CollegeBoard SAT®

DECEMBER 1, 2018
US

The SAT®

Test Book

IMPORTANT REMINDERS

1

A No. 2 pencil is required for the test. Do not use a mechanical pencil or pen.

2

Sharing any questions with anyone is a violation of Test Security and Fairness policies and may result in your scores being canceled.

Test begins on the next page.

Reading Test

65 MINUTES, 52 QUESTIONS

Turn to Section 1 of your answer sheet to answer the questions in this section.

DIRECTIONS

Each passage or pair of passages below is followed by a number of questions. After reading each passage or pair, choose the best answer to each question based on what is stated or implied in the passage or passages and in any accompanying graphics (such as a table or graph).

Questions 1-10 are based on the following passage.

This passage is adapted from Gail Tsukiyama, *Night of Many Dreams*. ©1998 by Gail Tsukiyama. Emma has sailed from Hong Kong to the United States in 1950 to attend college.

Not quite three weeks after leaving Hong Kong, Emma changed into a cotton cheungsam and finally set foot on Pier 19 in San Francisco. The late-
Line afternoon sun felt much cooler than she expected. By
5 the time she said a tearful good-bye to the other passengers, then found her luggage waiting on the dock, Emma felt scared and alone. Sister Madeleine from the college had promised in her last letter to have someone waiting for her, but no one appeared.
10 The air smelled salty and metallic. The sunlight had given way to shade. Emma waited as the passengers disembarked and the crowd dissipated. What would become of her? Alone on the pier, she listened for the voices of Mah-mee and Auntie Go telling her what to
15 do, but they seemed lost across the ocean. Emma took a deep breath and thought of her sister Joan's advice: What would Lauren Bacall do? She decided to take a taxi to Lone Mountain College.

A sympathetic cabdriver, himself an immigrant
20 from Russia, was kind and helpful. "You're a smart one, taking taxi. These docks is no good at night," he said, his thick, bushy mustache moving up and down as he talked. "Don't worry, Sergei is getting you to your school nice and safe."

25 Emma watched as he loaded her luggage into the trunk, then opened the rear door and waited for her to step in. He was short and heavyset, yet light and quick on his feet. His hair was longer than any other man's she'd ever seen before, hanging in uneven
30 strands below the back collar of his plaid shirt. She wrapped her sweater closer against the cold wind, happy to be in the safe confines of the cab.

Sergei turned around and looked over his shoulder. "We'll take scenic route. I want to be first
35 one to show you this great city!"

Emma felt suddenly warm. "No, I have to . . ."

"Don't worry. No extra cost for you. Sit back! Enjoy!" He winked and started the car with a great roar of the engine.

40 Emma's fear quickly disappeared as Sergei drove along the Embarcadero toward the bright lights of a place he called Fisherman's Wharf. Emma fixed her gaze out the window at the large buildings and the big cars parked along the wide, open streets—so
45 clean and uncluttered.

"This is where you can eat best crabs in all the world!" Sergei boasted.

When the cab turned down a narrow street toward the harbor, Emma had a full view of the small
50 fishing boats docked in the crowded marina, and she smiled at the hopeful names painted on their bows—*The Lucky Star*, *Mary's Dream*, *The Full Catch*, *A Pot of Gold*. She sat forward and rolled down her window, inhaling the distinct aromas of
55 fresh fish and crabs. In the narrow street, Emma could almost reach out the window to touch the crabs that scrabbled over each other in boxes, waiting to be boiled in a large black pot.

CONTINUE

From the crowded wharf, Sergei turned onto a street he called Columbus. "Like the explorer," he said, slowing down as he peeked at her in his rearview mirror. "And this is North Beach, where all the Italians live and eat."

Emma looked away from the mirror. "From Italy?"

He nodded. "At one time."

"And where do all the Russians live and eat?"

"Wherever we can," Sergei answered with a laugh.

He drove several blocks, then turned right. "This is Washington Street. Just remember, the first American president." Then he made another right turn onto Grant Avenue. "We are now in heart of Chinatown!" His thick eyebrows flashed upward as he again caught her eyes in the mirror.

Emma's pulse raced. Chinatown appeared much smaller than she had expected. Restaurants and storefronts painted red, green, and gold were crowded together into several blocks. She turned from window to window, soaking in all she could, seeking echoes of the life she'd left behind. Preoccupied faces she might have seen in Wanchai, or down in Causeway Bay, rushed down the bustling Grant Avenue. Names of streets flashed by—Jackson, Pacific, and back to Broadway. As if he knew what she was thinking, Sergei circled and drove through Chinatown again. Emma smiled, finding comfort in the Chinese characters written on signs and windows: The Forbidden City Nightclub, Golden Harvest, Kuo Wah Restaurant, The Great Wall of China . . . As different as this was from Hong Kong, San Francisco's Chinatown held the most familiar sights she'd seen in weeks.

Emma leaned forward and whispered to Sergei, "You are very kind."

He quickly turned back with a smile, his warm breath touching her cheek. "I know how it feels."

1

Which choice best summarizes the passage?

A) One character begins a quest for friendship, while another character begins a quest for knowledge.

B) A character is isolated after traveling far from her home, but she meets someone who makes her feel more at ease.

C) A character relives the sights and sounds of a distant world, but then she absorbs the sights and sounds of a new world.

D) One character mourns her lost friendships, while another character shares her loss and attempts to console her.

2

In saying that the voices of Mah-mee and Auntie Go seem "lost" (line 15), the narrator most likely means that they seem

A) strange and unfamiliar.

