHANGE
B. more blue then
C. bluer than
D. bluer then

longer it would take to bring her body temperature—which fell to 95.5 degrees Fahrenheit by the end of the swim—back to normal. [58] A mile was good enough as [59] Cox closed in on the shore—and her goal—penguins splashed in the water with the great athlete. [60]

58. **F.** NO CHANGE
G. back to a normal body temperature.
H. in other words, back to normal.
J. which was normal.

59. **A.** NO CHANGE
B. enough. As
C. enough, as
D. enough,

60. Given that all the choices are true, which one best concludes the essay with an image that emphasizes the location and indicates the completion of Cox's feat?

F. NO CHANGE
G. birds splashed in the water as if to cheer her on toward the goal of the entire expedition.
H. wildlife displayed their natural ability to swim in waters that truly tested Cox's ability to meet her goal.
J. a flock of penguins jumped into the water and joined her for the last thrilling strokes.

PASSAGE V

"All I Can Do Is Take a Picture"

[1]

Ernest C. Withers has been recording history with his camera for more than sixty years. For most of his life, Withers has lived and worked as a photojournalist in Memphis, Tennessee, where he covered newsworthy events, both local and national, over some six decades. [61]

61. The writer is thinking about deleting the phrase "over some six decades" from the preceding sentence (and replacing the comma after the word *national* with a period). Should that phrase be kept or deleted?

A. Kept, because it gives readers some idea of Withers's longevity.
B. Kept, because it helps readers to figure out when Withers began working as a photojournalist.
C. Deleted, because it repeats information presented earlier in the essay.
D. Deleted, because the length of Withers's career is not relevant to the focus of this essay.

As an African American intimately familiar with the geography and people of the South, he was often the first photographer present as historic moments took place. Using his hometown as his base and documenting (62) the key people and events of the world in which he grew up, observed, and learned. (63)

[2]

[1] When (64) his older sister's boyfriend showed no interest in using a camera that she had bought for him, Withers took it to school and photographed his classmates. [2] Years later, while serving as a jeep driver in World War II, he received permission from his company commander to train at the photography school at Camp Sutton, North Carolina. [3] Withers started taking pictures in (65) his youth. [4] In 1946, he left the Army and began working at a job that was (66) a self-employed photographer. [67]

[3]

Withers's profession gave him access to famous people. He has photographed seven of the last eight U.S. presidents and every major civil rights leader since the 1950s. Thus, he is well (68) known and well liked, Withers often traveled with and photographed

62. **F.** NO CHANGE
G. base. Withers documented
H. base, Withers documented
J. base, documenting

63. Given that all the choices are true, which one provides the most effective and most specific support for the statement made in the preceding sentence?

A. NO CHANGE
B. the Memphis music scene, baseball's Negro Leagues, and the civil rights movement.
C. his world, which have become memorable because of their significance.
D. this place that he thought would be important or newsworthy.

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

F. Whereas
G. Since
H. As if
J. After

65. **A.** NO CHANGE
B. with
C. of
D. at

66. **F.** NO CHANGE
G. for himself as
H. as
J. DELETE the underlined portion.

67. For the sake of the logic and coherence of this paragraph, Sentence 3 should be placed:

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

68. **F.** NO CHANGE
G. In fact, he is well
H. He is well
J. Well

such historic figures as Martin Luther King Jr., Medgar
69

Evers, and James Meredith. For instance, his photos of
70

Memphis's Beale Street jazz and blues musicians includes
71
the likes of B. B. King, Aretha Franklin, and Elvis Presley.

[4]

In addition to capturing many public personages on film, Withers also photographed: waitresses, church
72
congregations, nightclub audiences, and Little League baseball games. "I can't play a piano, I can't play a guitar, all I can do is take a picture," Withers said in a recent interview. At long last, Ernest C. Withers had recorded
73
some five million photographic images.

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

A. such historical figures as
B. historical figures such as
C. such historic figures
D. historic figures like

70. **F.** NO CHANGE
G. As a result, his
H. However, his
J. His

71. **A.** NO CHANGE
B. does include
C. including
D. include

72. **F.** NO CHANGE
G. photographed waitresses,
H. photographed: waitresses
J. photographed waitresses

73. Which choice best expresses the fact that Withers is still taking photographs at the time this essay was written?

A. NO CHANGE
B. At last count,
C. To sum up,
D. All in all,

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

74. Upon reviewing the essay and realizing that some information has been left out, the writer composes the following sentence incorporating that information:

> He immortalized his subjects in the middle of their performances as well as in quiet moments backstage.

This sentence would most logically be placed at the end of Paragraph:

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

75. Suppose the writer's goal had been to write a biographical sketch of a photojournalist that would portray the person in the context of the world he or she photographed. Does this essay successfully accomplish that goal?

A. Yes, because it describes Ernest Withers's career as a photojournalist and relates that career to his hometown of Memphis and the South.
B. Yes, because it explains how Ernest Withers first developed his interest in photography and photojournalism.
C. No, because it fails to make any connection between Ernest Withers and the world that he photographed.
D. No, because it doesn't sufficiently describe Ernest Withers's achievements, honors, and awards.

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. If $m = 4$, $n = -5$, and $p = 9$, what is the value of $mp - mn$?

A. 16
B. 31
C. 41
D. 56
E. 81

2. Vehicle A averages 19 miles per gallon of gasoline, and Vehicle B averages 37 miles per gallon of gasoline. At these rates, how many more gallons of gasoline does Vehicle A need than Vehicle B to make a 1,406-mile trip?

F. 28
G. 36
H. 38
J. 56
K. 74

3. If $\frac{x}{y} = \frac{1}{9}$ and $\frac{y}{z} = \frac{9}{8}$, then $\frac{z}{x} = ?$

A. $\frac{1}{648}$

B. $\frac{1}{8}$

C. $\frac{8}{81}$

D. $\frac{81}{8}$

E. 8

DO YOUR FIGURING HERE.

4. If $12(x - 7) = -11$, then $x = ?$

F. $-\frac{95}{12}$

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

H. $-\frac{11}{12}$

J. $-\frac{1}{3}$

K. $\frac{73}{12}$

5. The legs of a right triangle measure 18 m and 24 m, respectively. What is the length, in meters, of its hypotenuse?

A. 21

B. 30

C. 42

D. $\sqrt{252}$

E. $\sqrt{432}$

6. In the school cafeteria, students choose their lunch from 4 sandwiches, 2 soups, 2 salads, and 2 drinks. How many different lunches are possible for a student who chooses exactly 1 sandwich, 1 soup, 1 salad, and 1 drink?

F. 2
G. 4
H. 10
J. 16
K. 32

7. What is $\frac{1}{9}$ of 63% of \$6,000 ?

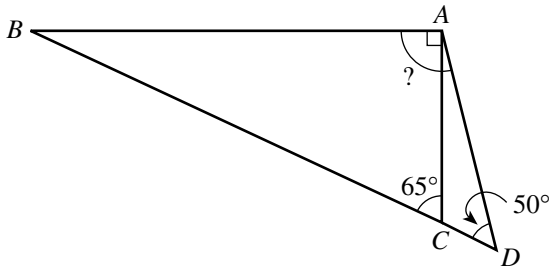
A. \$34,020
B. \$ 4,200
C. \$ 3,402
D. \$ 420
E. \$ 42

8. DMC Electronics Company builds 2 products: a DVD player and a VCR. Employees of the company can build a maximum of 150 DVD players per week and a maximum of 200 VCRs per week. No more than 250 products can be built per week. In the following inequalities, d represents the number of DVD players and v represents the number of VCRs. Which inequality expresses the constraint on the number of products built per week?

F. $d + v \leq 150$
G. $d + v \geq 200$
H. $d + v \leq 200$
J. $d + v \geq 250$
K. $d + v \leq 250$

DO YOUR FIGURING HERE.

9. In the figure below, $\angle ADC$ measures 50°, $\angle ACB$ measures 65°, and $\angle BAC$ measures 90°. What is the measure of $\angle BAD$?



A. 105°
B. 115°
C. 130°
D. 140°
E. 155°

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

F. $2x^2 - 21$
G. $2x^2 - 11x - 21$
H. $2x^2 + 11x - 21$
J. $2x^2 + 17x - 21$
K. $2x^2 + 17x + 21$

11. A baker has $4\frac{2}{3}$ cups of sugar in her pantry. Each cake she bakes requires $\frac{1}{2}$ cup sugar. Which of the following is the largest number of whole cakes for which she has enough sugar in her pantry?

A. 2
B. 3
C. 8
D. 9
E. 10

12. If $f(x) = 6x^2 + 4x - 11$, then $f(-5) = ?$

F. −181
G. −119
H. 61
J. 119
K. 159

13. Which of the following expressions is equivalent to $-x^2 - x$?

A. $-x(x + 1)$
B. $-x(x - 1)$
C. $-x(1 - x)$
D. $x(x + 1)$
E. $x(x - 1)$

DO YOUR FIGURING HERE.

14. The student body at Julian High School consists of sophomores, juniors, and seniors only. The ratio of sophomores to juniors to seniors on Julian High School's student council is 2:3:4. There are 15 juniors on the student council. How many students are on the entire student council?

F. 21
G. 24
H. 45
J. 60
K. 135

15. The second term of an arithmetic sequence is −14, and the third term is −34. What is the first term?

(Note: In an arithmetic sequence, consecutive terms differ by the same amount.)

A. $\frac{1}{14}$

B. 6

C. 14

D. 20

E. −20

16. Last year, Tom earned an annual salary of $\$S$ from which a total of $\$D$ was deducted for taxes and insurance. The balance was Tom's take-home pay. Tom's take-home pay represents what fraction of his annual salary?

F. $\frac{D}{S}$

G. $\frac{S}{D}$

H. $\frac{D-S}{D}$

J. $\frac{D-S}{S}$

K. $\frac{S-D}{S}$

17. Mara is the timer for a road race. She is 200 feet from the starting gun. Using 1,120 feet per second for the speed of sound, which of the following is closest to how many seconds after the starting gun is fired that Mara will hear the starting gun?

A. 0.1
B. 0.2
C. 0.6
D. 0.9
E. 1.3

DO YOUR FIGURING HERE.

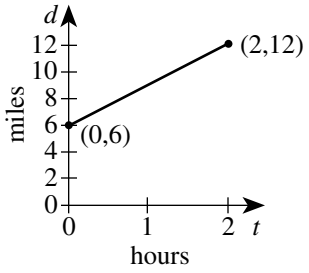
18. What is the slope of the line represented by the equation $6y - 18x = 6$?

F. 1
G. 3
H. 6
J. 18
K. −18

19. At a buffet restaurant, the price for dinner for an adult is \$6.95 and the price for dinner for a child is \$3.95. A group of 8 people went to the restaurant for dinner and paid a total of \$46.60, excluding tax and tip. How many adults were in the group?

A. 2
B. 3
C. 4
D. 5
E. 6

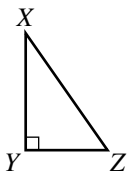
20. The graph below shows the distance, d miles, you are from home t hours following the start of a walk. Which of the following statements accurately describes your walk?



F. You start at home, and after 2 hours are 12 miles from home.
G. You start at home, and after 2 hours are 6 miles from home.
H. You start 12 miles from home, and after 2 hours are home.
J. You start 12 miles from home, and after 2 hours are 6 miles from home.
K. You start 6 miles from home, and after 2 hours are 12 miles from home.

21. In right triangle $\triangle XYZ$ below, $\cos Z = \frac{4}{7}$. Which of the following expressions is equal to $\cos X$?

A. $\frac{7}{4}$
B. $\frac{\sqrt{65}}{4}$
C. $\frac{\sqrt{33}}{4}$
D. $\frac{\sqrt{65}}{7}$
E. $\frac{\sqrt{33}}{7}$



DO YOUR FIGURING HERE.

22. For any nonzero value of y, $(y^{-5})^3 = ?$

F. $\frac{1}{y^{15}}$

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

H. y^8

J. y^{15}

K. y^{125}

23. The ratio of the side lengths of 2 similar triangles is 3:5. The smaller triangle has sides that measure 5 centimeters, 7 centimeters, and 9 centimeters. What is the perimeter, in centimeters, of the larger triangle?

A. $12\frac{3}{5}$

B. 21

C. 35

D. 63

E. 105

24. Points $R(6,4)$ and $S(-4,5)$ lie in the standard (x,y) coordinate plane. What is the slope of $\overline{RS}$?

F. $-\frac{1}{10}$

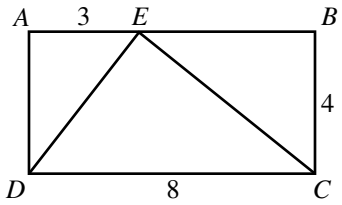
G. $\frac{1}{10}$

H. $-\frac{2}{9}$

J. $\frac{2}{9}$

K. $\frac{9}{2}$

25. In the figure below, E is a point on side $\overline{AB}$ of rectangle $ABCD$. The measures given are in inches. What is the area of $\triangle DEC$, in square inches?



A. 10
B. 12
C. 16
D. 20
E. 32

DO YOUR FIGURING HERE.

Use the following information to answer questions 26–28.

Fran is planning to fence a 10-foot-by-15-foot rectangular plot of ground to use as a garden. She intends to plant a 1-foot-wide border of flowers along the inside of the entire perimeter. The rectangular section surrounded by this border will be planted with vegetables in 11-foot-long rows parallel to the longer sides.

26. What is the minimum number of feet of fence Fran would need to enclose the garden if there will be a 3-foot-wide opening on one side of the plot for people to walk through?

F. 22
G. 25
H. 47
J. 50
K. 150

27. What is the area, in square feet, of the rectangular plot?

A. 50
B. 104
C. 126
D. 146
E. 150

28. When Fran plants the vegetables, she wants the center lines of adjacent rows to be at least 10 inches apart. She also wants the center lines of the outermost rows to be at least 10 inches from the inner edge of the flower border. According to these planting restrictions, what is the maximum number of 11-foot-long rows of vegetables that could be planted within this garden plot?

F. 8
G. 9
H. 10
J. 11
K. 12

---

29. If $|x + 9| = 19$, what are the possible values for x ?

A. −28 and 10
B. −10 and 10
C. −10 and 28
D. −9 and 9
E. 10 and 28

DO YOUR FIGURING HERE.

30. In the standard (x,y) coordinate plane, $M(9,-8)$ is the midpoint of $\overline{TW}$. If W has coordinates $(3,1)$, what are the coordinates of T ?

F. $(15, -7)$
G. $(15,-17)$
H. $\left(6, -\frac{7}{2}\right)$
J. $(6, -9)$
K. $(6,-15)$

31. If the circumference of a circle is 96π centimeters, what is the radius of the circle, in centimeters?

A. $\sqrt{96}$
B. 24
C. 48
D. 96
E. 192

32. A rectangular tabletop is 14 inches wide and 48 inches long. Which of the following is closest to the length, in inches, of the diagonal of this tabletop?

F. 34
G. 50
H. 55
J. 62
K. 68

33. Rectangle $ABCD$ has vertices in the standard (x,y) coordinate plane at $A(-4,-2)$, $B(-4,3)$, $C(2,3)$, and $D(2,-2)$. A translation of rectangle $ABCD$ is a second rectangle, $A'B'C'D'$, with vertices $A'(4,-12)$, $B'(x,y)$, $C'(10,-7)$, and $D'(10,-12)$. What are the coordinates of B' ?

A. $(3, -6)$
B. $(4, 3)$
C. $(4, -7)$
D. $(4,-13)$
E. $(6, -5)$

34. The solution set for x of the equation $x^2 + nx - 8 = 0$ is $\{-2, 4\}$. What does n equal?

F. -8
G. -6
H. -2
J. 2
K. 6

DO YOUR FIGURING HERE.

Use the following information to answer questions 35–37.

The Dow Jones Industrial Average (DJIA) is an index of stock values. The chart below gives the DJIA closing values from August 24 through September 30 of a certain year and the change in the closing value from the previous day. A minus sign indicates a *decline* (a closing value less than the previous day's closing value). A plus sign indicates an *advance* (a closing value greater than the previous day's closing value).

Dow Jones Industrial Average Closing Values

Date	Closing value	Change	Date	Closing value	Change
8/24	8,600		9/13	7,945	+150
8/25	8,515	−85	9/14	8,020	+75
8/26	8,160	−355	9/15	8,090	+70
8/27	8,050	−110	9/16	7,870	−220
8/30	7,540	−510	9/17	7,895	+25
8/31	7,825	+285	9/20	7,930	+35
9/01	7,780	−45	9/21	7,900	−30
9/02	7,680	−100	9/22	8,150	+250
9/03	7,640	−40	9/23	8,000	−150
9/07	8,020	+380	9/24	8,025	+25
9/08	7,860	−160	9/27	8,110	+85
9/09	8,045	+185	9/28	8,080	−30
9/10	7,795	−250	9/29	7,845	−235
			9/30	7,630	−215

35. Which of the following is closest to the percent of decrease from the August 24 closing value to the September 30 closing value?

A. 7.9%
B. 8.9%
C. 11.3%
D. 12.7%
E. 88.7%

36. The chart shows 4 more declines than advances. All of the following statements are true. Which one best explains why the decline from the August 24 closing value to the September 30 closing value was relatively large?

F. The greatest change in the chart was a decline.
G. The least change in the chart was an advance.
H. The greatest number of consecutive declines was greater than the greatest number of consecutive advances.
J. The first change was a decline.
K. The average of the declines was much greater than the average of the advances.

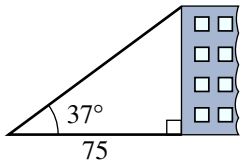
DO YOUR FIGURING HERE.

37. What is the average closing value for the 5-day period from September 13 through September 17 ?

A. 7,895
B. 7,920
C. 7,964
D. 7,980
E. 8,090

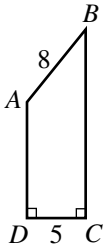
38. The angle of elevation from a point on the ground to the top of a building is 37°, as shown below. The point is 75 feet away from the building. Which of the following is closest to the height, in feet, of the building?

(Note: sin 37° ≈ 0.602, cos 37° ≈ 0.799, and tan 37° ≈ 0.754)



F. 45
G. 57
H. 60
J. 94
K. 125

39. For trapezoid *ABCD* shown below, $AB = 8$ m, $DC = 5$ m, and the perimeter is 39 m. What is the area, in square meters, of *ABCD* ?



A. $32\frac{1}{2}$
B. 52
C. 65
D. 130
E. 260

DO YOUR FIGURING HERE.

40. The average distance from Earth to the Sun, which is 9.3×10^7 miles, is about how many times the average distance from Earth to the Moon, which is 2.4×10^5 miles?

F. 4×10^2
G. 7×10^2
H. 4×10^{12}
J. 1×10^{13}
K. 2×10^{13}

41. Which of the following operations will produce the largest result when substituted for the blank in the expression 35 ____ $\left(-\frac{1}{56}\right)$?

A. Averaged with
B. Minus
C. Plus
D. Divided by
E. Multiplied by

42. A circle in the standard (x,y) coordinate plane has center $(7,-6)$ and radius 10 coordinate units. Which of the following is an equation of the circle?

F. $(x + 7)^2 - (y - 6)^2 = 100$
G. $(x + 7)^2 - (y - 6)^2 = 10$
H. $(x + 7)^2 + (y - 6)^2 = 10$
J. $(x - 7)^2 + (y + 6)^2 = 100$
K. $(x - 7)^2 + (y + 6)^2 = 10$

43. In $\triangle XYZ$, $\overline{XY} \cong \overline{XZ}$ and the measure of $\angle Y$ is 22°. What is the measure of $\angle X$?

A. 136°
B. 79°
C. 68°
D. 44°
E. 22°

44. What is the volume, in cubic centimeters, of a cube if the area of 1 square face is 144 square centimeters?

F. 36
G. 1,728
H. 20,736
J. 46,656
K. 373,248

DO YOUR FIGURING HERE.

45. If a number is chosen at random from the set $\{1, 2, 3, 4, \cdots, 12\}$, what is the probability that the chosen number is a factor of 12 ?

