

ANSWER SHEET

ACT PRACTICE TEST 2

Answer Sheet

ENGLISH

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

MATHEMATICS

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|------------------------|------------------------|------------------------|------------------------|
| 1 (A) (B) (C) (D) (E) | 16 (F) (G) (H) (J) (K) | 31 (A) (B) (C) (D) (E) | 46 (F) (G) (H) (J) (K) |
| 2 (F) (G) (H) (J) (K) | 17 (A) (B) (C) (D) (E) | 32 (F) (G) (H) (J) (K) | 47 (A) (B) (C) (D) (E) |
| 3 (A) (B) (C) (D) (E) | 18 (F) (G) (H) (J) (K) | 33 (A) (B) (C) (D) (E) | 48 (F) (G) (H) (J) (K) |
| 4 (F) (G) (H) (J) (K) | 19 (A) (B) (C) (D) (E) | 34 (F) (G) (H) (J) (K) | 49 (A) (B) (C) (D) (E) |
| 5 (A) (B) (C) (D) (E) | 20 (F) (G) (H) (J) (K) | 35 (A) (B) (C) (D) (E) | 50 (F) (G) (H) (J) (K) |
| 6 (F) (G) (H) (J) (K) | 21 (A) (B) (C) (D) (E) | 36 (F) (G) (H) (J) (K) | 51 (A) (B) (C) (D) (E) |
| 7 (A) (B) (C) (D) (E) | 22 (F) (G) (H) (J) (K) | 37 (A) (B) (C) (D) (E) | 52 (F) (G) (H) (J) (K) |
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| 9 (A) (B) (C) (D) (E) | 24 (F) (G) (H) (J) (K) | 39 (A) (B) (C) (D) (E) | 54 (F) (G) (H) (J) (K) |
| 10 (F) (G) (H) (J) (K) | 25 (A) (B) (C) (D) (E) | 40 (F) (G) (H) (J) (K) | 55 (A) (B) (C) (D) (E) |
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| 15 (A) (B) (C) (D) (E) | 30 (F) (G) (H) (J) (K) | 45 (A) (B) (C) (D) (E) | 60 (F) (G) (H) (J) (K) |

READING

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|--------------------|--------------------|--------------------|--------------------|
| 1 (A) (B) (C) (D) | 11 (A) (B) (C) (D) | 21 (A) (B) (C) (D) | 31 (A) (B) (C) (D) |
| 2 (F) (G) (H) (J) | 12 (F) (G) (H) (J) | 22 (F) (G) (H) (J) | 32 (F) (G) (H) (J) |
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| 5 (A) (B) (C) (D) | 15 (A) (B) (C) (D) | 25 (A) (B) (C) (D) | 35 (A) (B) (C) (D) |
| 6 (F) (G) (H) (J) | 16 (F) (G) (H) (J) | 26 (F) (G) (H) (J) | 36 (F) (G) (H) (J) |
| 7 (A) (B) (C) (D) | 17 (A) (B) (C) (D) | 27 (A) (B) (C) (D) | 37 (A) (B) (C) (D) |
| 8 (F) (G) (H) (J) | 18 (F) (G) (H) (J) | 28 (F) (G) (H) (J) | 38 (F) (G) (H) (J) |
| 9 (A) (B) (C) (D) | 19 (A) (B) (C) (D) | 29 (A) (B) (C) (D) | 39 (A) (B) (C) (D) |
| 10 (F) (G) (H) (J) | 20 (F) (G) (H) (J) | 30 (F) (G) (H) (J) | 40 (F) (G) (H) (J) |

SCIENCE

- | | | | |
|--------------------|--------------------|--------------------|--------------------|
| 1 (A) (B) (C) (D) | 11 (A) (B) (C) (D) | 21 (A) (B) (C) (D) | 31 (A) (B) (C) (D) |
| 2 (F) (G) (H) (J) | 12 (F) (G) (H) (J) | 22 (F) (G) (H) (J) | 32 (F) (G) (H) (J) |
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RAW SCORES	SCALE SCORES	DATE TAKEN:
ENGLISH _____	ENGLISH _____	
MATHEMATICS _____	MATHEMATICS _____	ENGLISH/WRITING _____
READING _____	READING _____	
SCIENCE _____	SCIENCE _____	COMPOSITE SCORE _____

Refer to the Scoring Worksheet on page 150 for help in determining your Raw and Scale Scores.

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ENGLISH TEST

45 Minutes—75 Questions

DIRECTIONS: In the passages that follow, some words and phrases are underlined and numbered. In the answer column, you will find alternatives for the words and phrases that are underlined. Choose the alternative that you think is best, and fill in the corresponding bubble on your answer sheet. If you think that the original version is best, choose “NO CHANGE,” which will always be either answer choice A or F. You will also find questions about a particular section of the

passage, or about the entire passage. These questions will be identified by either an underlined portion or by a number in a box. Look for the answer that clearly expresses the idea, is consistent with the style and tone of the passage, and makes the correct use of standard written English. Read the passage through once before answering the questions. For some questions, you should read beyond the indicated portion before you answer.

PASSAGE I

A Blessing in Disguise

Last spring, I had been¹ fortunate to be chosen to participate in an exchange study program. In my application essay, I was careful to express how much I wanted to see France. I suppose my excitement really came through in my words. Once I knew that I was going, all I could think about was the fun of foreign travel and making all sorts of new and interesting friends. While traveling was inspiring and meeting people was exciting, nothing about my semester in France was what I expected.

The moment I arrived in Paris, I was greeted by a nice French couple who² would become my host parents. The bit of French I had taken in high school began

pouring from my mouth³. Speaking the language would only become more natural over the course of the semester.

At the airport, we all got into the couple's little two-door hatchback and began the journey to their townhouse in the suburbs. We talked the whole way there, getting to know one another bit by bit. Everyday thereafter, I eat⁴ breakfast

1. A. NO CHANGE
B. will be
C. was
D. have been

2. F. NO CHANGE
G. couple that
H. couple, Jean and Christine
J. couple, in a few hours

3. A. NO CHANGE
B. pouring from my mouth, speaking
C. pouring from my mouth speaking
D. pouring from my mouth by speaking

4. F. NO CHANGE
G. was eating
H. began to eat
J. would eat

GO ON TO THE NEXT PAGE.

1

with the two of them, so⁵ we'd all go our separate ways for the day. In the evening, my host mother would make delicious dinners for the three of us. My entire experience was joyous and exhilarating until I received some shocking news from my program coordinator: there had been a

death in my host parents⁶ extended family. They had to

travel outside France for several weeks⁷, so tending to all the business that arises from an unforeseen death. That afternoon, I had to move out of one family's house and into another so I'd have to repack my suitcases⁸.

The exchange coordinator told me I'd have a roommate this time and asked whether I could share a bedroom with

an English speaker or someone who didn't speak English⁹.

To avoid the temptation to speak my native language,

I asked not to be placed with an English-speaking

roommate. When I got to my new room, I introduced

myself to my new roommate Paolo, a Brazilian the same

age as I, whom¹⁰ I was surprised to find playing one of my favorite CDs on the stereo!

In just a few hours, we knew we'd be¹¹
attached at the hip for the rest of the term.

I left France with many stories, so when people ask me what my favorite part of the trip was, they are always

surprised to hear me talk, about my Brazilian friend Paolo¹², and the scores of weekdays in class, weeknights on the town, and weekends exploring France we enjoyed together.

5. A. NO CHANGE
B. since
C. therefore
D. then

6. F. NO CHANGE
G. host parent's
H. host parents'
J. host's parents

7. A. NO CHANGE
B. weeks to tend
C. weeks, tended
D. weeks

8. F. NO CHANGE
G. which would probably be about the same size.
H. which I hope would be closer to the supermarket.
J. OMIT the underlined portion and end the sentence with a period.

9. A. NO CHANGE
B. English speaker and one who was not.
C. English speaker or a person, not an English speaker.
D. English speaker.

10. F. NO CHANGE
G. which
H. that
J. he who

11. Given that all the choices are true, which one provides the most relevant information with regard to the narrator's friendship with Paolo?
A. NO CHANGE
B. He hadn't heard of a lot of my CDs, though.
C. We didn't have a lot of classes together, but at least we liked the same music.
D. I didn't speak Portuguese, so it took some time to start to understand each other.

12. F. NO CHANGE
G. talk about my Brazilian friend Paolo
H. talk about my Brazilian friend, Paolo,
J. talk, about my Brazilian friend Paolo,

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GO ON TO THE NEXT PAGE.

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I love people, how they end up being so similar, but are

13

so different. The most valuable lesson I gained from
 studying in France wasn't just to respect the French people
 but to respect all people, for your next best friend could be
 just a continent away. [15]

13. A. NO CHANGE
 B. I love how people seem so different and are so similar.
 C. People seem so different, so I love how they end up being so similar.
 D. I love how people can seem so different, but end up being so similar.
14. Which of the choices would be most appropriate here?
 F. NO CHANGE
 G. enjoyable
 H. fun
 J. supportive
15. Which of the following sentences, if inserted here, would best conclude the essay as well as maintain the positive tone established earlier in the essay?
 A. France is an interesting place once you grasp the language.
 B. I would recommend an exchange program to anyone who wants to experience foreign cultures.
 C. High school is going to be quite boring now, especially since my new friend Paolo won't be there.
 D. It will be nice to graduate at the end of this year.

PASSAGE II

My Favorite Lunch Spot

A few blocks south of the apartment, I'm renting, Joe's
 Lunch Bucket serves up amazing sandwiches. The owner
 runs the place, so he stays open as late as he has
 customers, usually until some time after midnight. The

restaurant is at the end of an alley, and if you sit on the last
 stool by the window, you can see the big public

fountain, in the adjacent square. There are usually swarms
 of children and teenagers milling around the area; no one
 really enforces the curfew, especially in the summer when
 the nights are warm and families stroll around the shops
 and public spaces downtown.

[1] Joe has a menu stuck to the front window with
 masking tape that is yellowed and cracked from years in
 the sun. [2] Never mind the dingy interior, noisy kitchen,
 and lack of parking. [3] I just go there for the food.

16. F. NO CHANGE
 G. apartment I'm renting
 H. apartment I'm renting,
 J. apartment, I'm renting
17. A. NO CHANGE
 B. was located
 C. had been
 D. will be
18. F. NO CHANGE
 G. fountain in
 H. fountain in,
 J. fountain; in

GO ON TO THE NEXT PAGE.

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[4] I've never stopped to read it and, as far as I can tell, neither have the other regulars. [5] I like to sit at the bar along the window and relax with the sinfully deliciousness¹⁹

of Joe's Special Rueben. [6] Newcomers to Joe's who²⁰ have never seen his creations²⁰ marvel at the stack of

corned beef and sauerkraut; spilling²¹ from the bread onto

my paper plate. [22]

Joe's is my home away from home.²³ The sign outside is hardly eye-catching and the restaurant always appears to be dimly lit, but one can't help noticing the large smiley face decal affixed to the front door that reads "Keep Smiling!" The sandwiches certainly make me smile, but I can't say they do the same for Joe himself. His constant ugly expression belies, the care that he takes with his²⁴ meats, breads, and cheeses. So, too, does his quirky restaurant. The counters are dented and scratched from years of knife abuse. The old refrigerator case

clicks and whines²⁵ constantly. As I savor my sandwich, my gaze always drifts toward the caulk along the window panes, once white, which is slowly deteriorating with the rest of the place. In fact, I've often thought to offer Joe my painting services in exchange for some sustenance. [26]

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19. A. NO CHANGE
B. sinfully delicious
C. sinful deliciousness
D. sinful delicious
20. F. NO CHANGE
G. Newcomers to Joe's
H. Newcomers to Joe's who need a menu to order
J. People who've never had the pleasure of a Joe's sandwich
21. A. NO CHANGE
B. sauerkraut, spilling
C. sauerkraut, spilling,
D. sauerkraut spilling
22. For the sake of logic and coherence, Sentence 4 of this paragraph should be placed:
F. where it is now.
G. before Sentence 1.
H. after Sentence 2.
J. after Sentence 1.
23. Which choice most effectively guides the reader from the preceding paragraph into this new paragraph?
A. NO CHANGE
B. Joe takes good care of his property.
C. Maybe Joe learned his sandwich secrets at culinary school.
D. Good food is the key to Joe's success.
24. F. NO CHANGE
G. belies that the
H. belies, and the
J. belies the
25. A. NO CHANGE
B. clicks to whine
C. clicking and whining
D. click and whine
26. At this point, the writer wants to add a sentence that would further describe the condition of the restaurant. Which of the following sentences would best accomplish this?
F. Regardless of the appearance of the place, I still enjoy my delicious sandwich.
G. I would like to see who his maintenance man is.
H. If I had a restaurant, I'd make sure it was clean.
J. People seem to ignore the building, though.

GO ON TO THE NEXT PAGE.

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The food is, after all, the only charm this little place needs.

A lot of people pay daily visits to the sandwich shop.

I know much of their faces by now, but I could more
²⁷
easily recall their tastes in sandwiches. Older people like

the classics—chicken salad, corned beef, and the like. ²⁸

Kids come in after school for grilled cheeses or Joe’s

tuna salad. Back home, as I am reminiscing on this place,

I picture all these people with their favorite meals.
²⁹

Perhaps it’s the familiarity that makes Joe’s my favorite sandwich shop. I know that I can come in whenever I please and someone would look away from a savory sandwich and offer a friendly hello. It’s nice to know that Joe’s Lunch Bucket. And its neighborly ambience are just a short walk away.
³⁰

- 27. A. NO CHANGE
- B. many
- C. mostly
- D. none

- 28. The writer is considering deleting the following phrase from the preceding sentence:

chicken salad, corned beef, and the like.

If the writer were to make this deletion, the essay would primarily lose:

- F. foreshadowing of the conclusion.
 - G. irrelevant information.
 - H. specific descriptive material.
 - J. an understatement of important information.
- 29. A. NO CHANGE
 - B. When I am back home and reminiscing, I picture all of these people with their favorite meals.
 - C. Back home, I picture all these people with the favorite meals when I reminisce.
 - D. Reminiscing back home makes me picture all these people with their favorite meals.

- 30. F. NO CHANGE
- G. Bucket, and
- H. Bucket and
- J. Bucket;

PASSAGE III

Slowly Spanning the Straits

The Straits of Mackinac, located between Lake Huron and Lake Michigan, divide Michigan’s Upper and Lower Peninsulas. Native Americans in the former wilderness

territory know how to paddle between several islands to
³¹
make their way across the Straits. Settlers in the

eighteenth, and nineteenth, centuries crossed the Straits by
³²

ferry. However, ferries soon prove to be costly in both lives
³³

- 31. A. NO CHANGE
- B. knew
- C. have known
- D. knows

- 32. F. NO CHANGE
- G. eighteenth, and nineteenth
- H. eighteenth and nineteenth
- J. eighteenth and nineteenth,

- 33. A. NO CHANGE
- B. proved
- C. proves
- D. have proven

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and money. By the 1880s, the Michigan Legislature had begun discussing the idea of building a bridge to span the,

Strait noting the success of the newly-built Brooklyn

Bridge. However, many hurdles stood in the way.

³⁴
³⁵
During the late nineteenth century, the Legislature heard plans for an elaborate system of bridges and causeways that would use three islands as intermediate points.

However, no action was ever taken on the project. In the 1920s, an assembly ordered resumption of ferry service

between the peninsulas; so within five years, Governor

Fred Green felt there great cost warranted investigation of the bridge idea once again. The State Highway Authority concluded that a bridge could be built for around \$30 million.

In the 1930s, The Mackinac Bridge Authority twice sought federal funding for construction of the bridge, but was denied each time. Even so, a route was plotted and careful study of the lakebed and the rock below began.

Any progress, however, that was put on hold for the duration of World War II, and it was not until 1950 that funds were fully invested in the bridge project.

Construction of the Mackinac Bridge finally began in 1954. It would become a crowning achievement for design engineer David Steinman and, for years, would be

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34. F. NO CHANGE
G. Giving up by the 1880s
H. Until the 1880s
J. In terms of the 1880s

35. The writer is considering deleting the underlined portion from the sentence. If the writer were to delete this phrase, the essay would primarily lose:
A. a minor detail in the essay's opening paragraph.
B. an explanation of the impetus for discussion of a potential bridge.
C. the writer's opinion about the historical significance of the Mackinac Bridge.
D. an indication of Michigan's desire to keep pace with the transportation development taking place in New York City.

36. F. NO CHANGE
G. for the project
H. by the project
J. of the project

37. A. NO CHANGE
B. peninsulas so
C. peninsulas, but
D. peninsulas; and

38. F. NO CHANGE
G. their great cost
H. it's great cost
J. its great cost

39. A. NO CHANGE
B. however that
C. however
D. however,

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the longest suspension bridge in the world. ⁴⁰ U.S. Steel Company received the contract to build the massive steel superstructure. It was a two-and-a-half year ordeal that cost the state more than \$44 million and cost five men

their lives. On November 1, 1957, the Mackinac Bridge, ⁴¹ in spite of decades of problems, opened to traffic. Those ⁴¹ who did not know the history of the project were elated by the bridge's "on schedule" completion.

Today, the Mackinac Bridge is as solid as ever. In 1998 ⁴² it collected its 100 millionth toll. It will continue to serve

drivers and highway travelers well into the future and ⁴³

stand as a monument to Michigan's perseverance. ⁴⁴

40. If the writer were to delete the preceding sentence, the paragraph would primarily lose:
- F. an explanation of how the Mackinac Bridge was erected.
 - G. details about the significance of the Mackinac Bridge.
 - H. background information on the history of building bridges.
 - J. biographical information about David Steinman.
41. A. NO CHANGE
 B. On November 1, 1957, the Mackinac Bridge opened, in spite of decades of problems, to traffic.
 C. The Mackinac Bridge opened to traffic, in spite of decades of problems, on November 1, 1957.
 D. In spite of decades of problems, the Mackinac Bridge opened to traffic on November 1, 1957.
42. F. NO CHANGE
 G. Since,
 H. Meanwhile,
 J. Historically,
43. A. NO CHANGE
 B. highway drivers and travelers
 C. drivers—and highway travelers—
 D. highway travelers
44. Which of the following alternatives to the underlined portion would be LEAST acceptable in terms of the context of this sentence?
- F. mark the union of Michigan's two peninsulas.
 - G. serve as a symbol of suspension bridges around the world.
 - H. provide an image of strength and grace to all who cross it.
 - J. pay tribute to the progress of a great state.

Question 45 asks about the preceding passage as a whole.

45. Suppose the writer had intended to write a brief essay that describes the entire process of designing and building the Mackinac Bridge. Would this essay successfully fulfill the writer's goal?
- A. Yes, because it offers such details as the material of the superstructure, the identity of the designer, and the cost of construction.
 - B. Yes, because it explains in detail each step in the design and construction of the bridge.
 - C. No, because it focuses primarily on the difficulty and delay in seeing construction of a bridge across the Strait come to fruition.
 - D. No, because it is primarily a historical essay about the motivation behind the bridge project.

GO ON TO THE NEXT PAGE.

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PASSAGE IV

The following paragraphs may or may not be in the most logical order. You may be asked questions about the logical order of the paragraphs, as well as where to place sentences logically within any given paragraph.

Care with Cards

[1]

Does anyone have a real hobby anymore? I must admit I was disheartened when my brother, younger by 10 years, didn't want to go into the sports card shop with me.

We went to a department store instead. Every boy

46

which I have known as a kid had a box in his

47

room, brimming, with cards. Some boys were into

48

basketball and football cards, but my passion was for baseball cards. I couldn't believe the shocked look on my brother's face when he saw some of the expensive offerings in the shop's window display. He just couldn't appreciate the history behind the cards and the care taken to preserve them over the decades. For him, no piece of cardboard are worth any sum of money. He would rather

49

have a video screen to distract him.

[2]

[1] I appreciate the arguments in favor of television,

50

video games, and other electronic entertainment.

50

46. F. NO CHANGE
 G. We decided to go to a department store instead, to look for shoes.
 H. (We were in the mall to do some shoe shopping.)
 J. OMIT the underlined portion.
47. A. NO CHANGE
 B. whom I knew
 C. I knew
 D. OMIT the underlined portion.
48. F. NO CHANGE
 G. room, brimming
 H. room brimming
 J. room brimming,
49. A. NO CHANGE
 B. has
 C. was
 D. could of been
50. Which choice would most effectively and appropriately lead the reader from the topic of Paragraph 1 to that of Paragraph 2?
 F. NO CHANGE
 G. Electronic forms of entertainment involve the creative mind instead of the organized, mathematical mind.
 H. I find nothing entertaining about television, video games, and other electronic entertainment.
 J. Baseball cards decreased in popularity while electronic entertainment has increased.

GO ON TO THE NEXT PAGE.

1

[2] The technology is dynamic and, for the most part,
engaging. [3] There's indeed something⁵¹ for everyone.

[4] I also believe, however, that these new forms of
entertainment have taken time away from "unplugged"

fun. [5] A good hands-on hobby should be an important
part of any childhood. [6] Instead of simple story books,⁵²
toddlers⁵² have interactive learning computers that read for
them. [7] When children aren't watching satellite
television, they have console games to entertain them.

[8] It seems to me that more and more of the joys of
childhood are being lost to the allure of the video screen.

[3]

Building a sports card collection is a rewarding endeavor
for children and adults alike that is fun for everyone. It
teaches quality lessons, such as patience and organization.⁵³
For young fingers, it develops a careful touch. I remember
how hard I tried to slide each card into a plastic sleeve
without damaging the delicate corners of the card. Nearly

all weekend, there was a card show at the local mall where⁵⁴
I learned to bargain and trade for all the cards that I
needed to fill the gaps in my collection. Although I very
much enjoyed spending time alone looking at the cards,

I often shared the experience with others. Card collecting⁵⁵

is a social activity too encouraging the old and young to
swap cards and stories. Today's electronic entertainment,⁵⁶
however, keeps people apart and does little to benefit
developing minds. The video screen silences spectators as
it holds their attention to the screen. Television and video⁵⁷
games deliver instant gratification. Tune a channel or insert
a disc and off you go. Hours and hours of sedentary

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

- A. and, generally,
- B. but, thoroughly
- C. and, therefore,
- D. and, as such,

52. For the sake of logic and coherence of Paragraph 2 this
sentence should be:

- F. placed where it is now.
- G. placed after Sentence 1.
- H. placed after Sentence 7.
- J. OMITTED, because the paragraph focuses only on
electronic forms of entertainment.