B) desperate and unsure.

C) distant and irretrievable.

D) unappreciated and misjudged.

3

When Sergei first meets Emma, he assumes that she feels

A) intimidated by the college staff.

B) wary of accepting help.

C) daunted by her surroundings.

D) anxious about an unexpected expense.

4

Which choice best represents the two distinct meanings of "safe" as used in lines 24 and 32?

A) Cozy; sheltered

B) Convenient; reliable

C) Cautious; uncontroversial

D) Unharmed; protected

CONTINUE

5

Based on the passage, Sergei can most likely be characterized as

A) generous and reassuring.
B) proud and boisterous.
C) curious and innocent.
D) poised and serene.

6

Which choice provides the best evidence for the answer to the previous question?

A) Lines 20-21 ("You're . . . night")
B) Lines 28-30 ("His . . . shirt")
C) Lines 37-39 ("Don't . . . engine")
D) Lines 46-47 ("This . . . boasted")

7

Sergei's references to "the explorer" (line 60) and "the first American president" (lines 70-71) serve mainly to

A) reveal his passion for learning historical trivia.
B) show his desire to help Emma make connections.
C) introduce a serious side to his otherwise jovial nature.
D) portray his need to impress Emma with his knowledge.

8

Which choice best describes Emma's overall perspective on Chinatown?

A) She is astonished that it has so many similarities with Hong Kong's neighborhoods.
B) She is overwhelmed by the energetic pace of the people.
C) She is worried about initiating conversations with the local residents.
D) She is grateful to have found a place that reminds her of her hometown.

9

Which choice provides the best evidence for the answer to the previous question?

A) Lines 71-74 ("Then . . . mirror")
B) Lines 75-78 ("Emma's . . . blocks")
C) Lines 81-84 ("Preoccupied . . . Broadway")
D) Lines 86-88 ("Emma . . . windows")

10

According to the passage, Sergei treats Emma the way he does because

A) he understands what she is going through.
B) he enjoys showing off the sights of the city.
C) Emma reminds him of someone he knows.
D) Emma emigrated from his home country.

CONTINUE

Questions 11-21 are based on the following passage and supplementary material.

This passage and figure 1 are adapted from Rachel Ehrenberg, "GMOs under Scrutiny." ©2016 by Society for Science & the Public.

"We are in a world that's painted black and white," says agricultural economist Matin Qaim. "In Europe in particular, people are deeply convinced that genetically modified (GM) crops are bad for the world. If you say anything in favor of GM crops, you are talking in favor of evil."

That designation of evil is one of the two prevailing narratives concerning genetically engineered foods. Opponents of genetically modified organisms (GMOs) tell the story that "Franken" organisms are a new technology that poses known and unknowable dangers to human health, the environment, and society at large. On the other side, proponents argue that GMOs are a harmless and necessary tool for saving a world threatened by overpopulation and a changing climate. The loudest voices on the proponent side are typically cast as shills for Big Agriculture (some of them are), while the loudest on the anti-GMO side are typically cast as fear-mongering luddites (some of them are).

The broad brush is problematic for several reasons, Qaim and others argue. The term GMO itself is a catchall that encompasses a wide range of products developed through a variety of means, each with its own risks and benefits. There are GMOs that have led to large reductions in the use of pesticides, for example, and there are GMOs that have made herbicide use skyrocket. The broad brush also fails when labeling the developers of GM technology: Commercial giants of the agrochemical pesticide industry have developed GMOs, but so have academic scientists funded by nonprofits for the public sector.

"A technology like GM crops is neither good nor bad," Qaim says. "Talking about *the* impact of GMOs is way too broad."

The diversity of engineering processes and the products that result will probably continue to grow. For example, the relatively new CRISPR technology, which allows for superprecise gene editing, may soon become a GMO tool of choice. But generally speaking, the technologies behind GMOs are decades old. And despite fears of unknown risks, GMOs have been studied extensively.

The picture drawn from decades of research is out of sync with many common public perceptions. While unforeseeable health issues are often at the forefront of public concern, foods containing GMOs have been on grocery shelves for more than 20 years. Piles of evidence suggest that eating GMOs is no riskier than eating conventional foods. Effects on the environment are more mixed. Some of the problems that have arisen, such as the uptick in the use of certain herbicides, are more about farming practices than about dangers inherent to GM technology; the same problems arise with conventional, non-GM crops.

The environmental consequences of engineered genes escaping into the wild are less clear. But while fallout can be hard to predict, the odds of such escapes actually happening can often be evaluated. With the Food and Drug Administration's recent approval of GM salmon, for example, scientists agree that there is a slim possibility that escapees could harm native fish populations; that risk could be curtailed, however, with strict oversight about where and how such fish are farmed.

There's also a lot of unrealized promise. GMOs are often touted as a way to boost the nutrient content of foods to fight malnutrition. Yet GMOs that are on the market have largely benefited those producing them—companies and farmers—rather than consumers. There are many health-boosting GMOs in development, including bananas with increased iron, plants that make omega-3 fish oils, and rice, sorghum, and cassava enriched with vitamin A. New crops, such as those engineered to tolerate drought or excess salt in the soil, could play a crucial role.