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

B. $\frac{5}{12}$

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

D. $\frac{5}{6}$

E. 1

46. Jamal invested \$1,000 on January 1. At the end of 9 months, during which time Jamal made no withdrawals and no other deposits, the investment has earned \$75 in interest. Jamal's \$1,000 investment returned an annual percentage yield closest to which of the following percents?

(Note: Interest can be estimated using $I = Prt$, where I is the amount of interest earned; P is the amount of money initially invested; r is the annual percentage yield that the money returned; and t is the time, in years, the money is invested.)

F. 12%
G. 11%
H. 10%
J. 8%
K. 7%

47. Consider the function $f(x) = 2x^2 + x$. What is the value of $f(f(3))$?

A. 75
B. 168
C. 465
D. 885
E. 903

48. What are the possible values of y such that $xy^2 = 54$, $x < 10$, $y < 10$, and x and y are integers?

F. –3, 3
G. 1, 3
H. 1, 9
J. 3
K. 6

DO YOUR FIGURING HERE.

49. Each side of a quadrilateral is 12 cm long. Which 2 of the following *must* also describe this quadrilateral?

I. Square (sides of equal length and 90° angles)
II. Rhombus (sides of equal length)
III. Rectangle (90° angles)
IV. Parallelogram (opposite sides parallel)

A. I and II only
B. I and III only
C. II and III only
D. II and IV only
E. III and IV only

50. The points (–2,3) and (0,1) lie on a straight line. What is the slope-intercept equation of the line?

F. $y = 2x - 1$
G. $y = x + 5$
H. $y = x + 1$
J. $y = -x + 1$
K. $y = -2x + 3$

51. Each number on a list containing 100 numbers is divided by 10 to produce a second list containing 100 numbers. Each of the 100 numbers on the second list is decreased by 2 to produce a third list of 100 numbers. The median of the third list is x. Which of the following expressions gives the median of the original list?

A. $\frac{x}{10} - 2$

B. $\frac{x}{10}$

C. $x + 2$

D. $10x + 2$

E. $10(x + 2)$

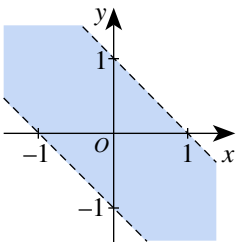
52. Whenever $(x + 4)(x - 3) < 0$, which of the following expressions *always* has a negative value?

F. $x - 5$
G. $x - 2$
H. $x + 5$
J. $2x$
K. $x^2 - 1$

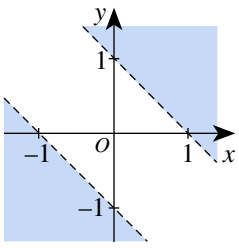
DO YOUR FIGURING HERE.

53. Which of the following graphs in the standard (x,y) coordinate plane represents the solution set of the inequality $|x + y| > 1$?

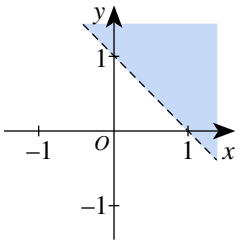
A.



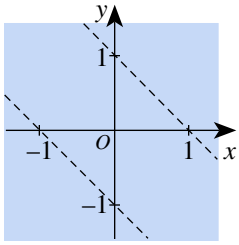
D.



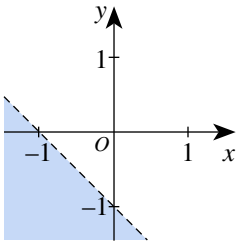
B.



E.



C.



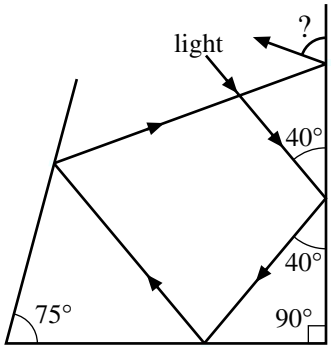
54. The expression $4 \sin x \cos x$ is equivalent to which of the following?

(Note: $\sin(x + y) = \sin x \cos y + \cos x \sin y$)

F. $2 \sin 2x$
G. $2 \cos 2x$
H. $2 \sin 4x$
J. $8 \sin 2x$
K. $8 \cos 2x$

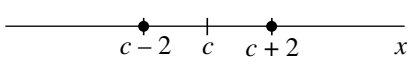
DO YOUR FIGURING HERE.

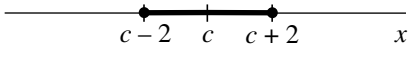
55. The angle at which light strikes a mirror is equal in measure to the angle at which it is reflected. In the hall of the mirrors below, what is the measure of the indicated angle?

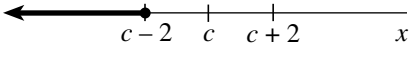


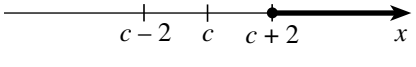
A. 50°
B. 55°
C. 70°
D. 80°
E. 90°

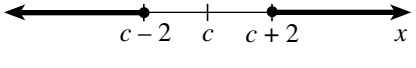
56. Which of the following is the graph of the solution set for $|x - c| \geq 2$?

F.


G.


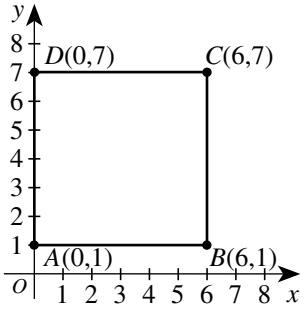
H.


J.


K.


57. Square $ABCD$ is shown below in the standard (x,y) coordinate plane. The line $y = ax + 2$ divides the square into 2 congruent regions if a = ?

A. $\frac{2}{3}$
B. $\frac{1}{6}$
C. $\frac{5}{6}$
D. $\frac{6}{7}$
E. 1



DO YOUR FIGURING HERE.

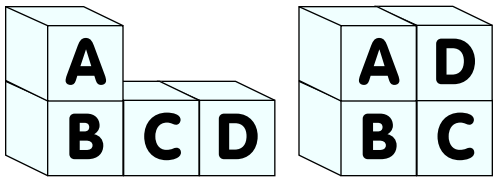
58. If $\log_3 2 = p$ and $\log_3 5 = q$, which of the following expressions is equal to 10 ?

F. 3^{p+q}
G. $3^p + 3^q$
H. 9^{p+q}
J. pq
K. $p + q$

59. The domain of the function $y(x) = 3\cos(5x - 4) + 1$ is all real numbers. Which of the following is the range of the function $y(x)$?

A. $-3 \leq y(x) \leq 3$
B. $-4 \leq y(x) \leq 3$
C. $-4 \leq y(x) \leq 2$
D. $-2 \leq y(x) \leq 4$
E. All real numbers

60. In the figure below, both solids consist of 4 cubes, each 1 unit on a side. In the solid on the right, the 4 cubes form a rectangular prism that is 2 units long, 1 unit wide, and 2 units high. The solid on the left is the result of moving Cube D from its position above Cube C to beside it so that Cubes B, C, and D form a rectangular prism 3 units long, 1 unit wide, and 1 unit high. To the nearest percent, the total surface area of the solid on the right is what percent less than the total surface area of the solid on the left?



F. 0%
G. 2%
H. 6%
J. 11%
K. 13%

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 four 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.

Passage I

PROSE FICTION: This passage is adapted from the novel *Toning the Sweep* by Angela Johnson (©1993 by Angela Johnson).

The narrator is visiting her grandmother, Ola, to help her prepare to move. Martha is Ola's friend and neighbor.

I think about how everybody Ola knows here has a story. Daddy says that everybody has one and their stories are all a part of us. If Ola loves these people, then they must be a part of me too. It must be true about all of us being a part of one another like Daddy says.

Ola hums on the porch while Mama eats an apple and labels boxes. I go over to the phone by the refrigerator and call Martha. When she picks up, her voice rings out and is so familiar. I tell her Ola's idea about making a movie.

Martha Jackson's hair is the color of coal and she must be about my grandmama's age. She cuts her hair short, and sometimes it sticks straight up, but she doesn't care.

She's probably one of the tallest people I know, and walks like she's swimming. Martha looks at you for a long time before she decides to speak.

She's leaning on a Joshua tree in Ola's front yard, saying, "It's like poetry and eating to me now. You let the camera become part of you. Like your head and your eyes. If the camera were to fall out of your hands, it should be like your head falling off in the middle of a conversation."

"I don't know if the camera can ever be that special to me, Martha," I say. "I just got used to the camera my dad gave me four years ago. I can remember to take off the lens cap sometimes."

Martha smiles. "This is a thing to get used to—that's all. No magic, no special real training. Turn the camera on and shoot."

I take the camera and start taping a crow that's landed on the back porch. I figure it's a start. The crow gets real interested in me filming him and stops pecking at the old apple core he's found near the garbage cans. He hops off the porch and checks me and the camera out till he sees something else off over by some brush.

Martha's watching me with a smirk when I turn back to her with the camera. "I guess you'll do okay by yourself now." She looks at me for a long time, then says, "Let's talk about Ola."

I start shooting and say to myself, "A part of me," and hope that the thing is going and the lens cap hasn't been on the whole time I've been taping the crow. I zoom in on Martha leaning against the Joshua tree. She stares into the camera.

"I met Ola in the late summer of 1964 'cause there was no other way around it."

A pot falls in the kitchen, and we can hear Ola laughing—then she stops. I keep the camera running.

"Like I was saying," Martha starts to whisper, but changes her mind and speaks even louder. "I couldn't help but meet her. There's about five hundred people that live out here, and she happens to be my closest neighbor. She was playing her music loud one night, and I was sitting out in my yard."

Ola comes out the screen door and sits down by Martha Jackson. Two people couldn't be more different in looks. I have them both in the frame.

Ola's short and delicate—like she'd break if you held her arm too tight. She wouldn't break, though. She hands Martha a glass of iced tea and sits cross-legged on the ground.

I press the pause button, then change my mind. I sit down on a lawn chair and ask, "What did you two think of each other when you first met?" It's easier to ask what I'd usually think of as a nosy question from behind a camera.

Martha whispers, "I thought she had the worst accent of anybody that I'd ever heard. It grew on me, though, and I got used to it. I liked her car and the way the fool painted the house yellow the day after she and Diane moved in."

Ola spills a little iced tea and says, "No, you didn't. You yelled from the road that this shade of yellow didn't look good from where you stood, and what was it called?" Ola looks at the camera and tells me, "Your mama was so embarrassed, Emmie, she begged me to stop painting it yellow and just make it gray or something. Your mama always took things so much to heart."

"What did you say to Martha then?"

"I told her I didn't know who she was, but if she had enough energy to yell from the road at a perfect stranger, she probably had enough strength to pick up a brush."

Martha tilts her head back and laughs. "So I did."

Ola gets up and goes into the house without making a sound. I don't think that Martha even knows she's gone, 'cause her eyes are closed.

I want to make this movie on my own. Martha makes me want to know all of Ola's friends. I want to know who they are and what they've done. I'll put them all in front of the camera, and when the movie's done, it can be my gift to Ola. The other gifts I've given her are things she could put on the wall or wear. I figure this will be better than all that. I'll give her memories of her people.

1. Based on the passage, Ola and Martha can reasonably be said to share all of the following traits EXCEPT a:

A. sense of humor.
B. capacity for brutal honesty.
C. great vitality and liveliness.
D. tendency to pause before speaking.

2. Which of the following statements does the passage support regarding the idea for the movie?

F. Though the original idea was Ola's, the narrator and Martha embraced it.
G. Although the narrator came up with the idea, she needed Martha's encouragement to continue.
H. Ola proposed the idea to Martha, who recruited the narrator to make the movie.
J. The narrator suggested the idea to Ola, who had to be talked into it by Martha.

3. The narrator's two references to a camera's lens cap (lines 27 and 42) primarily serve to suggest her:

A. expanding knowledge of camera terminology.
B. continuing desire to uncover her artistic vision.
C. ongoing insecurity about her skill with a camera.
D. growing eagerness to use a camera to tell stories.

4. Viewed in the context of the passage, Martha's smirk (line 37) most likely reflects a feeling of:

F. mild weariness.
G. sharp condescension.
H. profound relief.
J. slight amusement.

5. As presented by the participants, the initial meeting between Ola and Martha can best be described as:

A. a misunderstanding that escalates into harsh words until the two agree to keep their distance from each other.
B. a potentially bitter confrontation that, because of the personalities of the two people, turns into a cooperative effort.
C. a friendly, relaxed get-together between two families made even more enjoyable by music and a shared task.
D. an accidental encounter that slowly turns unpleasant due to a dispute that Ola's daughter helps resolve.

6. Martha clearly recommends that the narrator use a camera in which of the following ways?

F. Scientifically
G. Cautiously
H. Intuitively
J. Secretly

7. It can most reasonably be inferred that Diane is the name of:

A. the narrator.
B. the narrator's mother.
C. one of Ola's neighbors.
D. one of Martha's best friends.

8. In terms of the development of the narrator as a character, the last paragraph primarily serves to:

F. establish motivation for her actions.
G. provide background details about her past.
H. elaborate on her relationship with Martha.
J. undermine the reliability of her account.

9. In the first paragraph, the main conclusion the narrator reaches is that:

A. Daddy is usually right in his assessments of people.
B. Ola is a wonderful storyteller who entertains everyone she knows.
C. Ola shares a close bond with her neighbors.
D. people everywhere are connected to each other by stories and love.

10. The narrator's statement "She wouldn't break, though" (line 60) most nearly means that in the narrator's opinion, Ola is:

F. too stubborn to change her opinions very often.
G. too guarded to show her feelings.
H. stronger than she appears to be.
J. more active than many people half her age.

Passage II

SOCIAL SCIENCE: This passage is adapted from the article "The Trouble with Fries" by Malcolm Gladwell (©2001 by The Condé Nast Publications Inc.).

It is entirely possible, right now, to make a delicious French fry that does not carry with it a death sentence. A French fry can be much more than a delivery vehicle for fat.

Is it really that simple, though? Consider the cautionary tale of the efforts of a group of food scientists at Auburn University more than a decade ago to come up with a better hamburger. The Auburn team wanted to create a leaner beef that tasted as good as regular ground beef. They couldn't just remove the fat, because that would leave the meat dry and mealy. They wanted to replace the fat. The goal of the Auburn scientists was to cut about two-thirds of the fat from normal ground beef, which meant that they needed to find something to add to the beef that would hold an equivalent amount of water—and continue to retain that water even as the beef was being grilled. Their choice? Seaweed, or, more precisely, carrageenan. They also selected some basic flavor enhancers, designed to make up for the lost fat "taste." The result was a beef patty that was roughly three-quarters water, twenty per cent protein, five per cent or so fat, and a quarter of a per cent seaweed. They called it AU Lean.

It didn't take the Auburn scientists long to realize that they had created something special. They began doing blind taste comparisons of AU Lean burgers and traditional twenty-per-cent-fat burgers. Time after time, the AU Lean burgers won. Next, they took their invention into the field. They recruited a hundred families and supplied them with three kinds of ground beef for home cooking over consecutive three-week intervals—regular "market" ground beef with twenty per cent fat, ground beef with five per cent fat, and AU Lean. The families were asked to rate the different kinds of beef, without knowing which was which. Again, the AU Lean won hands down.

What the Auburn team showed was that, even though people love the taste and feel of fat—and naturally gravitate toward high-fat food—they can be fooled into thinking there is a lot of fat in something when there isn't. When the group tried to lower the fat in AU Lean below five per cent, people didn't like it anymore. But, within the relatively broad range of between five and twenty-five per cent, you can add water and some flavoring and most people can't tell the difference.

What's more, people appear to be more sensitive to the volume of food they consume than to its calorie content. Barbara Rolls, a nutritionist at Penn State, has demonstrated this principle with satiety studies. She feeds one group of people a high-volume snack and another group a low-volume snack. Even though the two snacks have the same calorie count, she finds that people who eat the high-volume snack feel more satisfied. Eating AU Lean, in short, isn't going to leave you with a craving for more calories; you'll feel just as full.

For anyone looking to improve the quality of fast food, all this is heartening news. It means that you should be able to put low-fat cheese and low-fat mayonnaise in a fast-food hamburger without anyone's complaining. It also means that there's no particular reason to use twenty-per-cent-fat ground beef in a fast-food burger. In 1990, using just this argument, the Auburn team suggested to McDonald's that it make a hamburger out of AU Lean. Shortly thereafter, McDonald's came out with the McLean Deluxe. Other fast-food houses scrambled to follow suit. Nutritionists were delighted. And fast food appeared on the verge of a revolution.

Only, it wasn't. The McLean was a flop, and four years later it was off the market. What happened? Part of the problem appears to have been that McDonald's rushed the burger to market before many of the production kinks had been worked out. More important, though, was the psychological handicap the burger faced. People liked AU Lean in blind taste tests because they didn't know it was AU Lean; they were fooled into thinking it was regular ground beef. But nobody was fooled when it came to the McLean Deluxe. It was sold as the healthy choice—and who goes to McDonald's for health food?

This is sobering news for those interested in improving the American diet. For years, the nutrition movement in this country has made transparency one of its principal goals: it has assumed that the best way to help people improve their diets is to tell them precisely what's in their food, to label certain foods good and certain foods bad. But transparency can backfire, because sometimes nothing is more deadly for our taste buds than the knowledge that what we are eating is good for us.

11. The author most nearly portrays the Auburn scientists as:

- **A.** severe critics of the fast-food industry's practices.
- **B.** enthusiastic promoters of their promising work.
- **C.** diligent researchers uninterested in the practical application of their work.
- **D.** clever innovators more interested in nutrition than in how food tastes.

12. It can reasonably be inferred from the passage that changing which of the following conditions of the experiment described in lines 28–36 would have had the biggest effect on the outcome?

- **F.** Altering the order in which the families received the three kinds of ground beef
- **G.** Using two hundred families instead of one hundred in the study
- **H.** Telling the families which kind of ground beef they were getting each time
- **J.** Lengthening the time the families used each type of ground beef

13. The statement in lines 61–63 most likely represents the view of all of the following groups EXCEPT:

- **A.** McDonald's officials introducing the McLean Deluxe to the public.
- **B.** the Auburn scientists, who had research to support these conclusions.
- **C.** nutritionists who saw the potential health benefits of AU Lean.
- **D.** fast-food company executives at the time this article was published.

14. According to the passage, carrageenan's role in AU Lean was as a:

- **F.** flavor enhancer.
- **G.** substitute for fat.
- **H.** source of protein.
- **J.** replacement for seaweed.

15. The author implies that for an AU Lean hamburger to seem as satisfying as a hamburger made from regular ground beef, the most important factor would be keeping which of the following the same?

- **A.** Volume
- **B.** Calorie content
- **C.** Percent of fat
- **D.** Method of cooking

16. The author indicates that the main cause of the failure of the McLean Deluxe was that:

- **F.** McDonald's failed to promote it through advertising.
- **G.** it was rushed to market before production problems were solved.
- **H.** people believed that it was made from "market" hamburger.
- **J.** people knew that it was supposed to be good for them.

17. The author most likely intends the question in lines 80–81 to be read:

- **A.** rhetorically; he believes the answer is self-evident and negative.
- **B.** ironically; he finds it surprising that people really wanted the healthy choice.
- **C.** genuinely; he is unsure about whether people enjoy healthy fast food.
- **D.** critically; he objects to fast-food restaurants selling AU Lean.

18. It can reasonably be inferred from the last paragraph that the author thinks that, in the future, the nutrition movement should:

- **F.** make its goals more transparent.
- **G.** reconsider its goal of transparency.
- **H.** label foods as either good or bad.
- **J.** tell people exactly what is in their food.

19. According to the passage, which of the following elements makes up the highest percent of AU Lean?

- **A.** Fat
- **B.** Seaweed
- **C.** Water
- **D.** Protein

20. According to information in the fourth paragraph (lines 37–46), which of the following comparisons between a 20-percent-fat hamburger and an 8-percent-fat hamburger with added water and flavorings would most people make?