53. A. NO CHANGE

- B. alike.
- C. alike, which can benefit both groups.
- D. alike that want a wholesome hobby.

54. F. NO CHANGE

- G. each and every
- H. every
- J. every unique

55. A. NO CHANGE

- B. we often shared
- C. I often share
- D. I then shared

56. F. NO CHANGE

- G. too, encouraging
- H. too; encouraging
- J. too, by encouraging

57. A. NO CHANGE

- B. at the screen.
- C. for the screen.
- D. OMIT the underlined portion and end the sentence
with a period.

GO ON TO THE NEXT PAGE.

1



1

satisfaction are at their fingertips!

58

[4]

I am concerned that this trend toward electronics will lead to less physical activity and make the fun in life effortless and instant available. The younger generation needs to know that pleasure can also come from a hobby that demands patience, care, hard work, and concentration.

58. F. NO CHANGE

- G. your
- H. one's
- J. people's

59. A. NO CHANGE

- B. instants
- C. instantly
- D. more instant

Question 60 asks about the preceding passage as a whole.

60. Suppose the writer had chosen to write an essay that indicates that sports card collecting is superior to electronic entertainment. Would this essay fulfill the writer's goal?

- F. No, because the writer admits that electronic entertainment has become more popular than sports card collecting.
- G. No, because the writer states that electronic entertainment is dynamic and engaging.
- H. Yes, because the writer claims that, unlike electronic entertainment, sports card collecting teaches valuable life skills such as organization and careful handling of fragile items, and also provides a medium for social interaction.
- J. Yes, because the writer suggests that any hands-on hobby is better than watching television.

PASSAGE V

The following paragraphs may or may not be in the most logical order. You may be asked questions about the logical order of the paragraphs, as well as where to place sentences logically within any given paragraph.

Spies Online

[1]

People who choose to use a personal computer to connect to the Internet should know the risks that this poses. Most computer users have some experience with slow computers, unexplainable program crashes, and indecipherable warnings about missing system files. These same computer users are more likely to wait, until

61

61. A. NO CHANGE

- B. wait, until,
- C. wait until,
- D. wait until

GO ON TO THE NEXT PAGE.

1



1

these problems get too bad to manage. They would buy a new system entirely before trying to fix their current one.

Online, the biggest threat is spyware, which is crippling⁶² unsecured computers and data networks around the world.

[2]

Like⁶³ a computer virus, a spyware program is not purely malicious. The developer of the spyware program stands to

gain from installing it on your computer, often⁶⁴ just in information, but usually financially, too. These programs may monitor your online activity and track your keystrokes and buying habits. This data is sold to marketing agencies for demographic research, and to more unscrupulous firms that will bombard you with email solicitations and sales calls. Not all spyware; however has⁶⁵ legitimate commerce behind it.

[3]

Both computer viruses and spyware can cause problems.⁶⁶ Other programs show up as system messages, luring unaware users to click their way into corrupting their own operating systems and revealing sensitive personal

information. Not only do these programs cause a⁶⁷ depletion of system resources, but they waste time and test the nerves of even the most patient user.

[4]

There are plenty of solutions designed to eliminate the spyware problem. The first step is to rid your computer of any unwanted programs. Detection utilities that detect⁶⁸ spyware are widely available, many at no cost,

62. F. NO CHANGE
G. spyware, which crippling
H. spyware, and it's crippled by
J. spyware, and its crippled

63. A. NO CHANGE
B. As with
C. Unlike
D. Comparable to

64. F. NO CHANGE
G. except
H. always
J. instead of

65. A. NO CHANGE
B. spyware, however,
C. spyware, however
D. spyware however

66. Which choice is the most effective first sentence of Paragraph 3?
F. NO CHANGE
G. Among the most serious spyware programs are those called "keystroke loggers."
H. Most people don't know their computers are infected with spyware.
J. Due to unsecured internet connections, spyware is far more prevalent than computer viruses.

67. A. NO CHANGE
B. initiate depletion of system resources,
C. lead to depleting system resources,
D. deplete system resources,

68. F. NO CHANGE
G. Detection utilities
H. Spyware can be found by detection utilities that
J. Detection utilities that find spyware

GO ON TO THE NEXT PAGE.

1



1

that scans the computer for undesirable programs and
then removes them. ⁶⁹ Once this is accomplished, the utilities
⁶⁹ monitor the system constantly to prevent any new
 installation of spyware. It is important to understand how
 your computer protects and to keep your software updated.
⁷⁰

[5]

Good web surfing habits are essential, too. Avoid web
 sites you don't trust. Spyware originates from many
⁷¹

kinds of web sites. ⁷¹ Go online never ⁷² without a firewall and
 active virus and spyware protection. Remember that a
 computer is just a machine. If you turn it on and never
 touch it, ⁷³ it will likely remain fast and reliable. It is
 generally what the user does to the computer that affects it.

69. A. NO CHANGE
 B. that scan the computer for undesirable programs and remove them.
 C. that scan the computer for undesirable programs and removes them.
 D. that scans the computer for undesirable programs then removing them.
70. F. NO CHANGE
 G. has been protected
 H. protects them
 J. is protected
71. In this paragraph, the writer intends to recommend a number of sound web surfing habits. This is to be the second recommendation. Given that all of the choices are true, which one would best accomplish the writer's intention?
 A. NO CHANGE
 B. Don't buy anything online from a store with no physical address.
 C. Shut down your computer when you aren't using it.
 D. Know the various names of spyware programs.
72. The best placement for the underlined portion would be:
 F. where it is now.
 G. after the word *Go*.
 H. after the word *firewall*.
 J. at the beginning of the sentence.
73. A. NO CHANGE
 B. it
 C. it, while it
 D. it, it,

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

74. Upon reviewing this essay and realizing that some information has been left out, the writer composes the following sentence, incorporating that missing information:
 If you own a computer, it is vital to understand it, for noxious software is becoming increasingly sophisticated and infectious.
 The most logical and effective place to add this sentence would be after the last sentence of Paragraph:
 F. 2.
 G. 3.
 H. 4.
 J. 5.

GO ON TO THE NEXT PAGE.

1**1**

75. Suppose the writer had decided to write an essay discussing the moral and ethical consequences of programming spyware to illicitly collect private information. Would this essay successfully fulfill the writer's goal?
- A. Yes, because the essay explains the moral and ethical consequences when spyware is installed on a computer.
 - B. Yes, because the essay details the process of ridding a computer of spyware, which helps the reader to understand the consequences of programming spyware.
 - C. No, because the essay does not explain how to program spyware, so the reader has no basis for making a moral or ethical judgment.
 - D. No, because the essay limits itself to a brief description of spyware and the basic precautions to be taken against it.

END OF THE ENGLISH TEST.**STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.**



MATHEMATICS TEST

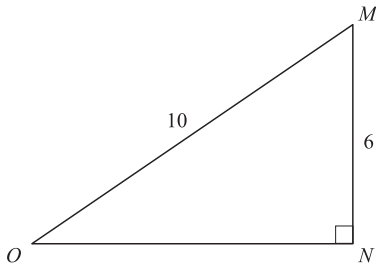
60 Minutes—60 Questions

DIRECTIONS: Solve each of the problems in the time allowed, then fill in the corresponding bubble on your answer sheet. Do not spend too much time on any one problem; skip the more difficult problems and go back to them later.

You may use a calculator on this test. For this test you should assume that figures are NOT necessarily drawn to scale, that all geometric figures lie in a plane, and that the word *line* is used to indicate a straight line.

- In the standard (x,y) coordinate plane, point X has coordinates $(-4,0)$ and point Y has coordinates $(0,-8)$. What are the coordinates of the midpoint of \overline{XY} ?
 - $(-6,-1)$
 - $(-2,-4)$
 - $(0,2)$
 - $(2,4)$
 - $(6,-1)$
- Given right triangle $\triangle MNO$ below, how many units long is \overline{NO} ?

DO YOUR FIGURING HERE.



- $2\sqrt{2}$
 - 4
 - 6
 - $\sqrt{60}$
 - 8
- A distance in meters, M , can be approximated by multiplying a distance in yards, Y , by 1.0936. Which of the following expresses this approximation method? (Note: The symbol \approx means “is approximately equal to.”)
 - $M \approx \frac{Y}{1.0936}$
 - $M \approx \frac{1.0936}{Y}$
 - $M \approx Y(1.0936)$
 - $M \approx Y + 1.0936$
 - $M \approx Y(1.0936Y)$

GO ON TO THE NEXT PAGE.



DO YOUR FIGURING HERE.

4. Seth has 4 plaid shirts and 5 solid-colored shirts hanging together in a closet. In his haste to get ready for work, he randomly grabs 1 of these 9 shirts. What is the probability that the shirt Seth grabs is plaid?

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

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

H. $\frac{4}{9}$

J. $\frac{1}{9}$

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

5. The daily totals of enrollments at Sunnyside Summer Camp last Monday through Saturday were 17, 19, 23, 14, 25, and 28. What was the average number of enrollments per day?

A. 126

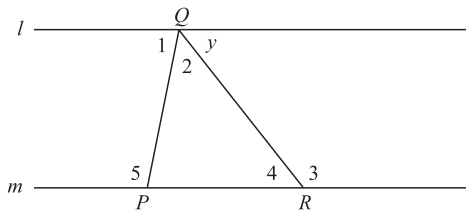
B. 28

C. 21

D. 18

E. 14

6. In the figure showing $\triangle PQR$ below, line l is parallel to line m . Which one of the following angles must be congruent to $\angle y$?



F. $\angle 1$

G. $\angle 2$

H. $\angle 3$

J. $\angle 4$

K. $\angle 5$

7. A carton of paper is priced at \$27.00 now. If the paper goes on sale for 25% off the current price, what will be the sale price of the carton?

A. \$6.75

B. \$20.25

C. \$22.00

D. \$26.75

E. \$33.75

GO ON TO THE NEXT PAGE.



8. What is the slope of any line parallel to the line $2x - 3y = 7$?

F. -3

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

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

J. 2

K. 3

DO YOUR FIGURING HERE.

9. Andrew won a cash prize on a game show. Andrew paid taxes of 30% on the original cash prize and had \$28,000 remaining. How much was the original cash prize?

A. \$19,600

B. \$28,300

C. \$36,400

D. \$40,000

E. \$84,000

10. Melissa had 3 fewer apples than Marcia. Then, she gave 2 apples to Marcia. Now how many fewer apples does Melissa have than Marcia?

F. 0

G. 2

H. 3

J. 5

K. 7

11. What is the value of $|5 - a|$ if $a = 9$?

A. -14

B. -4

C. 4

D. 9

E. 14

12. For all m and n , $(3m + n)(m^2 - n) = ?$

F. $3m^3 + 2m^2 - 2n$

G. $m^3 - 2n^2$

H. $2m^2 - n - n^2$

J. $3m^2 + 3mn - 2n^2$

K. $3m^3 - 3mn + m^2n - n^2$

13. For all x , $13 - 2(x + 5) = ?$

A. $-2x + 3$

B. $11x + 55$

C. $13 + 10x$

D. $23 - 2x$

E. $23 + 2x$

14. $(n^7)^{11}$ is equivalent to:

F. n^{77}

G. n^{18}

H. $11n^4$

J. $11n^7$

K. $77n$

GO ON TO THE NEXT PAGE.



15. What is the 217th digit after the decimal point in the repeating decimal $0.\overline{3456}$?

A. 0
B. 3
C. 4
D. 5
E. 6

DO YOUR FIGURING HERE.

16. The perimeter of a square is 48 centimeters. What is its area, in square centimeters?

F. 12
G. 96
H. 144
J. 192
K. 2,304

17. What is the product of the 2 solutions of the equation $x^2 + 3x - 21 = 0$?

A. -63
B. -21
C. -20
D. 20
E. 21

18. Which of the following expressions is a polynomial factor of $a^{16} - 16$?

F. $a^4 - 4$
G. $a^4 + 4$
H. $a^4 + 2$
J. $a + 2$
K. $a - 2$

19. When $n = \frac{1}{4}$, what is the value of $\frac{2n - 5}{n}$?

A. 18
B. 9
C. -3
D. -9
E. -18

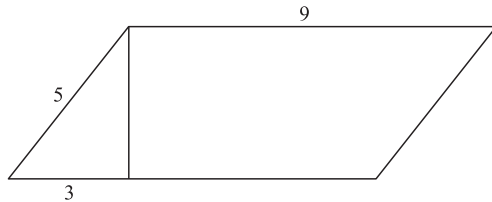
20. A proofreader can read 40 pages in one hour. How many pages can this proofreader read in 90 minutes?

F. 45
G. 60
H. 150
J. 360
K. 940

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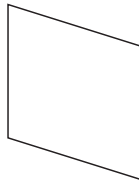


21. The area of a parallelogram may be found by multiplying the base by the height. What is the area, in square inches, of the parallelogram below?



DO YOUR FIGURING HERE.

- A. 27
 B. 36
 C. 45
 D. 48
 E. 81
22. For a certain quadratic equation, $ax^2 + bx + c = 0$, the 2 solutions are $x = \frac{3}{4}$ and $x = -\frac{2}{5}$. Which of the following could be factors of $ax^2 + bx + c$?
- F. $(4x - 3)$ AND $(5x + 2)$
 G. $(4x - 2)$ AND $(5x + 3)$
 H. $(4x + 2)$ AND $(5x - 3)$
 J. $(4x + 3)$ AND $(5x - 2)$
 K. $(4x + 3)$ AND $(5x + 2)$
23. All sides of a rhombus are the same length, as shown below.



If one diagonal is 12 inches long and the other is 32 inches long, how many inches long, to the nearest hundredth of an inch, is a side of the rhombus?

- A. 8.54
 B. 17.09
 C. 34.17
 D. 35.78
 E. 48.00
24. A rectangular parking lot that is 3 feet longer than it is wide has an area of 550 square feet. How many feet long is the parking lot?
- F. 19
 G. 20
 H. 22
 J. 25
 K. 28

GO ON TO THE NEXT PAGE.



25. In the standard (x, y) coordinate plane, what is the slope of the line joining the points $(3, 7)$ and $(4, -8)$?

A. -15

B. -1

C. $-\frac{1}{7}$

D. $\frac{21}{32}$

E. 15

DO YOUR FIGURING HERE.

26. Which of the following is the solution set of $x + 2 > -4$?

F. $\{x: x < -6\}$

G. $\{x: x > -6\}$

H. $\{x: x < -2\}$

J. $\{x: x > 2\}$

K. $\{x: x < 6\}$

27. What is the center of the circle with equation $(x - 3)^2 + (y + 3)^2 = 4$ in the standard (x, y) coordinate plane?

A. $(3, 3)$

B. $(3, -3)$

C. $(\sqrt{3}, -\sqrt{3})$

D. $(-3, 3)$

E. $(-\sqrt{3}, \sqrt{3})$

28. In the standard (x, y) coordinate plane, what is the length of the line segment that has endpoints $(-3, 4)$ and $(5, -6)$?

F. 9

G. $2\sqrt{41}$

H. 18

J. $20\sqrt{2}$

K. 40

29. A triangle has sides of length 4.7 meters and 9 meters. Which of the following CANNOT be the length of the third side, in meters?

A. 5

B. 7

C. 8

D. 11

E. 14

30. If $\frac{n^x}{n^y} = n^2$ for all $n \neq 0$, which of the following must be true?

F. $x + y = 2$

G. $x - y = 2$

H. $x \times y = 2$

J. $x \div y = 2$

K. $\sqrt{xy} = 2$

GO ON TO THE NEXT PAGE.



31. In the standard (x,y) coordinate plane, what is the y -intercept of the line given by the equation $3x + 5y = 8$?

A. 3

B. $\frac{5}{3}$

C. $\frac{8}{5}$

D. $-\frac{3}{5}$

E. -3

32. There are 16 ounces in one pound. If 3.4 pounds of beef cost \$4.95, what is the cost per ounce, to the nearest cent?

F. \$0.09

G. \$0.31

H. \$1.05

J. \$1.46

K. \$10.99

33. $\left(\frac{1}{2}\right)^2 + \left(\frac{1}{3}\right)^2 + \left(\frac{1}{4}\right)^2 = ?$

A. $\frac{1}{29}$

B. $\frac{3}{29}$

C. $\frac{61}{144}$

D. $\frac{15}{32}$

E. 9

34. One route along flat terrain from Hermansville to Melville is to drive straight north from Hermansville for 120 miles to Jamestown, then, at Jamestown, to drive straight west for 80 miles to Melville. If a straight, flat road existed between Hermansville and Melville, approximately how many miles long would it be?

F. 200

G. 144

H. 100

J. 98

K. 40

35. In order to clean her aquarium, Stephanie must remove half of the water. The aquarium measures 30 inches long, 16 inches wide, and 12 inches deep. The aquarium is currently completely full. What volume of water, in cubic inches, must Stephanie remove?

A. 1,440

B. 2,880

C. 4,320

D. 5,760

E. 7,200

DO YOUR FIGURING HERE.

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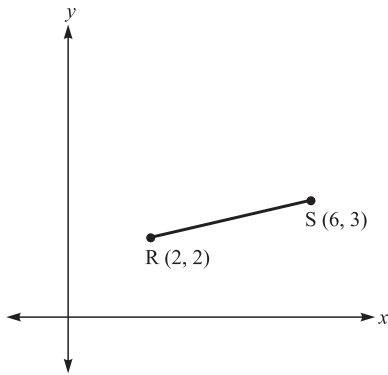


36. The bowling league selects its 4 officers by first selecting the president, then the vice president, then the secretary, then the treasurer. If there are 40 bowlers who are eligible to hold office and no member can hold more than one office, which of the following gives the number of different possible results of the election?

F. 37^4
 G. 39^4
 H. 40^4
 J. $39 \times 38 \times 37 \times 36$
 K. $40 \times 39 \times 38 \times 37$

DO YOUR FIGURING HERE.

37. The points $R(2,2)$ and $S(6,3)$ in the standard (x,y) coordinate plane below are 2 vertices of triangle RST , which has a right angle at S . Which of the following could be the third vertex, T ?



- A. $(5,7)$
 B. $(5,-5)$
 C. $(4,6)$
 D. $(4,9)$
 E. $\left(4, \frac{9}{2}\right)$
38. What value of x will satisfy the equation $0.2(x - 2,700) = x$?
- F. -675
 G. -540
 H. 0
 J. 540
 K. 675
39. If $0^\circ \leq x \leq 90^\circ$ and $\tan x = \frac{15}{8}$, then $\cos x = ?$

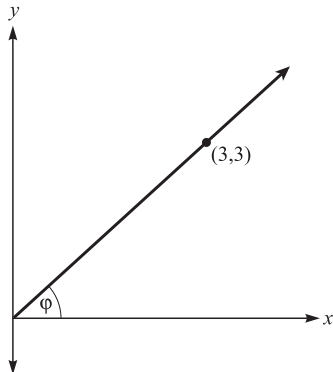
A. $\frac{8}{17}$
 B. $\frac{15}{17}$
 C. $\frac{17}{8}$
 D. $\frac{17}{15}$
 E. $\frac{8}{15}$

GO ON TO THE NEXT PAGE.



DO YOUR FIGURING HERE.

40. A square pool with an area of 81 square feet is to be placed entirely within a circular enclosure with a radius of 10 feet. Tiles will be laid within the entire enclosure around the pool (but not under it). What is the approximate area, in square feet, of the enclosure that will be tiled?
- F. 81
G. 233
H. 315
J. 396
K. Cannot be determined without knowing the exact placement of the pool.
41. In the standard (x,y) coordinate plane, which of the following lines goes through $(3,4)$ and is parallel to $y = 2x + 2$?
- A. $y = \frac{1}{2}x + 2$
B. $y = 2x - 2$
C. $y = 2x + 4$
D. $y = 2x + 10$
E. $y = 3x + 2$
42. In the figure below, $\tan \varphi = ?$



- F. $\frac{1}{\sqrt{2}}$
G. $\sqrt{2}$
H. 1
J. 3
K. $3\sqrt{2}$
43. Which of the following operations will produce the smallest result when substituted for the blank in the expression: $\frac{2}{3}$ _____ $- 3$?
- A. plus
B. minus
C. multiplied by
D. divided by
E. averaged with

GO ON TO THE NEXT PAGE.

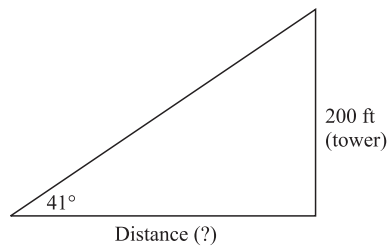


44. The value of b that will make $\frac{b}{3} + 2 = \frac{1}{4}$ a true statement lies between which of the following numbers?
- F. -4 and -6
 G. -1 and -3
 H. -1 and 1
 J. 1 and 3
 K. 3 and 5

DO YOUR FIGURING HERE.

45. What is the solution set of $|3a - 2| \leq 7$?
- A. $\{a: a \leq 3\}$
- B. $\left\{a: -\frac{5}{3} \leq a \leq 3\right\}$
- C. $\left\{a: -\frac{5}{3} \geq a \geq 3\right\}$
- D. $\left\{a: -\frac{5}{3} \leq a \geq 3\right\}$
- E. $\left\{a: -\frac{5}{3} \geq a \leq 3\right\}$

46. When measured from a point on the ground that is a certain distance from the base of a cell phone tower, the angle of elevation to the top of the tower is 41° , as shown below. The height of the cell phone tower is 200 feet. What is the distance, in feet, to the cell phone tower?



- F. $200 \tan 41^\circ$
 G. $200 \sin 41^\circ$
 H. $200 \cos 41^\circ$
 J. $200 \sec 41^\circ$
 K. $200 \cot 41^\circ$
47. For the area of a square to triple, the new side lengths must be the length of the old sides multiplied by:
- A. $\sqrt{3}$
 B. 3
 C. 4
 D. $2\sqrt{3}$
 E. 9

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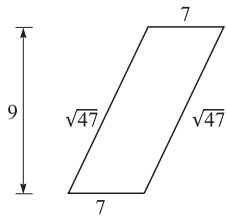


48. The volume of a cube is given by the formula s^3 , where s is the length of a side. If a cube has a volume of 64, and the length of each side is halved, the new cube's volume will be:

F. 3
 G. 6
 H. 8
 J. 16
 K. 32

DO YOUR FIGURING HERE.