CONTINUE

Figure 1

Adoption of GM Crops in the United States

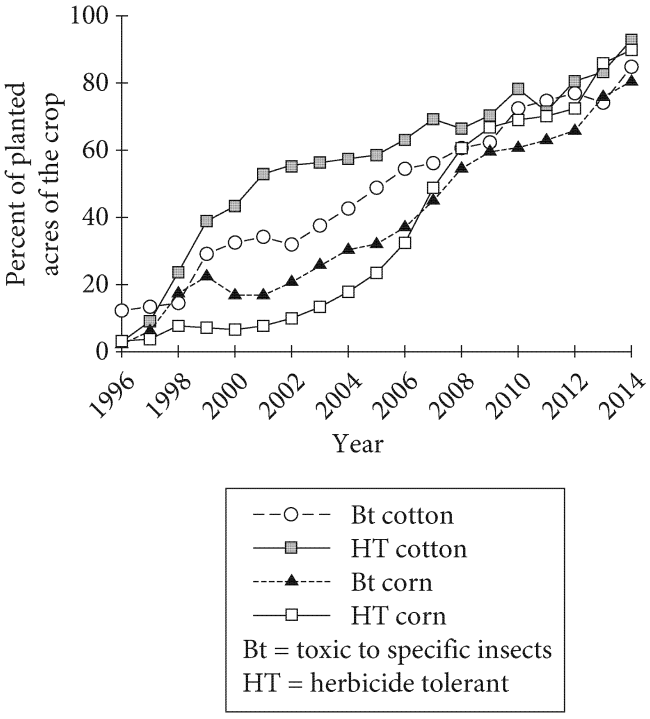


Figure 2

Average Impact of Change from Non-GM Crops to GM Crops, 1996–2014

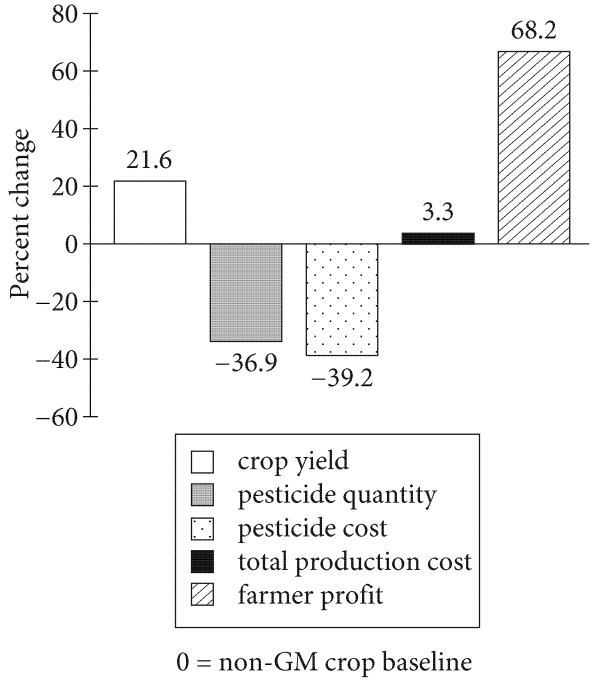


Figure 2 is adapted from Wilhelm Klümper and Matin Qaim, "A Meta-Analysis of the Impacts of Genetically Modified Crops." ©2014 by Wilhelm Klümper and Matin Qaim.

11

The first paragraph serves primarily to

A) dispute a long-standing scientific consensus.

B) introduce a problem that is specific to Europe.

C) draw attention to the controversial nature of GMOs.

D) express support for a worldwide ban on GMO agriculture.

CONTINUE

12

As used in line 11, the word "poses" most nearly means

A) arranges.
B) presents.
C) questions.
D) imitates.

13

In context, the italicization of the word "the" in line 35 serves to convey which meaning?

A) That there is one kind of GMO that governments need to be especially concerned about
B) That GMOs are the sole technology that can address the world's hunger problems
C) That the notion that GMOs could have only a single effect is simplistic
D) That GMOs are the most significant issue that science is grappling with today

14

The author cites CRISPR as an example of

A) recent technological innovations related to GMOs.
B) a GMO technique whose impact has been extensively studied.
C) an especially risky method of modifying genes.
D) less controversial approaches to increasing crop yields.

15

Which choice best describes the author's perspective on the consumption of genetically modified foods?

A) There is little reason to believe that consuming GMOs is harmful to humans.
B) GM foods require further study before scientists can determine conclusively that they are healthful.
C) It is safe to use GM crops to feed livestock, but it is not safe for humans to consume them directly.
D) Years of research have demonstrated that GMOs should not be part of the human diet.

16

Which choice provides the best evidence for the answer to the previous question?

A) Lines 45-46 ("The picture . . . perceptions")
B) Lines 50-51 ("Piles . . . foods")
C) Lines 51-52 ("Effects . . . mixed")
D) Lines 59-61 ("But . . . evaluated")

17

Which choice provides the best evidence for the idea that GMOs have tended to serve the interests of those other than the general public?

A) Lines 52-56 ("Some . . . technology")
B) Lines 62-65 ("With . . . populations")
C) Lines 70-73 ("Yet . . . consumers")
D) Lines 77-79 ("New . . . role")

CONTINUE

18

The author makes which of the following claims about GM salmon?

A) The fishing industry cannot be trusted to prevent GM salmon from escaping.

B) New research has led to the development of environmentally safe GM salmon.

C) The current inadequate regulations surrounding GM salmon fail to protect native fish.

D) The potential dangers associated with GM salmon can be anticipated and managed.

19

According to figure 1, approximately what percent of planted acres of cotton in the United States in 2004 were herbicide tolerant?

A) 20%

B) 40%

C) 60%

D) 80%

20

Which statement about the planting of corn that is toxic to specific insects is supported by figure 1?