- **F.** The 20-percent-fat hamburger would taste slightly better.
- **G.** The 8-percent-fat hamburger would taste slightly better.
- **H.** The 8-percent-fat hamburger would taste significantly better.
- **J.** The two hamburgers would taste the same.

Passage III

HUMANITIES: This passage is adapted from *The Piano Shop on the Left Bank* by Thad Carhart (©2001 by Thad Carhart).

No one knows exactly when the piano was invented. The generally accepted date is around 1700. There is little doubt, however, about its inventor, an instrument maker in Florence, Italy, named Bartolomeo Cristofori, who developed a way of making a struck string resound loudly. Before Cristofori, keyboard instruments were unsatisfactory for different reasons: clavichords, whose strings are struck, were small and delicate, and their greatly reduced volume made them suitable only for small gatherings. Harpsichords, while larger and therefore considerably louder, had one overriding limitation: since the string is plucked, the force with which the key is depressed is unrelated to the volume of the sound produced. Dynamic control of each note was not possible.

What was needed—and what Cristofori invented—was an instrument as large and robust as the big harpsichords that would also allow the dynamic range that before had only been available on the flimsy clavichords. The first piano was described by a contemporary musician in 1711 as a "*gravicembalo col piano e forte*," a "harpsichord with soft and loud." This was the essential breakthrough, but it took decades for the seed to find fertile ground, and it did so not in Italy but in eighteenth-century Germany.

German instrument makers incorporated Cristofori's breakthrough into a series of increasingly powerful keyboard instruments that were true pianos. Johann Sebastian Bach was impressed by the first piano he tried, but he pointed out limitations that still needed to be worked on: a heavy action and a treble that was not loud enough. Two of his sons, Carl Philipp Emanuel and Johann Christian, championed the instrument in the next generation; by the time Johann Christian Bach gave England's first solo piano performance in 1768, the triumph of this new keyboard instrument over the harpsichord was assured.

The role of the keyboard as a solo instrument came to the fore musically. It was no longer just another part of the ensemble, and its unique volume freed it from the confines of the drawing room to which the harpsichord had almost always been consigned. Haydn and Mozart both wrote masterful sonatas for the new instrument, its keyboard was greatly expanded, and its dynamic range—the single feature that most distinguished it from the harpsichord—was exploited fully. A whole new technique stressing fluidity was developed for the piano, and Mozart wrote: "It should flow like oil." Solo concerts became the norm rather than the exception, and a class of instrumentalists with technique and power arrived on the scene.

What had been a tinkerer's offshoot among harpsichord makers became an industry in its own right. London and Vienna were its focal points. The two capitals gave rise to distinct schools of piano building, the principal difference having to do with how the action—the intricate mechanism that activates the hammers to strike the strings—was conceived and assembled. Viennese pianos were generally softer, with a refined singing tone that allowed the melody to come to the fore; the pianos themselves had delicate cabinetry. English pianos, on the other hand, had a more robust tone, with a stronger action and greater tension in the strings; they had solid cases and sturdy frames. The great Viennese composers of the classical era—Haydn, Mozart, Beethoven—played Viennese pianos, but the transition to the stronger instruments of the English school can be seen in Beethoven's last piano sonatas.

Beethoven was known for the increasing dynamic contrasts in his works for piano, from whisper to thunder, and he sometimes destroyed the fragile Viennese pianos when playing his music. He had a strong influence on the direction of piano manufacture, and as early as 1796 he expressed his frustration with the overly delicate styles of playing that were a holdover from harpsichords.

In 1818, Broadwood, the pre-eminent English manufacturer of the day, offered him a grand piano that incorporated all of the latest features: stronger case and frame, trichord stringing, more responsive action. This piano, too, Beethoven damaged with the fervor of his playing (a contemporary reported that "the broken strings were jumbled up like a thorn bush in a storm"), but he remained attached to it until his death in 1827. He imagined music unlike anything his contemporaries were writing; the *Hammerklavier* sonata from this period still strikes many as a revelation of the piano's extreme limits of power and expressiveness.

21. Which of the following statements best describes how the second paragraph (lines 16–25) functions in relation to the first paragraph?

- **A.** It moves further back in time to provide background for the circumstances described in the first paragraph.
- **B.** It focuses on the general public's reaction to the developments described in the first paragraph.
- **C.** It provides the other side of the argument presented in the first paragraph.
- **D.** It describes the solution to the problem presented in the first paragraph.

22. Which of the following questions is NOT answered by the passage?

- **F.** Who invented the piano?
- **G.** What were keyboard instruments like before 1700?
- **H.** What are the beginning and ending dates of the classical era?
- **J.** What is *action* as it relates to keyboard instruments?

23. Based on the passage, the author would most likely agree that both Beethoven and Cristofori were:

- **A.** tremendous innovators in ways that dramatically affected the music world.
- **B.** world-class musicians who gained recognition in their time.
- **C.** contributors to the advancement of the piano who were appreciated only after their deaths.
- **D.** musicians who found more fame outside their native countries than inside.

24. For purposes of the passage, the significance of eighteenth-century Germany is that it was there:

- **F.** Cristofori had his breakthrough.
- **G.** instrument makers improved upon ideas of piano making that had originated in Italy.
- **H.** the best harpsichords and clavichords were originally produced.
- **J.** the first major split occurred among piano makers over the best way to design keyboards.

25. As it is used in line 27, the phrase *Cristofori's breakthrough* most nearly refers to the:

- **A.** instrument maker's decision to let leading musicians initiate changes to standard piano design.
- **B.** creation of pianos whose strings could be plucked loudly or softly, depending on the effect desired.
- **C.** piano's release from the confines of the drawing room to larger performance spaces.
- **D.** development of a keyboard instrument that offered the dynamic range of the clavichord and the loudness of the harpsichord.

26. It can most reasonably be inferred from the passage that which of the following was a direct expression of others' deep respect for Beethoven?

- **F.** The grand piano manufactured by Broadwood whose strings the composer damaged
- **G.** The way Viennese pianos were built before the classical era
- **H.** The sonatas written and performed by Haydn and Mozart
- **J.** The piano schools established in London and Vienna

27. As it is used in line 88, the phrase *extreme limits* most nearly means:

- **A.** harsh rules.
- **B.** far reaches.
- **C.** high notes.
- **D.** drastic shortcomings.

28. According to the passage, Johann Sebastian Bach's reaction to the first piano he played was:

- **F.** disapproval of its loudness, accompanied by appreciation of its fluidity.
- **G.** mild irritation over the singing quality of the notes.
- **H.** genuine respect, accompanied by observations about problems.
- **J.** amusement that the fervor of his playing damaged the strings.

29. According to the passage, the piano was better suited than the harpsichord to:

- **A.** solo performances.
- **B.** drawing room concerts.
- **C.** delicate cabinetry.
- **D.** church music.

30. According to the passage, the *Hammerklavier* sonata is a composition by Beethoven that:

- **F.** sounds as dramatic on the clavichord as on the piano.
- **G.** reveals the composer's remarkable awareness and use of the piano's full capacities.
- **H.** gained more favor in England than in Vienna until Vienna imported English pianos.
- **J.** first inspired Mozart to compose for piano.

Passage IV

NATURAL SCIENCE: This passage is adapted from *Great Waters: An Atlantic Passage* by Deborah Cramer (©2001 by Deborah Cramer).

Relative newcomers to the marine world, bluefin tuna and swordfish have evolved into some of the sea's most highly developed fishes. While the cod, haddock, flounder, and plaice who dwell year-round in the North Sea and the Gulf of Mexico are cold-blooded, their body temperatures rising and falling in synchrony with the surrounding water, thus limiting their geographic range, swordfish and bluefin, exquisitely adapted to live in the vastness of the sea, are free from the boundaries imposed by temperature. The swordfish who surface at the shelf edge have swum up from the depths, rising hundreds of feet through the water each evening as the sun sets, following their prey of fish and squid. A temperature difference of 36 degrees Fahrenheit, as great as the swing between winter and summer, night and day, separates cold deep from warm surface. Swordfish exit one realm and swim into the other in under an hour.

Moving between such extremes would stun the nervous system of a cold-blooded fish, but these ocean princes make their own heat, warming themselves in the deep cold. The burner of the swordfish lies behind its eyes, below its brain, a dark mass of tissue surrounded by insulating fat, heavy with blood, and loaded with energy-producing mitochondria. With warm brain and eyes, swordfish can chase their food in waters deep and shallow, near and distant. By night, they feed at the surface, at the edge of the deep water. By day, they move onto shallow banks, like Georges or the Grand Banks, and dive down to feed, slashing through schools of menhaden and mackerel with their long, sharp swords.

Bluefin tuna thrive in waters as cold as 40 degrees Fahrenheit and as warm as 75 degrees Fahrenheit but unlike swordfish, they do not possess organs whose chief function is to produce heat. Instead they retain the heat they generate swimming. Other bony fish quickly lose their heat to the sea, for their red muscle lies near their skin, close to the cold water. In bluefin, who can weigh as much as 1,000 pounds, red muscles are housed deep within the body, near the backbone. Warm venous blood flowing away from muscles heats cold blood coming in through the arteries, enabling bluefin to retain 98 percent of their body heat, giving them free rein to forage in cold waters and to dip in and out of the Gulf Stream, where sea temperatures plummet as much as 27 degrees Fahrenheit across one nautical mile. In cold water, the bluefin, separated from the chill by only a taut skin, maintains an internal temperature of 80 degrees Fahrenheit.

Coincident with the relocation of its red muscle, bluefin developed the unique style of swimming for which they are so aptly named (*Thunnus thynnus,* from the Greek meaning to dart or lunge forward). While the bodies of other fish undulate through the water as they swim, the crescent-shaped tail of the bluefin propels its rigid body forward. Retractable fins, small scales, and recessed eyes further enable bluefin to thrust quickly through thick and heavy seas, easily overcoming water's drag and resistance. With their warm bodies, rapid metabolism, and sleek design, bluefin excel at both short sprints and long-distance travel. They zoom in on prey in short, quick bursts of speed, and they can cruise at two body lengths per second, easily making long-distance endurance swims along an entire ocean basin. Engineers who design underwater robotics dream of replicating the sleek body of this 8-foot-long, 700-pound fish who rushes without ceasing through the breadth and depth of the sea.

Swordfish and bluefin travel throughout the Atlantic with tremendous speed, but from moment to moment, day to day, month to month, their migrations are not well charted. In the winter of 1997, when the warm Gulf Stream edged shoreward toward the coast of Cape Hatteras, pressing against cold water rushing south in the Labrador Current, giant bluefin gathered in the warmth along the boundary. The following year, when the Gulf Stream moved offshore and the chilly Labrador Current filled the waters of coastal Cape Hatteras, bluefin wintered in waters unknown to people. Some bluefin, fattened in American coastal waters during the summer and fall, follow the currents across the sea during the winter. How they navigate, no one really knows. They could be guided by internal compasses of magnetite chips embedded in their skulls, by the warmth, salinity, or motion of the current, by patterns of polarized light received by the pineal window in their heads, or by prey leaving their scent as an oily, odorous slick in the water.

31. The main purpose of the passage is to:

- **A.** propose that research be conducted to confirm which navigational method swordfish and bluefin actually use.
- **B.** persuade the reader that swordfish are superior to bluefin in their adaptation to ocean life.
- **C.** speculate on the reasons why two fish have developed certain specialized traits.
- **D.** describe two fishes' adaptations to the ocean environment, including specialized traits and physical features.

32. The author's attitude regarding swordfish and bluefin can best be described as one of:

- **F.** appreciation for the advanced, unique abilities of the two fish.
- **G.** concern that their adaptations put other fish at a disadvantage.
- **H.** confusion over how their adaptations evolved so quickly beyond other fish.
- **J.** neutrality when comparing their abilities to those of other fish.

33. The passage indicates that the body temperature of a cold-blooded fish is primarily determined by the:

A. limits of its geographic range.
B. speed at which it swims.
C. type of prey it consumes.
D. temperature of its surrounding water.

34. According to the passage, the most significant difference between the temperature-regulation systems of swordfish and bluefin is that swordfish:

F. generate heat from a specialized organ, while bluefin retain heat generated from swimming.
G. have a heat-producing organ located behind their eyes, while the bluefin's is near its backbone.
H. retain heat generated by mitochondria, while bluefin retain heat generated by ocean currents.
J. retain most of the heat they generate, while bluefin lose most of the heat they generate.

35. It can reasonably be concluded from the passage that the body of a bluefin remaining rigid while swimming is related to the fact that its red muscles are:

A. moved sparingly in order to conserve body heat.
B. frozen stiff from the icy-cold water of the ocean.
C. restricted from movement by its super-tight skin.
D. located deep within its body near the backbone.

36. It can most reasonably be inferred from the passage that the waters in and near the Gulf Stream pose a challenge to most species of fish primarily because these waters:

F. are home to a large number and variety of predators.
G. represent a wide range of temperatures.
H. contain strong and swirling currents.
J. force fish into unfamiliar ocean regions.

37. According to the passage, the Greek-derived name for bluefin refers to the:

A. bluefin's constant internal temperature.
B. powerful crescent-shaped tail of the bluefin.
C. bluefin's lunging swimming style.
D. sound the bluefin produces while swimming.

38. The main purpose of the last paragraph is to:

F. explain that charting the Gulf Stream would help accurately predict the migration patterns of swordfish and bluefin.
G. highlight the fact that researchers do not yet fully understand the migrations of swordfish and bluefin.
H. reiterate that the territory of swordfish and bluefin is the entire Atlantic Ocean.
J. remind the reader of the speed and depth at which swordfish and bluefin travel.

39. The passage supports the idea that all of the following fish dwell in the North Sea and the Gulf of Mexico year round EXCEPT:

A. cod.
B. haddock.
C. plaice.
D. bluefin.

40. According to the passage, the heat a swordfish generates is primarily intended to:

F. attract cold-blooded prey seeking warmth.
G. maintain the warmth of its eyes and brain.
H. increase its speed by keeping large muscles warm.
J. strengthen its long, sharp sword with warm blood.

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 seven 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

Diploid human cells contain 46 chromosomes. Genes residing on the same chromosome are *linked*. Figure 1 shows the location of some genes in humans.

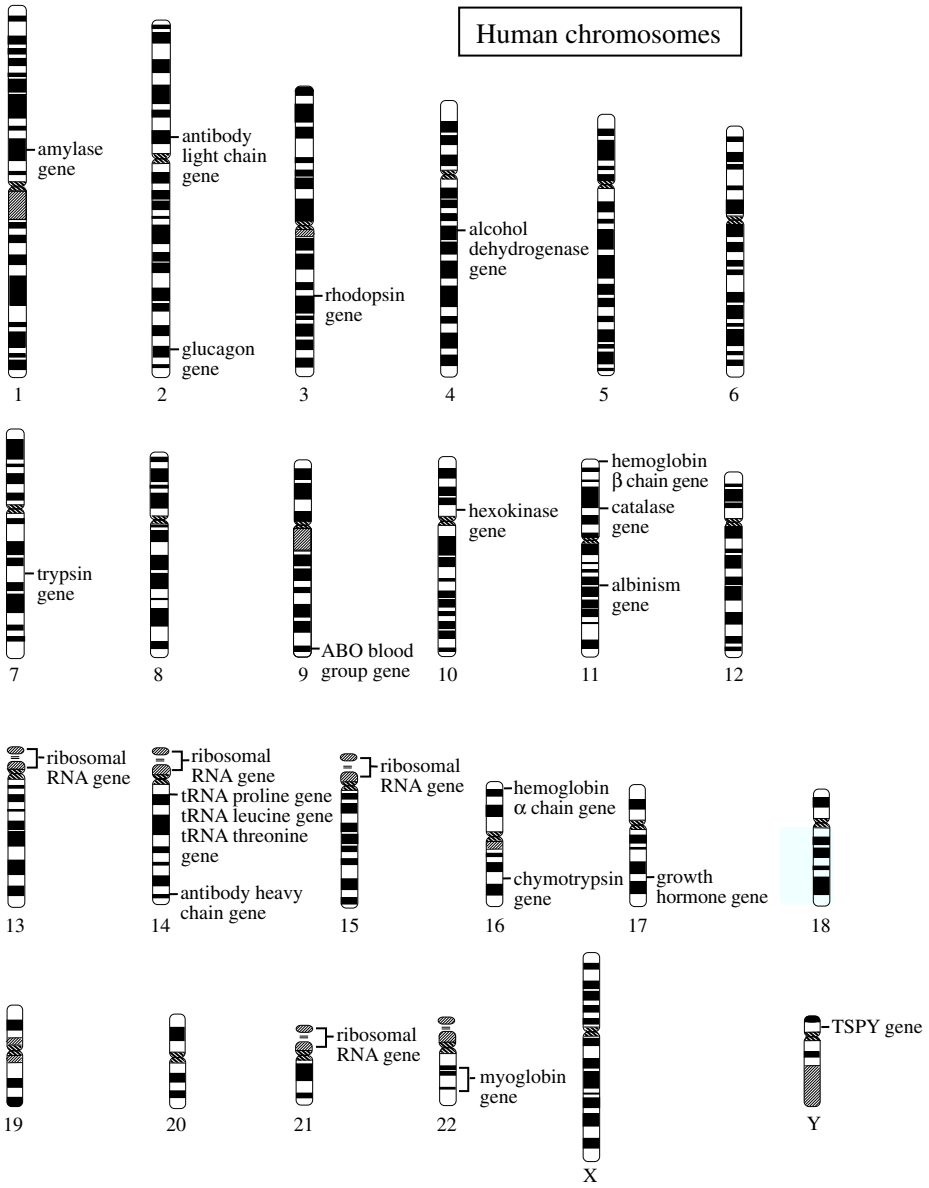


Figure 1

Figure 1 adapted from Susan Offner, "Human Chromosomes." ©1992 by Susan Offner.

Table 1 lists the biological process associated with some of the genes in Figure 1.

Table 1	
Biological process	Gene
Digestion	amylase gene trypsin gene chymotrypsin gene
Immune response	antibody light chain gene antibody heavy chain gene
Respiration	hemoglobin α chain gene hemoglobin β chain gene myoglobin gene
Protein synthesis	ribosomal RNA gene tRNA proline gene tRNA leucine gene tRNA threonine gene

Table 2 lists 7 genetic diseases, the chromosome associated with each disease, and the mode of inheritance for each disease.

Table 2		
Genetic disease	Chromosome	Mode of inheritance
Tay-Sachs disease	15	autosomal recessive
Neurofibromatosis	17	autosomal dominant
Familial hypercholesterolemia	19	autosomal dominant
Duchenne muscular dystrophy	X	X-linked recessive
Incontinentia pigmenti	X	X-linked dominant
Red-green color blindness	X	X-linked recessive
Hemophilia A	X	X-linked recessive

1. According to Figure 1 and Table 1, Chromosome 13 contains a gene associated with which of the following biological activities?

A. Digestion
B. Immune response
C. Respiration
D. Protein synthesis

2. Is the statement "The tRNA proline gene is linked to the hexokinase gene" supported by the information in Figure 1 ?

F. No; the 2 genes are found on the same chromosome.
G. No; the 2 genes are found on different chromosomes.
H. Yes; the 2 genes are found on the same chromosome.
J. Yes; the 2 genes are found on different chromosomes.

3. Table 1 lists 3 genes as being associated with digestion. According to Figure 1, these 3 genes are:

A. on different chromosomes.
B. on the same chromosome.
C. linked to genes associated with immune response.
D. linked to genes associated with respiration.

4. Based on the information presented, which of the following genes is linked to the neurofibromatosis gene?

F. Amylase gene
G. Growth hormone gene
H. Myoglobin gene
J. Rhodopsin gene

5. Based on the information presented, which of the following genes is typically present in human males, but not in human females?