49. In the parallelogram below, lengths are given in inches. What is the area of the parallelogram, in square inches?

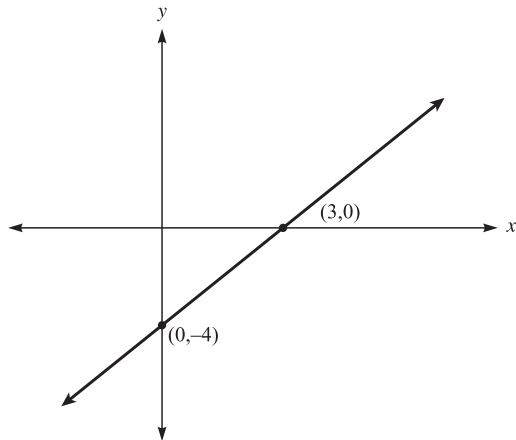


- A. $\sqrt{94}$
 B. $7\sqrt{47}$
 C. 49
 D. 63
 E. $16\sqrt{47}$
50. If $8a^6b^3 < 0$, then which of the following CANNOT be true?
 F. $b < 0$
 G. $b > 0$
 H. $a = b$
 J. $a < 0$
 K. $a > 0$
51. If $\log_4 x = 3$, then $x = ?$
 A. $\frac{1}{\log_{12}}$
 B. $4 \log^3$
 C. 12
 D. 64
 E. 81

GO ON TO THE NEXT PAGE.

2 △ △ △ △ △ △ △ △ 2

52. If a system of 2 linear equations in 2 variables has NO solution, and 1 of the equations is graphed in the (x,y) coordinate plane below, which of the following *could* be the equation of the other line?



DO YOUR FIGURING HERE.

- F. $y = -2$
- G. $y = -\frac{1}{4}x + 2$
- H. $y = -2x - 4$
- J. $y = \frac{4}{3}x + 2$
- K. $y = 4x - 4$
53. In a game, 80 marbles numbered 00 through 79 are placed in a box. A player draws 1 marble at random from the box. Without replacing the first marble, the player draws a second marble at random. If both marbles drawn have the same ones digit (that is, both marbles have a number ending in 0, 1, 2, 3, etc.), the player is a winner. If the first marble drawn is numbered 35, what is the probability that the player will be a winner on the next draw?
- A. $\frac{1}{79}$
- B. $\frac{7}{80}$
- C. $\frac{7}{79}$
- D. $\frac{1}{10}$
- E. $\frac{8}{79}$

GO ON TO THE NEXT PAGE.



54. In the standard (x,y) coordinate plane, what is the equation of the line that passes through the origin and the point $(3,4)$?

F. $y = \frac{1}{4}x + \frac{3}{4}$

G. $y = \frac{1}{4}x - \frac{1}{3}$

H. $y = \frac{4}{3}x$

J. $y = \frac{1}{2}x + \frac{3}{4}$

K. $y = \frac{9}{4}x$

55. The measure of the vertex angle of an isosceles triangle is $(a + 30)^\circ$. The base angles each measure $(2a - 15)^\circ$. What is the measure in degrees of one of the base angles?

A. 36°

B. 45°

C. 57°

D. 66°

E. 90°

56. What is the smallest possible value for the product of 2 integers that differ by 7?

F. 8

G. 0

H. -6

J. -10

K. -12

57. Three distinct lines, all contained within a plane, separate that plane into distinct regions. What are all of the possible numbers of distinct regions of the plane that could be separated by any such three lines?

A. 4, 6, 7

B. 4, 5, 6

C. 3, 5, 7

D. 3, 5, 6

E. 3, 4, 5

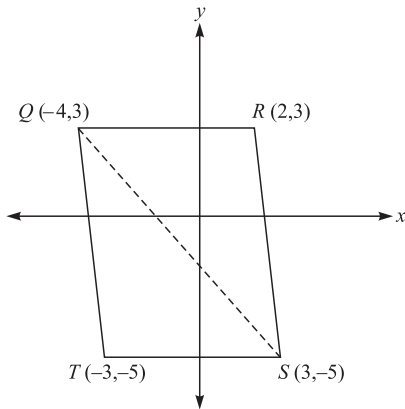
DO YOUR FIGURING HERE.

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58. Given the vertices of parallelogram $QRST$ in the standard (x, y) coordinate plane below, what is the area of triangle QRS , in square units?

DO YOUR FIGURING HERE.



- F. 24
 G. 28
 H. 48
 J. 60
 K. 80
59. The first and second terms of a geometric sequence are a and ab , in that order. What is the 643rd term of the sequence?
- A. $(ab)^{642}$
 B. $(ab)^{643}$
 C. $a^{642}b$
 D. $a^{643}b$
 E. ab^{642}
60. Points A , B , and C are three distinct points that lie on the same line. If the length of AB is 19 meters and the length of BC is 13 meters, then what are all the possible lengths, in meters, for AC ?
- F. 6 only
 G. 32 only
 H. 6 and 32 only
 J. Any number less than 32 or greater than 6
 K. Any number greater than 32 or less than 6

END OF THE MATHEMATICS TEST.
 STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.

3

3

READING TEST

35 Minutes—40 Questions

DIRECTIONS: This test includes four passages, each followed by ten questions. Read the passages and choose the best answer to each question. After you have selected your answer, fill in the corresponding bubble on your answer sheet. You should refer to the passages as often as necessary when answering the questions.

PASSAGE I

PROSE FICTION: *The Summer Sandwich Club*

Maxwell was one of those kids I know I will remember for the rest of my life. I first met Max three summers ago when he showed up at the park on the first day of camp with his mother Katherine. After a brief
5 good morning, he went off to play with the rest of the five and six year olds who I would be counseling for the next several weeks. As his mother walked back to her car, I couldn't help but notice that she looked as though she had just finished running a marathon; however, that
10 thought left my mind soon after she drove away, as I was surrounded by the smiling faces of thirty brand new campers.

The summer started off great, and Max and I hit it off right away; he looked up to me as an older brother, and I thought he was a great little kid. There were a few things that stuck out in my mind as odd, though, like when he would complain of being hungry an hour or so after lunch at least once or twice a week. By the third week of camp, I decided that it was something
20 I needed to investigate, and during lunch time I went over to his table and asked if I could sit next to him. He giggled and said, "Sure Jake," feeling special that I would want to spend my lunch break with him. His lunch consisted of a bag of potato chips, a can of soda, and a chocolate bar—hardly a healthy meal for a five
25 year old. I offered him half of my sandwich and his eyes lit up like it was his birthday.

That afternoon, when Katherine came to pick Max up from the park, I pulled her aside to discuss the lunch
30 issue.

"Katherine, Maxwell needs to have a healthy lunch." She looked down at the ground.

"What do you mean, Jake?"

"I mean Max can not keep eating junk food
35 every day."

"Oh. That. I'm sorry about that. It's just that I work back-to-back jobs every night and barely make it home in time to get him out of bed and dressed before camp starts in the morning. His babysitter is supposed to pack Max's lunch for him at night when she puts
40 him to bed. We have had a couple of new babysitters

lately, and sometimes they forget to do it, so I end up having to throw something together at the last minute. I'll make sure it doesn't happen any more."

45 "It happens to the best of us; I just wanted to make sure you knew what he was eating. After a couple days of him being hungry I got worried and wondered who was making his lunch for him. See you tomorrow morning then."

50 Several days later I expected to see Max eating a sandwich went I went over to him at lunchtime. His lunch once again consisted entirely of junk food. Something had to change; at the very least he needed to be eating much less sugar.

55 "Katherine," I called to his mother as she stepped out of her car that afternoon. I really had no idea what I was supposed to say. It was quite a predicament. "We really need to fix this problem with Max's lunch."

60 "Jake, I know, it's just that the house payment was due yesterday, and I haven't had the, uh, time to get to the grocery store," she trailed off. "Things are just a little hard for us right now."

65 She was obviously self-conscious at the moment, and I felt bad for having brought it up again. I told her that I had a plan, and not to worry about it. After explaining what I meant, the look on her face was one of relief and thanks, and she and Max headed home for the day.

70 For the rest of the summer, I spent my lunches with Max and his friends, having meetings of what we called the "Sandwich Club": every day I would bring a couple of extra sandwiches, and anybody who wanted to try one could have some. Max never seemed to care what kind of sandwiches I brought to the club, but just
75 giggled and smiled up at me every afternoon.

80 At the end of the summer, I got a letter from Katherine, thanking me for being so kind to she and Max. I wrote back telling her that I could hardly wait until the next meeting of the "Sandwich Club," and to tell Max that I said hello.

For the next two years, the "Sandwich Club" had regular meetings, Monday-Friday at noon, all summer long. After that, Max and his mother moved to be closer to his grandparents, and I went back to having my lunch

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- 85 with the rest of the staff. But for those few years, the “Summer Sandwich Club” brought joy to one camp counselor and many young campers.
- When Jake says, “It happens to the best of us,” he is primarily saying that:
 - he understands that sometimes things happen that are beyond our control.
 - Katherine is a perfect parent, and he is surprised that Max is unhappy.
 - Max is a picky eater and would not eat a healthy lunch anyway.
 - Max is his favorite camper, despite the problems faced by Max’s mother.
 - It can be reasonably inferred from the conversations with Jake, that Katherine:
 - is a stay-at-home-mother.
 - does not care about her son.
 - works two jobs to make ends meet.
 - believes that junk food is healthy.
 - The idea that Jake’s mother is trying her best to take care of her son is least supported by which of the following quotations from the passage?
 - “It’s just that I work back-to-back jobs every night and barely make it home in time to get him out of bed and dressed before camp starts in the morning.”
 - “Katherine, Maxwell needs to have a healthy lunch.”
 - “Things are just a little hard for us right now.”
 - “I’ll make sure it doesn’t happen any more.”
 - As it is used in line 57 the word *predicament* most nearly means:
 - joke.
 - solution.
 - complaint.
 - challenge.
 - It can be inferred from the passage that Jake is:
 - Max’s older brother.
 - dissatisfied with his job.
 - a good influence on Max.
 - someone Max barely knows.
 - The passage makes it clear that the “Sandwich Club”:
 - lasted as long as Max was a camper.
 - met only when it rained.
 - was an insult to Katherine.
 - was Max’s favorite part of camp.
 - You may reasonably infer from the details in the passage that Katherine and Max:
 - dislike Jake.
 - are very wealthy.
 - do not trust other people.
 - have little money.
 - Katherine can most accurately be characterized as:
 - indifferent and withdrawn.
 - caring but distracted.
 - cruel and arrogant.
 - friendly but aloof.
 - The word *issue*, as it is used in line 30, most nearly means:
 - publication.
 - incident.
 - idea.
 - problem.
 - The title, “The Summer Sandwich Club,” combined with details presented in the passage imply that:
 - everyone loves sandwiches.
 - Jake only eats sandwiches in the summer.
 - children should join clubs to make friends.
 - the club was created because of Max.

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PASSAGE II

SOCIAL SCIENCE: *Lewis and Clark Go West*

Over two hundred years ago, at the request of President Jefferson, the corps of volunteers for “North Western Discovery” set off under the command of Meriwether Lewis and William Clark to find the fastest water route across North America. The path they were to carve out would be the first of its kind; they were setting a course through the territory of potentially dangerous Indian tribes and ferocious animals. None but the fearless and inventive, the most resourceful and curious, would dare to undertake such a venture. In 1803, virtually no one had attempted to cross the stretch of land between the mighty Mississippi and the vast Pacific Ocean using only water routes. All of the wonders of those states in the West are, in part, the result of this expedition. These intrepid pioneers, especially Lewis and Clark, deserve to be remembered now some two centuries after their courageous journey into the unknown lands west of the Mississippi. The rolling hills of the breadbasket, the ski-resorts in the snow-capped Rocky Mountains, and the lush, fertile valleys of the coast echo the bravery of all those involved.

After receiving wilderness training in Washington D.C., Meriwether Lewis set out on July 5, 1803, picked up guns at Harpers Ferry, Virginia, and then moved to Pittsburgh to pick up a 55-foot keelboat. Floating it down the Ohio, he met with Clark in Indiana, who took over command of the boat and crew, while Lewis then rode on to get supplies in St. Louis. Months later, in May, the entire party gathered in St. Louis. The forty-some men were to travel from there to the Pacific Ocean in only the keelboat and two smaller boats, all of which were moved by sails, towropes, poles, or oars.

The beginning of their journey was a voyage of confirmation; traders had gathered information of various possible water routes to the Pacific, and Lewis and Clark’s job was to confirm the truth of such reports and observe anything else of importance along the way. They also catalogued new species of plants and animals which they encountered, and worked toward peace with several Indian tribes. History tells us that the few messages the men were able to send back told of their health and high spirits. They were all eager to explore just what might lie beyond the Mississippi.

Despite having adequate supplies and equipment, including guns, the men’s journey was still a dangerous one. They were traversing the wild and until this point, the only other individuals to have crossed it were fur traders and trappers. It was largely Indian territory and although most tribes, such as the Otos, the Missouris, and the Mandans were friendly, the Sioux and the Blackfeet tried to impede the group’s progress on more than one occasion. Illness claimed the life of one man early, but despite the strenuous pace of the expedition, there were no further losses.

Throughout it all, including long winters and the harsh conditions of wilderness living, the travelers continued to forge west in search of an efficient trade route using only the rivers. In September of 1806, some three years after they started on their voyage, Lewis, Clark, and their team made it to the Pacific Ocean. Relying on

the Missouri and Columbia rivers as their main “highways,” and taking the help of friendly Indian tribes whenever they could, the expedition was a success, and served as an example for all manner of westward expansion.

Despite the success of their expedition, proving that there was indeed a water route from the Mississippi River to the Pacific Ocean, future travelers to the West found faster passage on land, utilizing the Oregon Trail. Keelboats were eventually replaced by covered wagons and trains, and America pushed ever onward into the West. The settlers who came after Lewis and Clark went forward with blind-devotion knowing then that it could be done. The initial breakthrough into that unknown land was all that the country really needed. From there on out, the rest was history.

11. One of the main points that the author seeks to make in the passage is that westward expansion:
 - A. was never attempted prior to the Lewis and Clark expedition.
 - B. was a challenging but important aspect of the growth of the United States.
 - C. led to the discovery of many new and dangerous Indian tribes.
 - D. resulted in the development of the corps of volunteers for “North Western Discovery.”
12. The focus of the passage can best be summarized as a study of both the:
 - F. Lewis and Clark Expedition and the characteristics of the United States in the early 1800s.
 - G. history of Midwest development and the Lewis and Clark Expedition.
 - H. Lewis and Clark Expedition and the legendary Northwest Passage.
 - J. losses and difficulties faced by the Lewis and Clark Expedition.
13. According to the information presented in the passage, which of the following best describes the relationship between the Lewis and Clark Expedition and the settlers who came after them?
 - A. Everyone to follow the Expedition used Lewis and Clark’s water route.
 - B. The settlers who went west after the Expedition were much more cautious.
 - C. Both the Lewis and Clark expedition and the future settlers suffered great losses.
 - D. The Lewis and Clark Expedition gave others confidence to head West.
14. According to the passage, the motivation for the Lewis and Clark Expedition was to:
 - F. make money.
 - G. catalog the animals of North America.
 - H. discover a water route to the Pacific.
 - J. reach the Rocky Mountains.

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15. As it is used in the 2nd paragraph (lines 22–32), the word *party* most nearly means:
- A. a joyous celebration.
 - B. a group of people setting out on a trip.
 - C. a segment of the population.
 - D. a meeting to discuss business matters.
16. As it is depicted in the passage, the initial mood of the Lewis and Clark expedition can best be described as:
- F. hopelessly discouraged.
 - G. eagerly determined.
 - H. remarkably cautious.
 - J. overtly happy.
17. It can be inferred that the word *forge* as it is used in Paragraph 5 (lines 55–65) refers to:
- A. creating new tools out of metal.
 - B. searching for food.
 - C. continuing a journey.
 - D. crossing a river on foot.
18. According to the passage, which of the following were the primary dangers faced by the Lewis and Clark expedition?
- F. Illness and lack of motivation.
 - G. Fast moving water.
 - H. Wagons that fell apart.
 - J. Conflicts with the indigenous people.
19. As it relates to the passage, all of the following were methods used to move the boats EXCEPT:
- A. man power.
 - B. wind power.
 - C. rowing power.
 - D. steam power.
20. According to the passage, in the early part of their journey members of the Lewis and Clark Expedition were doing all of the following EXCEPT:
- F. receiving wilderness training.
 - G. cataloguing new species of plants and animals.
 - H. confirming possible water routes across the continent.
 - J. sending back messages regarding their status.

GO ON TO THE NEXT PAGE.

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PASSAGE III

HUMANITIES: *Colorful Reflections on Fairfield Porter*

My first encounter with the international artist and art critic Fairfield Porter was actually through the poetry of his wife, Anne (Channing) Porter. While both grew to become quite celebrated in their crafts, Fairfield's story is unique.

Born into an affluent, artistic family in 1907, the boy who was to one day become a renowned artist and respected art critic showed a comparative lack of artistic ability when seen next to his siblings. While his older brother Eliot took to photography, Fairfield Porter, despite being remarkably intelligent, appeared to be lacking any natural artistic talents. It seemed that, although a member of a family full of artists, his true skill lay in the critiquing of others' artistry. This was evidenced in his second year at Harvard by Fairfield's decision to pursue art history as his major field of study. After studying at Harvard under Arthur Pope and then traveling briefly through Europe, Fairfield came back to the United States to further his education at the Art Students League in New York City. There he became acquainted with the famed photographer Alfred Stieglitz—the work of whom is said to have positively influenced Fairfield's paintings to some degree.

Between the years 1931 and 1932, Fairfield spent the majority of his time in Italy learning to appreciate and critique the works of the great Renaissance painters. His training came from both direct study under world-famous art historian Bernard Berenson, and from countless hours spent in museums and galleries observing the greatest pieces of Italian art.

Following his marriage to Anne upon his return from Italy, Fairfield spent the better part of the next two decades developing his skills as a painter while caring for his autistic son. During this period his meetings with the French Intimist painter Willem De Kooning would prove to have a profound effect on his later works. Porter was the first to publicly acclaim the work of Kooning.

In fact, what made Porter so famous was his knack for responding directly to an artist's work. He found fault with the common "talk based" criticism that spoke to art only in reference to its past or to some vague theoretical framework; such criticism attempted to shape the future of art and was far too biased for Porter. His time as an art critic for such publications as *Art News* and *The Nation* ended, however, in 1961 when he decided to pursue a full-time painting career.

The other side of his fame, his uncommon approach to painting, is just as important to the understanding of Fairfield Porter's contributions to the world of art. His personal philosophy comes from a blending of two views; art should be personal, emotional, and representative of its subject, while at the same time be boldly colorful, expressive, and generally abstract. Drawing on his vast knowledge of art history, especially the styles of French Intimism, Porter fused these two feelings to create a powerful, emotive collection of paintings about families, individuals, and the home, as well as moving nature scenes such as

60 *The Door to the Woods* (1971) and *Maine – Toward the Harbor* (1967).

When he died in 1975, on a morning walk along the ocean, he left the world as one of the most respected art critics in the past century. On top of that, his work as a painter is still viewed within the art community as amazingly distinctive and especially representative of his life. It is sad to say that now, however, some thirty years after his death, he is still virtually unknown outside of art circles. This remarkably insightful, articulate, creative individual needs to be discovered by the common man and revered for his continuing influence on the artists of today. The words of this intellectual were some of the best and most honest critiques of art ever spoken.

- 70
21. The main purpose of the passage can best be described as an attempt to:
- A. explain Porter's renowned ability to candidly address artists' works.
 - B. illustrate the influence several renowned artists had on the works of Porter.
 - C. appraise Porter's unusual methods of painting and critiquing artwork.
 - D. chronicle Porter's life, particularly the events and beliefs that shaped his career.
22. The author's attitude towards the subject of the passage can best be characterized as:
- F. detached interest.
 - G. amused tolerance.
 - H. warm appreciation.
 - J. deep abhorrence.
23. As described in the passage, Porter's method of criticizing art can best be summarized by which of the following statements?
- A. Porter's criticisms were frank and forthright, and were based solely on his evaluation of the piece of art that he was appraising.
 - B. Porter criticized art based on the context of the painting and conceptual structures that he found most useful in his evaluations.
 - C. Porter's critiques were comparable to those of Bernard Berenson, who greatly influenced Porter's outlook on art.
 - D. Porter targeted his criticisms at helping artists by attempting to influence their forthcoming works.
24. Porter's painting style can be described by all of the following EXCEPT:
- F. stirring.
 - G. vivid.
 - H. trite.
 - J. individualistic.

GO ON TO THE NEXT PAGE.

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25. Without the first paragraph, the passage would lose:
- A. an overview of the passage as a whole.
 - B. a brief introduction and transition into the topic.
 - C. important detail that later becomes relevant to the passage.
 - D. an explanation of the logic behind the author's viewpoint.
26. In line 11, the statement "despite being remarkably intelligent" is intended to:
- F. call attention to the fact that although Porter was a well-respected art critic, he failed to impress his college professors.
 - G. communicate to the reader that Porter's lack of a formal education did not detract from his ability to critique art.
 - H. emphasize to the reader that Porter's high level of intelligence was not related to his artistic ability.
 - J. inform the reader that Porter's position as an art critic was so difficult that it challenged his intellect.
27. The word *revered* in line 71 most nearly means:
- A. trusted.
 - B. depreciated.
 - C. reminiscent.
 - D. honored.
28. According to the passage, when did Fairfield Porter become serious about becoming an artist?
- F. Immediately upon his return from Italy.
 - G. While he was studying at the Art Students League.
 - H. Just before his death in 1975.
 - J. Approximately thirty years after he returned from Italy.
29. The third paragraph states that, during 1931 and 1932, Fairfield Porter was:
- A. continuing his training as an art critic.
 - B. the greatest art critic in Italy.
 - C. planning his marriage to Anne Channing.
 - D. training to become a Renaissance painter.
30. The author uses the phrase "other side of his fame" (line 48) most likely in order to:
- F. suggest that Fairfield Porter was better known as an artist than as an art critic.
 - G. indicate that Fairfield Porter was both a renowned art critic and painter.
 - H. show that Fairfield Porter was not aware of his popularity as a painter.
 - J. suggest that other art critics of the time were more famous than was Fairfield Porter.