A) It has increased without interruption since 1996.

B) It dipped slightly around the year 2000 but has risen ever since.

C) It remained fairly steady for about a decade, then rose abruptly around 2006.

D) It has consistently exceeded the planting of herbicide-tolerant corn.

21

Figure 2 best supports which of the following statements about the average economic impact on farmers of the change from non-GM to GM crops?

A) Due to their higher production costs, GM crops have led to an overall decrease in financial returns for farmers.

B) The increase in profits seen by farmers who have switched to GM crops was largely the result of increased demand for those crops worldwide.

C) Even though GM crops have generally resulted in higher yields, they have had little if any effect on farmers' profits.

D) GM crops have increased total production costs slightly, but they have increased overall profits substantially.

CONTINUE

Questions 22-31 are based on the following passage.

This passage is adapted from "Fascinating Rhythm: Light Pulses Illuminate Rare Black Hole." ©2014 by The University of Maryland College of Computer, Mathematical, and Natural Sciences.

Nearly all black holes fall into one of two classes: big, and colossal. Astronomers know that black holes ranging from about 10 times to 100 times the mass of our sun are the remnants of dying stars, and that supermassive black holes, more than a million times the mass of the sun, inhabit the centers of most galaxies.

But scattered across the universe like oases in a desert are a few apparent black holes of a more mysterious type. Ranging from a hundred times to a few hundred thousand times the sun's mass, these intermediate-mass black holes are so hard to measure that even their existence is sometimes disputed. Little is known about how they form. And some astronomers question whether they behave like other black holes.

Now a team of astronomers has succeeded in accurately measuring—and thus confirming the existence of—a black hole about 400 times the mass of our sun in a galaxy 12 million light years from Earth. The finding, by University of Maryland astronomy graduate student Dheeraj Pasham and two colleagues, was published online in the journal *Nature*.

Co-author Richard Mushotzky, a UMD astronomy professor, says the black hole in question is a just-right-sized version of this class of astral objects.

"Objects in this range are the least expected of all black holes," says Mushotzky. "Astronomers have been asking, do these objects exist or do they not exist? What are their properties? Until now we have not had the data to answer these questions."

While the intermediate-mass black hole that the team studied is not the first one measured, it is the first one so precisely measured, Mushotzky says, "establishing it as a compelling example of this class of black holes."

A black hole is a region in space containing a mass so dense that not even light can escape its gravity. Black holes are invisible, but astronomers can find them by tracking their gravitational pull on other objects. Matter being pulled into a black hole gathers around it like storm debris circling a tornado's center. As this cosmic stuff rubs together it produces friction and light, making black holes among the universe's brightest objects.

Since the 1970s astronomers have observed a few hundred objects that they thought were intermediate-mass black holes. But they couldn't measure their mass, so they couldn't be certain. "For reasons that are very hard to understand, these objects have resisted standard measurement techniques," says Mushotzky.

Pasham focused on one object in Messier 82, a galaxy in the constellation Ursa Major. Messier 82 is our closest "starburst galaxy," where young stars are forming. Beginning in 1999 a NASA satellite telescope, the Chandra X-ray Observatory, detected X-rays in Messier 82 from a bright object prosaically dubbed M82 X-1. Astronomers, including Mushotzky and co-author Tod Strohmayer of NASA's Goddard Space Flight Center, suspected for about a decade that the object was an intermediate-mass black hole, but estimates of its mass were not definitive enough to confirm that.

Between 2004 and 2010 NASA's Rossi X-Ray Timing Explorer (RXTE) satellite telescope observed M82 X-1 about 800 times, recording individual X-ray particles emitted by the object. Pasham mapped the intensity and wavelength of X-rays in each sequence, then stitched the sequences together and analyzed the result.

Among the material circling the suspected black hole, he spotted two repeating flares of light. The flares showed a rhythmic pattern of light pulses, one occurring 5.1 times per second and the other 3.3 times per second—or a ratio of 3:2.

The two light oscillations were like two dust motes stuck in the grooves of a vinyl record spinning on a turntable, says Mushotzky. If the oscillations were musical beats, they would produce a specific syncopated rhythm like a Latin-inflected bossa nova.

In music, this is a 3:2 beat. Astronomers can use a 3:2 oscillation of light to measure a black hole's mass. The technique has been used on smaller black holes, but it has never before been applied to intermediate-mass black holes.

CONTINUE

Pasham used the oscillations to estimate that M82 X-1 is 428 times the mass of the sun, give or take 105 solar masses. He does not propose an explanation for how this class of black holes formed. "We needed to confirm their existence observationally first," he says. "Now the theorists can get to work."

22

The main purpose of the passage is to

A) account for the differences between the two major classes of black holes.

B) discuss the difficulties scientists encounter when measuring the mass of black holes.

C) describe how evidence supports the existence of a particular type of black hole.

D) explain why the brightness of a black hole heightens the challenge of measuring its mass.

23

In line 9, the author uses the word "apparent" to indicate that a

A) characteristic of certain black holes is visible.

B) conclusion about certain types of black holes is obvious.

C) description of a certain group of black holes is misleading.

D) characterization of certain objects as black holes is plausible.

24

The passage indicates that research into intermediate-mass black holes has been impeded by the fact that

A) such black holes seem to have a comparatively short life span.

B) current models of the universe's evolution cannot explain such black holes.

C) it has been difficult for scientists to precisely measure such black holes.