A. Amylase gene
B. Hexokinase gene
C. Ribosomal RNA gene
D. TSPY gene

Passage II

G. soja (a wild soybean) produces *γ-tocopherol* (a type of vitamin E). It then converts some γ-tocopherol into *α-tocopherol* (another type of vitamin E). In *G. soja*, the enzyme *TMT* catalyzes this reaction:

$$\gamma\text{-tocopherol} \xrightarrow{\text{TMT}} \alpha\text{-tocopherol}$$

A. thaliana (a mustard plant) produces γ-tocopherol, but lacks TMT, so it produces only a small amount of α-tocopherol.

Because α-tocopherol is more effective at reducing cellular damage than is γ-tocopherol, a scientist tried to transfer *G. soja*'s TMT gene into *A. thaliana*.

Experiment 1

Four versions of *G. soja*'s TMT gene (TMT1–TMT4) were cloned. Each gene was incorporated into a *vector* (a biological structure that carries a gene and transfers it into the cells of an organism).

Six genetically identical lines of *A. thaliana* were developed (L1–L6). As shown in Table 1, L1–L4 were each exposed to a vector carrying 1 of the 4 cloned genes; L5 was exposed only to the vector; and L6 was left untreated.

Next, 10 plants from each line were grown. Table 1 gives the tocopherol concentration and the percent (%) by mass of the 2 types of tocopherol in the plants.

Experiment 2

Four genetically different strains of *A. thaliana* were grown (S1–S4). S1–S4 were each exposed to a vector carrying TMT1.

Next, 10 plants from each strain were grown. Table 2 shows the tocopherol concentration and the percent by mass of the 2 types of tocopherol in the plants.

Table 1

Line	Treatment	Tocopherol concentration (mg/kg)	γ-tocopherol (%)	α-tocopherol (%)
L1	vector + TMT1	360	3	97
L2	vector + TMT2	360	3	97
L3	vector + TMT3	360	51	49
L4	vector + TMT4	360	2	98
L5	vector	360	99	1
L6	untreated	360	99	1

Table 2

Strain	Treatment	Tocopherol concentration (mg/kg)	γ-tocopherol (%)	α-tocopherol (%)
S1	vector + TMT1	390	1	99
S2	vector + TMT1	360	3	97
S3	vector + TMT1	320	9	91
S4	vector + TMT1	310	99	1

Tables adapted from D. Shintani and D. DellaPenna, "Elevating the Vitamin E Content of Plants Through Metabolic Engineering." ©1998 by the American Association for the Advancement of Science.

6. At the end of Experiment 2, which of the 4 strains had the greatest amount of γ-tocopherol per kilogram of plant material?

F. S1
G. S2
H. S3
J. S4

7. One of the *A. thaliana* strains used in Experiment 2 was genetically identical to the *A. thaliana* used in Experiment 1. Based on the results of Experiments 1 and 2, this strain was most likely:

A. S1.
B. S2.
C. S3.
D. S4.

8. To determine whether exposure to the vector alone affected tocopherol concentration in Experiment 1, one should compare the results from which 2 lines?

F. L1 and L2
G. L2 and L4
H. L3 and L4
J. L5 and L6

9. The scientist believed that 1 of the 4 cloned genes in Experiment 1 produced an enzyme that was less efficient than the enzyme produced by the other 3 genes. Based on the results, this gene was most likely:

A. TMT1.
B. TMT2.
C. TMT3.
D. TMT4.

10. After reviewing the data from Experiment 2, the scientist concluded that the transfer of the TMT gene to 1 of the strains was unsuccessful. This strain was most likely:

F. S1.
G. S2.
H. S3.
J. S4.

11. Which of the following best explains why the scientist wanted to transfer the TMT gene from one organism to another?

A. To increase the amount of α-tocopherol produced by some of the *G. soja* plants
B. To increase the amount of α-tocopherol produced by some of the *A. thaliana* plants
C. To decrease the amount of α-tocopherol produced by some of the *G. soja* plants
D. To decrease the amount of α-tocopherol produced by some of the *A. thaliana* plants

Passage III

An elevated inclined plane makes an angle, θ, with a floor. Points A and B on the inclined plane are 0.50 m apart. Point B is at a height H above the floor (see Figure 1).

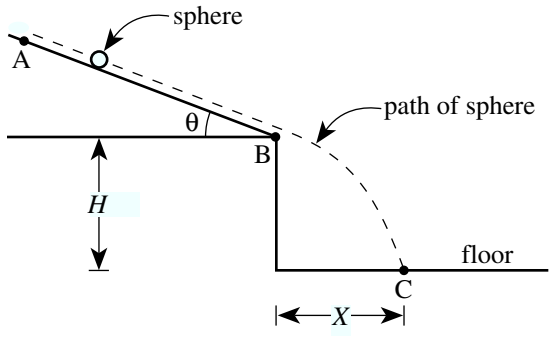


Figure 1

A solid metal sphere is released from rest at Point A and travels down the inclined plane to Point B. The sphere is in free fall between Points B and C and first hits the floor at Point C, a horizontal distance X from the bottom of the inclined plane.

Figure 2 shows how X varies with θ for different H if the sphere *rolls* from Point A to Point B. Figure 3 shows how X varies with θ for different H if the sphere *slides* from Point A to Point B.

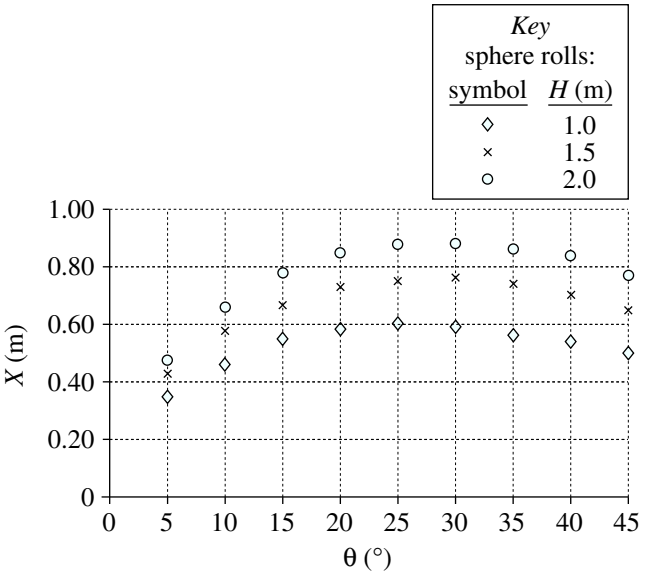


Figure 2

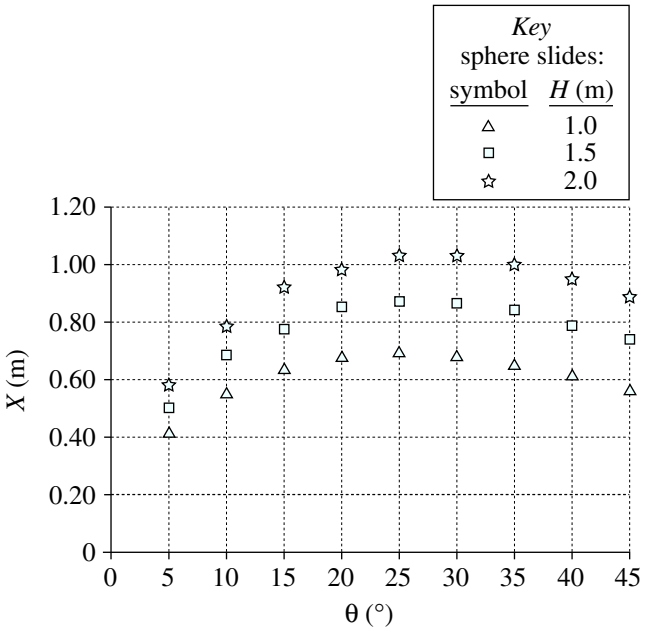


Figure 3

12. Based on Figures 2 and 3, for the sphere either sliding or rolling down the inclined plane and for H = 1.5 m, as θ increases from 5° to 45°, X :

F. increases only.
G. decreases only.
H. increases, then decreases.
J. decreases, then increases.

13. For the sliding sphere at θ = 10°, if H = 0.5 m, X would most likely be:

A. less than 0.56 m.
B. between 0.56 m and 0.68 m.
C. between 0.68 m and 0.79 m.
D. greater than 0.79 m.

14. For the sphere sliding down the inclined plane and $H = 2.0$ m, if X had been plotted every 2.5° instead of every 5° between $\theta = 5°$ and $\theta = 45°$, X would most likely have been greatest at which of the following θ ?

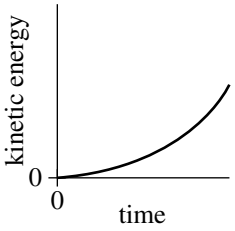
F. 17.5°
G. 22.5°
H. 27.5°
J. 32.5°

15. If $H = 2.0$ m for the rolling sphere and $\theta = 50°$, X will most likely be closest to which of the following?

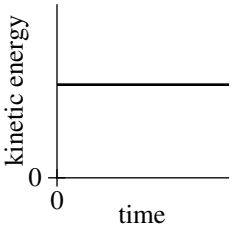
A. 0.50 m
B. 0.65 m
C. 0.80 m
D. 0.95 m

16. Which of the following figures best shows how the sphere's kinetic energy varies with time as the sphere travels down the incline?

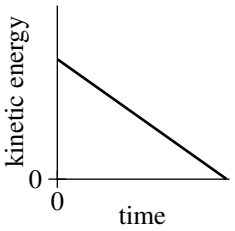
F.



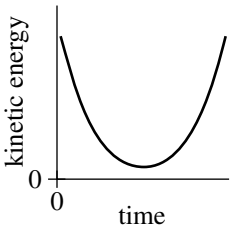
H.



G.



J.



Passage IV

Using the circuit shown in Figure 1, students studied the variables that affect the electrical resistance, *R*, of a wire.

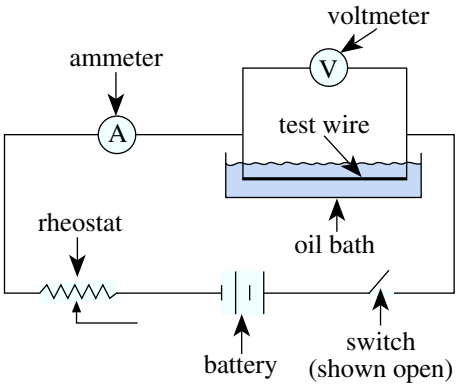


Figure 1

The students used the following procedure to find *R* for each test wire. They immersed the test wire in an oil bath and allowed the test wire to come to the temperature of the oil. Keeping the test wire in the oil bath (to control the temperature of the test wire), they then closed the switch and, using the *rheostat* (a variable resistor), adjusted the electrical current through the test wire until the ammeter indicated 0.80 amp. As soon as the ammeter indicated 0.80 amp, they measured the voltage, *V*, across the test wire. Finally, they used *V* and the current (0.80 amp) to calculate *R*.

Study 1

The students found *R* for test wires made of different metals. Each wire was at the same temperature and was 100 cm long and 0.130 mm^2 in cross-sectional area (see Table 1).

Table 1

Metal	*V* (volts)	*R* (ohms)
Copper	0.11	0.14
Lead	1.36	1.7
Platinum	0.66	0.83
Tungsten	0.35	0.44

Study 2

The students found *R* for copper test wires of different lengths. Each wire was at the temperature of the test wires in Study 1 and was 0.130 mm^2 in cross-sectional area (see Table 2).

Table 2

Length (cm)	*V* (volts)	*R* (ohms)
50	0.05	0.06
100	0.11	0.14
150	0.17	0.21
200	0.22	0.28

Study 3

The students found *R* for copper test wires of different cross-sectional areas. Each wire was at the temperature of the test wires in Study 1 and was 100 cm long (see Table 3).

Table 3

Cross-sectional area (mm^2)	*V* (volts)	*R* (ohms)
0.065	0.22	0.28
0.130	0.11	0.14
0.195	0.07	0.09
0.260	0.05	0.06

Study 4

The students varied the temperature of the oil. At each temperature, they found *R* for the copper test wire used in Study 1 (see Table 4).

Table 4

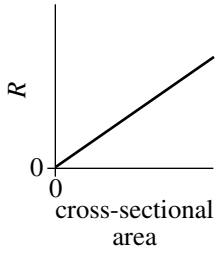
Temperature (°C)	*V* (volts)	*R* (ohms)
20	0.11	0.14
60	0.13	0.16
100	0.14	0.18
140	0.16	0.20

17. Based on the results of Studies 1 and 4, the temperature of the test wire in Study 1 was most likely closest to which of the following?

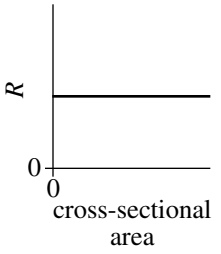
A. 5°C
B. 10°C
C. 20°C
D. 60°C

18. The results of Study 3 are best represented by which of the following figures?

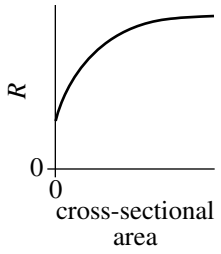
F.



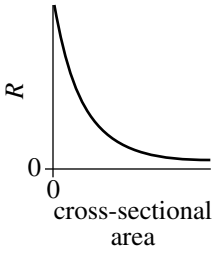
H.



G.



J.



19. Which of the following correctly lists the wires tested in Study 1 in order of increasing electrical resistance?

A. Copper wire, lead wire, platinum wire, tungsten wire
B. Copper wire, lead wire, tungsten wire, platinum wire
C. Copper wire, tungsten wire, lead wire, platinum wire
D. Copper wire, tungsten wire, platinum wire, lead wire

20. Suppose that the length of the copper wire tested in Study 4 had been 200 cm instead of 100 cm. Based on the results of Study 2, when the temperature of the copper test wire was 60°C in Study 4, V would most likely have been closest to which of the following?

F. 0.06 volt
G. 0.16 volt
H. 0.26 volt
J. 0.36 volt

21. Based on Studies 2 and 3, a copper test wire at the temperature of the test wires in Studies 2 and 3 will have the greatest electrical resistance if the test wire has which of the following lengths and cross-sectional areas?

	Length (cm)	Cross-sectional area (mm^2)
A.	20	0.15
B.	20	0.30
C.	40	0.15
D.	40	0.30

22. Given the position of the ammeter in the circuit shown in Figure 1, which of the following assumptions about the electrical current were the students most likely making?

F. Nearly all of the current went through the voltmeter.
G. Nearly all of the current went through the test wire.
H. Almost none of the current went through the test wire.
J. Almost none of the current went through the rheostat.

Passage V

Rock types can often be differentiated by the rare earth elements (REEs) they contain. Table 1 shows the average concentration of 2 REEs, neodymium and samarium, in 4 igneous rock types (oceanic basalt, continental basalt, andesite, and granite) and also in 3 sedimentary rock types (shale, sandstone, and dolomite).

Table 1

Rock type	Average concentration (ppm*) of: neodymium	samarium
Igneous rocks		
oceanic basalt	10	3
continental basalt	50	8
andesite	30	7
granite	50	9
Sedimentary rocks		
shale	30	6
sandstone	15	3
dolomite	1	0.2

*ppm = parts per million

Figure 1 shows the *relative concentration* of REEs in various igneous rock types and in sedimentary rocks taken as a group. Relative concentration is calculated using the following formula:

$$\text{relative concentration of REE in rock type} = \frac{\text{average concentration of REE in rock type}}{\text{average concentration of REE in meteorites}}$$

Meteorites, taken as a group, are used to calculate the relative concentration because their composition is distinctly different from any Earth rock.

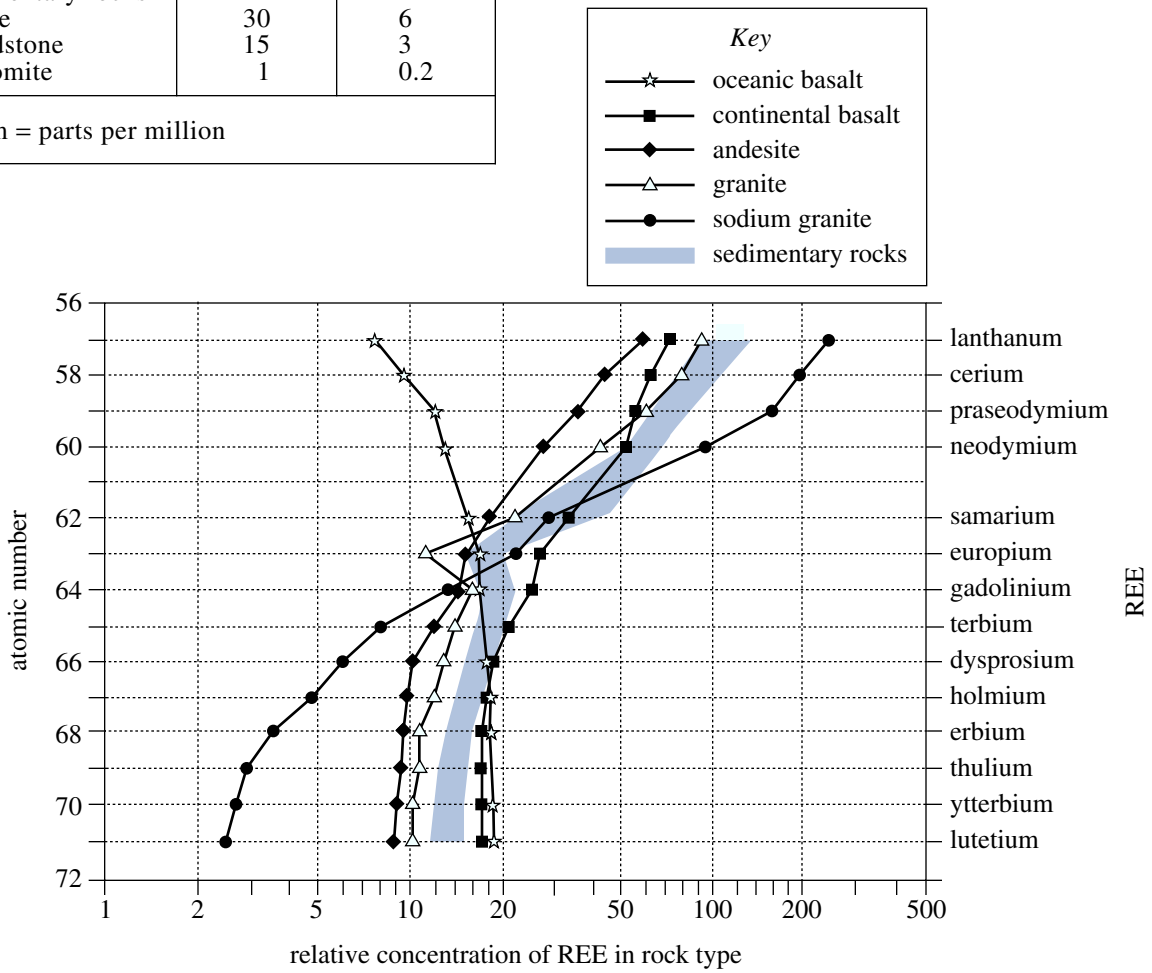


Figure 1

Figure adapted from S. Ross Taylor and Scott McLennan, "The Evolution of Continental Crust." ©1996 by Scientific American, Inc.

23. According to Figure 1, oceanic basalt and continental basalt differ the most in their relative concentrations of which of the following REEs ?

A. Cerium
B. Samarium
C. Holmium
D. Lutetium

24. A chemical analysis of another group of samples of 1 of the igneous rock types listed in Figure 1 revealed the following relative concentrations for 3 of its REEs:

REE	Relative concentration
Lanthanum	91
Europium	11
Ytterbium	10

According to Figure 1, to which rock type do these samples most likely belong?

F. Oceanic basalt
G. Andesite
H. Granite
J. Sodium granite

25. Which of the following statements comparing the average concentrations of neodymium and samarium in the rock types listed in Table 1 is true?

A. In each rock type, the average neodymium concentration is lower than the average samarium concentration.
B. In each rock type, the average neodymium concentration is higher than the average samarium concentration.
C. In some rock types, the average neodymium concentration is lower than the average samarium concentration; in other rock types, the average neodymium concentration is equal to the average samarium concentration.
D. In some rock types, the average neodymium concentration is higher than the average samarium concentration; in other rock types, the average neodymium concentration is equal to the average samarium concentration.