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PASSAGE IV

NATURAL SCIENCE: *This passage discusses some of the controversy surrounding the existence of dark matter in the universe.*

Dark matter in the universe is believed by some scientists to be a substance that is not readily observable because it does not directly refract light or energy. Its existence can only be deduced because of the effect that it has on surrounding matter. In fact, some members of the scientific community have argued that dark matter does not actually exist. Others, however, believe in its existence, in part because the scientific community does not have a complete understanding of gravitational science. On the other hand, some would argue that it is the understanding of gravitational science that leads most scientists to believe in the existence of dark matter, because without dark matter, there are many cosmological phenomena that are difficult to explain.

For example, dark matter in the universe may have a peculiar effect on the Milky Way galaxy. Some scientists believe that the interaction between dark matter and other smaller, nearby galaxies is causing the Milky Way galaxy to take on a warped profile. It has been asserted that not only does dark matter exist, it may also be responsible for the Milky Way's unusual shape. The interaction referenced involves two smaller galaxies near the Milky Way, called Magellanic clouds, moving through an enormous amount of dark matter, which, in effect, enhances the gravitational pull that the two Magellanic clouds could have on the Milky Way and other surrounding bodies. Without the existence of the dark matter, the Magellanic clouds would not have sufficient mass to have such a strong effect on the bend of the Milky Way galaxy.

The strongest evidence for the validity of this hypothesis rests in Newtonian physics, and the hypothesis that anything with mass will exert a gravitational pull. The Milky Way and other galaxies with peculiar warped shapes are being molded by a gravitational force. However, there is nothing readily observable with sufficient mass that could cause such a high level of distortion via gravitational pull in the vicinity of the Milky Way. Therefore, something that is not easily observed must be exerting the necessary force to create the warped shape of the galaxy.

Aaron Romanowsky and several colleagues have questioned the effect that dark matter might have on galaxies. They point to the existence of several elliptical galaxies surrounded by very little dark matter as evidence that dark matter is not, in fact, the cause of the warped galaxies. While they do not claim that their findings should be interpreted to conclude that dark matter does not exist, they apparently believe that the results of their studies cast doubt on some of the conventional theories of galaxy formation and manipulation.

Several models constructed by researchers from the University of California at Berkeley, however, point to the idea that dark matter is the most likely explanation for the distorted shape of the Milky Way and other galaxies. Using computer models, they have

mapped the likely interactions between certain galaxies and the surrounding dark matter, and those models have shown not only the possibility that dark matter is responsible for the warped shape of the Milky Way, but that the relationship between the dark matter and the Magellanic clouds is dynamic; the movement of the clouds through the dark matter seems to create a wake that enhances their gravitational influence on the Milky Way.

31. As it is used in line 14, the term *phenomena* most nearly means:
- A. occurrences.
 - B. problems.
 - C. attitudes.
 - D. surprises.
32. The passage states that some members of the scientific community are reluctant to believe in the existence of dark matter because:
- F. there is absolutely no evidence for the existence of dark matter.
 - G. no one understands how to apply gravitational science.
 - H. dark matter cannot be directly observed.
 - J. dark matter has little effect on surrounding matter.
33. What does the passage offer as evidence for the existence of dark matter?
- A. A complete understanding of gravitational science.
 - B. The enormous mass of Magellanic clouds.
 - C. The shape of the Milky Way galaxy.
 - D. A photograph taken with the aid of a refracting telescope.
34. According to the passage, what is Aaron Romanowsky's theory regarding dark matter?
- F. It cannot be conclusively proven that dark matter affects the shape and formation of galaxies.
 - G. The discovery of certain galaxies disproves the theory that dark matter exists in the universe.
 - H. Computer models suggest that dark matter is responsible for warped galaxies.
 - J. Dark matter has not effect at all on the shape of a galaxy.

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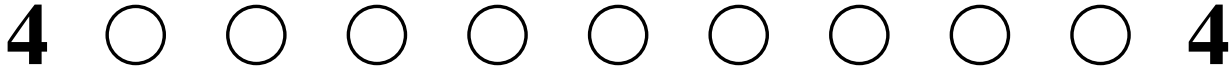
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35. The last paragraph supports the general hypothesis provided earlier in the passage that:
- A. the effect of Magellanic clouds on galaxies is enhanced by dark matter.
 - B. computer models are necessary for an understanding of gravitational science.
 - C. dark matter has little to no effect on the formation of certain cosmological phenomena.
 - D. the shape of the Milky Way galaxy can be deduced by observing the matter surrounding it.
36. The main purpose of the third paragraph is to point out that:
- F. dark matter was first discovered by applying Newtonian physics.
 - G. different viewpoints exist regarding gravitational science.
 - H. galaxies with peculiar shapes could not exist in the presence of dark matter.
 - J. scientific theories provide support for the existence of dark matter in the universe.
37. The word *conventional* in line 51 most nearly means:
- A. easily understood.
 - B. formally disputed.
 - C. strictly interpreted.
 - D. generally accepted.
38. Which one of the following is NOT mentioned in the passage as a scientific theory regarding dark matter?
- F. The existence of dark matter cannot be proved by direct observation.
 - G. Dark matter may be responsible for the shape of the Milky Way.
 - H. It is certain that dark matter has no influence on surrounding celestial bodies.
 - J. Magellanic clouds require the presence of dark matter in order to influence the shape of galaxies.
39. According to the passage, dark matter cannot be readily detected because:
- A. dark matter does not actually exist.
 - B. most of the dark matter in the universe is hidden behind galaxies.
 - C. it does not directly interact with light or energy.
 - D. it has no effect on the surrounding matter.
40. The passage supports which of the following statements about dark matter?
- F. Its existence is inferred by some researchers based on observations of cosmological bodies composed of ordinary matter.
 - G. Its existence has been conclusively proven by computer models.
 - H. If it does not exist, the universe is largely empty.
 - J. Its presence is readily observable to researchers who completely understand how to apply gravitational science.

END OF THE READING TEST.

STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.



SCIENCE REASONING TEST

35 Minutes—40 Questions

DIRECTIONS: This test includes seven passages, each followed by several questions. Read the passage and choose the best answer to each question. After you have selected your answer, fill in the corresponding bubble on your answer sheet. You should refer to the passages as often as necessary when answering the questions. You may NOT use a calculator on this test.

PASSAGE I

A researcher has conducted two experiments to test the rate of pinecone production in the *Pinus palustris* Miller (a type of pine tree).

Experiment 1

P. palustris Miller seeds were collected from 5 different populations (A1, A2, A3, A4, A5) each of which was from a different site (S1, S2, S3, S4, S5).

The seeds were grown under controlled conditions in a greenhouse. 300 of these seedlings from each population were chosen at random. Each set of seedlings was divided into 30 groups with 10 seedlings in each group. The seedlings were planted in marked cylindrical containers which were then placed at each of the 5 sites. Figure 1 shows the procedure for A1.

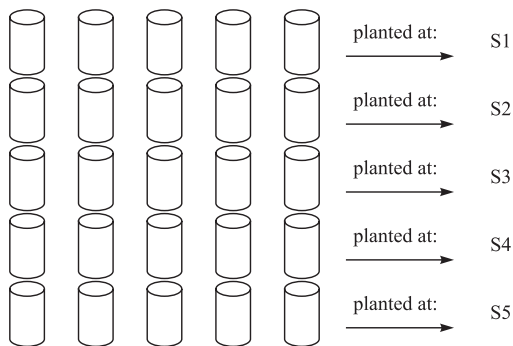


Figure 1 25 Cups containing a total of 250 A1 seedlings

Table 1 shows the number of pinecones that were produced on each tree.

The researchers also collected data on the root structure of the trees. From the information they collected they came up with the following formula relating the root structure in inches to the number of pinecones produced:

$$\text{number of pinecones} = 0.037 + 0.147 (\text{root thickness})$$

Statistical analysis indicated that this equation was accurate.

Site	Pinecones produced per tree				
	A1	A2	A3	A4	A5
S1	2.1	7.1	12.0	2.4	3.1
S2	3.9	2.5	8.5	6.2	6.4
S3	0.4	6.7	3.1	9.3	7.2
S4	5.2	2.1	2.9	0.2	4.5
S5	1.8	6.3	0.9	3.7	8.5

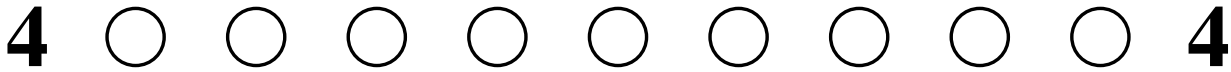
Experiment 2

P. palustris Miller seeds were collected and grown in the same manner as in Experiment 1. When the seeds had grown into seedlings, 150 containers were prepared with 5 A1 seedlings and 5 seedlings from either A2, A3, A4 or A5. Seven containers for each of the 4 combinations were planted at each site.

Table 2 shows how many pinecones were produced on each A1 plant.

Site	Pinecones produced per A1 tree when planted with			
	A2	A3	A4	A5
S1	5.7	3.2	6.7	3.5
S2	3.2	1.7	4.3	5.2
S3	9.6	8.4	0.8	7.0
S4	4.2	3.2	1.3	0.2
S5	4.9	6.1	6.1	3.9

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1. In Experiment 1, trees from A5 produced more pinecones than did trees from A4 at which of the following sites?
 - A. S4 only
 - B. S1 and S5 only
 - C. S1, S2, S4, and S5 only
 - D. S1, S2, S3, S4, and S5 only
2. In Experiment 1, A1 trees produced the largest number of pinecones at which of the following sites?
 - F. S1
 - G. S3
 - H. S4
 - J. S5

3. The procedures utilized in Experiment 2 were repeated, except that only 25 containers were planted at a sixth site (S6). The results appear in Table 3.

Table 3				
Site	Pinecones produced per A1 tree when planted with			
	A2	A3	A4	A5
S6	4.1	6.4	1.9	0.3

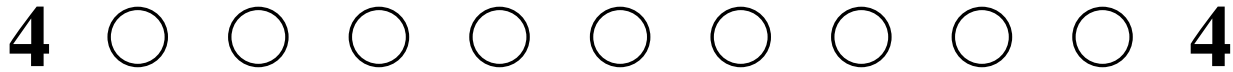
Based on these data, one should conclude that A1 trees produced more pinecones at S6 than at which of the following sites in Experiment 2?

- A. S1
- B. S3
- C. S4
- D. S5

4. A student wanted to produce the greatest number of pinecones from 6 A1 trees, using the procedures from Experiment 2. Which plants and site should the A1 trees be combined with to achieve the desired results?
 - F. A4 and S1
 - G. A2 and S3
 - H. A3 and S2
 - J. A5 and S5

5. In which of the following ways was Experiment 2 different from Experiment 1?
 - A. Experiment 2 included trees from more than 1 population.
 - B. Experiment 2 combined trees from more than 1 species.
 - C. Experiment 2 trees were planted at all 5 sites.
 - D. Experiment 2 trees were planted at only 1 site.

6. In Experiment 2, how many seedlings were planted in each container?
 - F. 6
 - G. 8
 - H. 10
 - J. 12



PASSAGE II

Researchers conducted trials on a certain prescription drug delivered in immediate-release capsules and extended-release capsules.

Figure 1 shows the mean concentration (nanograms per milliliter [ng/mL]) of the two active ingredients of the prescription drug in patients' blood plasma over time (hr).

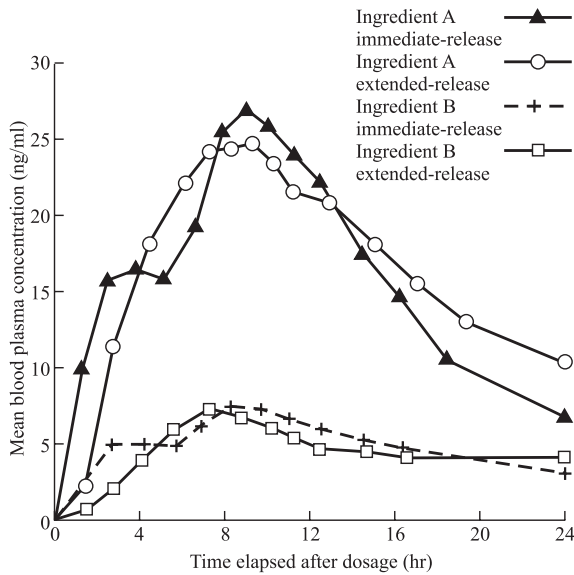


Figure 1

In clinical trials of the prescription drug, subjects given the prescription drug were interviewed at regular intervals about the symptoms the prescription drug is meant to relieve. After each interview, the subjects were assigned a symptom score. A high symptom score corresponds to high intensity of symptoms, and a low symptom score indicates low intensity of symptoms. Figure 2 shows the mean symptom score over time (hr) for subjects who took the prescription drug.

In the clinical trials, some subjects were given the prescription drug and some subjects were given a placebo (an inactive pill). Table 1 shows the percentage of subjects from both groups who reported various adverse side effects.

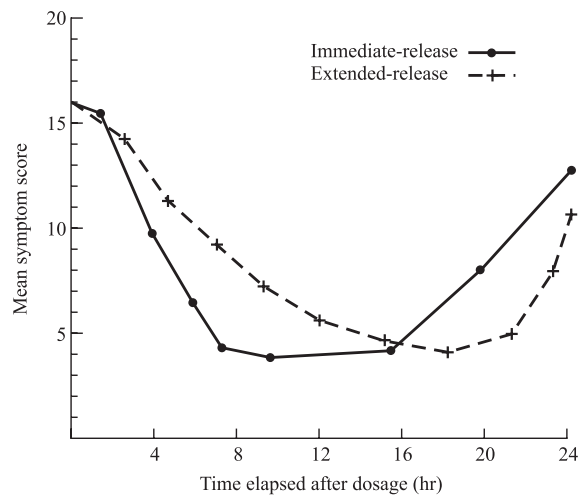


Figure 2

Table 1			
Body system	Side effect	Prescription drug group (%)	Placebo group (%)
General	Feeling of weakness	6	5
	Headache	26	14
Digestive system	Loss of appetite	32	5
	Diarrhea	8	0
	Dry mouth	31	5
Nervous system	Nausea	14	0
	Anxiety	7	4
	Dizziness	9	0
	Insomnia	25	11
Cardiovascular system	Irritability	11	4
Cardiovascular system	Rapid heart rate	10	2
Nutritional	Weight gain	15	0

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7. According to Figure 1, 16 hours after taking the extended-release form of the prescription drug, the difference in mean blood plasma concentration between Ingredient A and Ingredient B is closest to:
- A. 7 ng/ml.
 - B. 9 ng/ml.
 - C. 11 ng/ml.
 - D. 16 ng/ml.
8. Based on the data in Figures 1 and 2, the researchers should make which of the following conclusions about the overall change in mean blood plasma concentration and mean symptom score over time following dosage?
- F. Both mean blood plasma concentration and mean symptom score increase then decrease.
 - G. Both mean blood plasma concentration and mean symptom score decrease then increase.
 - H. Mean blood plasma concentration increases then decreases, and mean symptom score decreases then increases.
 - J. Mean blood plasma concentration decreases then increases, and mean symptom score increases then decreases.
9. According to Figure 1, mean blood plasma concentration of Ingredient A administered in immediate-release form increases most during which of the following time periods?
- A. From the moment of dosage to 3 hours after dosage.
 - B. From 3 hours after dosage to 10 hours after dosage.
 - C. From 10 hours after dosage to 14 hours after dosage.
 - D. From 14 hours after dosage to 24 hours after dosage.
10. Which of the following conclusions about adverse side effects caused by the prescription drug is consistent with the results shown in Table 1?
- F. Results from the placebo group most question the number of instances of feeling of weakness caused by the prescription drug.
 - G. Results from the placebo group most question the number of instances of insomnia caused by the prescription drug.
 - H. Results from the placebo group least question the number of instances of anxiety caused by the prescription drug.
 - J. Results from the placebo group least question the number of instances of irritability caused by the prescription drug.
11. The symptom score of a clinical trial subject given the extended-release form of the prescription drug remained unchanged for 8 hours. Based on Figure 2, the 8-hour period most likely began:
- A. 3 hours after dosage.
 - B. 5 hours after dosage.
 - C. 9 hours after dosage.
 - D. 14 hours after dosage.

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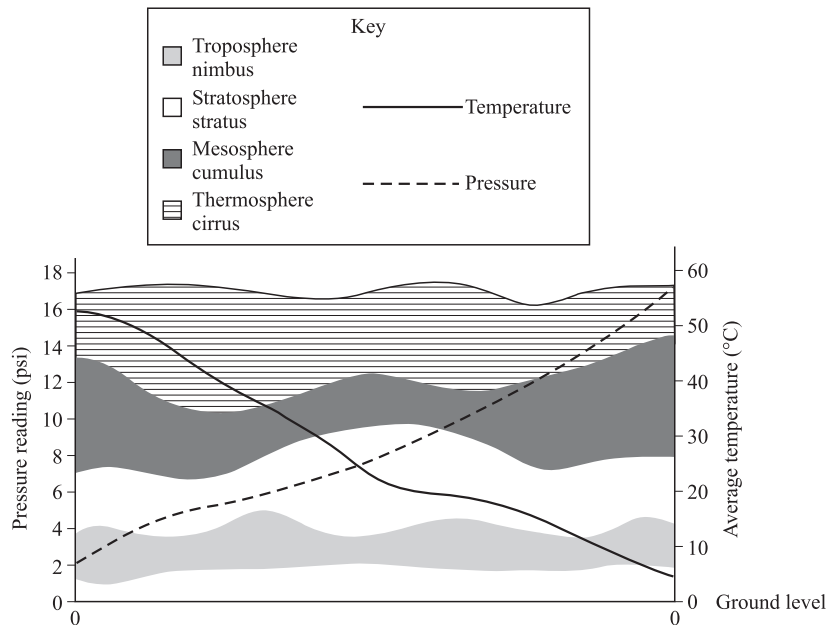


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PASSAGE III

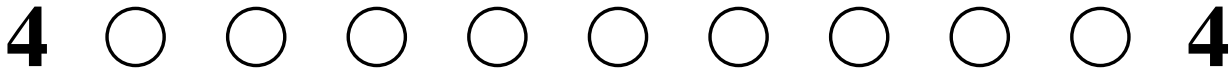
The atmosphere is made up of 4 distinct layers: the troposphere, stratosphere, mesosphere, and thermosphere. Different types of clouds form in the different layers depending on the pressure in the atmosphere and the ambient temperature. The cloud types include nimbus, stratus, cumulus, and cirrus. Figure 1 shows the location of the

barriers of the atmosphere when the temperature and pressure are at an ideal condition for cloud formation. It also shows the different types of clouds formed at the different levels. Note: Clouds are formed mostly of water crystals, but can also contain particles of rock and dust.



12. According to Figure 1, the atmospheric layer with the greatest range in pressure is the:
- F. mesosphere.
 - G. thermosphere.
 - H. stratosphere.
 - J. troposphere.
13. Which of the following statements about the formation of cumulus clouds is supported by the data presented in Figure 1? Cumulus clouds typically form in:
- A. pressures between 8 and 12 psi and at an average temperature of 35°C.
 - B. pressures between 12 and 16 psi and at an average temperature of 22°C.
 - C. a pressure of 4 psi and at average temperatures between 12°C and 22°C.
 - D. a pressure of 18 psi and at average temperatures between 50°C and 60°C.
14. According to Figure 1, as pressure within the atmospheric layers increases, temperature within the atmospheric layers:
- F. increases only.
 - G. decreases only.
 - H. increases up to 6 psi, then decreases.
 - J. decreases up to 10 psi, then increases.
15. According to the information given in Figure 1, clouds within the stratosphere are most likely formed:
- A. under a pressure of 4 psi and 20°C.
 - B. under a pressure of 10 psi and 30°C.
 - C. over a pressure of 12 psi and 40°C.
 - D. over a pressure of 14 psi and 50°C.
16. If a pressure of 7 psi were sustained within the atmosphere, according to Figure 1, which of the following types of clouds would likely form?
- F. Cirrus
 - G. Cumulus
 - H. Nimbus
 - J. Stratus

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PASSAGE IV

Because fish live in water they are exposed to any bacteria that exist in the water. Table 1 lists the habitat choices of 7 species of fish in a local pond and the fish's ability to combat the effects of the bacteria found in the water.

Fish species	Relative ability to combat bacteria	Habitat	Exposure to waterborne bacteria
A	<0.2	Shallow water with plants	None
B	<0.3	Shallow water with no plants	Low
C	0.2	Shallow water with no plants	Low
D	0.3	Deep water with no plants	Moderate
E	0.4	Shallow water with plants	High
F	0.6	Shallow water with plants	High
G	1.3	Shallow water with plants	High

Figure 1 shows the percent of fish that survive to adulthood in the lab for the 7 species, after exposure to water with bacteria present or exposure to water with the bacteria removed.

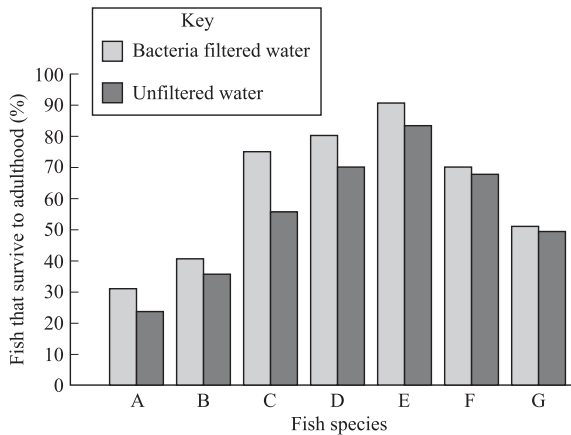


Figure 1

Figure 2 shows predicted bacteria levels over time in 4 geographic regions with fish populations.