D) the gravitational pull that such black holes exert on other objects is negligible.

25

Which choice provides the best evidence that Mushotzky would characterize earlier discussions of intermediate-mass black holes as largely speculative?

A) Lines 25-28 ("Co-author . . . objects")

B) Lines 29-30 ("Objects . . . Mushotzky")

C) Lines 32-33 ("Until . . . questions")

D) Lines 34-38 ("While . . . holes")

26

The main purpose of the sixth paragraph (lines 39-47) is to

A) provide examples of black holes and discuss the properties of each.

B) describe the nature of black holes and explain how they can be detected.

C) present competing theories about the origins and characteristics of black holes.

D) illustrate the differences between supermassive and intermediate-mass black holes.

CONTINUE

27

As used in line 42, "tracking" most nearly means

A) trailing.
B) traversing.
C) monitoring.
D) paralleling.

28

In context of the passage as a whole, the quotation from Mushotzky in lines 52-54 serves mainly to

A) defend the work of the researchers against the potential criticisms of other scientists.
B) explain why the researchers were able to interest relatively few other scientists in their work.
C) suggest a particular scientific process that the researchers eventually adapted and refined for their work.
D) emphasize a significant scientific challenge that the work of the researchers ultimately surmounted.

29

It can reasonably be inferred from the passage that the data collected by the Chandra X-ray Observatory were insufficient to rule out which possibility?

A) M82 X-1 is a member of one of the two established classes of black holes.
B) The X-rays associated with M82 X-1 come from another object entirely.
C) Changes in the brightness of M82 X-1 reflect imperfections in the telescope itself.
D) M82 X-1 was formed later than was any known supermassive black hole.

30

It can reasonably be inferred from the passage that Pasham made which assumption about the pattern of light flares detected near M82 X-1?

A) It arises from variations in the wavelength of the X-rays emitted by M82 X-1 but not from variations in the intensity of those X-rays.
B) It could be used to analyze M82 X-1 in the same way as similar patterns had been used to analyze other black holes.
C) It displays a 3:2 ratio because the mass of M82 X-1 is greater than the mass of black holes in the smaller of the two major classes of black holes.
D) It could serve as a reliable way of estimating the distance from Earth to M82 X-1.

31

Which choice provides the best evidence for the answer to the previous question?

A) Lines 58-61 ("Beginning . . . M82 X-1")
B) Lines 70-73 ("Pasham . . . result")
C) Lines 76-78 ("The flares . . . 3:2")
D) Lines 86-88 ("The technique . . . holes")

CONTINUE

Questions 32-41 are based on the following passages.

Passage 1 is from a speech delivered in 1926 by Calvin Coolidge, "Address before the American Association of Advertising Agencies, Washington, DC." Passage 2 is adapted from Stuart Chase and F. J. Schlink, *Your Money's Worth: A Study in the Waste of the Consumer's Dollar*. ©1927 by Stuart Chase and F. J. Schlink.

Passage 1

It is to be seen that advertising is not an economic waste. It ministers to the true development of trade. It is no doubt possible to waste money through
Line wrong methods of advertising, as it can be wasted
5 through wrong methods in any department of industry. But rightfully applied, it is the method by which the desire is created for better things. When that once exists, new ambition is developed for the creation and use of wealth. The uncivilized make
10 little progress because they have few desires. The inhabitants of our country are stimulated to new wants in all directions. In order to satisfy their constantly increasing desires they necessarily expand their productive power. They create more wealth
15 because it is only by that method that they can satisfy their wants. It is this constantly enlarging circle that represents the increasing progress of civilization.

A great power has been placed in the hands of those who direct the advertising policies of our
20 country, and power is always coupled with responsibilities. No occupation is charged with greater obligations than that which partakes of the nature of education. Those engaged in that effort are changing the trend of human thought. They are
25 molding the human mind. Those who write upon that tablet write for all eternity. There can be no permanent basis for advertising except a representation of the exact truth. Whenever deception, falsehood, and fraud creep in they
30 undermine the whole structure. They damage the whole art. The efforts of the Government to secure correct labels, fair trade practices, and equal opportunity for all our inhabitants is fundamentally an effort to get the truth into business.
35 The Government can do much in this direction by setting up correct standards, but all its efforts will fail unless it has the loyal support of the business men of the Nation. If our commercial life is to be clean and wholesome and permanent in the last
40 resort, it will be because those who are engaged in it are determined to make it so. The ultimate reformers of business must be the business men themselves. My conception of what advertising agencies want is a business world in which the standards are so high
45 that it will only be necessary for them to tell the truth about it. It will never be possible to create a permanent desire for things which do not have a permanent worth.

Passage 2

The great bulk of the things which we consumers
50 buy are not reviewed by any impartial testing body. Most of them advance upon us from behind a great smoke screen of advertising. Given time enough, and trial and error enough, quality will in many cases make itself felt. But consider the waste of this trial
55 and error method as against a permanent source to which we might turn for the results of scientific tests and the setting of impartial standards.