26. Based on Figure 1, the relative concentration of terbium for *limestone*, another rock type, would most likely be:

F. less than 10.
G. between 10 and 14.
H. between 15 and 20.
J. greater than 20.

27. In Figure 1, the plot of relative concentration versus atomic number covers the smallest range of relative concentrations for which of the following rock types?

A. Oceanic basalt
B. Continental basalt
C. Sodium granite
D. Sedimentary rocks

Passage VI

Four billion years ago (4 BYA), the Sun was only 70% as bright as it is today. With sunlight that faint, Earth's average surface temperature should have been −15°C and all surface water would have been frozen. However, isotope evidence from certain sedimentary rocks (rocks made of sediments deposited in liquid water) formed around that time indicates that Earth's surface temperature was well above freezing.

Scientists believe that 1 of 2 greenhouse gases, either ammonia (NH_3) or carbon dioxide (CO_2), was present in Earth's atmosphere at a concentration well above that of the respective gas in the atmosphere today. This gas trapped enough heat radiating from Earth's surface to keep the surface temperature above freezing.

Two scientists present their viewpoints.

Scientist 1

Four BYA, large quantities of NH_3 continuously entered Earth's atmosphere from ocean-floor hydrothermal vents and by other processes. NH_3 is a more efficient greenhouse gas than is CO_2, so a lower concentration of NH_3 is required to warm the atmosphere a given amount. Any NH_3 molecule entering the atmosphere would have been broken down in 5–10 days by UV radiation. However, methane (CH_4), another gas that was abundant in the atmosphere 4 BYA, combined with molecular nitrogen gas to produce organic compounds that blocked much of the incoming UV radiation and kept NH_3 molecules intact for much longer than 10 days. Continuous removal of CO_2 from the atmosphere by ocean water prevented CO_2 from accumulating in the atmosphere.

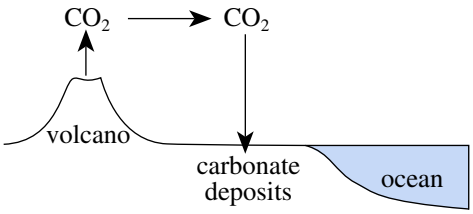
Scientist 2

Two carbon isotopes found in sedimentary rocks indicate a 75% higher concentration of CO_2 in Earth's atmosphere 4 BYA than the 360 parts per million (ppm) present today. Four BYA, large quantities of CO_2 continuously entered the atmosphere through widespread, long-term volcanic activity. Today, as in the past, much CO_2 is removed from the atmosphere as CO_2 becomes part of carbonates in rock and sediment on land. However, 4 BYA, there was 80% less dry land area on which to form and store carbonates, so CO_2 accumulated in the atmosphere.

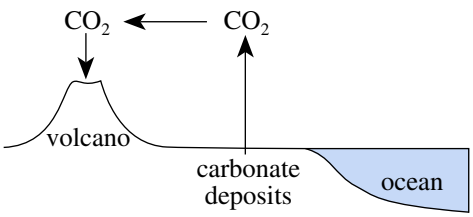
The vast amounts of CH_4 that would be required to help preserve atmospheric NH_3 did not exist on Earth 4 BYA. Thus, atmospheric NH_3 was too short-lived to have been an effective greenhouse gas.

28. Which of the following diagrams is most consistent with Scientist 2's description of how CO_2 enters and is removed from Earth's atmosphere?

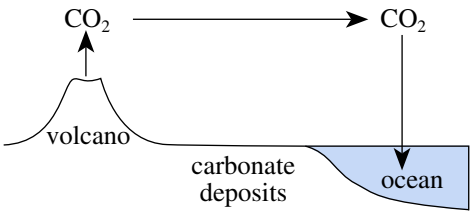
F. atmosphere



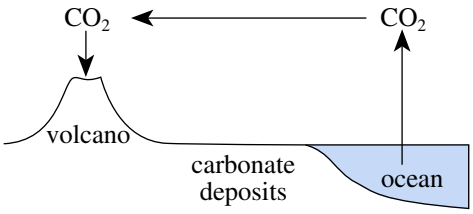
G. atmosphere



H. atmosphere



J. atmosphere



29. CH_4 is also a greenhouse gas. Scientist 1 would most likely agree that the presence of CH_4 in Earth's atmosphere 4 BYA:

A. helped warm Earth's surface.
B. helped cool Earth's surface.
C. reduced the quantity of NH_3 present.
D. increased the quantity of CO_2 present.

30. A given concentration of NH_3 in Earth's atmosphere can trap as much heat radiating from Earth's surface as can a CO_2 concentration 3 times higher. Given this information and Scientist 2's viewpoint, the present-day concentration of NH_3 that would trap an amount of heat equivalent to that trapped by the present-day concentration of CO_2 would be approximately:

F. 50 ppm.
G. 80 ppm.
H. 120 ppm.
J. 360 ppm.

31. The Sun was 30% dimmer 4 BYA than it is today. Assuming the relative proportions of all greenhouse gases in Earth's atmosphere have stayed constant, both scientists would most likely agree that the minimum total concentration of all greenhouse gases necessary to keep Earth's surface temperature above freezing 4 BYA was:

- **A.** more than the minimum total concentration necessary today.
- **B.** the same as the minimum total concentration necessary today.
- **C.** less than the minimum total concentration necessary today, but not zero.
- **D.** zero.

32. Suppose volcanic activity 4 BYA produced large quantities of CH_4. Which scientist would most likely use this information to support his/her viewpoint?

- **F.** Scientist 1, because it would explain how CH_4 entered Earth's atmosphere 4 BYA.
- **G.** Scientist 1, because it would explain how NH_3 entered Earth's atmosphere 4 BYA.
- **H.** Scientist 2, because it would explain how CH_4 entered Earth's atmosphere 4 BYA.
- **J.** Scientist 2, because it would explain how NH_3 entered Earth's atmosphere 4 BYA.

33. In order to protect NH_3 from incoming UV radiation, the organic compounds had to be located:

- **A.** below the elevation in the atmosphere where NH_3 was present.
- **B.** at or above the elevation in the atmosphere where NH_3 was present.
- **C.** on the ocean floor near where NH_3 was produced in hydrothermal vents.
- **D.** on land near where NH_3 was produced from carbonate deposits.

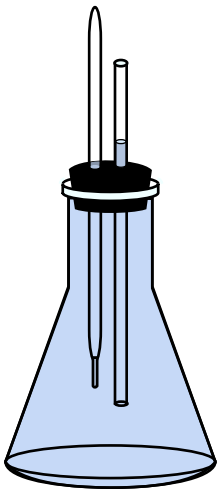
34. Scientist 2 would most likely agree that the concentration of CO_2 in Earth's atmosphere 4 BYA was closest to which of the following?

- **F.** 75 ppm
- **G.** 180 ppm
- **H.** 360 ppm
- **J.** 630 ppm

Passage VII

Students conducted experiments to study the effects of temperature on density.

In the experiments, each flask was filled to the top with either distilled water or salt (NaCl) water at 20°C. A rubber stopper with 2 holes—one fitted with a thermometer and the other fitted with glass tubing—was placed in the neck of the flask (see figure of apparatus).



The initial height of the liquid in the tubing was adjusted to 25 mm above the top of the stopper.

Experiment 1

A flask filled with distilled water was slowly heated. As the temperature of the water increased, the height of the water in the tubing increased. At 100°C, water and steam squirted out the top of the tubing.

Experiment 2

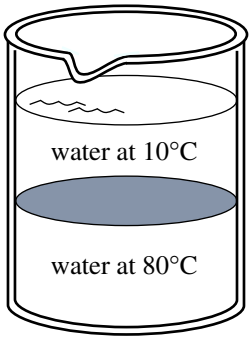
The body of a flask filled with distilled water was submerged in a cold bath at −6°C. As the temperature of the water in the apparatus decreased, the height of the water in the tubing decreased. At 4°C, the height of the water in the tubing stopped decreasing, and then began to increase. At 0°C, water and ice were forced out the top of the tubing. Eventually, the flask cracked in several places.

Experiment 3

Two saltwater solutions were prepared. Solution I had a lower salt concentration (in g/mL) than did Solution II. Two flasks containing Solutions I and II, respectively, were slowly heated. In both flasks, the salt water in the tubing rose and then squirted out the top of the tubing (at 102°C for Solution I and at 104°C for Solution II).

Two flasks containing Solutions I and II, respectively, were cooled as in Experiment 2. In both flasks, the height of the salt water in the tubing decreased until the temperature reached −6°C and then remained level (no freezing occurred).

35. Water in the upper part of a hypothetical 2-compartment container is at 10°C, and water in the lower part is at 80°C, as shown in the figure below.



If the barrier separating the 2 compartments could be removed without disturbing the water, what mixing, if any, would occur?

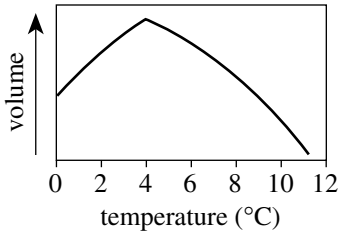
A. No mixing would occur, because the water in the upper part of the container is more dense than the water in the lower part of the container.
B. No mixing would occur, because the water in the upper part of the container is less dense than the water in the lower part of the container.
C. Mixing would occur, because the water in the lower part of the container is more dense than the water in the upper part of the container.
D. Mixing would occur, because the water in the lower part of the container is less dense than the water in the upper part of the container.

36. Based on the results of Experiments 1 and 3, 1 L of distilled water with which of the following quantities of NaC1 added to it would most likely boil at the *lowest* temperature?

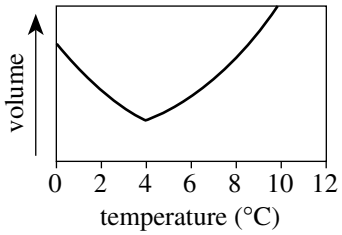
F. 0 g
G. 1 g
H. 20 g
J. 30 g

37. Which of the following graphs best shows how the volume of the liquid H_2O changed with temperature in Experiment 2 ?

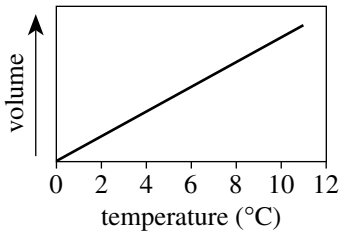
A.



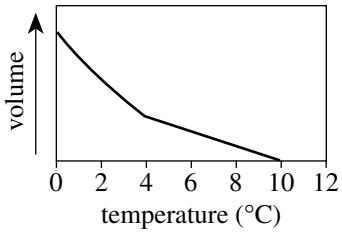
B.



C.



D.



38. Which of the following changes in the procedure of Experiment 3 would have provided the most information about the effect of decreasing temperature on the density of salt water?

F. Using a bath at −13°C to cool the flask
G. Using a bath at −3°C to cool the flask
H. Using a larger flask
J. Using a smaller flask

39. Suppose that equal volumes of Solutions I and II from Experiment 3 were mixed and the resulting solution was then tested as in Experiment 1. Salt water would most likely have started to squirt out of the top of the tubing when the temperature was:

A. less than 100°C.
B. between 100°C and 102°C.
C. between 102°C and 104°C.
D. greater than 104°C.

40. As the height of the water in the glass tubing decreased in Experiment 2, which of the following properties of the water in the apparatus also changed?

I. Volume
II. Mass
III. Density

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

END OF TEST 4

STOP! DO NOT RETURN TO ANY OTHER TEST.

The ACT® Sample Answer Document

 Printed in U.S.A.

The ACT® *2012–2013 Answer Sheet (NO Writing)*

A **NAME, MAILING ADDRESS, AND TELEPHONE (Please print.)**

Last Name First Name MI (Middle Initial)

House Number & Street (Apt. No.); or PO Box & No.; or RR & No.

City State/Province ZIP/Postal Code

( ) / –

Area Code Number Country

ACT, Inc.—Confidential Restricted when data present.

ALL examinees must complete block A – please print.

Blocks B, C, and D are required for all examinees. Find the MATCHING INFORMATION on your ticket or standby document. Enter it EXACTLY the same way, even if any of the information is missing or incorrect. Fill in the corresponding ovals. If you do not complete these blocks to match your previous information EXACTLY, your scores will be **delayed up to 8 weeks**.

Block E: Fill in the oval ONLY if you are testing standby today.

B **MATCH NAME** (First 5 letters of last name)

C **MATCH NUMBER**

D **DATE OF BIRTH**

Month: Jan., Feb., March, April, May, June, July, Aug., Sept., Oct., Nov., Dec.

Day: 01–31

Year: 1900–2099

E **STANDBY TESTING**

Fill in the oval below ONLY if you are testing standby today.

Yes, I am testing as a standby.

Do NOT mark in this shaded area.

USE A SOFT LEAD NO. 2 PENCIL ONLY.
(Do NOT use a mechanical pencil, ink, ballpoint, correction fluid, or felt-tip pen.)

EXAMINEE STATEMENT, CERTIFICATION, AND SIGNATURE

1. Read the following **Statement:** By submitting this answer sheet, I agree to the terms and conditions set forth in the ACT registration booklet or website for this exam, including the arbitration and dispute remedy provisions. I understand that ACT owns the test questions and responses and affirm that I will not share any test questions or responses with anyone by any form of communication. I understand that assuming anyone else's identity to take this test may violate the law and be subject to legal penalty.
2. Copy the **Certification** shown below (only the text in italics) on the lines provided. Write in your normal handwriting.

   Certification: *I agree to the Statement above and certify that I am the person whose name and address appear on this form.*

3. Sign your name as you would any official document and enter today's date.

Your Signature Today's Date

ACT®

P.O. BOX 168, IOWA CITY, IOWA 52243-0168

You may wish to remove this sample answer document from the booklet to use in a practice test session.

Marking Directions: Mark only **one** oval for each question. Fill in response completely. Erase errors cleanly without smudging.

Correct mark:

Do NOT use these *incorrect* or *bad* marks.

Incorrect marks:
Overlapping mark:
Cross-out mark:
Smudged erasure:
Mark is too light:

BOOKLET NUMBER

FORM

Print your 5-character **Test Form** in the boxes above and fill in the corresponding oval at the right.

BE SURE TO FILL IN THE CORRECT FORM OVAL.

0861B 0861D 1163E 1165D

TEST 1

1 A B C D	14 F G H J	27 A B C D	40 F G H J	53 A B C D	66 F G H J
2 F G H J	15 A B C D	28 F G H J	41 A B C D	54 F G H J	67 A B C D
3 A B C D	16 F G H J	29 A B C D	42 F G H J	55 A B C D	68 F G H J
4 F G H J	17 A B C D	30 F G H J	43 A B C D	56 F G H J	69 A B C D
5 A B C D	18 F G H J	31 A B C D	44 F G H J	57 A B C D	70 F G H J
6 F G H J	19 A B C D	32 F G H J	45 A B C D	58 F G H J	71 A B C D
7 A B C D	20 F G H J	33 A B C D	46 F G H J	59 A B C D	72 F G H J
8 F G H J	21 A B C D	34 F G H J	47 A B C D	60 F G H J	73 A B C D
9 A B C D	22 F G H J	35 A B C D	48 F G H J	61 A B C D	74 F G H J
10 F G H J	23 A B C D	36 F G H J	49 A B C D	62 F G H J	75 A B C D
11 A B C D	24 F G H J	37 A B C D	50 F G H J	63 A B C D	
12 F G H J	25 A B C D	38 F G H J	51 A B C D	64 F G H J	
13 A B C D	26 F G H J	39 A B C D	52 F G H J	65 A B C D	

TEST 2

1 A B C D E	11 A B C D E	21 A B C D E	31 A B C D E	41 A B C D E	51 A B C D E
2 F G H J K	12 F G H J K	22 F G H J K	32 F G H J K	42 F G H J K	52 F G H J K
3 A B C D E	13 A B C D E	23 A B C D E	33 A B C D E	43 A B C D E	53 A B C D E
4 F G H J K	14 F G H J K	24 F G H J K	34 F G H J K	44 F G H J K	54 F G H J K
5 A B C D E	15 A B C D E	25 A B C D E	35 A B C D E	45 A B C D E	55 A B C D E
6 F G H J K	16 F G H J K	26 F G H J K	36 F G H J K	46 F G H J K	56 F G H J K
7 A B C D E	17 A B C D E	27 A B C D E	37 A B C D E	47 A B C D E	57 A B C D E
8 F G H J K	18 F G H J K	28 F G H J K	38 F G H J K	48 F G H J K	58 F G H J K
9 A B C D E	19 A B C D E	29 A B C D E	39 A B C D E	49 A B C D E	59 A B C D E
10 F G H J K	20 F G H J K	30 F G H J K	40 F G H J K	50 F G H J K	60 F G H J K

TEST 3

1 A B C D	8 F G H J	15 A B C D	22 F G H J	29 A B C D	36 F G H J
2 F G H J	9 A B C D	16 F G H J	23 A B C D	30 F G H J	37 A B C D
3 A B C D	10 F G H J	17 A B C D	24 F G H J	31 A B C D	38 F G H J
4 F G H J	11 A B C D	18 F G H J	25 A B C D	32 F G H J	39 A B C D
5 A B C D	12 F G H J	19 A B C D	26 F G H J	33 A B C D	40 F G H J
6 F G H J	13 A B C D	20 F G H J	27 A B C D	34 F G H J	
7 A B C D	14 F G H J	21 A B C D	28 F G H J	35 A B C D	

TEST 4

1 A B C D	8 F G H J	15 A B C D	22 F G H J	29 A B C D	36 F G H J
2 F G H J	9 A B C D	16 F G H J	23 A B C D	30 F G H J	37 A B C D
3 A B C D	10 F G H J	17 A B C D	24 F G H J	31 A B C D	38 F G H J
4 F G H J	11 A B C D	18 F G H J	25 A B C D	32 F G H J	39 A B C D
5 A B C D	12 F G H J	19 A B C D	26 F G H J	33 A B C D	40 F G H J
6 F G H J	13 A B C D	20 F G H J	27 A B C D	34 F G H J	
7 A B C D	14 F G H J	21 A B C D	28 F G H J	35 A B C D	

The ACT®

The ACT®

Sample Test 1165D
Scoring Instructions

This booklet includes the following information to assist students with scoring their sample tests and evaluating their performance:

- Scoring Instructions
- Scoring Keys
- Conversion Tables
- Norms

You may use the sample answer document in the booklet or your own answer documents. You also received the administration instructions as a separate document with your test booklets. Please refer to those for how to conduct the test session.

ACT®
P.O. BOX 168
IOWA CITY, IA 52243-0168

Scoring Your Sample Tests

How to Score the Sample Tests

Follow the instructions below and on the following pages to score your sample tests and evaluate your performance.

Raw Scores

The number of questions you answered correctly on each test and in each subscore area is your *raw score.* Because there are many forms of the ACT, each containing different questions, some forms will be slightly easier (and some slightly harder) than others. A raw score of 67 on one form of the English Test, for example, may be about as difficult to earn as a raw score of 70 on another form of that test.

To compute your raw scores, check your answers with the scoring keys on pages 3–5. Count the number of correct answers for each of the four tests and seven subscore areas, and enter the numbers in the blanks provided on those pages. These numbers are your raw scores on the tests and subscore areas.

Scale Scores

To adjust for the small differences that occur among different forms of the ACT, the raw scores for tests and subscore areas are converted into *scale scores.* Scale scores are printed on the reports sent to you and your college and scholarship choices.

When your raw scores are converted into scale scores, it becomes possible to compare your scores with those of examinees who took different test forms. For example, a scale score of 26 on the English Test has the same meaning regardless of the form of the ACT on which it is based.

To determine the scale scores corresponding to your raw scores on the sample test, use the score conversion tables on pages 6–7. Table 1 on page 6 shows the raw-to-scale score conversions for each test, and Table 2 on page 7 shows the raw-to-scale score conversions for the subscore areas. Because each form of the ACT is unique, each form has somewhat different conversion tables. Consequently, these tables provide only approximations of the raw-to-scale score conversions that would apply if a different form of the ACT were taken. Therefore, the scale scores obtained from the sample tests would not be expected to match precisely the scale scores received from a national administration of the ACT.