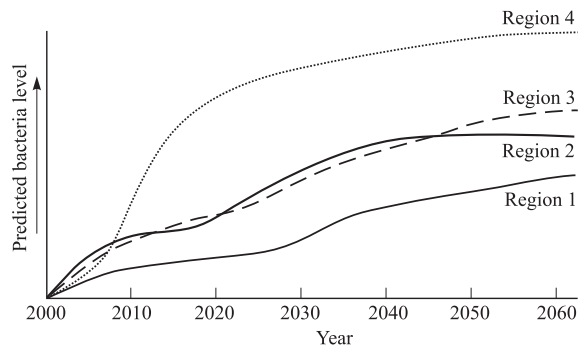
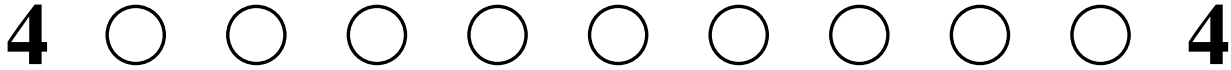


Figure 2



17. Based on the information in Figure 1, fish from which species are most likely to survive prolonged exposure to bacteria?
- A. Species A
 - B. Species B
 - C. Species D
 - D. Species E
18. According to the data in Figure 1, which species showed the greatest difference between the percent of fish that survived to adulthood after exposure to unfiltered water, and the percent of fish that survived to adulthood after exposure to filtered water?
- F. Species A
 - G. Species C
 - H. Species E
 - J. Species G
19. Researchers recently discovered a new species of fish that lives in deep water without plants. Based on the data in Table 1, the researchers would predict that this species' relative ability to combat bacteria is most likely:
- A. high.
 - B. moderate.
 - C. low.
 - D. nonexistent.
20. According to the information in Table 1, for all the species shown, as the exposure to bacteria increases, the relative ability to combat the bacteria generally:
- F. decreases only.
 - G. increases only.
 - H. decreases, then increases.
 - J. increases, then decreases.
21. Based on the data in Table 1 and Figure 1, fish that had the lowest percent of individuals survive to adulthood when exposed to bacteria tend to:
- A. live in shallow water without plants.
 - B. live in shallow water with plants.
 - C. live in deep water without plants.
 - D. live in deep water with plants.

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PASSAGE V

While digging in a remote site in Africa, paleontologists discovered a collection of fossilized dinosaur bones. The bones were dated back to the Jurassic period, and have been confirmed to be from a dinosaur known as a velociraptor. Two paleontologists discuss the finding.

Paleontologist 1

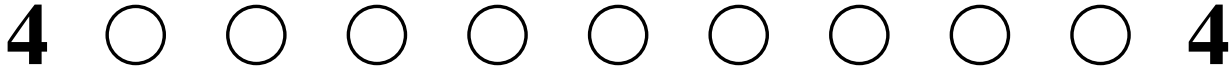
Once the well-preserved bones are assembled it is clear that they are velociraptor bones from the Jurassic period. The bones are long in the arms, indicating that the velociraptor was definitely capable of flight. You can see that there are cuts within the arm/wing bones of this dinosaur, indicating that it was caught while in flight. Perhaps it was attempting an escape from a more predatory dinosaur, such as tyrannosaurus rex. It is obvious from the body structure of the velociraptor that it was an effective hunter and predator. It was most likely quick to swoop in on its prey and was more than able to carry the prey away on its own. The form and function of the velociraptor has been misunderstood until this important discovery. The condition of these bones offers a clear picture of the way in which the velociraptor lived.

Paleontologist 2

Indeed, the velociraptor bones are in excellent condition. The long arm bones are indicative of the dinosaur's ability to scavenge prey and fend off larger predators. The cuts within the arm bones show that the velociraptor often stole its meals—the marks resemble defense wounds, perhaps from forcing other would-be scavengers away from the free meal. The structure of the velociraptor's feet indicates that it was a fast runner and was able to maneuver well through the high trees and undergrowth. This would certainly have allowed the velociraptor to quickly escape predators and possibly arrive at a kill-site before other larger dinosaurs, such as tyrannosaurus rex, descended upon the leftovers. The bones that were discovered answer many questions about the velociraptor, but they also bring up many new issues to consider.

22. Paleontologist 1's viewpoint contains the basic assumption that the velociraptor must have been:
- F. unknown until the discovery of these bones.
 - G. an ineffective hunter.
 - H. previously mischaracterized.
 - J. unable to escape large predators.
23. Paleontologist 1 would most likely state that the cuts on the velociraptor bones were the result of:
- A. failed attempts to fly.
 - B. fending off a competing scavenger.
 - C. an attack by a larger predator.
 - D. mistakes made in assembling the bones.
24. Suppose that the fossilized remains of another dinosaur species with long arm bones were discovered, and scientists determined that this dinosaur lived at the same time as the velociraptor. According to the passage, Paleontologist 2 would most likely conclude that:
- F. the new dinosaur could fly.
 - G. the new dinosaur could be a scavenger.
 - H. the new dinosaur could not escape from predators.
 - J. the new dinosaur could swoop in on its prey.
25. Paleontologist 2's viewpoint regarding the velociraptor as a scavenger was based on the dinosaur's:
- A. strong musculature.
 - B. excellent condition.
 - C. long arm bones.
 - D. ability to fly.
26. Paleontologist 1 would most likely support which of the following statements about the lifestyle of the velociraptor?
- F. The velociraptor was a predatory dinosaur capable of flight, and is only now being understood.
 - G. The velociraptor was a dinosaur who scavenged other dinosaurs' kills.
 - H. The velociraptor was a fast runner that could easily out-manuever its predators in order to survive.
 - J. The velociraptor was hunted by many other dinosaurs during its time on Earth.
27. Assuming all are true, both paleontologists would most likely agree with which of the following facts concerning the velociraptor?
- A. It was threatened by larger dinosaurs, such as tyrannosaurus rex.
 - B. It was unable to sustain flight.
 - C. It was not built for speed, and therefore, could not easily fend for itself.
 - D. It was not an effective hunter.
28. Both Paleontologists 1 and 2 would most likely agree with which of the following statements about the discovery of the velociraptor bones? The bones:
- F. did not clarify any assumptions about the velociraptor.
 - G. provided some useful information regarding the velociraptor.
 - H. could not be assembled properly due to the poor condition in which they were found.
 - J. completely altered both paleontologist's viewpoints regarding the velociraptor.

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PASSAGE VI

The peaks of mountains often lose sediment due to wind erosion. Figure 1 shows mountain peak compositions, mountain heights, in meters (m), and the net change in meters (m), in mean peak height (MPH) from 1910 to 1970 along a section of the Rocky Mountains. A net negative change in MPH indicates a net loss of sediment and a net positive change in MPH indicates a gain of sediment.

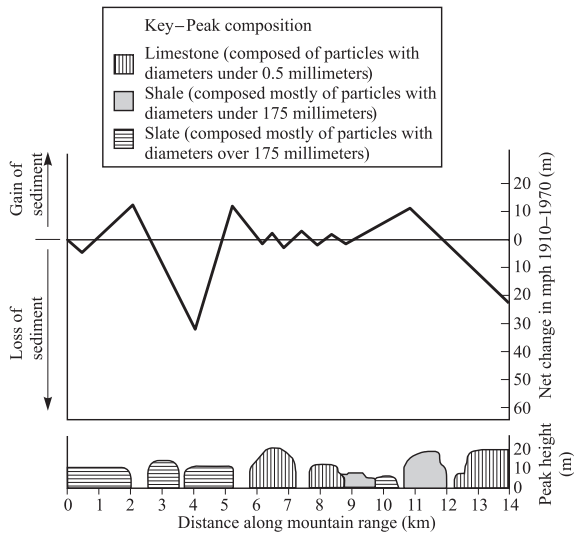


Figure 1

Table 1 shows the percentage of a year that horizontal sections of a mountain are exposed to wind.

Peak section height (m)	Percentage of the year that peak section is exposed to wind
0.0–0.5	1.1
0.5–1.0	3.1
1.0–1.5	7.2
1.5–2.0	10.5
2.0–2.5	14.2
2.5–3.0	19.4
3.0–3.5	23.7
3.5–4.0	29.3
4.0–4.5	37.4
4.5–5.0	42.3
5.0–5.5	48.0

Note: Heights are measured from mean (average) sea level.

Figure 2 shows Peak C and D erosion rates, in m/y, as they relate to percentage of a year that mountain peak section is exposed to wind.

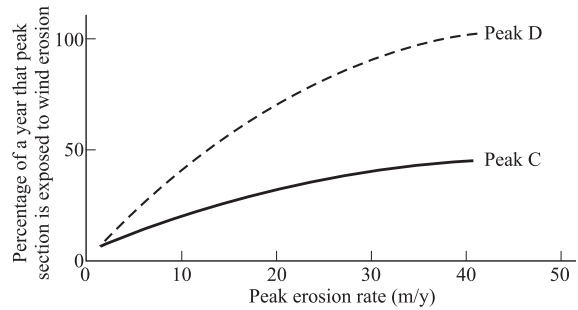


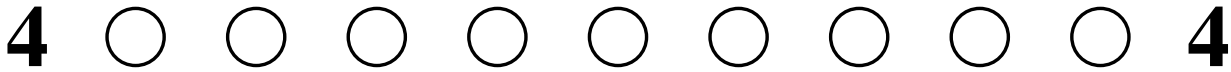
Figure 2

29. According to Figure 1, at a distance of 9 km along the mountain range, peaks of what composition are present, if any?
 - A. Peaks of slate
 - B. Peaks of shale
 - C. Peaks of limestone
 - D. No peaks are present

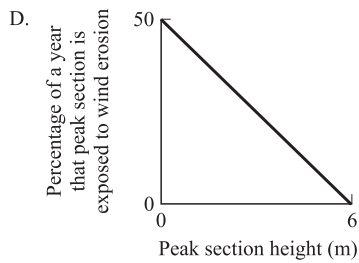
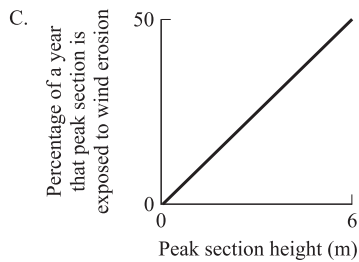
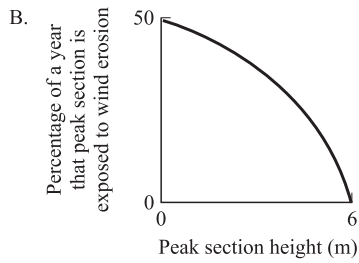
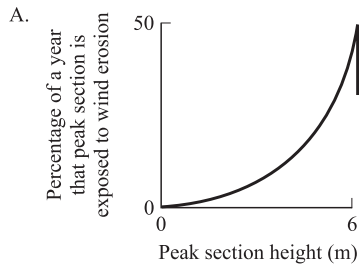
30. According to the information in Figure 1, which of the following properties was used to distinguish the various materials that compose the peaks in the study area?
 - F. Particle size
 - G. Particle clarity
 - H. Particle color
 - J. Particle density

31. Based on the information listed in Table 1, a peak section with a height of 5.5–6.0 m would be exposed to wind approximately what percentage of a year?
 - A. 22%
 - B. 39%
 - C. 48%
 - D. 53%

32. According to Figures 1 and 2, the difference between Peak C and Peak D erosion rates could best be explained as a difference in the:
 - F. heights of the two peaks.
 - G. force of the winds on the two peaks.
 - H. composition of the two peaks.
 - J. annual snowfall on the two peaks.

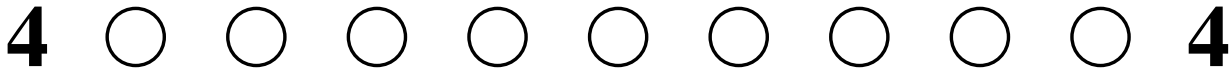


33. According to Table 1, which of the following figures best represents the relationship between the height of a peak section and the percentage of a year that peak section is exposed to wind erosion?



34. According to information in the passage, wind erosion often results in:

- F. an increase in the percentage of a mountain peak that is exposed to snow.
- G. a reduction in the overall surface area of mountain peaks.
- H. a higher number of slate and shale deposits on mountain peaks.
- J. a lower number of record snowfalls each year.



PASSAGE VII

A biologist investigated some of the environmental factors that could influence the growth of certain types of bacteria. The following experiments were conducted at a constant temperature, and no sample was tested more than once.

Experiment 1

Ten samples of bacteria were placed in each of 2 Petri dishes, the bottoms of which were each half moist and half dry. The dishes were covered with Petri dish lids. Dish 1 was placed in a darkened area and Dish 2 was placed in a lighted area. After 2 hours the location of bacterial growth in each dish was recorded (Table 1).

	Dry side	Moist side
Dish 1 (in dark)	1	9
Dish 2 (in light)	2	8

Experiment 2

Ten samples of bacteria were placed in each of 2 Petri dishes. The dishes were covered with Petri dish lids. Dish 1 was placed in a darkened area and Dish 2 was placed directly under a 25-watt incandescent lamp, creating a warm, lighted environment. After 2 hours the amount of bacterial growth in each dish was recorded and compared to the amount of growth in a control sample that was placed in a Petri dish and left in a regularly lighted area (Table 2).

	Growth proportional to control
Dish 1 (in dark)	0.93
Dish 2 (under lamp)	1.06

Experiment 3

Ten samples of bacteria were placed in each of 2 Petri dishes. Four different environments were created in each dish—dry/lighted, dry/dark, moist/lighted, and moist/dark. The bottoms of the Petri dishes were each half moist and half dry. The dishes were covered with Petri dish lids. Dish 1 was placed in a darkened area and Dish 2 was placed directly under a 25-watt incandescent lamp, creating a warm, lighted environment. After 2 hours the amount of bacterial growth in each dish was recorded and compared to the amount of growth in a control sample that was placed in a Petri dish and left in a regularly lighted area (Table 3).

	Growth proportional to control	
	Moist side	Dry side
Dish 1 (in dark)	0.99	0.53
Dish 2 (under lamp)	1.15	0.67

35. One reason refrigeration might be used as a means to control bacteria growth is that bacteria:
- grow at a faster rate in warm environments.
 - grow at a slower rate in warm environments.
 - require good ventilation.
 - prefer dry environments.
36. Based on the results of Experiment 3, the greatest proportional growth was observed:
- on the moist side of Dish 1.
 - on the moist side of Dish 2.
 - on the dry side of Dish 1.
 - on the dry side of Dish 2.
37. Which of the following conclusions is supported by the results of Experiment 1?
- Bacteria prefer light environments to dark environments.
 - Bacteria exhibit an equal preference for light and dark environments.
 - Bacteria prefer moist environments to dry environments, regardless of lighting conditions.
 - Bacteria exhibit an equal preference for dry and moist environments.
38. One criticism of these experiments might be that the presence of more than one sample of bacteria in each Petri dish might have had an effect on the results. Which of the following changes in experimental design could be made to counter this criticism?
- Use additional species of bacteria in each test.
 - Use only bacteria that was taken directly from nature and not generated in a lab.
 - Place each sample in a separate Petri dish.
 - Vary the size of the starting sample.

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39. Bacteria are known to exist on nearly every surface of the world. On the basis of the experimental results, which of the following environments would provide the conditions best suited for a high growth rate?
- A. The surface of a desert rock.
 - B. The bottom of a Great Lake.
 - C. The surface of Antarctic ice sheet.
 - D. Beneath a rock in a tropical forest.
40. In the 3 experiments, the environmental factors that could influence growth were evaluated by recording data about growth after 2 hours. Because bacteria double population size in short intervals, better information about growth might be achieved by recording data:
- F. after 10 minutes.
 - G. at 30-minute intervals for 1 hour.
 - H. after 1 hour.
 - J. at 10-minute intervals for 2 hours.

END OF THE SCIENCE REASONING TEST.
STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.

WRITING TEST PROMPT

DIRECTIONS: This test is designed to assess your writing skills. You have 30 minutes to plan and write an essay based on the stimulus provided. Be sure to take a position on the issue and support your position using logical reasoning and relevant examples. Organize your ideas in a focused and logical way, and use the English language to clearly and effectively express your position.

When you have finished writing, refer to the Scoring Rubrics discussed in the Introduction (page 4) to estimate your score.

Some high schools ban students from driving to and from school if they live in an area with bus service. Administrators think this will reduce morning and afternoon traffic accidents and congestions as well as alleviate morning tardiness. Opponents say that a student with a driver's license should have the same right to drive to school as do faculty and staff with licenses. Some students say that while they are technically inside the boundary for bus service, walking to and from the bus stop every day is a major inconvenience.

In your opinion, should high schools ban students' commuting to reduce traffic and tardiness problems?

In your essay, take a position on this question. You may write about one of the points of view mentioned above, or you may give another point of view on this issue. Use specific examples and reasons for your position.

ANSWER KEY**English Test**

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

Mathematics Test

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

Reading Test

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

Science Reasoning Test

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

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■ SCORING GUIDE

Your final reported score is your **COMPOSITE SCORE**. Your **COMPOSITE SCORE** is the average of all of your **SCALE SCORES**.

Your **SCALE SCORES** for the four multiple-choice sections are derived from the Scoring Table on the next page. Use your **RAW SCORE**, or the number of questions that you answered correctly for each section, to determine your **SCALE SCORE**. If you got a **RAW SCORE** of 60 on the English test, for example, you correctly answered 60 out of 75 questions.

Step 1 Determine your **RAW SCORE** for each of the four multiple-choice sections:

English _____

Mathematics _____

Reading _____

Science Reasoning _____

The following Raw Score Table shows the total possible points for each section.

RAW SCORE TABLE	
KNOWLEDGE AND SKILL AREAS	RAW SCORES
ENGLISH	75
MATHEMATICS	60
READING	40
SCIENCE REASONING	40
WRITING	12

Multiple-Choice Scoring Worksheet

Step 2 Determine your SCALE SCORE for each of the four multiple-choice sections using the following Scoring Worksheet. Each SCALE SCORE should be rounded to the nearest number according to normal rules. For example, $31.2 \approx 31$ and $31.5 \approx 32$. If you answered 61 questions correctly on the English section, for example, your SCALE SCORE would be 29.

English	_____	$\times 36 =$	_____	$\div 75 =$	_____
	RAW SCORE				<u>- 2</u> (*correction factor)

					SCALE SCORE

Mathematics	_____	$\times 36 =$	_____	$\div 60 =$	_____
	RAW SCORE				<u>+ 1</u> (*correction factor)

					SCALE SCORE

Reading	_____	$\times 36 =$	_____	$\div 40 =$	_____
	RAW SCORE				<u>+ 2</u> (*correction factor)

					SCALE SCORE

Science Reasoning	_____	$\times 36 =$	_____	$\div 40 =$	_____
	RAW SCORE				<u>+ 1.5</u> (*correction factor)

					SCALE SCORE

*The correction factor is an approximation based on the average from several recent ACT tests. It is most valid for scores in the middle 50% (approximately 16–24 scale composite score) of the scoring range.

The scores are all approximate. Actual ACT scoring scales vary from one administration to the next based upon several factors.

If you take the optional Writing Test, you will need to combine your English and Writing scores to obtain your final COMPOSITE SCORE. Once you have determined a score for your essay out of 12 possible points, you will need to determine your ENGLISH/WRITING SCALE SCORE, using both your ENGLISH SCALE SCORE and your WRITING TEST SCORE. The combination of the two scores will give you an ENGLISH/WRITING SCALE SCORE, from 1 to 36, that will be used to determine your COMPOSITE SCORE mentioned earlier.

Using the English/Writing Scoring Table, find your ENGLISH SCALE SCORE on the left or right hand side of the table and your WRITING TEST SCORE on the top of the table. Follow your ENGLISH SCALE SCORE over and your WRITING TEST SCORE down until the two columns meet at a number. This number is your ENGLISH/WRITING SCALE SCORE and will be used to determine your COMPOSITE SCORE.