The United States Government has solved this problem some time since, for its own purposes, and
60 provides a working model of how to do it, and what is to be gained from it. Each year the Government buys some $300,000,000 of supplies and equipment—ranging all the way from thumbtacks to dredging machines; from baseballs to battleships.
65 Nearly every kind of thing the general consumer buys, the Government at Washington buys—though in not such great variety—foodstuffs, textiles, clothing, furniture, building materials, office supplies, sporting goods, toilet articles . . .
70 everything. But in buying much of this material, the several [government] purchasing agents pay little attention to . . . magazine covers, nor yet to super-salesmen. . . . They pay attention to technical advice from the Bureau of Standards. Half way between
75 Washington [DC] and Chevy Chase [Maryland], these great laboratories rise. Skilled chemists, physicists, engineers, research workers, in a hundred fields are passing continually and relentlessly upon the relative quality of the goods which the purchasing
80 agent proposes to buy. During the last fiscal year, the Bureau made no less than 180,000 tests. For an operating cost of $2,000,000, it is estimated that the Bureau of Standards saves the Government in the neighborhood of $100,000,000 every year—an
85 investment which nets fifty-fold.

CONTINUE

Why cannot this technique be extended to aid the consumer at large as it has aided the United States Government? If it has helped to secure better and cheaper gas masks and dreadnoughts, why should it not help to secure better and cheaper boots, vacuum cleaners, breakfast foods and houses?

32

The primary purpose of Passage 1 is to

A) analyze the relationship between advertising and government.

B) discuss two competing conceptions of the nature of advertising.

C) advance a view about the role and responsibility of advertising.

D) oppose proposed reforms to the advertising industry.

33

According to Passage 1, advertising is useful to society because it

A) helps people understand the overarching goals of the government.

B) energizes the economy by encouraging people to want new products.

C) inspires a sense of shared cultural identity among people.

D) allows people to uncover the deceptions of some manufacturers.

34

As used in line 21, "charged" most nearly means

A) tasked.

B) blamed.

C) assaulted.

D) purchased.

35

Passage 1 suggests that those who create advertisements are similar to

A) inventors who do not understand the full significance of their inventions.

B) officials who set policies that regulate the behavior of citizens.

C) teachers who permanently influence the ideas and beliefs of others.

D) artists who produce works of great beauty for people to admire.

36

Which choice provides the best evidence for the answer to the previous question?

A) Lines 9-12 ("The uncivilized . . . directions")

B) Lines 14-17 ("They . . . civilization")

C) Lines 18-21 ("A great . . . responsibilities")

D) Lines 24-26 ("They are . . . eternity")

37

According to Passage 2, consumers generally learn about the merits of a product by

A) using it and observing the results over time.

B) reading reviews written by journalists.

C) assessing reports published by scientists.

D) engaging in conversations with their friends.

38

As used in line 65, "general" most nearly means

A) collective.

B) widespread.

C) approximate.

D) ordinary.

CONTINUE

39

The authors of both passages would most likely agree with which statement about deceptive advertisements?

A) They are generally more effective than truthful advertisements.

B) They are more common in certain media than in others.

C) They tend to inspire public cynicism about the advertising industry.

D) They are unlikely to mislead the public indefinitely.

40

The author of Passage 1 would most likely claim that the approach suggested in the last paragraph of Passage 2 would

A) be viable only if it had the genuine support of businesses.

B) likely fail because it would not provide useful information.

C) probably appeal to those with money to purchase luxuries.

D) discourage advertisers from representing their products honestly.

41

Which choice provides the best evidence for the answer to the previous question?

A) Lines 31-34 ("The efforts . . . business")

B) Lines 35-38 ("The Government . . . Nation")

C) Lines 42-46 ("My conception . . . about it")

D) Lines 46-48 ("It will . . . worth")

CONTINUE

Questions 42-52 are based on the following passage and supplementary material.

This passage is adapted from Doug Macdougall, *Frozen Earth: The Once and Future Story of Ice Ages*. ©2013 by The Regents of the University of California.

One of the most important effects of the Pleistocene Ice Age is something that is difficult to observe visually but is quite predictable if you think about it a bit. It is the fact that there was a massive transfer of water from the oceans to the land during the glacial periods. It has been estimated that at the maximum of the most recent glacial period, about twenty thousand years ago, sea level was approximately 120 meters lower than it is at present. Along most shorelines, dry land extended far out into what is now quite deep water. A map of the world as it was then would look quite different from the one we are familiar with today.

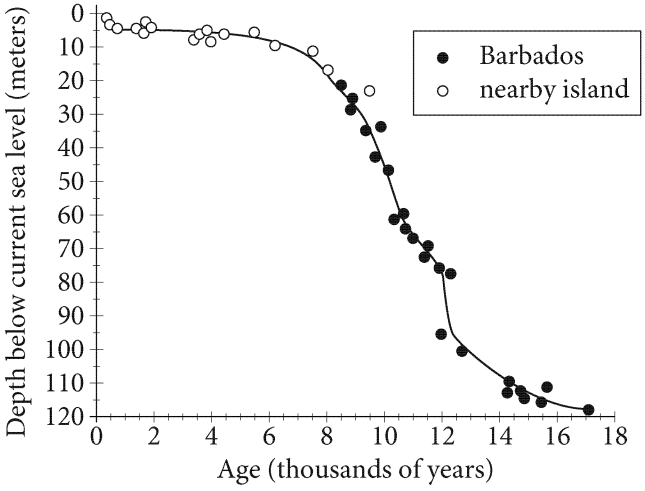
One hundred and twenty meters over the entire ocean adds up to a very large amount of water, about 3 percent of the present ocean volume. All of this water, evaporated from the sea, was transported to the continents as water vapor in the atmosphere, fell as snow, and accumulated as the glaciers of the Ice Age. Where the ice was thick, as in parts of Canada and Scandinavia, for example, an enormous weight was placed on a relatively small area of the continental crust. Slowly but steadily, the crust actually sank down into the yielding rocks of the underlying mantle in response to this burden. When the ice melted, these same areas began to rebound, and they have been slowly rising for the past ten thousand years or more.