Computing the Composite Score

The Composite score is the average of the four scale scores in English, Mathematics, Reading, and Science. If you left any of these tests blank, a Composite score cannot be calculated.

Comparing Your Scores

Even scale scores don't tell the whole story of your test performance. You may want to know how your scores compare to the scores of other students who took the ACT.

The norms table (Table 3 on page 8) enables you to compare your scores on the sample tests with the scores of recent high school graduates who tested as sophomores, juniors, or seniors. The numbers reported in Table 3 are cumulative percents. A cumulative percent is the percent of students who scored *at* or *below* a given score. For example, a Composite score of 20 has a cumulative percent of 48. This means that 48% of the ACT-tested high school students had a Composite score of 20 or lower.

Remember that your scores and percent at or below on the sample tests are only *estimates* of the scores that you will obtain during an actual administration of the ACT. Test scores are only one indicator of your level of academic knowledge and skills. Consider your scores in connection with your grades, your performance in outside activities, and your career interests.

Reviewing Your Performance on the Sample Tests

After you have determined your scale scores, consider the following as you evaluate your performance.

- Did you run out of time before you completed a test? Perhaps you need to adjust the way you used your time in responding to the questions. It is to your advantage to answer every question and pace yourself so that you can do so.
- Did you spend too much time trying to understand the directions for the tests? If so, read the directions for each test again thoroughly. The directions for the sample tests are exactly like the directions that will appear in your test booklet on test day. Make sure you understand them now, so you won't have to spend too much time studying them on test day.
- Review the questions that you missed. Did you select a response that was an incomplete answer or that did not directly respond to the question being asked? Try to figure out what you overlooked in answering the questions.
- Did a particular type of question confuse you? Did the questions you missed come from a particular subscore area? In reviewing your responses to the sample tests, check to see whether a particular type of question or a particular subscore area was more difficult for you or took more of your time.

Scoring Keys for the ACT Sample Test Booklet 1165D

Use the scoring key for each test to score your answer document for the sample tests. Mark a "1" in the blank for each question you answered correctly. Add up the numbers in each subscore area and enter the total number correct for each subscore area in the blanks provided. Also enter the total number correct for each test in the blanks provided. The total number correct for each test is the sum of the number correct in each subscore area.

Test 1: English—Scoring Key

	Key	Subscore Area* UM	RH		Key	Subscore Area* UM	RH		Key	Subscore Area* UM	RH
1.	B		_____	26.	F	_____		51.	B		_____
2.	F	_____		27.	C		_____	52.	J	_____	
3.	D		_____	28.	J	_____		53.	A		_____
4.	H	_____		29.	C	_____		54.	H	_____	
5.	A		_____	30.	H		_____	55.	C		_____
6.	J		_____	31.	D		_____	56.	G		_____
7.	D		_____	32.	J		_____	57.	C	_____	
8.	H	_____		33.	B		_____	58.	F		_____
9.	B	_____		34.	F		_____	59.	B	_____	
10.	J	_____		35.	A	_____		60.	J		_____
11.	C		_____	36.	J	_____		61.	C		_____
12.	H	_____		37.	D		_____	62.	H	_____	
13.	A	_____		38.	F	_____		63.	B		_____
14.	G		_____	39.	A	_____		64.	H		_____
15.	B	_____		40.	J	_____		65.	A	_____	
16.	G	_____		41.	A	_____		66.	H		_____
17.	D	_____		42.	H		_____	67.	B		_____
18.	H		_____	43.	B	_____		68.	J	_____	
19.	D	_____		44.	F	_____		69.	C	_____	
20.	F	_____		45.	D		_____	70.	J		_____
21.	B		_____	46.	G	_____		71.	D	_____	
22.	G	_____		47.	B	_____		72.	G	_____	
23.	B	_____		48.	F	_____		73.	B		_____
24.	F	_____		49.	B	_____		74.	H		_____
25.	C		_____	50.	J		_____	75.	A		_____

Number Correct (Raw Score) for:	
Usage/Mechanics (UM) Subscore Area	_____ (40)
Rhetorical Skills (RH) Subscore Area	_____ (35)
Total Number Correct for English Test (UM + RH)	_____ (75)

*UM = Usage/Mechanics
RH = Rhetorical Skills

1165D

Test 2: Mathematics—Scoring Key

	Key	Subscore Area* EA	AG	GT
1.	D	_____		
2.	G	_____		
3.	E	_____		
4.	K	_____		
5.	B			_____
6.	K	_____		
7.	D	_____		
8.	K	_____		
9.	A			_____
10.	G	_____		
11.	D	_____		
12.	J		_____	
13.	A	_____		
14.	H	_____		
15.	B		_____	
16.	K	_____		
17.	B	_____		
18.	G		_____	
19.	D		_____	
20.	K		_____	
21.	E			_____
22.	F		_____	
23.	C			_____
24.	F		_____	
25.	C			_____
26.	H			_____
27.	E			_____
28.	F	_____		
29.	A		_____	
30.	G		_____	

	Key	Subscore Area* EA	AG	GT
31.	C			_____
32.	G			_____
33.	C		_____	
34.	H	_____		
35.	C	_____		
36.	K	_____		
37.	C	_____		
38.	G			_____
39.	C			_____
40.	F	_____		
41.	B	_____		
42.	J		_____	
43.	A			_____
44.	G			_____
45.	C	_____		
46.	H	_____		
47.	E		_____	
48.	F	_____		
49.	D			_____
50.	J		_____	
51.	E	_____		
52.	F		_____	
53.	D		_____	
54.	F			_____
55.	C			_____
56.	K		_____	
57.	A		_____	
58.	F		_____	
59.	D			_____
60.	J			_____

Number Correct (Raw Score) for:	
Pre-Alg./Elem. Alg. (EA) Subscore Area	_____ (24)
Inter. Alg./Coord. Geo. (AG) Subscore Area	_____ (18)
Plane Geo./Trig. (GT) Subscore Area	_____ (18)
Total Number Correct for Math Test (EA + AG + GT)	_____ (60)

*EA = Pre-Algebra/Elementary Algebra
AG = Intermediate Algebra/Coordinate Geometry
GT = Plane Geometry/Trigonometry

1165D

Test 3: Reading—Scoring Key

	Key	Subscore Area* SS	AL		Key	Subscore Area* SS	AL		Key	Subscore Area* SS	AL
1.	D		_____	15.	A	_____		29.	A		_____
2.	F		_____	16.	J	_____		30.	G		_____
3.	C		_____	17.	A	_____		31.	D	_____	
4.	J		_____	18.	G	_____		32.	F	_____	
5.	B		_____	19.	C	_____		33.	D	_____	
6.	H		_____	20.	J	_____		34.	F	_____	
7.	B		_____	21.	D		_____	35.	D	_____	
8.	F		_____	22.	H		_____	36.	G	_____	
9.	D		_____	23.	A		_____	37.	C	_____	
10.	H		_____	24.	G		_____	38.	G	_____	
11.	B	_____		25.	D		_____	39.	D	_____	
12.	H	_____		26.	F		_____	40.	G	_____	
13.	D	_____		27.	B		_____				
14.	G	_____		28.	H		_____				

Number Correct (Raw Score) for:

Social Studies/Sciences (SS) Subscore Area _____ (20)

Arts/Literature (AL) Subscore Area _____ (20)

Total Number Correct for Reading Test (SS + AL) _____ (40)

*SS = Social Studies/Sciences
AL = Arts/Literature

1165D

Test 4: Science—Scoring Key

	Key			Key			Key	
1.	D	_____	15.	B	_____	29.	A	_____
2.	G	_____	16.	F	_____	30.	H	_____
3.	A	_____	17.	C	_____	31.	A	_____
4.	G	_____	18.	J	_____	32.	F	_____
5.	D	_____	19.	D	_____	33.	B	_____
6.	J	_____	20.	H	_____	34.	J	_____
7.	B	_____	21.	C	_____	35.	D	_____
8.	J	_____	22.	G	_____	36.	F	_____
9.	C	_____	23.	A	_____	37.	B	_____
10.	J	_____	24.	H	_____	38.	F	_____
11.	B	_____	25.	B	_____	39.	C	_____
12.	H	_____	26.	H	_____	40.	H	_____
13.	A	_____	27.	A	_____			
14.	H	_____	28.	F	_____			

Number Correct (Raw Score) for:

Total Number Correct for Science Test _____ (40)

1165D

TABLE 1
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 1165D	**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.

	Raw Scores				
Scale Score	**Test 1 English**	**Test 2 Mathematics**	**Test 3 Reading**	**Test 4 Science**	**Scale Score**
36	75	59-60	40	39-40	**36**
35	73-74	57-58	—	38	**35**
34	71-72	55-56	39	37	**34**
33	70	54	38	36	**33**
32	69	53	37	35	**32**
31	68	51-52	36	34	**31**
30	67	50	35	33	**30**
29	65-66	48-49	34	32	**29**
28	64	46-47	33	31	**28**
27	62-63	44-45	32	30	**27**
26	60-61	41-43	31	29	**26**
25	57-59	39-40	30	27-28	**25**
24	55-56	37-38	29	26	**24**
23	52-54	35-36	27-28	25	**23**
22	49-51	33-34	26	23-24	**22**
21	45-48	31-32	24-25	22	**21**
20	42-44	29-30	23	20-21	**20**
19	39-41	27-28	21-22	18-19	**19**
18	37-38	24-26	20	17	**18**
17	35-36	21-23	18-19	16	**17**
16	32-34	18-20	17	14-15	**16**
15	29-31	14-17	15-16	13	**15**
14	27-28	11-13	13-14	12	**14**
13	25-26	9-10	11-12	11	**13**
12	23-24	7-8	10	10	**12**
11	21-22	6	8-9	8-9	**11**
10	18-20	5	7	7	**10**
9	16-17	4	6	6	**9**
8	14-15	3	5	5	**8**
7	11-13	—	4	4	**7**
6	9-10	2	—	3	**6**
5	7-8	—	3	—	**5**
4	5-6	1	2	2	**4**
3	4	—	—	1	**3**
2	2-3	—	1	—	**2**
1	0-1	0	0	0	**1**

TABLE 2
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 responses, do not list any scale subscores for that test.

ACT Test 1165D	Your Scale Subscore
English	
Usage/Mechanics (UM)	_____
Rhetorical Skills (RH)	_____
Mathematics	
Pre-Algebra/Elementary Algebra (EA)	_____
Intermed. Algebra/Coord. Geometry (AG)	_____
Plane Geometry/Trigonometry (GT)	_____
Reading	
Social Studies/Sciences (SS)	_____
Arts/Literature (AL)	_____

	Raw Scores							
	Test 1 English		Test 2 Mathematics			Test 3 Reading		
Scale Subscore	Usage/ Mechanics	Rhetorical Skills	Pre-Algebra/ Elem. Algebra	Inter. Algebra/ Coord. Geometry	Plane Geometry/ Trigonometry	Social Studies/ Sciences	Arts/ Literature	**Scale Subscore**
18	39-40	35	23-24	18	18	20	20	**18**
17	37-38	34	22	17	17	19	19	**17**
16	36	32-33	20-21	16	16	18	18	**16**
15	34-35	30-31	19	15	14-15	17	17	**15**
14	32-33	29	18	13-14	13	16	16	**14**
13	30-31	27-28	17	12	11-12	15	15	**13**
12	28-29	24-26	16	10-11	10	14	14	**12**
11	26-27	21-23	14-15	9	8-9	12-13	13	**11**
10	23-25	18-20	13	7-8	7	11	12	**10**
9	20-22	16-17	12	6	5-6	9-10	11	**9**
8	18-19	13-15	10-11	4-5	4	8	9-10	**8**
7	16-17	11-12	7-9	—	—	6-7	8	**7**
6	14-15	9-10	5-6	3	3	5	7	**6**
5	12-13	8	4	2	2	4	5-6	**5**
4	9-11	6-7	3	—	—	3	4	**4**
3	7-8	4-5	2	1	1	2	3	**3**
2	4-6	2-3	1	—	—	1	1-2	**2**
1	0-3	0-1	0	0	0	0	0	**1**

TABLE 3
Norms Table

Use the norms table below to determine your estimated percent at or below for each of your scale scores.

In the far left-hand column, circle your scale score for the English Test (from page 6). Then read across to the percent at or below column for that test; circle or put a check mark beside the corresponding percent at or below. Use the same procedure for each test, and also for each subscore area (from page 7). You may find it easier to use the far right-hand column of scale scores for your Science Test and Composite scores.

As you mark your percents at or below, enter them in the blanks provided at the right.

You may also find it helpful to compare your performance with the national mean (average) score for each of the four tests, subscore areas, and the Composite as shown at the bottom of the norms table.

ACT Test		Your Estimated Percent At or Below on Sample Test
English		_____
Usage/Mechanics	_____	
Rhetorical Skills	_____	
Mathematics		_____
Pre-Algebra/Elem. Alg.	_____	
Alg./Coord. Geometry	_____	
Plane Geometry/Trig.	_____	
Reading		_____
Soc. Studies/Sciences	_____	
Arts/Literature	_____	
Science		_____
Composite		_____

Table 3

National Distributions of Cumulative Percents for ACT Test Scores
ACT-Tested High School Graduates from 2009, 2010, and 2011

Score	**ENGLISH**	Usage/Mechanics	Rhetorical Skills	**MATHEMATICS**	Pre-Algebra/Elem. Alg.	Alg./Coord. Geometry	Plane Geometry/Trig.	**READING**	Soc. Studies/Sciences	Arts/Literature	**SCIENCE**	**COMPOSITE**	*Score*
36	**99**			**99**				**99**			**99**	**99**	**36**
35	**99**			**99**				**99**			**99**	**99**	**35**
34	**99**			**99**				**99**			**99**	**99**	**34**
33	**97**			**98**				**97**			**99**	**99**	**33**
32	**96**			**97**				**95**			**98**	**98**	**32**
31	**94**			**96**				**93**			**98**	**97**	**31**
30	**93**			**94**				**91**			**96**	**95**	**30**
29	**91**			**93**				**87**			**95**	**93**	**29**
28	**88**			**91**				**85**			**93**	**91**	**28**
27	**85**			**88**				**82**			**91**	**87**	**27**
26	**82**			**84**				**78**			**88**	**84**	**26**
25	**78**			**79**				**75**			**84**	**79**	**25**
24	**73**			**74**				**71**			**77**	**74**	**24**
23	**68**			**67**				**66**			**71**	**68**	**23**
22	**63**			**61**				**60**			**63**	**62**	**22**
21	**57**			**57**				**54**			**56**	**55**	**21**
20	**50**			**52**				**48**			**47**	**48**	**20**
19	**43**			**47**				**42**			**38**	**41**	**19**
18	**38**	99	99	**41**	99	99	99	**35**	99	99	**31**	**34**	**18**
17	**33**	96	99	**34**	96	99	99	**30**	97	97	**24**	**28**	**17**
16	**29**	92	98	**26**	91	98	98	**25**	94	91	**19**	**21**	**16**
15	**24**	88	92	**14**	87	95	95	**19**	88	85	**14**	**16**	**15**
14	**18**	83	86	**06**	81	92	90	**15**	82	77	**11**	**11**	**14**
13	**14**	78	79	**02**	74	83	82	**10**	76	71	**08**	**06**	**13**
12	**11**	71	71	**01**	66	74	72	**06**	69	65	**05**	**03**	**12**
11	**09**	64	60	**01**	58	64	63	**03**	59	57	**03**	**01**	**11**
10	**06**	56	49	**01**	48	51	52	**01**	50	47	**02**	**01**	**10**
09	**04**	44	38	**01**	40	36	38	**01**	40	39	**01**	**01**	**09**
08	**02**	35	27	**01**	32	22	25	**01**	29	31	**01**	**01**	**08**
07	**01**	27	19	**01**	20	13	15	**01**	18	23	**01**	**01**	**07**
06	**01**	19	12	**01**	09	07	09	**01**	10	16	**01**	**01**	**06**
05	**01**	13	08	**01**	03	04	06	**01**	05	09	**01**	**01**	**05**
04	**01**	07	04	**01**	01	02	03	**01**	02	04	**01**	**01**	**04**
03	**01**	03	02	**01**	01	01	02	**01**	01	01	**01**	**01**	**03**
02	**01**	01	01	**01**	01	01	01	**01**	01	01	**01**	**01**	**02**
01	**01**	01	01	**01**	01	01	01	**01**	01	01	**01**	**01**	**01**
Mean	**20.6**	10.2	10.6	**21.0**	10.9	10.6	10.5	**21.3**	10.8	10.9	**20.9**	**21.1**	
S.D.	**6.4**	3.9	3.4	**5.3**	3.6	2.9	3.1	**6.2**	3.5	3.9	**5.1**	**5.2**	

Note: These norms are the source of national norms, for multiple-choice tests, printed on ACT score reports during the 2011–2012 testing year. Sample size: 4,665,862.

Your Signature: _____
(Do not print.)

Print Your Name Here: _____

Your Date of Birth:

		–			–				
Month			Day			Year			

Form 15AC15

The ACT® WRITING TEST BOOKLET

Sample Test Booklet and Answer Document

Directions

A sample answer document appears on pages 19 through 22. Instructions for scoring this sample test begin on page 4.

This is a test of your writing skills. You will have **forty** (40) minutes to read the prompt, plan your response, and write an essay in English. Before you begin working, read all material in this test booklet carefully to understand exactly what you are being asked to do.

You will write your essay on the lined pages in the **answer document** provided. Your writing on those pages will be scored. You may use the unlined pages in this test booklet to plan your essay. Your work on these pages will not be scored.

Your essay will be evaluated based on the evidence it provides of your ability to:

- analyze and evaluate multiple perspectives on a complex issue
- state and develop your own perspective on the issue
- explain and support your ideas with logical reasoning and detailed examples
- clearly and logically organize your ideas in an essay
- effectively communicate your ideas in standard written English

Lay your pencil down immediately when time is called.

DO NOT OPEN THIS BOOKLET UNTIL TOLD TO DO SO.

ACT®
PO Box 168
Iowa City, IA 52243-0168

The Competitive Spirit

There are many times in life when we are in competition with other people. Whether we are looking for a job or pursuing interests like sports, music, or drama, our success is often dependent on our ability to stand out from the crowd. However, some people do not like to compete or do not do their best in competitive environments. These people may be talented and driven, even if competition is not in their nature. As the world becomes an increasingly competitive place, it is worth considering the value of a competitive spirit to an individual.

Read and carefully consider these perspectives. Each suggests a particular way of thinking about the role of competition in the life of an individual.

Perspective One

Competition drives innovation and excellence. Learning to compete brings out the best in us.

Perspective Two

People should be ready and willing to compete—but only with themselves. We better ourselves by setting and reaching our own goals, not by trying to beat other people.

Perspective Three

When we focus on individual success, we do so to the detriment of other people. When people collaborate rather than compete, everybody wins.

Essay Task

Write a unified, coherent essay in which you evaluate multiple perspectives on the role of competition in the life of an individual. In your essay, be sure to:

- analyze and evaluate the perspectives given
- state and develop your own perspective on the issue
- explain the relationship between your perspective and those given

Your perspective may be in full agreement with any of the others, in partial agreement, or wholly different. Whatever the case, support your ideas with logical reasoning and detailed, persuasive examples.

Planning Your Essay

Your work on these prewriting pages will not be scored.

Use the space below and on the back cover to generate ideas and plan your essay. You may wish to consider the following as you think critically about the task:

Strengths and weaknesses of the three given perspectives

- What insights do they offer, and what do they fail to consider?
- Why might they be persuasive to others, or why might they fail to persuade?

Your own knowledge, experience, and values

- What is your perspective on this issue, and what are its strengths and weaknesses?
- How will you support your perspective in your essay?