Step 3 Determine your ENGLISH/WRITING SCALE SCORE using the English/Writing Scoring Table on the following page:

English _____

Writing _____

English/Writing _____

ENGLISH/Writing SCORING TABLE

ENGLISH SCALE SCORE	WRITING TEST SCORE											ENGLISH SCALE SCORE
	2	3	4	5	6	7	8	9	10	11	12	
36	26	27	28	29	30	31	32	33	34	32	36	36
35	26	27	28	29	30	31	31	32	33	34	35	35
34	25	26	27	28	29	30	31	32	33	34	35	34
33	24	25	26	27	28	29	30	31	32	33	34	33
32	24	25	25	26	27	28	29	30	31	32	33	32
31	23	24	25	26	27	28	29	30	30	31	32	31
30	22	23	24	25	26	27	28	29	30	31	32	30
29	21	22	23	24	25	26	27	28	29	30	31	29
28	21	22	23	24	24	25	26	27	28	29	30	28
27	20	21	22	23	24	25	26	27	28	28	29	27
26	19	20	21	22	23	24	25	26	27	28	29	26
25	18	19	20	21	22	23	24	25	26	27	28	25
24	18	19	20	21	22	23	23	24	25	26	27	24
23	17	18	19	20	21	22	23	24	25	26	27	23
22	16	17	18	19	20	21	22	23	24	25	26	22
21	16	17	17	18	19	20	21	22	23	24	25	21
20	15	16	17	18	19	20	21	21	22	23	24	20
19	14	15	16	17	18	19	20	21	22	23	24	19
18	13	14	15	16	17	18	19	20	21	22	23	18
17	13	14	15	16	16	17	18	19	20	21	22	17
16	12	13	14	15	16	17	18	19	20	20	21	16
15	11	12	13	14	15	16	17	18	19	20	21	15
14	10	11	12	13	14	15	16	17	18	19	20	14
13	10	11	12	13	14	14	15	16	17	18	19	13
12	9	10	11	12	13	14	15	16	17	18	19	12
11	8	9	10	11	12	13	14	15	16	17	18	11
10	8	9	9	10	11	12	13	14	15	16	17	10
9	7	8	9	10	11	12	13	13	14	15	16	9
8	6	7	8	9	10	11	12	13	14	15	16	8
7	5	6	7	8	9	10	11	12	13	14	15	7
6	5	6	7	7	8	9	10	11	12	13	14	6
5	4	5	6	7	8	9	10	11	12	12	13	5
4	3	4	5	6	7	8	9	10	11	12	13	4
3	2	3	4	5	6	7	8	9	10	11	12	3
2	2	3	4	5	6	6	7	8	9	10	11	2
1	1	2	3	4	5	6	7	8	9	10	11	1

Step 4 Determine your **COMPOSITE SCORE** by finding the sum of all your **SCALE SCORES** for each of the four sections: English only (if you do not choose to take the optional Writing Test) *or* English/Writing (if you choose to take the optional Writing Test), Math, Reading, and Science Reasoning, and divide by 4 to find the average. Round your **COMPOSITE SCORE** according to normal rules. For example, $31.2 \approx 31$ and $31.5 \approx 32$.

$$\begin{array}{cccccc}
 \underline{\hspace{2cm}} & + & \underline{\hspace{2cm}} & + & \underline{\hspace{2cm}} & + & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \\
 \text{ENGLISH OR} & & \text{MATHEMATICS} & & \text{READING} & & \text{SCIENCE} & & \text{SCALE SCORE} \\
 \text{ENGLISH/WRITING} & & \text{SCALE SCORE} & & \text{SCALE SCORE} & & \text{SCALE SCORE} & & \text{TOTAL} \\
 \text{SCALE SCORE} & & & & & & & & \\
 \\
 & & \underline{\hspace{2cm}} & \div & 4 & = & \underline{\hspace{2cm}} & & \\
 & & \text{SCALE SCORE TOTAL} & & & & \text{COMPOSITE SCORE} & &
 \end{array}$$

ANSWERS AND EXPLANATIONS**English Test Explanations****PASSAGE I**

1. **The best answer is C.** The narrator was chosen “last spring,” which was in the past. Answer choice A is incorrect because the moment the narrator is referring to is relative to the time the narrator wrote the passage, not another time in the past. Answer choices B and D can be eliminated because they are not past tense.
2. **The best answer is F.** The sentence appropriately uses the relative pronoun *who* to introduce the clause that modifies *couple*; this sentence is correct as it is written. The pronoun *who* also functions as the subject of the clause.
3. **The best answer is A.** The sentence represents a clear, complete thought that is grammatically correct. It is correct to begin a new sentence with *speaking*. You can eliminate the other answer choices because either they create incomplete sentences (B), or are otherwise grammatically incorrect.
4. **The best answer is J.** The sentence indicates that eating breakfast with the host family was a routine action in the past. Answer choice J is best because it includes *would*, which suggests repeated eating of breakfast with the couple. You can eliminate answer choice F because it is written in the present tense.
5. **The best answer is D.** The two clauses are unrelated and, therefore, you can connect the two separate ideas by using the word *then*. Answer choices B and C can be eliminated because they express a cause-and-effect relationship that does not fit with the sentence.
6. **The best answer is H.** This question asks you to place the apostrophe correctly in the underlined portion of the sentence. Answer choice H is best because the extended family is that of both parents together. This is made even clearer by the subject *they* in the following sentence.
7. **The best answer is B.** Answer choice B correctly uses the infinitive form *to tend* to explain why the host couple must travel. Choice C is incorrect because inflected forms like *tended* require an expressed subject. Choice D is incorrect because the *to* that follows is realized as a preposition linked to *travel*. The couple is not physically traveling to the *business*.
8. **The best answer is J.** This question tests your ability to spot relevance. Neither the underlined portion nor the information is answer choice G and H add anything relevant to the sentence. Therefore, it would be best to omit the underlined portion and simply end the sentence with “another.”
9. **The best answer is D.** Logically, the question is asking whether the speaker would like to live with someone who speaks English or someone who does not speak English. The term *whether* only requires one side of a two-sided situation (e.g. “I don’t know whether she has a roommate,” not “I don’t know whether she has a roommate or lives by herself.”)
10. **The best answer is F.** The word *whom* is an object pronoun, meaning it will occur in object, not subject, position. In this case, it is the object of *find*. Remember, *whom* refers to Paolo, the logical direct object. This becomes clear if you reorder the clause: “I was surprised to *find Paolo* playing one of my favorite CDs on the stereo!”
11. **The best answer is A.** The essay maintains a positive, uplifting tone with regard to the speaker’s friendship with Paolo. The other answer choices do not match the tone of the essay.
12. **The best answer is G.** The word *talk* takes a prepositional object starting with *about*; you cannot divide the phrase with a comma. Answer choice H is incorrect because modifiers like “my Brazilian friend” that come before proper names do not need a comma.
13. **The best answer is D.** The sentence is used to describe a faulty or incomplete first impression, then uses *but* to introduce a revision to it. Such clauses introduced by a subordinating conjunction are offset from the first clause of the sentence with a comma.
14. **The best answer is F.** The speaker is summarizing his trip into one important lesson. Answer choices G and H do not represent how meaningful the lesson is to the speaker and answer choice J is awkward as a modifier of *lesson*.

15. **The best answer is B.** The essay describes an enjoyable friendship between people of two different nationalities that begins in the context of a foreign culture. Answer choices A and C have a negative tone that does not match the rest of the essay. Answer choice D can be eliminated because it is not relevant to the passage.

PASSAGE II

16. **The best answer is H.** The clause subordinate to *apartment* is *I'm renting* and cannot be divided by a comma. The sentence up to the word *renting* is an adverbial, describing the location of the restaurant, so it must be followed by a comma.
17. **The best answer is A.** The paragraph is written in present tense. Answer choices B and C are past tense, and imply that the restaurant is not located there anymore. Answer choice D implies that the restaurant is not located there yet.
18. **The best answer is G.** The prepositional phrase introduced by *in* modifies *fountain* and cannot be divided by a comma. Answer choice J can be eliminated because a semicolon should be used to separate two independent clauses.
19. **The best answer is C.** Adjectives such as *sinful* modify nouns, such as *deliciousness*, which can be modified by prepositional phrases, such as *of Joe's Special Reuben*. The other answer choices incorrectly pair adjectives, adverbs, and nouns.
20. **The best answer is G.** This question tests your ability to recognize redundancy in a sentence. *Newcomers* implies people who have never seen *his creations*. The other answer choices are redundant.
21. **The best answer is D.** This question requires you to determine the correct punctuation. No punctuation is necessary between nouns like *sauerkraut* and gerunds like *spilling*, which modify them.
22. **The best answer is J.** Sentence 4 is about the menu in the window. It should be placed after the sentence that describes the menu. Placing it anywhere else in the paragraph would cause the paragraph not to make sense.
23. **The best answer is D.** This answer choice describes how the unwelcoming appearance of the restaurant does not reveal the truth about the delicious food. The other answer choices can be eliminated because they are not relevant to the topic of the paragraph.
24. **The best answer is J.** *Belies* is a transitive verb that takes what follows it as its direct object. A comma cannot be placed after *belies*; therefore, answer choices F and H can be eliminated. Answer choice G would create a sentence fragment, and can be eliminated.
25. **The best answer is A.** The verbs must agree with the subject *refrigerator*. Answer choice D is not appropriate when describing a single refrigerator case, and can be eliminated. Answer choice B does not make sense. Answer choice C is not inflected for tense.
26. **The best answer is F.** This sentence provides a logical transition between the previous sentence, which is about building repair, and the following sentence, which is about how the food is enough to sustain the charm of the restaurant.
27. **The best answer is B.** *Many* is the appropriate adjective for "A lot of people" from the previous sentence. It emphasizes the disparity between the narrator's knowledge of regular customers' faces and the sandwiches they eat. Answer choice A can be eliminated because while *much* can apply to mass nouns (e.g. much trash, much noise), it cannot be used with countable nouns. For those, *many* must be used (e.g. many people, many marbles). Answer choice C is an adverb and would, therefore, be ungrammatical. Answer choice D does not make sense in context.
28. **The best answer is H.** The phrase describes *the classics*, which by itself may be unclear. Answer choice G can be eliminated because the information is important to your knowledge of what *the classics* are. Answer choices F and J are not supported by the passage.
29. **The best answer is B.** The information is made clear without the use of excess commas or weak words like *makes* and *this place*. The other answer choices are too wordy or have awkward pauses.
30. **The best answer is H.** This question requires you to determine the correct punctuation. No punctuation is required between two noun phrases conjoined with *and*.

PASSAGE III

31. **The best answer is B.** The speaker is talking about Native Americans in the past; therefore, answer choices A, C, and D may be eliminated.
32. **The best answer is H.** A list of only two items does not need punctuation to separate them; therefore, the other answer choices may be eliminated.

33. **The best answer is B.** The speaker is talking about the ferries in past tense; therefore, the other answer choices may be eliminated.
34. **The best answer is F.** The phrase as it is written is clear and concise. Answer choice G is wordy and answer choices H and J do not make sense in the sentence.
35. **The best answer is B.** The underlined sentence explains that a potential bridge was reasonable because the Brooklyn Bridge was a success. The other answer choices are not supported by the passage.
36. **The best answer is F.** To “take action on” something is a common idiomatic expression; therefore, the other answer choices may be eliminated.
37. **The best answer is C.** The second clause describes something that stands in opposition to the first clause; that is, ferry service was resumed, *but* something caused it to stop again. The other answer choices would not link the two clauses correctly.
38. **The best answer is J.** The possessive form of “it” is “its,” without the apostrophe; answer choice H may be eliminated. Here, “its” refers to “ferry service between peninsulas,” which is singular; therefore, answer choice G may be eliminated.
39. **The best answer is D.** The sentence as it is written is a fragment. Simply eliminating “that” after “however” corrects this problem. The word “however,” when used in the middle of a sentence must be offset with commas.
40. **The best answer is G.** The preceding sentence shows the significance of the bridge. Answer choices H and J can be eliminated because they are irrelevant to the topic of the essay. Answer choice F can be eliminated because the sentence does not explain how the bridge was built.
41. **The best answer is D.** The elements in the sentence are ordered logically. The other answer choices separate elements from each other with use of commas, which make the sentence less clear.
42. **The best answer is F.** The other answer choices would not make sense with the simple present form “is” used in the sentence.
43. **The best answer is D.** This question tests your ability to recognize redundancy. *Highway drivers* and *travelers* in this sentence essentially mean the same thing. The other answer choices are redundant.
44. **The best answer is G.** This answer choice does not fit with the topic of the essay, which is

the Mackinac Bridge in the context of Michigan, not the context of the all the world’s suspension bridges.

45. **The best answer is C.** This essay focuses on how the bridge came to be built. Answer choices A and B may be eliminated because the essay does not describe the entire process of building the Mackinac Bridge. Answer choice D may be eliminated because the topic of the essay is not specifically the reason for building the bridge.

PASSAGE IV

46. **The best answer is J.** The underlined sentence distracts from the intent of the paragraph, and should be omitted. The other answer choices also include information that is irrelevant to the topic of the essay.
47. **The best answer is C.** The narrator is speaking about his past. Answer choice A is ungrammatical and wordy. Answer C differs from B in that it omits whom, an unnecessary element. Answer D may be eliminated because the sentence would not make sense.
48. **The best answer is H.** This question requires you to determine the correct punctuation. No punctuation may come between a noun phrase (*box in his room*) and the gerund modifying it (*brimming*).
49. **The best answer is C.** The simple plural past tense is correct here. *No piece* is a singular subject, and cannot be referred to by answer choice A. Answer choice B would not make sense in the sentence.
50. **The best answer is F.** In Paragraph 2 the author analyzes the arguments in favor of electronic entertainment and then proposes his counterarguments. Answer choice G can be eliminated because it is irrelevant to the author’s argument. Answer choice H is unsupported by the passage and answer choice J does not provide a logical transition from the previous paragraph.
51. **The best answer is B.** In the sentence, *but* does not correctly conjoin *dynamic* and *engaging*, which are closely related. The other answer choices are equivalent to the underlined sentences and are acceptable.
52. **The best answer is H.** When placed after Sentence 7, the sentence provides a logical transition to the subsequent paragraph. Answer choices F and

G can be eliminated because their placement would cause the paragraph to be illogical. The assertion in answer choice J is false, and may, therefore, be eliminated.

- 53. The best answer is B.** This question tests your ability to recognize redundancy in a sentence. Answer choice B is the best answer because it avoids redundancy. Answer choices A, C, and D would introduce redundancy.
- 54. The best answer is H.** The answer choice correctly modifies *weekend*. The narrator intends to describe card shows that occurred multiple times over multiple weekends. Answer choice F can be eliminated because it does not accurately convey what the narrator intends to describe.
- 55. The best answer is A.** The sentence describes a habitual action in the past. Answer choice C can be eliminated because it is present tense. Answer choice B can be eliminated because *we* does not make any sense in the sentence.
- 56. The best answer is G.** Adverbials like *too* are separated from the main clause by a comma. The gerund *encouraging* modifies *activity*, so *too* must be followed by a comma as well.
- 57. The best answer is D.** This answer choice eliminates the redundancy. The word *screen* does not need to be repeated because the reader already knows that it is the video screen that silences the spectators.
- 58. The best answer is G.** This answer choice is consistent with the narrator's use of the second person from the preceding sentence. Answer choices F, H, and J can be eliminated because they do not use second person.
- 59. The best answer is C.** The best way to answer this question is to try the answer choices in the sentence. Answer choice C is the best because only adverbs modify adjectives.
- 60. The best answer is H.** The narrator believes video games do not teach the skills card collecting teaches. Showing this in the passage indicates the author finds card collecting superior to electronic entertainment.
- 61. The best answer is F.** The clause headed by *which* provides descriptive detail about why spyware is a threat. The remaining answer choices are not grammatical.
- 62. The best answer is F.** The best way to answer this question is to try the answer choices in the sentence. Here, *often* coordinates well with *usually*. Answer choice H can be eliminated because *always* does not make sense with *but*. The other answer choices would not make sense in context.
- 63. The best answer is C.** *However*, when used in the middle of a clause is set apart with commas. The other answer choices can be eliminated because they don't follow this rule.
- 64. The best answer is G.** The paragraph describes some harmful spyware programs. This sentence effectively introduces the topic and links Paragraphs 2 and 3.
- 65. The best answer is D.** This is clear, concise, and in active voice. The other answer choices are wordy.
- 66. The best answer is G.** Answer choice G is the only choice that avoids redundancy. *Detection utilities* suggest that the utilities detect spyware. It is unnecessary to restate the fact that spyware is being detected.
- 67. The best answer is B.** The verbs must agree with the plural subject *Detection utilities*. Answer choice B is the only answer in which *scan* and *remove* correspond with the plural subject.
- 68. The best answer is J.** The writer is using present tense. Answer choices G may be eliminated because it is in past tense. *Computer* is the logical object of *protect*, and therefore, answer choices H and F can be eliminated.
- 69. The best answer is B.** This is the only answer choice that provides a specific sound web surfing habit. Answer choice A is not specific enough to provide you with an example of a habit. Answer choices C and D are irrelevant to the argument the writer is making.
- 70. The best answer is J.** Negative elements appear at the beginning of imperative clauses. *Never* is negative, and therefore, would fit best at the beginning of the sentence.

PASSAGE V

- 61. The best answer is D.** This question requires you to determine the correct punctuation. In the sentence, *wait* takes a prepositional object headed by *until*, so punctuation must not separate them.

73. **The best answer is A.** The sentence begins with an “If” clause and ends with a clause describing the result. These two must be separated by a comma and the subject must be repeated. The other answer choices may, therefore, be eliminated.
74. **The best answer is J.** The sentence would provide a logical conclusion to the essay. Answer choices F,

G, and H can be eliminated because if the sentence were placed in one of those paragraphs, it would not support the arguments it followed.

75. **The best answer is D.** Though the author might know how to protect computers from spyware, he makes no reference to its programming or the ethical issues that surround it.

Mathematics Test Explanations

1. **The correct answer is B.** To find the midpoint of two points, you can take the average of the x and y coordinates. If point X has coordinates $(-4,0)$ and point Y has coordinates $(0,-8)$, then the midpoint is:

$$\left(\frac{(-4+0)}{2}, \frac{(0+(-8))}{2} \right)$$

$$\left(\frac{-4}{2}, \frac{-8}{2} \right)$$

$$(-2, -4)$$

2. **The correct answer is K.** To solve, use the Pythagorean Theorem ($c^2 = a^2 + b^2$). Using values from $\triangle MNO$, you can set up the equation like this:

$$10^2 = 6^2 + NO^2$$

$$100 = 36 + NO^2$$

$$NO^2 = 100 - 36 = 64$$

$$NO = \sqrt{64} = 8$$

3. **The correct answer is C.** Since a distance in meters, M , can be approximated by multiplying a distance in yards, Y , by 1.0936, it follows that $M \approx Y(1.0936)$.
4. **The correct answer is H.** Because Seth has 4 plaid shirts and 5 solid-colored shirts, the total number of shirts is $4 + 5 = 9$. Of these 9 shirts, 4 are plaid. Thus the probability that a randomly selected shirt will be plaid is $\frac{4}{9}$.
5. **The correct answer is C.** Unless otherwise specified, average means “arithmetic mean,” which is defined as the sum of a set of values divided by the number of values. Therefore, you can see that the average number of enrollments per day is $\frac{(17 + 19 + 23 + 14 + 25 + 28)}{6} = \frac{126}{6}$, or 21.
6. **The correct answer is J.** When parallel lines are cut by a transversal (such as segment PR in this problem), “alternate interior angles” are congruent. In this problem, $\angle y$ and $\angle 4$ are alternate interior angles, and so you can conclude that they are congruent.
7. **The correct answer is B.** The easiest way to solve this problem is to take 25% of the original price and deduct it from the original price. To find 25%

of the sale price of the carton of paper, you would multiply \$27.00 by 25%, or 0.25. Therefore, the sale price of the carton of paper would be $\$27.00 - (\$27.00)(0.25) = \$27.00 - \6.75 , or \$20.25.

8. **The correct answer is H.** To solve this problem, you must recognize that parallel lines always have the same slope. Remember that to find the slope of the line, you have to convert the equation $2x - 3y = 7$ into slope-intercept form ($y = mx + b$, where m is the slope):

$$2x - 3y - 2x = 7 - 2x$$

$$\frac{(-3y)}{3} = \frac{(-2x + 7)}{(-3)}$$

$$y = \frac{-2x}{-3} + \frac{7}{-3}$$

$$y = \frac{2}{3}x - \frac{7}{3}$$

Thus the slope of this line, or any line parallel to it, is $\frac{2}{3}$.

9. **The correct answer is D.** In order to solve this problem, you must realize that if Andrew had \$28,000 remaining after paying 30% in taxes, then the \$28,000 constitutes $100\% - 30\%$ or 70% of the original prize, P . Therefore, $0.7P = 28,000$. Dividing by 0.7, you can conclude that the original cash value of the prize was $P = \frac{28,000}{0.7}$, or \$40,000.
10. **The correct answer is K.** To solve this problem, it is useful to assign values to the number of apples that Melissa and Marcia both possess. If Marcia has 10 apples, Melissa has $10 - 3 = 7$ apples. If Melissa gives 2 of her 7 apples to Marcia, Melissa is left with $7 - 2 = 5$ apples. When Marcia receives 2 more apples, she has $10 + 2 = 12$ apples. Since Marcia now has 12 apples and Melissa now has 5 apples, Melissa has $12 - 5 = 7$ fewer apples than Marcia.
11. **The correct answer is C.** The absolute value of a number is its distance from zero, regardless of whether it is positive or negative. Therefore, the value of $|5 - 9| = |-4| = 4$.
12. **The correct answer is K.** Since this problem requires you to multiply two binomials, you can utilize the FOIL (First, Outside, Inside, Last) method

to multiply the expressions.

$$\text{First: } (3m)(m^2) = 3m^3$$

$$\text{Outside: } (3m)(-n) = -3mn$$

$$\text{Inside: } (n)(m^2) = m^2n$$

$$\text{Last: } (n)(-n) = -n^2$$

Finally, add all these terms up to come up with your final answer. $(3m + n)(m^2 - n) = 3m^3 - 3mn + m^2n - n^2$.

- 13. The correct answer is A.** To solve this problem, you must distribute and add like terms, as follows:

$$13 - 2(x + 5) =$$

$$13 - 2x - 10 = 2x + 3$$

- 14. The correct answer is F.** Remember that the rule for exponents states that for base number b and exponents x and y , $(b^x)^y = b^{xy}$. Thus, when you apply the numbers from this problem, you find that $(n^7)^{11} = n^{(7)(11)} = n^{77}$.

- 15. The correct answer is B.** To solve this problem, recognize that the repeating decimal has four places (0.3456), and that the fourth place is occupied by the number 6. Therefore, every place that is a multiple of 4 will be represented by the number 6. Since 217 is not divisible by 4, you know that the 217th digit cannot be 6; eliminate answer choice E. Because 216 is a multiple of 4, the 216th digit will be 6. Therefore, the 217th digit must be 3, the next digit in the repeating decimal.

- 16. The correct answer is H.** If a square has side x , then its perimeter is $4x$; this is because a square is defined as a rectangle where all four sides are of equal length. Since the perimeter of the square is 48, then $48 = 4x$ and $x = \frac{48}{4} = 12$. Thus, the length of one side of the square is 12. The area of a square is defined as $(\text{side})^2$; therefore the area of this square is 12^2 or 144.

- 17. The correct answer is B.** The easiest way to solve this problem is to remember that when two binomial expressions are multiplied, there is a predictable result. Take the following generalized example: $(x + a)(x - b) = x^2 - bx + ax - ab$. If $x^2 - bx + ax - ab = 0$, then the solutions to the equation are $x = -a$ and $x = b$. The product of the solutions is $-ab$. With this expression, $x^2 + 3x - 21 = 0$, the product of the solutions ($-ab$) is -21 .

- 18. The correct answer is H.** Remember that a difference of squares factors easily, such as: $a^2 - b^2 = (a + b)(a - b)$. Using the same technique, you can factor $a^{16} - 16$ into $(a^8 + 4)(a^8 - 4)$. The factor $(a^8 - 4)$ is another difference of squares, so it can be factored further into itself: $(a^8 - 4) = (a^4 + 2)(a^4 - 2)$. Of these factors, only $(a^4 + 2)$ is an answer choice.