Just how do we know that the accumulation of Ice Age glaciers lowered sea level by 120 meters? Well, it would be possible to calculate the amount of ocean surface lowering if you knew exactly how much ice was on the land, but that too is a difficult question to answer. You would need to estimate how thick the ice was, and what area of the land it covered. What seems a simple problem suddenly looks quite complicated, and to solve it required a great deal of ingenuity. Evidence began to accumulate when oceanographers, studying the nature of the seafloor close to the continents, found that many river channels continue underwater, uninterrupted, far beyond the present-day shoreline. A classic example is the Hudson River, which has a deep channel extending far across the continental shelf. However, it is well known that rivers can no longer erode a valley once they enter the sea—instead, they typically deposit sediments and build up a delta. It was immediately clear that the now-submerged channels had once been above sea level. But exactly when this erosion occurred was not known, and the precise amount of sea-level lowering was also difficult to determine with certainty.

Enter Richard Fairbanks, a geochemist at Columbia University, who developed a program to recover drill cores from the coral reef platform surrounding the island of Barbados. The species of coral that Fairbanks was interested in grows only right at the sea surface, and as Ice Age glaciers melted and sea level rose, the coral had grown upward to keep pace. A piece of coral recovered from 50 meters down the drill core must have been at sea level when it grew, so by dating such a sample, Fairbanks could determine quite accurately the time when sea level was 50 meters lower than at present. Repeated analyses of this sort throughout the cores allowed him to plot the change in sea level over time. Twenty-thousand-year-old corals, he found, grew near an ocean surface that was almost 120 meters below present-day sea level. Fairbanks also found that the rate of sea-level rise since the time of maximum glaciation has been quite variable. Bursts of rapid increase alternated with periods of slower change, reflecting fluctuations in the amount of melting of the ice sheet, probably the result of irregular warming of the climate over the past twenty thousand years.

CONTINUE

Depth and Age of Radiocarbon-Dated Coral in Drill Core Samples



Adapted from Richard G. Fairbanks, "A 17,000-Year Glacio-Eustatic Sea Level Record: Influence of Glacial Melting Rates on the Younger Dryas Event and Deep-Ocean Circulation." ©1989 by Nature Publishing Group.

42

As used in line 3, "predictable" most nearly means

A) commonplace.
B) reliable.
C) unsurprising.
D) well known.

43

The passage suggests that a map of the world as it was 20,000 years ago would differ from a map of the world as it is today in which way?

A) Mountain chains would be closer to shorelines.
B) Rivers would be longer but less numerous.
C) The ratio of land to sea would be greater.
D) Islands would appear farther apart.

44

Which choice provides the best evidence for the answer to the previous question?

A) Lines 1-4 ("One . . . bit")
B) Lines 10-11 ("Along . . . water")
C) Lines 11-13 ("A map . . . today")
D) Lines 14-16 ("One hundred . . . volume")

45

It can reasonably be inferred from the passage that in parts of Canada and Scandinavia there are

A) forces beneath the continental crust pushing the crust upward.
B) signs that the crust has sunk since the end of the last ice age.
C) greater accumulations of water vapor than in other areas at similar latitudes.
D) many mantle rocks present on the surface.

46

Which choice provides the best evidence for the answer to the previous question?

A) Lines 16-20 ("All . . . Age")
B) Lines 20-23 ("Where . . . crust")
C) Lines 23-25 ("Slowly . . . burden")
D) Lines 26-28 ("When . . . more")

47

The author discusses the possibility of calculating "the amount of ocean surface lowering" (lines 30-35) primarily to

A) describe the difficulties in adapting a common method of data analysis to new circumstances.
B) acknowledge a possible objection to an argument and conclude that the objection is baseless.
C) show how a seemingly complicated question was broken down into several simpler questions.
D) indicate a potential approach to a problem and explain why that approach is not feasible.

CONTINUE

48

As used in line 42, "classic" most nearly means

A) representative.
B) timeless.
C) unrivaled.
D) outdated.

49

How does the summary of the research conducted by Richard Fairbanks relate to the rest of the passage?

A) It describes an exception to a global pattern discussed earlier.
B) It outlines a way to reconcile contradictory theories cited earlier.
C) It challenges a consensus view presented earlier.
D) It provides details about a solution to a problem outlined earlier.

50

According to the graph, 10,000-year-old coral samples were found at approximately what depth below current sea level?

A) 60 meters
B) 80 meters
C) 100 meters
D) 120 meters

51

Which of the following choices presents a question that is relevant to the graph but is not answered by the passage?

A) Why are older samples deeper than more recent samples?
B) Why are the samples older than 7,500 years nearly all from Barbados?
C) Why does the rate of change in the depth of the samples vary over time?
D) Why is the deepest sample approximately 120 meters below current sea level?

52

Information in the passage suggests that if the graph could be modified to show coral dating back to 30,000 years ago, the graph would likely be different from the current graph in which way?

A) Moving rightward along the horizontal axis, the line of data points from Barbados would start to curve upward beginning at approximately 20,000 years.
B) Moving rightward along the horizontal axis, the line of data points from Barbados would shift up and down sharply between approximately 20,000 and 30,000 years.
C) Moving rightward along the horizontal axis, the line of data points from Barbados would remain at the same level as it was at approximately 18,000 years.
D) Moving rightward along the horizontal axis, the line of data points from Barbados would curve sharply downward beginning at approximately 25,000 years.