How to Score the Sample Test

It is difficult to be objective about one's own work. However, it is to your advantage to read your own writing critically, as doing so can help you grow as a writer and as a reader. It may also be helpful for you to give your sample essay to another reader, such as a classmate, parent, or teacher. To rate your practice test, you and your reader(s) should review the sample essays (pages 7–17) and then use the scoring rubric below to assign your practice essay a score of 1 (low) through 6 (high) in each of the four writing domains (Ideas and Analysis, Development and Support, Organization, Language Use and Conventions).

Scoring Rubric (pages 4 and 5)

The rubric presents the standards by which your essay will be evaluated. To score your essay, determine which scorepoint, in each domain, best describes the features of your writing. Because each domain receives its own scores, the four scores you assign need not be identical. For example, you may find that your essay exhibits stronger skill in organization than in the development of ideas. In this case, you may determine that your essay should receive a higher score in Organization than in Development and Support.

The ACT Writing Test Scoring Rubric

	Ideas and Analysis	***Development and Support***	***Organization***	***Language Use***
Score 6: **Responses at this scorepoint demonstrate effective skill in writing an argumentative essay.**	The writer generates an argument that critically engages with multiple perspectives on the given issue. The argument's thesis reflects nuance and precision in thought and purpose. The argument establishes and employs an insightful context for analysis of the issue and its perspectives. The analysis examines implications, complexities and tensions, and/or underlying values and assumptions.	Development of ideas and support for claims deepen insight and broaden context. An integrated line of skillful reasoning and illustration effectively conveys the significance of the argument. Qualifications and complications enrich and bolster ideas and analysis.	The response exhibits a skillful organizational strategy. The response is unified by a controlling idea or purpose, and a logical progression of ideas increases the effectiveness of the writer's argument. Transitions between and within paragraphs strengthen the relationships among ideas.	The use of language enhances the argument. Word choice is skillful and precise. Sentence structures are consistently varied and clear. Stylistic and register choices, including voice and tone, are strategic and effective. While a few minor errors in grammar, usage, and mechanics may be present, they do not impede understanding.
Score 5: **Responses at this scorepoint demonstrate well-developed skill in writing an argumentative essay.**	The writer generates an argument that productively engages with multiple perspectives on the given issue. The argument's thesis reflects precision in thought and purpose. The argument establishes and employs a thoughtful context for analysis of the issue and its perspectives. The analysis addresses implications, complexities and tensions, and/or underlying values and assumptions.	Development of ideas and support for claims deepen understanding. A mostly integrated line of purposeful reasoning and illustration capably conveys the significance of the argument. Qualifications and complications enrich ideas and analysis.	The response exhibits a productive organizational strategy. The response is mostly unified by a controlling idea or purpose, and a logical sequencing of ideas contributes to the effectiveness of the argument. Transitions between and within paragraphs consistently clarify the relationships among ideas.	The use of language works in service of the argument. Word choice is precise. Sentence structures are clear and varied often. Stylistic and register choices, including voice and tone, are purposeful and productive. While minor errors in grammar, usage, and mechanics may be present, they do not impede understanding.
Score 4: **Responses at this scorepoint demonstrate adequate skill in writing an argumentative essay.**	The writer generates an argument that engages with multiple perspectives on the given issue. The argument's thesis reflects clarity in thought and purpose. The argument establishes and employs a relevant context for analysis of the issue and its perspectives. The analysis recognizes implications, complexities and tensions, and/or underlying values and assumptions.	Development of ideas and support for claims clarify meaning and purpose. Lines of clear reasoning and illustration adequately convey the significance of the argument. Qualifications and complications extend ideas and analysis.	The response exhibits a clear organizational strategy. The overall shape of the response reflects an emergent controlling idea or purpose. Ideas are logically grouped and sequenced. Transitions between and within paragraphs clarify the relationships among ideas.	The use of language conveys the argument with clarity. Word choice is adequate and sometimes precise. Sentence structures are clear and demonstrate some variety. Stylistic and register choices, including voice and tone, are appropriate for the rhetorical purpose. While errors in grammar, usage, and mechanics are present, they rarely impede understanding.

The ACT Writing Test Scoring Rubric

	Ideas and Analysis	*Development and Support*	*Organization*	*Language Use*
Score 3: **Responses at this scorepoint demonstrate some developing skill in writing an argumentative essay.**	The writer generates an argument that responds to multiple perspectives on the given issue. The argument's thesis reflects some clarity in thought and purpose. The argument establishes a limited or tangential context for analysis of the issue and its perspectives. Analysis is simplistic or somewhat unclear.	Development of ideas and support for claims are mostly relevant but are overly general or simplistic. Reasoning and illustration largely clarify the argument but may be somewhat repetitious or imprecise.	The response exhibits a basic organizational structure. The response largely coheres, with most ideas logically grouped. Transitions between and within paragraphs sometimes clarify the relationships among ideas.	The use of language is basic and only somewhat clear. Word choice is general and occasionally imprecise. Sentence structures are usually clear but show little variety. Stylistic and register choices, including voice and tone, are not always appropriate for the rhetorical purpose. Distracting errors in grammar, usage, and mechanics may be present, but they generally do not impede understanding.
Score 2: **Responses at this scorepoint demonstrate weak or inconsistent skill in writing an argumentative essay.**	The writer generates an argument that weakly responds to multiple perspectives on the given issue. The argument's thesis, if evident, reflects little clarity in thought and purpose. Attempts at analysis are incomplete, largely irrelevant, or consist primarily of restatement of the issue and its perspectives.	Development of ideas and support for claims are weak, confused, or disjointed. Reasoning and illustration are inadequate, illogical, or circular, and fail to fully clarify the argument.	The response exhibits a rudimentary organizational structure. Grouping of ideas is inconsistent and often unclear. Transitions between and within paragraphs are misleading or poorly formed.	The use of language is inconsistent and often unclear. Word choice is rudimentary and frequently imprecise. Sentence structures are sometimes unclear. Stylistic and register choices, including voice and tone, are inconsistent and are not always appropriate for the rhetorical purpose. Distracting errors in grammar, usage, and mechanics are present, and they sometimes impede understanding.
Score 1: **Responses at this scorepoint demonstrate little or no skill in writing an argumentative essay.**	The writer fails to generate an argument that responds intelligibly to the task. The writer's intentions are difficult to discern. Attempts at analysis are unclear or irrelevant.	Ideas lack development, and claims lack support. Reasoning and illustration are unclear, incoherent, or largely absent.	The response does not exhibit an organizational structure. There is little grouping of ideas. When present, transitional devices fail to connect ideas.	The use of language fails to demonstrate skill in responding to the task. Word choice is imprecise and often difficult to comprehend. Sentence structures are often unclear. Stylistic and register choices are difficult to identify. Errors in grammar, usage, and mechanics are pervasive and often impede understanding.

Calculating Your Writing Subject Score

Complete these steps to calculate your Writing Subject Score (1–36 scale).

1. Locate the four domain scores (1–6) and enter them in the first column below. Double each score and enter in the Domain Score column to the right.

			Domain Score
Ideas and Analysis	____	x 2 =	____
Development and Support	____	x 2 =	____
Organization	____	x 2 =	____
Language Use and Conventions	____	x 2 =	____

2. Enter the sum of the second-column scores here _____. This is your raw score (value between 8 and 48).

3. Use the table below to find the scaled Writing Subject Score that corresponds to your raw score.

Scale Score	Raw Score
	Writing
36	46-48
35	44-45
34	42-43
33	40-41
32	38-39
31	—
30	36-37
29	35
28	34
27	33
26	—
25	32
24	30-31
23	29
22	28
21	—
20	27
19	26
18	25
17	24
16	23
15	22
14	21
13	20
12	19
11	18
10	17
9	16
8	15
7	13-14
6	11-12
5	10
4	—
3	9
2	—
1	8

Sample Essays and Scoring Explanations

Readers for the ACT writing test receive extensive training and spend substantial time practicing before they begin to score "live" essays. Although we cannot provide you with the same training, reading the sample essays that follow will help you better understand some of the characteristics of essays at each scorepoint. The scoring explanations will also be useful in helping you understand the writing task and scoring rubric.

These samples were written in response to the prompt found on page 2. Note that the essays are not scored on the basis of the stance they take on the issue the prompt presents, but on the basis of their ability to generate an argument that establishes a critical perspective on the issue and brings it into dialogue with other perspectives.

Sample Essay 1

Scores

***Ideas and Analysis*: 1**
***Development and Support*: 1**
***Organization*: 1**
***Language Use and Conventions*: 1**

Essay

if you have competition you is challeging yourself with someone eles an see who is better at it if you are racing you would want to see who is the fastest an a running race you would want to see who has the fastest time if you were playing football with somebody you would see who was better an who could score the most points in the game

if you compete with yourself you can see if if you can beat your old football record you could see if you is better than you was before an ave your skills the same would you still have to practice with your friends an play a game to see if you are better than they are at football

Scoring Explanation

Ideas and Analysis – 1

While the writer does attempt to describe a few activities that involve competition, these efforts do not constitute an argument that responds meaningfully to the task. The examples offered do not clearly relate or respond to the ideas offered by the prompt's perspectives; neither do they join together to form a larger idea that the writer hopes to advance. As such, the writer's purpose in offering these examples is unclear. On the whole, the writer demonstrates little skill in generating the ideas and analysis that a written argument requires.

Development and Support – 1

Perhaps the descriptions of competitive scenarios are intended to illustrate a larger point, but because that point does not come through with clarity, these attempts at illustration are largely incoherent. The net effect of this approach is a list of disconnected, undeveloped examples that do not demonstrate skill in expanding and supporting a written argument.

Organization – 1

Organization, like ideas and the development thereof, seems to reflect confusion in purpose. The response begins and ends abruptly, and the list of examples does not proceed according to an apparent logic. While the writer does split ideas into two paragraphs, he seems to have done so arbitrarily. While basic transitional phrases introduce each new example ("if you are racing," "if you were playing football"), they do not serve to connect these examples to one another or to a larger idea. Because of these problems, the response fails to exhibit even a rudimentary structure and thus demonstrates little skill in organizing a written argument.

Language Use and Conventions – 1

Although the language in this response is impaired, the reader can generally comprehend much of what the writer is trying to convey. Nevertheless, the response demonstrates little skill in using standard written English to compose an argument. Errors in grammar, usage, and mechanics are pervasive. For example, the piece is entirely free of punctuation. In some cases, these problems are mere distractions; in others, they impede understanding ("an ave your skills the same would you still have to practice with your friends an play a game to see if you are better than they are at football"). All told, the use of language contributes to this writer's failure in meeting the requirements of the task.

Sample Essay 2

Scores

***Ideas and Analysis*: 2**
***Development and Support*: 2**
***Organization*: 2**
***Language Use and Conventions*: 2**

Essay

Competting with others is a good way to accomplish some goals and push yourself to be better, but imagine competing with yourself? To think of it, it is easy to compete with yourself and be very successful because you might have a motive of being so much better than you were before.

Competting is an excellent way for individuals to drive innovation and excellence in accomplishing many goals. Others may disagree on this theroy because they might not have competed themselves on many things. For example, students in school don't really put any effort into their classes because they are lazy and if they try competting with themselves, they are not as successful as they really thought they would be. Most people learn to compete with themselves and that brings out the best of them.

It's very different when one is competting with themselves instead of an other. Various of people better themselves when they compete within one another by setting and reaching out their own goals, not by trying to be better then other people. This helps accomplish a lot of goals by trying so hard to beat the old you so that the new you can be so much better. But why compete? to win? Maybe if people collaborate rather than compete, there might be a possibility that everybody will win. There are many good reasons why competting with yourselves other than other people are good to yourself and others.

Scoring Explanation

Ideas and Analysis – 2

This writer generates an argument that weakly responds to multiple perspectives by choosing one offered by the prompt and advocating for it. While the writer does allude to an alternate perspective ("Others may disagree on this theroy"), there is little interaction between the writer's ideas and those of others. A thesis statement serves to assert the writer's perspective ("To think of it, it is easy to compete with yourself and be very successful because you might have a motive of being so much better than you were before"), but the vagueness of this statement—and the argument that follows—reveals ambiguity in thought. The writer attempts to clarify and advance her perspective by way of analysis, but these attempts are incomplete. For example, the writer's attempt to draw out a distinction between self-competition and competition with others (paragraph three) serves to reaffirm the writer's perspective but does little towards advancing it.

Development and Support – 2

While development of ideas and support for claims help to reinforce the writer's general agreement with Perspective Two, they do not fully clarify her rationale. Reasoning and illustration are inadequate; the writer's attempt to respond to dissenters (paragraph two), for example, neither clarifies the specific objection at hand ("because they might not have competed themselves on many things") nor offers a logical response. As such, this attempt to bolster the argument falls short. The same is true of a weakly developed nod to the idea of collaboration ("But why compete? to win? Maybe if people collaborate rather than compete, there might be a possibility that everybody will win"), which, because it seemingly runs counter to the writer's perspective, serves to confuse rather than clarify and extend. In these ways, the response has exhibited inconsistent skill in developing and supporting a written argument.

Organization – 2

This argument exhibits a rudimentary organizational structure. The first paragraph introduces the issue and asserts the writer's perspective, and the final sentence serves as a brief reiteration. Between these brackets, however, grouping of ideas is inconsistent. While paragraph 2 is dedicated to a counterargument, paragraph 3 includes a disconnected discussion of both self-improvement and collaboration, and also includes the aforementioned concluding sentence. Perhaps transitions would have clarified the basic relationships between and among the ideas in this paragraph and in the larger argument, but, with a few exceptions, they are missing from this response. While the writer is able to shape ideas into essay form, the response exhibits only weak skill in organizing a written argument.

Language Use and Conventions – 2

This response exhibits imprecise word choice and awkward syntax. While these features do not render ideas unintelligible, they do serve as distractions for the reader. Voice and tone are nondescript, with the brief exception of a rhetorical flourish ("But why compete? to win?") that is somewhat jarring in its break from the rest of the response and somewhat confusing in its execution. On balance, these features indicate inconsistent skill in using language in service of an argumentative purpose.

Sample Essay 3

Scores

***Ideas and Analysis*: 2**
***Development and Support*: 2**
***Organization*: 3**
***Language Use and Conventions*: 3**

Essay

Competition, it's something everybody has and it's something everybody does. Competition can be good or bad, depending on the outcome. People all have different opinions on competition.

The first perspectives states, "Competition drives innovation and excellence. Learning to compete brings out the best in us." They fail to mention that competition can make things harder. For example seven people doing the same job in a neighborhood.

The second perspective claims, "People should be ready and willing to compete – but only with themselves. We better ourselves by setting and reaching our own goals, not by trying to beat other people." They fail to state that competition with other people can be productive in bettering ourselves. For example, if Susie gets an A on a test and Cody gets a B+, then Cody will want to compete for a higher grade.

The third and final perspective states, "When we focus on individual success, we do so to the detriment of other people. When people collaborate rather than compete, everybody wins." They fail to consider that sometimes when people collaborate, they clash and nothing gets done. For example Jack and Jason are buying a house. Jack wants two bedrooms and Jason wants three.

One might disagree with all three perspectives, or they might agree. If they agree it could be because all of the perspectives are true to their ideals.

All in all, competition is one thing people can't agree on. They could like it or hate it. Whatever it is, competition plays a big role in our everyday lives.

Scoring Explanation

Ideas and Analysis – 2

This writer offers weak critiques of multiple perspectives on the issue at hand. These attempts at analysis are promising, in that they reveal a willingness to enter into conversation with the voices of others, but fall short in execution and are thus incomplete. The argument offers little beyond these attempts at analysis. The fifth paragraph ("One might disagree with all three perspectives, or they might agree. If they agree it could be because all of the perspectives are true to their ideals") may intend to convey the argument's thesis; if so, this unproductive point does not offer much to argue, reflecting little clarity in purpose.

Development and Support – 2

Development of ideas falls well short of adequacy. Consider the writer's critique of Perspective One: "They fail to mention that competition can make things harder. For example seven people doing the same job in a neighborhood." While one can infer a relationship between claim and support, this brief example leaves the reader with a number of questions: Is this truly an example of competition? It sounds more like seven people working together—or are these people competing for the same job? While the writer's instinct to illustrate her claims is worthy of recognition, the response demonstrates weak skill in illustrating and explaining ideas.

Organization – 3

While its ideas and development are weak, this response reveals developing skill in organizing a written argument. The essay exhibits a basic organizational structure: The first and final paragraphs, respectively, present an introduction and conclusion, and body paragraphs take on an orderly discussion of the perspectives. Although this basic structure is a bit rigid, its dependence on logically grouped ideas allows the response to cohere and earns the writer a score of 3 in this domain.

Language Use and Conventions – 3

As with organization, the use of language in this response outstrips its ideas and development. Word choice is clear, if general, and sentence structures, though simple and rarely varied, are appropriate. These features help establish a straightforward tone that is appropriate for the writer's approach to critique, although this tone is not always maintained ("They could like it or hate it"). All told, the response demonstrates developing skill in the Language Use domain.

Sample Essay 4

Scores

***Ideas and Analysis*: 3**
***Development and Support*: 3**
***Organization*: 3**
***Language Use and Conventions*: 3**

Essay

A lot of people compete in the world today. It's how every one functions. Sometimes you compete without even relizing it like who's going to get the last cookie or slice of cake. When you compete you test your ability and you benefit from that. It helps you see what you know and see what you need to work on. Some people might say that when they compete they do not do their best but people can benefit even from that.

Many people have diffrent perspectives on competition. One is that competition drives innovation and learning and that it brings out the best in us. I agree with this because practice and actually competing are very diffrent. If you mess up when practicing you can just go back and fix what you did wrong. At competition you have to go along with whatever happens. This is a good thing because it lets you see what you need to work on, something that's hard to tell when just practicing.

Another opinion on the topic is that you should only compete with yourself because its better to set and reach your own goals without trying to beat others. This is slightly persuasive but it doesn't consider the fact of when you compete with yourself, you only have you own ideas to compete. When that happens you don't grow or get better. With other people being involved, you get your ideas challenged and it makes you consider yours more and come up with new ones.

Some people make a case of everyone winning when you focus on individual success rather than compete. This isn't very accurate because, as stated before, competing is very diffrent from practicing or, in this case, collaborating. When you compete, there isn't changing or going back so you have to stick with what you have. This is benificial because you get to see what your used to and what you need to fix.

Perspective One is the most persuasive.

Scoring Explanation

Ideas and Analysis – 3

The writer offers her perspective on the issue and attempts to advance it by evaluating and analyzing the perspectives offered by the prompt. The writer contextualizes the issue as a matter of self-improvement, evaluating each perspective on these grounds. This context is promising, but because it produces simplistic analysis, its utility is limited. Perspective One, we are told, is agreeable because it promotes competition with others, which is itself the key to self-improvement; Perspectives Two and Three, then, are less agreeable because they do not promote competition with others and thus do not promote self-improvement. While these analyses are oriented toward the writer's thesis, they are too superficial to earn a higher score.

Development and Support – 3

Reasoning and illustration clarify the writer's argument but are unable to draw out its significance. While the writer does explain some of her ideas (see paragraph two's discussion of the difference between practice and competition, for example), these explanations are only somewhat satisfying. For instance, we are asked to trust the writer's unexplored assumption that collaboration is tantamount to practice (paragraph four), and because the writer's critique of Perspective Three depends on this comparison, the precision of this critique suffers. Furthermore, the writer's discussions never advance far enough to make clear the stakes of the larger argument. For example, even if we trust that competition may play a part in self-improvement, does self-improvement *depend* on competition? Are there other ways in which we might improve ourselves? What about people who aren't challenged by those with whom they compete? Anticipating and addressing questions like these may have helped the writer draw out implications and complexities, thus elevating the quality of ideas and analysis and, indeed, the larger argument. Instead, the writer's claims are limited by the overly general nature of their support.

Organization – 3

This response exhibits a basic organizational structure. Like Sample Essay 3, this one proceeds through an orderly discussion of the given perspectives, bracketed by an introduction and conclusion. Transitions move the reader through the discussion by introducing new perspectives ("Another opinion on the topic is," "Some people make a case") and the writer's critiques of these perspectives ("This is slightly persuasive but it doesn't consider," "This isn't very accurate because"). While this approach to organization allows the response to cohere, it also constrains argument in a number of ways. For example, while the perspectives are presented in the order in which they appear in the prompt, the discussion of these perspectives does not build and progress logically but instead feels fragmented and piecemeal. A stronger controlling idea may have helped the argument gain momentum.