- 19. The correct answer is E.** Recall that dividing by a fraction is equivalent to multiplying by the reciprocal. When $\frac{1}{4}$ is substituted for n in the following expression, $\frac{2n - 5}{n}$, the result is:

$$\begin{aligned} & \frac{2(\frac{1}{4}) - 5}{\frac{1}{4}} \\ &= \left(\frac{2}{4} - 5\right) 4 \\ &= 2 - 20 = -18 \end{aligned}$$

- 20. The correct answer is G.** Since 90 minutes is equal to 1.5 hours, a proofreader who can read 40 pages in one hour can read $(1.5)(40)$ or 60 pages in 1.5 hours.

- 21. The correct answer is B.** The height, h , can be found using the Pythagorean Theorem ($c^2 = a^2 + b^2$):

$$5^2 = 3^2 + h^2$$

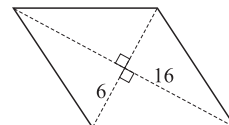
$$25 = 9 + h^2$$

$$h^2 = 16, \text{ or } h = 4.$$

Thus, when you multiply the base of the parallelogram by its height, the area of the parallelogram is $9 \times 4 = 36$.

- 22. The correct answer is F.** For a certain quadratic equation $ax^2 + bx + c = 0$, if $x = \frac{a}{b}$ is a solution, then a possible factor would be $(bx - a)$. Since two solutions for $ax^2 + bx + c = 0$ are $x = \frac{3}{4}$ and $x = \frac{-2}{5}$, then possible factors are $(4x - 3)$ and $(5x + 2)$.

- 23. The correct answer is B.** The diagonals of a rhombus intersect at their midpoints and form right angles as shown below.



Since the diagonals meet at their midpoints and form right angles, they form a right triangle with legs $\frac{12}{2} = 6$ and $\frac{32}{2} = 16$. To find the length of a side of the rhombus, you can simply use the Pythagorean Theorem and solve where the side of the rhombus, s , is the hypotenuse: $s^2 = 6^2 + 16^2 = 292$; s is approximately equal to 17.09.

- 24. The correct answer is J.** If a rectangular parking lot has a length, l , that is 3 feet longer than its width, w , then $l = 3 + w$, or $w = l - 3$. The area of a rectangle is equal to its length times its width, or $A = lw$. Since the area of this parking lot is 550, $lw = 550$. Substituting $(l - 3)$ for

$$550 = l(l - 3) =$$

$$550 = l^2 - 3l$$

$$l^2 - 3l - 550 = 0.$$

To solve for l , factor the quadratic equation to get $(l + 22)(l - 25) = 0$, making $l = -22$ or $l = 25$. Since negative values for length do not make sense in this context, the length is 25.

- 25. The correct answer is A.** To find the slope of the line between any two points (x_1, y_1) and (x_2, y_2) , you can use the equation $\frac{(y_2 - y_1)}{(x_2 - x_1)}$. Therefore, when you have the points $(3, 7)$ and $(4, -8)$ it follows that the slope of the line joining these points is $\frac{(-8 - 7)}{(4 - 3)} = \frac{-15}{1}$, or -15 .

- 26. The correct answer is G.** To find the solution set of $x + 2 > -4$, first solve for x by subtracting 2 from both sides. The result is $x > -6$. Thus the solution set is $\{x : x > -6\}$.

- 27. The correct answer is B.** To solve this problem, you need to know that the equation of a circle with center (h, k) and radius r is $(x - h)^2 + (y - k)^2 = r^2$. Therefore, the center of the circle in the problem, $(x - 3)^2 + (y + 3)^2 = 4$, is $(3, -3)$.

- 28. The correct answer is G.** To find the distance between two points (x_1, y_1) and (x_2, y_2) , you can use the distance formula, which is $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$. The length of the line segment that has endpoints $(-3, 4)$ and $(5, -6)$ will equal the distance between points $(-3, 4)$ and

$(5, -6)$. Therefore, $d =$

$$\begin{aligned} & \sqrt{(5 - (-3))^2 + (-6 - 4)^2} \\ &= \sqrt{8^2 + 10^2} \\ &= \sqrt{64 + 100} \\ &= \sqrt{164} \\ &= \sqrt{(4)(41)} \\ &= \sqrt{4}\sqrt{41} \\ &= 2\sqrt{41} \end{aligned}$$

- 29. The correct answer is E.** The key to solving this problem is remembering that the triangle inequality states that no one side of a triangle can be greater than the sum of the other two sides. Thus the third side of the triangle in the problem cannot be greater than the sum of the other two sides, 4.7 and 9, which is 13.7. Of the answer choices, only 14 is too large to be a possible value for the third side of the triangle.

- 30. The correct answer is G.** To solve this problem, recall that $\frac{n^x}{n^y} = n^{x-y}$. Since it is given in the problem that $\frac{n^x}{n^y} = n^2$, you can conclude that $n^{x-y} = n^2$ and thus $x - y = 2$.

- 31. The correct answer is C.** To solve, convert the equation of the line to slope-intercept form ($y = mx + b$, where m is the slope and b is the y -intercept). If $3x + 5y = 8$, then:

$$3x + 5y - 3x = 8 - 3x$$

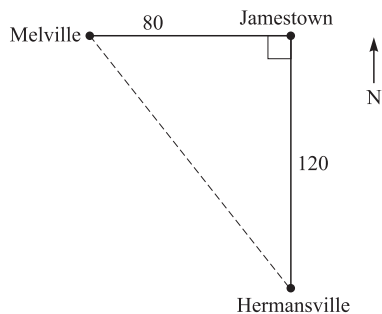
$$\frac{(5y)}{5} = \frac{(-3x + 8)}{5}$$

$$y = \frac{-3x}{5} + \frac{8}{5}$$

Since the equation $y = \frac{-3x}{5} + \frac{8}{5}$ is in slope-intercept form, the y -intercept is $\frac{8}{5}$.

- 32. The correct answer is F.** To find the cost per ounce, first convert 3.4 pounds to ounces. Because there are 16 ounces in a pound, 3.4 pounds is $3.4(16) = 54.4$ ounces. To find cost per ounce, divide the cost in dollars by the number of ounces, or $\frac{\$4.95}{54.4}$ ounces = \$0.09 per ounce.

33. **The correct answer is C.** To solve, first square each fraction: $\left(\frac{1}{2}\right)^2 + \left(\frac{1}{3}\right)^2 + \left(\frac{1}{4}\right)^2 = \frac{1}{4} + \frac{1}{9} + \frac{1}{16}$. Remember that to be added, fractions must have a common denominator. In this case, since 4 is a factor of 16, the lowest common denominator is $(9)(16) = 144$. To convert fractions into different denominators, you must multiply the top and bottom of a fraction by the *same* number. If $\frac{1}{4}$ is multiplied by $\frac{36}{36}$, the result is $\frac{36}{144}$. Likewise, multiplying $\frac{1}{9}$ by $\frac{16}{16}$ yields $\frac{16}{144}$, and multiplying $\frac{1}{16}$ by $\frac{9}{9}$ yields $\frac{9}{144}$. Therefore $\frac{1}{4} + \frac{1}{9} + \frac{1}{16} = \frac{36}{144} + \frac{16}{144} + \frac{9}{144} = \frac{(36 + 16 + 9)}{144}$, or $\frac{61}{144}$.
34. **The correct answer is G.** The easiest way to solve this problem is to draw a picture similar to the one below.



Since the route heads straight north from Hermansville for 120 miles to Jamestown, and then straight west for 80 miles to Melville, the turn at Jamestown creates a right angle. If a straight, flat road existed between Hermansville and Melville, it would form the hypotenuse of a right triangle with legs 80 and 120. Using the Pythagorean Theorem ($c^2 = a^2 + b^2$), you can see that the distance of this straight route from Hermansville to Melville would be:

$$\begin{aligned} & \sqrt{(120^2 + 80^2)} \\ &= \sqrt{(14,400 + 6,400)} \\ &= \sqrt{20,800} \approx 144 \end{aligned}$$

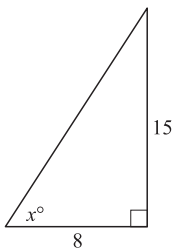
35. **The correct answer is B.** To solve this problem, calculate the volume of the aquarium and divide by 2. Since volume is equivalent to length \times width \times height, the volume is $30 \times 16 \times 12$, or 5,760 cubic inches of water. Dividing by two, you see that half of the tank would be 2,880 cubic inches of water.
36. **The correct answer is K.** To solve this problem, you would multiply the number of possibilities in each officer position. Since the league selects its 4 officers by first selecting the president, then the vice president, then the secretary, then the treasurer, there are 40 possibilities for president, 39 possibilities for vice president, 38 possibilities for secretary, and 37 possibilities for treasurer. The total number of different possibilities for the election is therefore $40 \times 39 \times 38 \times 37$.
37. **The correct answer is A.** Because there is a right angle at S , the point T will lie along the line through S that is perpendicular to the segment RS . To solve this problem, find the equation for the line through S that is perpendicular to the segment RS and try each answer choice to find one that lies on the line. Since the line is perpendicular to segment RS , it will have a slope that is the opposite reciprocal of the slope of RS . Since slope is rise/run, the slope of RS is $\frac{(3 - 2)}{(6 - 2)} = \frac{1}{4}$. The slope of a line perpendicular to that is -4 . Because a point and the slope of the line are known, the point-slope form of the equation can be utilized. A line through point $(h, -k)$ with slope m has equation $y - k = m(x - h)$. Thus the line through $S(6, -3)$ that is perpendicular to the segment RS has equation $y - 3 = -4(x - 6)$. Distributing and adding like terms, the result is $y = -4x + 27$. Of the answer choices, only the point $(5, 7)$ falls on the line.
38. **The correct answer is F.** To solve the equation $0.2(x - 2,700) = x$, first distribute:

$$0.2x - 540 = x$$

$$-540 = 0.8x$$

$$-675 = x$$

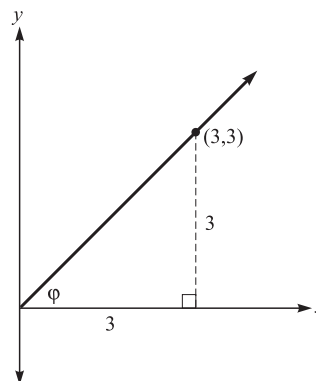
39. **The correct answer is A.** Given that $0^\circ \leq x \leq 90^\circ$ and that $\tan x = \frac{15}{8}$, x can be pictured in the right triangle below.



Because tangent is the ratio of the side opposite the angle to the side adjacent to the angle, the legs of the right triangle can be labeled as above. Cosine is the ratio of the side adjacent to the angle to the hypotenuse, which is not given. It is possible to eliminate answer choices in such a manner that it is not necessary to use the Pythagorean Theorem. Since the side adjacent to x is 8, the numerator in $\cos x$ will be 8, eliminating all but answers A and E. Since the legs of the triangle are 8 and 15, the hypotenuse will be longer than either, eliminating answer choice E. Thus $\cos x = \frac{8}{17}$.

40. **The correct answer is G.** Since the area of the square pool is given, you must find the area of the circle, with a radius of 10, and subtract the area of the pool. The area of a circle is equal to πr^2 , where r is the radius. The area of this circle is $10^2\pi = 100\pi \approx 314$ square feet. Thus the area of the enclosure is approximately $314 - 81 = 233$ square feet.
41. **The correct answer is B.** Remember that all parallel lines have the same slope, so a line parallel to $y = 2x + 2$ will have a slope of 2. A quick way to aid you in solving this problem would be to eliminate answer choices that do not have slope 2, so answer choices A and E can be immediately eliminated. Check the point $(3, -4)$ in the remaining answer choices. The only choice that works is $y = 2x - 2$.
42. **The correct answer is H.** Tangent is the ratio of the side opposite to the side adjacent to an angle in a right triangle. Drawing a line that passes through $(3, 3)$ and is perpendicular to the x -axis

creates a right triangle, as shown in the figure (see below).



Because point $(3, 3)$ is given, both legs of the right triangle have a length of 3. Thus $\tan \phi = \frac{3}{3} = 1$.

43. **The correct answer is A.** To solve, calculate the result for each operation and select the smallest result.

Answer Choice A: $\frac{2}{3} + (-3) = -2\frac{1}{3}$

Answer Choice B: $\frac{2}{3} - (-3) = 3\frac{2}{3}$

Answer Choice C: $\frac{2}{3} \times -3 = -2$

Answer Choice D: $\frac{2/3}{-3} = \frac{-2}{9}$

Answer Choice E: $\frac{[2/3 + (-3)]}{2} = \frac{-7}{6}$

The smallest result is $-2\frac{1}{3}$, which was obtained by adding.

44. **The correct answer is F.** To simplify calculations, you can multiply the entire equation by 12 to obtain whole numbers and get $4b + 24 = 3$. Subtracting 24 from both sides yields $4b = -21$. Dividing by 4 yields $b = -\frac{21}{4}$, which is a little less than -5 . Thus the correct answer will lie between -4 and -6 .
45. **The correct answer is B.** To find the solution set for $|3a - 2| \leq 7$, break it up into two separate inequalities: $3a - 2 \leq 7$ and $3a - 2 \geq -7$. Starting with $3a - 2 \leq 7$, solving for a yields $a \leq 3$. With $3a - 2 \geq -7$, solving for a yields $a \geq -\frac{5}{3}$. Thus a is between $-\frac{5}{3}$ and 3 inclusive.

46. **The correct answer is K.** Tangent is the ratio of the side opposite to the side adjacent to an angle in a right triangle. If the distance, in feet, to the cell phone tower is x , then $\tan 41^\circ = \frac{200}{x}$, or $x = \frac{200}{\tan 41^\circ}$. Since $\cot 41^\circ = \frac{1}{\tan 41^\circ}$, $x = \frac{200}{\tan 41^\circ} = 200 \cot 41^\circ$.
47. **The correct answer is A.** Since the area of a square is equal to the square of its sides, multiplying the sides by $\sqrt{3}$ will have the effect of multiplying the area by $(\sqrt{3})^2 = 3$.
48. **The correct answer is H.** In order to solve this problem, you must realize that since the volume of a cube is equal to the cube of its sides, multiplying the length of the sides by $\frac{1}{2}$ will have the effect of multiplying the volume by $\left(\frac{1}{2}\right)^3 = \frac{1}{8}$. The cube in this problem has a volume of 64, so if you halve the length of each side, new cube's volume will be $64\left(\frac{1}{8}\right) = 8$.
49. **The correct answer is D.** The area of a parallelogram is equal to base \times height. In the figure, you can see that the base of the parallelogram is 7 and the height of the parallelogram is 9. Thus, the area of the parallelogram is $9 \times 7 = 63$.
50. **The correct answer is G.** In order for $8a^6b^3$ to be less than zero, either 8 or a^6 or b^3 must be less than zero. However, it is obvious that $8 > 0$ and any number taken to an even power is non-negative. Thus $b^3 < 0$ and in order for that to be true, $b < 0$. Of the answer choices, only $b > 0$ CANNOT be true.
51. **The correct answer is D.** Logarithms are used to indicate exponents of certain numbers called bases. By definition, $\log_a b = c$, if $a^c = b$. If $\log_4 x = 3$, then $x = 4^3$, or 64.
52. **The correct answer is J.** In order for a system of 2 linear equations to have no solutions, the graphs of the equations must be parallel. Parallel lines have the same slope. To find the equation whose graph is parallel to the line in the figure, you must find the slope of the line between the points $(0, -4)$ and $(3, -0)$. Since slope is $\frac{\text{rise}}{\text{run}}$, the slope is $\frac{4}{3}$. The only equation with the correct slope of $\frac{4}{3}$ is $y = \frac{4}{3}x + 2$.

53. **The correct answer is C.** Of the 80 marbles, only 8 end in 5. If the first marble is drawn and not replaced, there are 79 marbles left, 7 of which have a ones digit of 5. Thus the probability that the player will be a winner is $\frac{7}{79}$.
54. **The correct answer is H.** To solve this problem, remember that the formula for slope is equal $\frac{(y_2 - y_1)}{(x_2 - x_1)}$, where (x_1, y_1) and (x_2, y_2) are two given points on a line. The equation of the line that passes through the origin and the point $(3, 4)$ will have slope $\frac{(4 - 0)}{(3 - 0)} = \frac{4}{3}$. Since the line passes through the origin, the y -intercept is 0. Thus the correct equation is $y = \frac{4}{3}x$.
55. **The correct answer is C.** To solve this problem, you must remember that in an isosceles triangle, the base angles have the same measure. Since the sum of angles is 180° for all triangles, $180 = (a + 30) + 2(2a - 15)$. Distributing and adding like terms yields

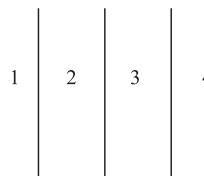
$$180 = (a + 30) + 4a - 30$$

$$180 = 5a$$

$$a = 36$$

Since the base angles are equivalent to $2a - 15$, they equal $2(36) - 15 = 72 - 15$, or 57° .

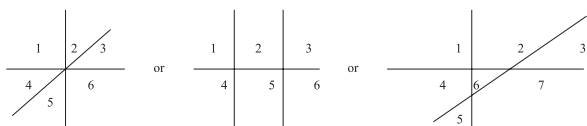
56. **The correct answer is K.** The smallest possible value will occur when it is negative. A negative product will result only when one of the numbers is positive and one is negative. The possible pairs are then -1 and 6 , -2 and 5 , -3 and 4 , -4 and 3 , -5 and 2 , and -6 and 1 . Of these pairs, the smallest product is $(-3)(4) = (-4)(3)$, or -12 .
57. **The correct answer is A.** Start by drawing 3 parallel lines.



This creates 4 distinct regions, so the minimum number of distinct regions must be 4. Eliminate answer choices C, D, and E.

Now, try drawing 3 lines in other configurations, and you will see that there will always be either

6 or 7 regions:



Therefore, the correct answer is 4, 6, or 7 distinct regions, answer choice A.

- 58. The correct answer is F.** Remember that the area of a parallelogram is equal to base \times height. In this case, the base is $[3 - (-3)]$ or $[2 - (-4)]$, both of which equal 6, and the height is $(3 - (-5)) = 8$. Thus the area is $6 \times 8 = 48$. The area of triangle QRS , $\left[\frac{1}{2}(b)(h)\right]$, is half the area of the parallelogram, or 24.

- 59. The correct answer is E.** Refer to the following chart to follow the patten of the sequence.

Term	1	2	3	4	...	n
Term	a	ab	ab^2	ab^4	...	ab^{n-1}

Since the power of b is one less than the number of term, the n th term will be ab^{n-1} . The 643rd term will then be $ab^{643-1} = ab^{642}$.

- 60. The correct answer is H.** Since AB is longer than BC , there are only two possible configurations: B is between A and C or C is between A and B . In the case that B is between A and C , $AC = AB + BC = 19 + 13 = 32$. In the case that C is between A and B , $AC = AB - BC = 19 - 13 = 6$. Therefore, AC can be 6 and 32 only.

Reading Test Explanations

PASSAGE I

- The best answer is A.** Jake makes this statement in response to Katherine telling him that she sometimes has to “throw something together at the last minute.” This suggests that it does not happen often and is unintentional. The other answer choices are not supported by the passage.
- The best answer is H.** During the conversation, Katherine says, “It’s just that I work two back-to-back jobs every night,” and later, “Things are just a little hard for us right now.” You can infer that Katherine is working hard and barely getting by.
- The best answer is B.** When Jake says, “Katherine, Maxwell needs to have a healthy lunch,” he indicates that Max is currently not eating well. This example has nothing to do with how well Katherine takes care of her son, but rather highlights one of the problems she is having in taking care of her son. The other answer choices all make reference to her trying in some way.
- The best answer is J.** The word *predicament* is used to indicate Jake’s problematic situation with Max’s lunches. Based on the context of the paragraph, his situation is somewhat difficult. Therefore, *predicament* most nearly means “challenge,” which refers to a difficult task. The other answer choices are not supported by the context of the passage.
- The best answer is C.** Throughout the passage, Jake is never referred to as either Max’s best friend or his brother, but Jake does know Max; therefore, A, B, and D should be eliminated. He is noted as being Max’s camp counselor, and has a good influence on him by encouraging and allowing Max to consume healthier meals. Therefore, answer choice C is correct.
- The best answer is F.** At the end of the passage, Jake remarks that the club lasted for two summers, and then Max moved away. This best supports answer choice F. Although answer choice J may appear to be correct because it is implied that Max enjoyed the meetings of the Sandwich Club, the author never defines these meetings as Max’s favorite part of camp.
- The best answer is D.** At several points in the passage, Katherine refers to how hard it is to find enough money for everything, and how much she has to work to make ends meet. This suggests that Katherine and Max have little money. The other

answer choices are not supported by details in the passage.

- The best answer is G.** Whenever Jake brings up problems with Katherine, she seems genuinely concerned about Max’s well-being. However, because she works so much and has so many other things to get done, her attention is often diverted away from Max. The other answer choices are not supported by the context of the passage.
- The best answer is D.** When Jake pulled Katherine aside to discuss the lunch issue, he indicated that Max’s lunch is a concern of his, eliminating answer choices A and C. Although answer choice B may appear to be correct, the word “incident” implies a one-time occurrence. Max was consistently bringing unhealthy lunches to camp, therefore answer choice D, “problem,” is correct.
- The best answer is J.** The passage states that Jake thought of the Sandwich Club because he needed to come up with a solution to help Max eat healthier lunches. The last paragraph also mentions the fact that once Max moved away, the Sandwich Club ended. These facts best support answer choice J. The other answer choices are beyond the scope of the passage.

PASSAGE II

- The best answer is B.** The passage states that “None but the fearless and inventive, the most resourceful and curious, would dare to undertake such a venture,” which clearly suggests that this was a challenge. The passage later goes on to say that “All of the wonders of those states in the West are, in part, the result of this expedition.” This implies that western expansion was important. Answer choice A may appear to be correct; however, the passages tells us that fur traders and trappers had traversed the wilderness to reach the west prior to Lewis and Clark’s journey.
- The best answer is F.** The passage discusses many aspects of the Lewis and Clark expedition, and mentions several characteristic of the country, describing to the reader that the expedition led to “the unknown lands west of the Mississippi” and that “The path they were to carve out would be the first of its kind.” Answer choice H may appear to be correct, however, the passage mentions that the men on the expedition were volunteers for “North Western Discovery,” not the “Northwest Passage.”