Language Use and Conventions – 3

The use of language is basic. Word choice is generally accurate. Sentence structures are often clear but sometimes suffer from imprecision ("This is slightly persuasive but it doesn't consider the fact of when you compete with yourself, you only have you own ideas to compete"), thanks in part to a handful of distracting syntactical and grammatical errors. Stylistic choices indicate an attempt to assume a formal, academic tone, though execution falters. On balance, language in this response exhibits both promising features and common mistakes, and thus exhibits developing skill.

Sample Essay 5

Scores

***Ideas and Analysis*: 4**
***Development and Support*: 3**
***Organization*: 3**
***Language Use and Conventions*: 4**

Essay

Competition is not just a thing a person can decide to have or make, it is what made and makes people and nature what they are today. In our genetics we are programmed to compete. Wether that is for food, shelter, a good mate, or the last piece of cake at dinner, everyone and everything on this earth is in a competition to survive. Without competition, no one would be able to strive to better themselves; to be more capable at surviving than their peers. In the real world competition is the only way to adapt and thrive, and without it, the world would be a much different place.

Another perspective to look at is that competition is what brings out the best in people. To compete is to know that someone out there wants exactly what you want, and that for you to get your desired thing, you must be better and more capable than your competition. Such as when a person is looking for a better job. They know that there is competition for this job because it is desirable. Consequently they also know that they must better themselves, so that they have advantages over their competition when the time comes to compete. Such as becoming more qualified and having a better background for the new and desired job. While being competitive does not mean you will always get what you desire and need, it does mean that you will have a better chance at getting what you desire, and at learning to adapt from failures and strive to be better.

A furthur point of view to consider is that competition is good, and helps us reach our goals, but only if we compete with ourself to be better. This view has a good point because truely we are the only thing that can make us strive to be better, but it fails to notice the greatness that can come from competition between peers. If we did not hold ourselves up to the standards of our peers, we could not know if we are bettering ourselves or are being detrimental to ourselves and this is very important for us to survive and thrive.

Scoring Explanation

Ideas and Analysis – 4

Ideas and analysis exhibit a degree of sophistication that is not present in the previous samples. The first paragraph begins an argument that recognizes and challenges an assumption underlying each of the given perspectives, and indeed the prompt itself: that the role of competition in the life of an individual is determined *by* the individual. Instead, the writer asserts, competitiveness is innate ("Competition is not just a thing a person can decide to have"; "In our genetics we are programmed to compete"), and the world itself is one big struggle to thrive and survive. This discussion forms a contextual backdrop—competition as a matter of adaptation and, ultimately, survival—that informs the writer's further analysis, particularly in paragraph 2's discussion of competition "[bringing] out the best in people." While the argument falters as it progresses—paragraph 3 is a middling critique of Perspective Two—it earns a score of 4 thanks to engagement with multiple perspectives.

Development and Support – 3

While the writer makes a number of sharp analytical claims, she does not offer adequate support. Take paragraph one: Is it really true that "[w]ithout competition, no one would be able to strive to better themselves"? If so, where do we find evidence of this idea? Claims such as this indicate engagement with the issue and its perspectives, but they require supporting rationale and illustration to convince the reader of their validity. While development of paragraph two is nice, particularly in its treatment of competition in the job market, the larger argument fails to reach adequacy in its development and support.

Organization – 3

The response begins and ends rather abruptly; it is initially unclear whether the first paragraph intends to set the stage for an argument or has indeed begun to argue, and the final paragraph does not serve to meaningfully conclude the piece. Transitions introduce new paragraphs and perspectives, thus clarifying basic relationships ("Another perspective to look at," "A further point of view to consider"), but do not establish a clear sequence of ideas—why has the writer discussed these ideas in this order, and how do they come together around a larger idea or purpose? As such, the response exhibits only a basic organizational structure and earns a 3 in this domain.

Language Use and Conventions – 4

Word choice is adequate, with moments of precision that reinforce the survival motif and thus the writer's argument ("adapt and thrive," "detrimental," "strive to be better"). Despite a glitch or two, sentence structures are clear and show some variety. These same features serve a mostly formal tone that is appropriate for the rhetorical purpose. Because the use of language serves to convey the argument with clarity, the response earns a 4 in this domain.

Sample Essay 6

Scores

***Ideas and Analysis*: 4**
***Development and Support*: 4**
***Organization*: 4**
***Language Use and Conventions*: 4**

Essay

Competition truely brings out the best in us. It is good to compete because competition drives innovation and excellence. While collaboration is also Quite useful at times, that drive to be your best still trumps all. Self-motivation, or competing with yourself has also proven to be a useful method of motivation. However, motivation from an outside force will determine us all more than anything else.

Setting goals for yourself and trying your best to reach them through self-motivation is a great plan to have. However, some people, myself included, need a little push in life. I can come up with great goals and a plan for myself just fine, the same way that most people can. But where does the motivation to achieve those goals come from? Everyone is different, and we all learn in different ways. The vast majority of people today are not self motivated. Especially amongst young adults, most people have someone else there to help them, or even do things for them. A great example is parents. For most young adults today, the parents are there to help them and motivate them. Essentially, if most of the parents out there didn't motivate their children, most kids wouldn't amount to anything. Because, especially in the adolecent to young adult age range, kids are more focused on having fun than thinking about the future. That is a great example of why more can be achieved with the help of motivation from an outside force. While it is good to set goals for yourself, those goals have a better chance of being accomplished with some competition and motivation, not only from yourself, but also from others.

Collaboration with other people is a great method to use in situations of problem solving, and so on. But working in groups is not always the best idea for yourself. When you collaborate with others, it is easy to become dependent on someone else. In every group there is always an unofficial "leader," or one person who seems to grasp the concept or the situation more than the others seem to. In a situation of collaboration, if you are not the so called "leader" of the group, then you could very easily become dead weight. If someone else is doing all of the work for you, then you are not learning and bettering yourself. Even if you do turn out to be the unofficial "leader," then you may be betting your own understanding of the concept, but at the expense of the others in the group. There are times or certain situations where collaboration is a method that works wonderfully. However, people must keep in mind that there are also situations that they really shouldn't collaborate and just focus on themselves.

This concept of determination, and competition, and what source it should come from really comes down to one thing. Everyone is different and everyone learns differently. I personally think that I achieve more when I compete with others. Each concept has it's upsides and it's downsides. You just have to find which is the best fit for you.

Scoring Explanation

Ideas and Analysis – 4

A clear thesis drives an argument that engages with multiple perspectives. The writer contextualizes the central issue as a question of intrinsic vs. extrinsic motivation ("Self-motivation, or competing with yourself has also proven to be a useful method of motivation. However, motivation from an outside force will determine us all more than anything else") and employs this context while arguing her thesis. Paragraph 2, for example, discusses the limitations of intrinsic motivation, thus recognizing and critiquing an implication of Perspective Two, while Paragraph 3 discusses the limitations of collaborative environments as *forces* of external motivation. In this way, the writer advances her thesis by analyzing and evaluating multiple perspectives, and demonstrates adequate skill in doing so.

Development and Support – 4

Development of ideas and support for claims clarify meaning and purpose. The second paragraph begins by noting that "self-motivation" is valuable, but that many people require "a little push" in order to achieve. In exploring this idea, the writer clarifies what she means by this statement ("I can come up with great goals and a plan for myself […] the same way that most people can. But where does the motivation to achieve those goals come from? […] For most young adults today, the parents are there to help them and motivate them") and how it relates to her thesis ("That is a great example of why more can be achieved with the help of motivation from an outside force"). As this line of reasoning unfolds, the significance, or larger importance, of this idea begins to emerge ("[Without the prodding of their parents], most kids wouldn't amount to anything"; "While it is good to set goals for yourself, these goals have a better chance of being accomplished with some competition and motivation"). In this way, development extends ideas and analysis, and earns a score of 4.

Organization – 4

The writer's clear thesis serves as a controlling idea; the argument takes shape around her efforts to argue this thesis. In this way, an organizational strategy emerges. Ideas are logically grouped, with an introduction that establishes the thesis, a separate body paragraph for each driving idea, and a (somewhat ineffective) conclusion. Transitions between and within paragraphs clarify the relationships among ideas; the writer's reasoning unfolds clearly thanks in part to strong transitions ("A great example," "If," "Even if," "However").

Language Use and Conventions – 4

The response demonstrates sustained language control. With the exception of a few glitches ("you may be betting your own understanding of the concept"), word choice is accurate and clear. Sentence structures are clear and, despite a few glitches here as well, demonstrate some variety. Voice and tone are conversational, a stylistic choice that lends a sense of honesty and perhaps authority to this student's discussion of collaboration in the classroom and the pratfalls of adolescence.

Sample Essay 7

Scores

***Ideas and Analysis*: 5**
***Development and Support*: 5**
***Organization*: 5**
***Language Use and Conventions*: 5**

Essay

The prompt asks us whether competition is necessary to achieve true success and promote learning. However, there are many different viewpoints that can be considered. Throughout life, competition is partially necessary – with others and ourselves – to better ourselves and achieve success. In everyday life, the evidence to support my ideas are prevalent.

In high school, competition between sports teams helps motivate them to succeed. Teams are motivated to succeed because they know they want to achieve their goal of winning a game or a championship. However, they will have to compete with teams from other schools to achieve their goals. As a result, they will train harder to try to beat the other teams. This helps them better themselves because nothing in life is easy to achieve. If one wants to succeed, one must put in hard work and dedication. I agree with this perspective because it teaches us about the world in general. Competition is always present in the world because different people are striving to achieve similar goals. I believe that people need to develop a competitive spirit to be able to adjust to the competitive world we live in. Therefore, competition with others can help us better ourselves and succeed, but competing with ourselves can also help us.

Competition with ourselves can help us succeed by overcoming failures and learn from past mistakes. In high school, many of us have to take tests every week. Typically, people make a few careless or conceptual mistakes. If someone fails a test by making mistakes, he or she often feels discouraged and may not try to study harder for the next test. If the person has a competitive nature, they will try to learn from their mistakes so that they will do better than they did last time. This helps them because they will better themselves by striving to expand their knowledge than just giving up. I agree with this perspective because most people will experience failure in their life at least once. However, competing with ourselves allows us to overcome our past failures and achieve success later on. I believe that competing with ourselves an important source of motivation to learn from the past and overcome difficulties. Therefore, competing with ourselves can help us better ourselves by learning more, but working with others can also help us succeed in life.

Collaborating with others can help us succeed by helping us complete a task more easily and efficiently. In school, many of us have to do group projects in which it is necessary to work with others. Usually, people have designated roles and they are responsible for completing the tasks accompanying their role. However, if a person has difficulty completing the task, it may take longer or might not be done as well. This can cause the whole group's grade to be lower. If other group members work together, they will be able to help the person who is struggling. They can use different peoples' strengths and weaknesses to complete the task. This helps them succeed because they make the task easier for everyone and would achieve a better grade. I agree with this perspective because in companies many people have to work together to compete a larger project. This would only be possible if people worked together to clarify their doubts. I believe that by working together, people make the task easier for themselves and others. Therefore, collaborating with others makes a task easier, which allows everyone to succeed.

Ultimately, competition is necessary while trying to overcome past failures or achieving an individual goal, but a degree of collaboration is also necessary to make work easier for everyone. It is important to have a competitive nature in this competitive world, but it is also useful to be able to work with others when trying to achieve a common goal.

Scoring Explanation

Ideas and Analysis – 5

This argument addresses the implications of multiple perspectives on the issue. The argument comes together around a precise thesis that is encapsulated in the conclusion ("Ultimately, competition is necessary while trying to overcome past failures or achieving an individual goal, but a degree of collaboration is also necessary to make work easier for everyone"). The writer places the issue in a thoughtful context, posing the question of "whether competition is necessary to achieve true success and promote learning." This context affords productive engagement with the perspectives; analysis and evaluation are channeled toward unpacking the perspectives and revealing their implicit relationships to the ideas of success and the promotion of learning.

Development and Support – 5

The argument deepens the reader's understanding of its meaning and importance by exploring the relationships between competition, collaboration, and success. In this way, the writer maintains focus on developing the thesis and drawing out its significance. Consider the writer's discussion of self-competition (paragraph three). The writer begins with a claim ("Competition with ourselves can help us succeed by overcoming failures and learn from past mistakes"), and then illustrates the claim with the example of high school students who make a few mistakes on a test. The writer does not leave the example to speak for itself; instead, she reasons through it, clarifying its intent as support ("If the person has a competitive nature, they will try to learn from their mistakes so that they will do better than they did last time") and connecting it back to the thesis ("This helps them because they will better themselves by striving to expand their knowledge than just giving up"). The discussion presses forward, noting that "most people will experience failure in their life […] competing with ourselves allows us to overcome our past failures and achieve success later on." These thorough discussions serve to elevate and strengthen ideas and analysis and earn the writer a score of 5 in this domain.

Organization – 5

In some respects, the basic structure of this argument mirrors the structure of Sample Essays 3 and 4—both of which earned a 3 in this domain. After all, the writer presents each perspective in order, framing the discussion with a simple introduction and conclusion. However, this response exhibits much greater purpose in organization, utilizing this structure to a strategic end. For example, the presentation of perspectives mirrors the presentation in the prompt, but also serves the logic of the controlling idea. This idea—that competition helps us achieve individual goals and overcome failures, but that "it is also useful to be able to work with others when trying to achieve a common goal"—is reinforced by strong transitions ("Competition with ourselves can help us succeed by overcoming failures," "Competing with ourselves can help us better ourselves by learning more, but working with others can also help us succeed in life") that keep the thesis in full view as the writer moves through the perspectives. Organization within paragraphs is somewhat rigid but largely effective; the writer begins each paragraph by analyzing a given perspective, illustrating its basic meaning before moving to an evaluation ("I agree with this perspective because") and concluding with a discussion of its implications. As such, organization, despite its somewhat formulaic structure, facilitates a mostly unified argument and earns a score of 5.

Language Use and Conventions – 5

The response demonstrates well-developed skill in the use of language. A measured voice supports the writer's measured argument. While the prose is not particularly economical, word choice is often precise ("an important source of motivation," "designated roles," "a competitive natures"). Sentence structures are varied often and usually clear, despite a few misleading introductory clauses. The language in this response is not flashy, but it works in service of the writer's argument and receives a score of 5.

Sample Essay 8

Scores

***Ideas and Analysis*: 6**
***Development and Support*: 6**
***Organization*: 6**
***Language Use and Conventions*: 6**

Essay

When I was a child of about six or seven my parents allowed me to join one of our city's numerous T-ball leagues. We practiced twice a week, on Tuesdays and Thursdays, and my favorite cousin would be joining the team as well, I found out. Practice ran like a well-oiled machine; however, when we reached our first game, I realized something: I had no athletic ability whatsoever. I could not field a ball, I could not run the bases quickly. Yet out of pride, or delusion perhaps, I stuck the game out. I went home that day crying, informed my parents that I was quitting and that was that. It was not my spirit that was lacking that day. I wanted to win; I simply couldn't do it. My parents, of course, wouldn't let me quit, and I went through the season miserable. Desperately wanting to win for my team, yet unable to.

The lesson, of course, is that even if a person is competitive, it is not what makes one excel. Many people, as they ardently repeat "Competition drives excellence," fail to account for what truly makes one succeed. Success is, as I've learned, a mixture of good luck and preparation. One must be lucky enough to be born with even the smallest amount of natural talent, and one must prepare that talent through competition. The two are inseparable.

As my life went on, I generally stayed away from sports, though I briefly took up archery in middle school. I was stagnant, not driven nor compelled to improve, even in the things I loved, like playing my instruments. But that year on my birthday, I found a reason to compete again: golf. I recieved a nine-club starter set for my 13th birthday, and immediately set about learning. I discovered that I had an excellent eye for distance, a great mind for club selection, and just enough wiry strength to tie it all together.

I golfed all the way to high school, taking on 2 leagues and many tournaments, and with high school, I found yet another competitive spark in me. Marching band.

Never have I cared so much about winning. Sometimes I'm afraid that I will become a soccer-mom type figure, and lose sight of why I truly want my band to do well: The people in the band. I found that struggling for victory along with my friends brought the same joy as getting the lowest score on the golf course, many times over. The collaboration, self-improvement, and passion to win have made me love marching. This is what many Anti-Competition advocates fail to understand – while collaboration and self-comparison are excellent, without that drive to beat others, these are weak and unfocused.

Losing, I've discovered, is also a cause for joy – the ability to look back and assess oneself is vital for improving, and there is no better test of this than competing with others. Only after we know how we compare to others can we know how to improve ourselves.

In short, I believe in competition; however, I believe no one should be forced into contest against their will. A person's choice to compete, and indeed, excel should be based on their own skills and passion.

Scoring Explanation

Ideas and Analysis – 6

This compelling argument utilizes personal anecdote and narrative technique to critically engage with multiple perspectives on the question of the role of competition in the lives of individuals. The writer positions this question in a context that allows for an insightful treatment, introducing considerations of talent, luck, preparation, and personal fulfillment. This context permits an examination of assumptions that underlie both the given perspectives ("Many people, as they ardently repeat 'Competition drives excellence,' fail to account for what truly makes one succeed") and the writer's own argument ("In short, I believe in competition; however I believe no one should be forced into contest against their will"). The argument is propelled by a nuanced thesis that is refined as the argument progresses: competition is instrumental in success, but in order to succeed, one's competitive spirit must be accompanied by luck, talent, and hard work, all of which are forged in the fires of competition itself.

Development and Support – 6

Where lesser responses are often fragmented in their development, this one exhibits an integrated line of skillful reasoning and illustration. The first paragraph uses the writer's t-ball experience to set up a critique of Perspective One, which is subsequently supported by a discussion of the writer's experience with golf. This discussion feeds into an anecdote about marching band, which is itself used to set up the writer's critique of Perspective Three. As the argument unfolds, its context broadens—the thesis grows against the backdrop of examples from the writer's childhood, adolescence, and high school. As these examples build upon one another, the argument's insights deepen—here's what I *learned* from these experiences, here's how these lessons relate, and here's why these lessons *matter*.

Organization – 6

Many of the noted strengths in developing an argument are also reflections of strategic organization. The chronological tour through the writer's experiences serves an effective framework and represents a logical progression of ideas. Analysis and narrative are deftly interwoven; the writer moves seamlessly into and out of her anecdotes, keeping them tightly connected to the thesis. Transitions, both within paragraphs ("This is what many Anti-Competition advocates fail to understand – ") and between ("The lesson, of course"), serve to clarify and strengthen these connections. All of these choices serve to increase the effectiveness of the argument; in fact, the logic of the argument itself, in its moves from premise to conclusion to premise to conclusion, is in many ways inseparable from the manner in which it is organized.

Language Use and Conventions – 6

The writer's command of language serves to enhance the argument. The prose shifts between informal ("Sometimes I'm afraid that I will become a soccer-mom type figure") and formal registers ("Many people, as they ardently repeat"), reflecting shifts in perspective as the piece moves in and out of narrative and commentary. Word choice is precise and engaging, and an array of crisp sentence structures—including a few intentional fragments—helps facilitate shifts in register and perspective and makes for enjoyable reading.

You may wish to remove these sample answer document pages to write your essay.

Please enter the information at the right before beginning the Writing Test.

Use a soft lead No. 2 pencil only. Do NOT use a mechanical pencil, ink, ballpoint, or felt-tip pen.

WRITING TEST BOOKLET NUMBER

Print your 6-digit **Booklet Number** in the boxes at the right.

WRITING TEST FORM

Print your 3-character **Test Form** in the boxes above and fill in the corresponding oval at the right.

⬭ C15

Begin WRITING TEST here.

If you need more space, please continue on the next page.

WRITING TEST

If you need more space, please continue on the next page.

WRITING TEST

If you need more space, please continue on the next page.

WRITING TEST

STOP here with the Writing Test.


0801151 6W