13. **The best answer is D.** The passage states that, “The settlers who came after Lewis and Clark went forward with blind-devotion knowing then that it could be done.” This suggests that the Expedition gave other people confidence that they, too, could cross the United States because they knew that it had already been done by other travelers. Answer choice A is incorrect because the passage explicitly states that after Lewis and Clark’s historic journey, many people traveled by land. Answer choices B and C are beyond the scope of the passage.
14. **The best answer is H.** The passage explicitly states that the Lewis and Clark expedition was intended to “find the fastest water route across North America.” In addition, the passage states that previous to this journey, “virtually no one had attempted to cross the stretch of land between the mighty Mississippi and the vast Pacific Ocean using only water routes.” Although Lewis and Clark did catalogue new species of animals on their journey—answer choice G—this was not their primary objective in traveling across the United States.
15. **The best answer is B.** The second paragraph states that, “Months later, in May, the party gathered in St. Lewis. The forty some men were to travel . . .” Answer choice B best fits the context of the paragraph. The previous statement does not support the idea that party means “a celebration,” “a segment of the population,” or a “meeting to discuss business,” so answer choices A, C, and D can be eliminated.
16. **The best answer is G.** In the third paragraph, the men on the expedition are told to have written of their “health and high spirits.” The statement is also made that the men were “all eager to explore,” in spite of the potential dangers they faced in their long journey. This best supports answer choice G.
17. **The best answer is C.** It is reasonable to infer that the word “forge,” as it is used in the passage – “the travelers continued to *forge* west in search of an efficient trade route using only the rivers”—refers to advancing on a path or journey, answer choice C. The other answer choices do not make sense within the context of the passage.
18. **The best answer is J.** The fourth paragraph mentions that “the Sioux and the Blackfeet tried to impede the group’s progress on more than one occasion.” This suggests that the Expedition would likely face danger in the form of conflict

with indigenous people, answer choice J. The other answer choices are not supported by details in the passage.

19. **The best answer is D.** As stated in the passage, the men set out on three boats, “all of which were moved by sails, towropes, poles, or oars.” These methods involve man power, wind power, or rowing power. Although the passage indicates that steam power eventually replaced the boats, nowhere does it mention that steam power was used on the Expedition.
20. **The best answer is F.** According to the passage, “After receiving wilderness training in Washington D.C., Meriwether Lewis set out . . .” This indicates that Lewis was the only member of the Expedition to have received wilderness training. All of the other answer choices are mentioned explicitly in the passage as having been done by all members of the Expedition.

PASSAGE III

21. **The best answer is D.** Although the passage discusses Porter’s renowned ability to candidly address artists’ works, illustrates the influence that several famous artists had on his works, and assesses his unusual methods of painting and critiquing artwork, none of these are the main focus of the passage. Therefore, answer choices A, B, and C can be eliminated. The passage gives a brief summary of Porter’s life and discusses all of the above topics as points that shaped his career. This best supports answer choice D.
22. **The best answer is H.** At the end of the passage, the author states that it is sad that Porter “is still virtually unknown outside of art circles,” and that “This remarkably insightful, articulate, creative individual needs to be discovered by the common man and revered for his continuing influence on the artists of today.” Clearly, the author thinks very highly of Porter and his works and believes that he deserves to be honored (“revered”) for his influence on today’s artists. These details best support answer choice H. Answer choice F is incorrect because the author is clearly not “detached,” or indifferent. Answer choice G is incorrect because the author is not merely “tolerant,” or just able to withstand Porter. Answer choice J is incorrect because the author obviously does not “abhor,” or hate, Porter and his works.
23. **The best answer is A.** As stated in the passage, “what made Porter so famous was his knack for

responding directly to an artist's work." Answer choices B and D are incorrect because the passage states that those are the things that Porter did NOT do, for he found criticisms based on those criteria to be insignificant and meaningless. Answer choice C is beyond the scope of the passage; Bernard Berenson's influence on Porter's art critiques is not discussed.

- 24. The best answer is H.** Porter's personal philosophy regarding his paintings was that they should be "personal, emotional, and representative of its subject, while at the same time be boldly colorful, expressive, and generally abstract." This description of his works supports all of the answer choices except "trite," answer choice H, which means "ordinary or dull."
- 25. The best answer is B.** The first paragraph of the passage simply tells how the author first came to meet Fairfield Porter, and provides a smooth transition into the life of Fairfield Porter. Answer choice A may appear to be correct; however, the author simply tells the reader how he came across Porter; there is no overview of what is to come in the passage. Answer choices C and D are not supported by information found in the passage.
- 26. The best answer is H.** The passage states that, "Fairfield Porter, despite being remarkably intelligent, appeared to be lacking any natural artistic talents." Therefore, his high intelligence level was not correlated at all to his level of artistic ability. This best supports answer choice H. Porter's intelligence is not discussed in terms of the criteria listed in answer choices F, G, and J.
- 27. The best answer is D.** The author states that, "This remarkably insightful, articulate, creative individual needs to be discovered by the common man and *revered* for his continuing influence on artists today." The author is clearly praising Porter and his continuing influence. It makes the most sense that the author believes that Porter should be "honored" for his continuing influence on artists today. The other answer choices do not make sense in the context of the paragraph.
- 28. The best answer is J.** It is stated in the passage that Porter was primarily an art critic until "1961, when he decided to pursue a full time painting career." This was approximately 30 years after he returned from Italy, as he spent time between the years 1931 and 1932 in Italy learning to appreciate and critique artworks. The other answer choices are not supported by details in the passage.

- 29. The best answer is A.** As stated in the passage, "Between the years 1931 and 1932, Fairfield spent the majority of his time in Italy learning to appreciate and critique the works of the great Renaissance painters. His training came from both . . ." This suggests that Porter was continuing his training as an art critic, answer choice A. The other answer choices are outside the scope of the passage.
- 30. The best answer is G.** The passage preceding this phrase discusses Porter's fame as an acclaimed art critic. The passage then goes on to state that, "The other side of his fame, his uncommon approach to painting, is just as important to an understanding of Fairfield Porter's contributions to the world of art." This contrast indicates that Porter was famous both for his criticisms of art, as well as his artwork itself—answer choice G. Answer choice F may appear to be correct, however, the passage does not ever define Porter's level of fame as an artist versus his level of fame as an art critic.

PASSAGE IV

- 31. The best answer is A.** The passage states that, "without dark matter, there are many cosmological phenomena that are difficult to explain." In the context of the sentence, it would make the most sense that without dark matter, there would be many "occurrences" or incidents that would be difficult to explain. Answer choice B may appear to be correct; however, the passage does not indicate the nature of the phenomena and whether or not they are problematic.
- 32. The best answer is H.** The passage states that, "Dark matter . . . is not readily observable because it does not refract light or energy directly. Its existence can only be deduced because of the effect that it has on surrounding matter. In fact, some members of the scientific community have argued that dark matter does not actually exist." This best supports answer choice H. Answer choice F is incorrect because the evidence for the existence of dark matter is its effect on surrounding matter; this discussion of dark matter's effect on surrounding matter also eliminates answer choice J. Answer choice G is not supported by details in the passage.
- 33. The best answer is C.** As stated in the passage, "It has been asserted that not only does dark matter exist, it may also be responsible for the Milky Way's unusual shape." The passage then goes on to discuss the way in which dark matter probably affects the shape of the Milky Way. Answer choice

B may appear to be correct; however, the passage does not indicate that the Magellanic clouds have enormous mass. In fact, the passage explicitly states that “The interaction referenced involves two *smaller* galaxies near the Milky Way, called Magellanic clouds, moving through an enormous amount of dark matter.” Answer choices A and D are not supported by details in the passage.

- 34. The best answer is F.** As stated in reference to Romanowsky’s theory, “They point to the existence of several elliptical shaped galaxies surrounded by very little dark matter as evidence that dark matter is not, in fact, the cause of the warped galaxies.” By showing galaxies that are similar in shape to the Milky Way but NOT surrounded by enormous amounts of dark matter, the theory illustrates that dark matter may not affect the shape and formation of galaxies, answer choice F. Answer choice G may appear to be correct; however, the passage explicitly states that Romanowsky’s theory is not intended “to conclude that dark matter does not exist.”
- 35. The best answer is A.** The last paragraph states that “the movement of [the Magellanic] clouds through the dark matter seems to create a wake that enhances their gravitational influence on the Milky Way.” Earlier in the paragraph, when discussing the Magellanic clouds, the passage states that when a cloud moves through dark matter, it “enhances the gravitational pull that the two Magellanic clouds could have on the Milky Way and other surrounding bodies.” This best supports answer choice A. The other answer choices are not supported by details found in the passage.
- 36. The best answer is J.** The third paragraph discusses the substance of Newton’s hypothesis and the consequences that his hypothesis had on the existence of dark matter. When applying this hypothesis, it seems that dark matter must exist: “something that is not easily observed must be exerting the necessary force to create the warped shape of the galaxy.” This best supports answer choice J. Answer choice F may appear to be correct; however, it is simply stated that Newtonian physics provide the strongest evidence for dark matter. It is not stated anywhere in the passage how dark matter was first discovered.
- 37. The best answer is D.** The passage states that “they apparently believe that the results of their studies cast doubt on some of the *conventional* theories of galaxy formation and manipulation.” Answer choices A and C do not make sense in the context of the sentence, because if a theory was “easily understood” or “strictly interpreted,” there would not be a lot of room for doubt to be cast upon the theory. Answer choice B is incorrect because if a theory was “formally disputed,” opposing viewpoints would already exist on that theory. That the result of these studies cast doubt on some “generally accepted” theories makes the most sense; therefore, answer choice D is correct.
- 38. The best answer is H.** There is nothing in the passage to indicate with certainty that dark matter has no influence on surrounding celestial bodies. Although Aaron Romanowsky suggests that dark matter is not responsible for warped galaxies, there is no discussion in the passage to show that he believes dark matter has no influence whatsoever on galaxy shape or other cosmological phenomena. The other answer choices are all mentioned in the passage as scientific theories regarding dark matter.
- 39. The best answer is C.** As stated in the passage, dark matter is “a substance that is not readily observable because it does not refract light or energy directly.” This best supports answer choice C. The other answer choices are not supported by details found in the passage.
- 40. The best answer is F.** The passage describes dark matter as surrounding and impacting galaxies composed of common matter, such as the Milky Way. This best supports answer choice F. Answer choice G is incorrect because whether dark matter truly exists is still a topic of debate among scientists. Answer choice H is incorrect because the passage does not provide the magnitude of the amount of dark matter in the universe. Answer choice J is incorrect because dark matter is not directly observable at all; its effect on galaxies is the only proof of its existence.

Science Reasoning Test Explanations

PASSAGE I

- The best answer is C.** Table 1 provides information on how many pinecones were produced at each of the six sites. When looking at the A4 and A5 column, the only sites at which A5 trees produced more pinecones per tree than A4 trees were S1, S2, S4, and S5. This best supports answer choice C.
- The best answer is H.** The results of Experiment 1 are shown in Table 1. According to these results, the only site at which A1 trees produced more pinecones than the other trees was at S4, answer choice H.
- The best answer is C.** According to Table 2, only S4 trees produced fewer pinecones than did the trees at S6. This suggests that A1 trees produced more pinecones at S6 than at S4, because A1 trees were planted with A2, A3, A4, and A5 trees in both experiments.
- The best answer is G.** Table 2 provides information on how many pinecones were produced per A1 tree at each of the six sites. To answer the question, you must look at which A1 tree produced the most pinecones. The A1 trees that were planted with seedlings from A2 at S3 produced 9.6 pinecones per tree, more than any other tree on the table. This information best supports answer choice G.
- The best answer is A.** To answer this question, you must read the procedures for both Experiment 1 and Experiment 2. In Experiment 2, “150 containers were prepared with 5 A1 seedlings and 5 seedlings from either A2, A3, A4, or A5.” This says that, unlike Experiment 1, trees from more than one population were combined in Experiment 2. Therefore, answer choice A is correct.
- The best answer is H.** The procedure for Experiment 2 states, “150 containers were prepared with 5 A1 seedlings and 5 seedlings from either A2, A3, A4, or A5.” Therefore, 10 seedlings were planted in each container. This data supports answer choice H.

PASSAGE II

- The best answer is C.** The point at $hr = 16$ for the “Ingredient A extended-release” line is at about 15 on the vertical axis. The point at $hr = 16$ for the “Ingredient B extended-release” line is at about 4

on the vertical axis. Therefore, the difference is about 11.

- The best answer is H.** This question can be answered by observing the trends in the Figures or simply thinking critically about how medication generally works. According to Figure 2, it takes a bit of time for the medication to start working, the symptoms decline for a period of time, then, presumably once the medication starts to wear off, the symptoms return. Figure 1 shows that symptom relief is inversely proportional to concentration of the medication in the body.
- The best answer is A.** According to Figure 1, the concentration of immediate-release Ingredient A increases most immediately following taking the pill. This is evident by the extended steep upward trend of the line.
- The best answer is F.** Table 1 shows that nearly as many subjects given the placebo (5%) reported feelings of weakness as did subjects given the drug (6%). The difference of only 1% shows that there is a high level of uncertainty over whether the drug actually caused the feelings of weakness.
- The best answer is D.** Figure 2 reflects the mean (average) symptom score of all the subjects given the drug. To find the 8-hour period of the graph where symptoms scores changed the least, find the 8-hour period of the curve over which slope changes the least. This occurs roughly between $hr = 14$ and $hr = 22$.

PASSAGE III

- The best answer is G.** By looking at Figure 1, you can determine the range in pressure at which each atmospheric layer can exist. Beginning with answer choice F, calculate the difference between the lowest pressure and the highest pressure at which the atmospheric layer can exist:

$$\text{Mesosphere: } 14.5 \text{ psi} - 7.5 \text{ psi} = 7 \text{ psi}$$

$$\text{Thermosphere: } 17.8 \text{ psi} - 10.3 \text{ psi} = 7.5 \text{ psi}$$

$$\text{Stratosphere: } 9.5 \text{ psi} - 3.8 \text{ psi} = 5.7 \text{ psi}$$

$$\text{Troposphere: } 5.0 \text{ psi} - 1.0 \text{ psi} = 4.0 \text{ psi}$$

The pressure in the thermosphere has the greatest range, answer choice G.

- The best answer is A.** To answer this question you need to look at the information on cumulus clouds in Figure 1. Figure 1 suggests that cumulus clouds form in the mesosphere. The mesosphere’s

pressure ranges from 8 psi to 12 psi, and the average temperature for this range is 35°C. This information supports answer choice A.

- 14. The best answer is G.** The key in Figure 1 includes two lines: temperature and pressure. As the pressure line is increasing (positive slope), the temperature line is decreasing (negative slope). This suggests that as pressure within the atmospheric layer increases, temperature decreases only, answer choice G.
- 15. The best answer is B.** Answering this question requires you to look carefully at the range of temperature and pressure combinations at which clouds in the stratosphere form, as shown in Figure 1. Because the clouds here begin to form under 30°C and most are located below a pressure of 10 psi, this combination is correct. The other choices designate ranges of the atmosphere either above or below the stratosphere.
- 16. The best answer is J.** At a pressure of 7 psi, Figure 1 shows that cloud formation will most likely occur in the stratosphere. According to Figure 1, clouds that form in the stratosphere are stratus clouds. This information best supports answer choice J.

PASSAGE IV

- 17. The best answer is D.** Figure 1 shows the percent of fish that survive after exposure to water with bacteria present. The fish species with the highest percent (85%) of fish that survived after prolonged exposure to bacteria (light gray bar) was fish species E. Answer choice D is correct.
- 18. The best answer is G.** To answer this question, you must look at the difference between the light gray and dark gray bars for each species in Figure 1. Answer choice J can be eliminated because the percent of fish that survived with and without exposure to bacteria are almost identical. Species C has the greatest difference in percent between the two, answer choice G.
- 19. The best answer is B.** According to Table 1, fish that live in deep water without plants have a moderate ability to combat bacteria.
- 20. The best answer is G.** By looking at Table 1, you can see that as you go down the column, the exposure to waterborne bacteria increase. Also as you go down the column, the relative ability to combat bacteria increases. The information supports answer choice G.
- 21. The best answer is B.** According to Figure 1, Species A has the lowest percent of fish surviving to adulthood. Table 1 indicates that Species A fish live in shallow water with plants. Therefore, answer choice B is correct.

PASSAGE V

- 22. The best answer is H.** This question asks you to identify the assumption that Paleontologist 1 must have made while discussing the finding of the fossilized bones. Answer choice F can be eliminated because the paleontologist refers to the velociraptor as a known dinosaur. Paleontologist 1 says, “The form and function of the velociraptor has been misunderstood until this important discovery.” By stating that the dinosaur has been misunderstood, Paleontologist 1 is saying that it has been mischaracterized until now. This statement best supports answer choice H.
- 23. The best answer is C.** Paleontologist 1 states, “You can see that there are cuts within the arm/wing bones of this dinosaur, indicating that it was caught while in flight.” The paleontologist, then goes on to say, “Perhaps it was attempting an escape from a more predatory dinosaur.” This suggests that while trying to escape from a larger predator, the predator caught the velociraptor, answer choice C.
- 24. The best answer is G.** According to Paleontologist 2, “long arm bones are indicative of the dinosaur’s ability to scavenge prey and fend off larger predators.” It makes sense that Paleontologist 2 would conclude that, because the new dinosaur species had long arm bones, it could be a scavenger.
- 25. The best answer is C.** According to Paleontologist 2, “The long arm bones are indicative of the dinosaur’s ability to scavenge prey and fend off larger predators.” This implies that the reason that the velociraptor had long arm bones was to scavenge for food.
- 26. The best answer is F.** This question asks you to summarize the main idea of Paleontologist 1’s viewpoint. Answer choices G and H can be eliminated because only Paleontologist 2 supports them. Paleontologist 1 says that “the velociraptor was definitely capable of flight” and “the velociraptor has been misunderstood until this important discovery.” These two statements support answer choice F.

27. **The best answer is A.** Both Paleontologists mention the *Tyrannosaurus rex* as a possible threat either to the velociraptor's food source or to its very life. This best supports answer choice A. Answer choices B, C, and D do not support the views of both paleontologists, and therefore, can be eliminated.
28. **The best answer is G.** By reading the viewpoints of both Paleontologist 1 and Paleontologist 2, you can determine what they thought of the discovery of the velociraptor bones. Answer choices H and J can be eliminated because they are not supported by either passage. Both paleontologists extracted useful information from the discovery of the bones. Therefore, answer choice G is the best answer.

PASSAGE VI

29. **The best answer is B.** Figure 1 provides information on the compositions of mountain peaks. At a distance of 9 km along the mountain range, the peak composition is shown in the key as shale. This supports answer choice B.
30. **The best answer is F.** To determine the correct answer, you must look at the key in Figure 1, which shows the different composition of the mountain peaks. It defines limestone as "particles with diameters under 0.5 mm," shale as "composed mostly of particles with diameters under 175 mm," and slate as, "composed mostly of particles with diameters over 175 mm." The only difference between the different compositions is the size of the particle, answer choice F.
31. **The best answer is D.** As the peak section heights in Table 1 increase, the percentage of the year that peak section is exposed to wind also increases. Since a height of 5.5 m to 6.0 m is higher than the other values in the table, the percentage of the year that the peak section would be exposed to the wind should also be greater than the other values in the table. The only answer choice with a value greater than the other percentages in the table is answer choice D.
32. **The best answer is F.** Figure 2 shows that Peak D is exposed to wind erosion for a greater percentage of the year than Peak C. Table 1 suggests that the percentage of the peak exposed to wind is directly proportional to peak section height. Therefore, because Peak D is exposed to the wind for longer than Peak C is, Peak D must be

taller than Peak C. This information best supports answer choice F.

33. **The best answer is C.** Table 1 shows that as the peak section height increases by equal increments, the percentage of the year that peak section is exposed to wind also increases by approximately the same amount. Therefore, the slope of the graph is positive and the graph is a straight line as shown in answer choice C.
34. **The best answer is G.** The passage states that "the peaks of mountains often lose sediment due to wind erosion." By losing sediment, the mountain peaks are losing mass. This supports answer choice G. Answer choice J can be eliminated because the information is irrelevant to the data presented in the passage.

PASSAGE VII

35. **The best answer is A.** According to the information in Table 2 and Table 3, the bacteria grew quicker when left under a lamp. This suggests that bacteria grow faster in warm environments, answer choice A. Answer choice C can be eliminated because it is irrelevant to the information presented in the passage.
36. **The best answer is G.** Table 3 provides information on the proportional growth of bacteria in four different environments. The moist side of Dish 2 produced 1.15 times the amount of bacteria in the control sample, which is more than the other three environments produced when compared to the control sample. This best supports answer choice G.
37. **The best answer is C.** Table 1 provides the results of Experiment 1. Answer choices A and D can be eliminated because they are not supported by the data. For both dishes, the bacteria growth was greater on the moist side. This information best supports answer choice C.
38. **The best answer is H.** More than one sample of bacteria was put into each Petri dish. To avoid skewed results, only one sample of bacteria should be placed in each Petri dish. Answer choice H is the best answer. Answer choice J can be eliminated because varying the size of the starting sample would not alter the results.
39. **The best answer is D.** Both Table 2 and Table 3 show that the bacteria growth rate is highest in

moist, warm places. The only answer choice that is both warm and moist is beneath a rock in a tropical forest. The other answer choices can be eliminated because they contain only one or none of the two conditions.

40. The best answer is J. According to the question, “bacteria double population size in short intervals.” The only answer choice that includes recording data in short intervals is answer choice J.

Writing Test Explanation

Because grading the essay is subjective, we've chosen not to include any "graded" essays here. Your best bet is to have someone you trust, such as your personal tutor, read your essays and give you an honest critique. If you plan on grading your own essays, review the

grading criteria and be as honest as possible regarding the structure, development, organization, technique, and appropriateness of your writing. Focus on your weak areas and continue to practice in order to improve your writing skills.