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

Writing and Language Test

35 MINUTES, 44 QUESTIONS

Turn to Section 2 of your answer sheet to answer the questions in this section.

DIRECTIONS

Each passage below is accompanied by a number of questions. For some questions, you will consider how the passage might be revised to improve the expression of ideas. For other questions, you will consider how the passage might be edited to correct errors in sentence structure, usage, or punctuation. A passage or a question may be accompanied by one or more graphics (such as a table or graph) that you will consider as you make revising and editing decisions.

Some questions will direct you to an underlined portion of a passage. Other questions will direct you to a location in a passage or ask you to think about the passage as a whole.

After reading each passage, choose the answer to each question that most effectively improves the quality of writing in the passage or that makes the passage conform to the conventions of standard written English. Many questions include a "NO CHANGE" option. Choose that option if you think the best choice is to leave the relevant portion of the passage as it is.

Questions 1-11 are based on the following passage.

Making Energy Flow

Researchers interested in renewable methods of generating electricity have 1 pondered the environmental impact of tidal energy systems. Gravitational forces of the Sun and Moon produce regular cycles of rising and falling tides in Earth's oceans.

1

Which choice most effectively introduces the information that follows in the paragraph?

A) NO CHANGE

B) been intrigued for many years by the prospect of harnessing the Sun's power.

C) looked to the powerful currents of the ocean as a potential source.

D) sought to identify which US states are the best candidates for developing tidal energy systems.

CONTINUE

The bidirectional currents created by the tides as well as ocean currents that typically flow in one direction hold 2 enormous potential for energy generation. A 2013 report from the US Department of Energy found that currents in US waters were capable of generating up to 2,116 terawatt-hours of energy each year, enough to 3 collect half of the country's demand. Developing the technology to harness this essentially untapped source of power would 4 be a costly—though worthwhile—endeavor.

2

Which choice is most consistent with the tone of the passage?

A) NO CHANGE
B) gargantuan
C) very big
D) stupendous

3

A) NO CHANGE
B) settle
C) meet
D) receive

4

Which choice best establishes the main idea of the passage?

A) NO CHANGE
B) require a collaborative effort among research scientists and engineers.
C) lead to a rise in the number of companies providing electricity harvested from tidal energy.
D) be a major step forward for sustainable energy production.

CONTINUE

Various systems have been designed to extract power from ocean currents, but they all perform the same general 5 function, of transforming energy from the flow of water into electricity. 6 Moreover, the experimental TidGen system, which was installed at the bottom of Cobscook Bay, Maine, in 2012, uses the powerful tides in the bay to rotate a large turbine. A generator attached to the turbine then converts this rotational mechanical energy into electricity that is sent to share via an underwater cable. Additionally, CETO, a submerged buoy system installed in the Indian Ocean near Perth, Australia, generates electricity by using the cyclic rise and fall of the ocean to drive hydraulic pumps. Still other systems incorporate devices such as propellers or corkscrew rotors to extract the kinetic energy from the water.

The primary advantage of tidal energy systems over systems that use fossil fuels 7 are that tidal energy systems do not generate air pollution, but advantages over other sources of renewable energy exist as well. Unlike solar and wind power, which 8 vary in their energy outputs depending on the season and weather, tidal power makes use of unrelenting ocean currents and can therefore be counted on to generate a steady supply

5

A) NO CHANGE
B) function:
C) function;
D) function

6

A) NO CHANGE
B) For example,
C) On the one hand,
D) Nevertheless,

7

A) NO CHANGE
B) have been
C) is
D) being

8

Which choice best sets up the contrast between solar and wind power on the one hand and tidal power on the other?

A) NO CHANGE
B) also help meet the growing demand for energy in the United States,
C) have become more popular in certain parts of the country,
D) grow more cost-effective each year,

CONTINUE

of electricity throughout the year. Also, recent research suggests that tidal energy is relatively safe for wildlife. An international collaborative research project focused **9** on the noise generated by tidal energy systems, their effect on water flow, and the occurrence of animal collisions with the systems; initial reports uncovered no evidence of harmful effects.

More research still needs to be done to **10** excess the effects of tidal energy systems on the environment, particularly as these systems become larger and more prevalent. But if they are developed carefully, tidal energy systems hold great promise as clean, **11** safe: and stable sources of electricity for the world.

9

A) NO CHANGE
B) at
C) with
D) about

10

A) NO CHANGE
B) axis
C) access
D) assess

11

A) NO CHANGE
B) safe, and stable
C) safe—and stable
D) safe, and stable;

CONTINUE

Questions 12-22 are based on the following passage.

A Natural Bridge

[1] Iranian architect Leila Araghian traces the inspiration for her award-winning pedestrian bridge, Pol-e-Tabiat (Nature Bridge), to a whimsical afternoon she shared with a fellow architecture student. [2] While meandering through Tehran, the capital of Iran, Araghian and her friend happened upon a discarded sofa on the sidewalk. [3] From their comfortable perch, 12 the sights and sounds of the flowing water were enjoyable beneath them. [4] They wished more bridges offered experiences like this—providing inviting and peaceful sanctuaries for pedestrians rather than 13 merely connect two points together as efficiently as possible. 14

12

A) NO CHANGE
B) they enjoyed the sights and sounds of the water flowing beneath them.
C) the water flowed beneath them, enjoying the sights and sounds.
D) beneath them was the enjoyment of the water's sights and sounds.

13

A) NO CHANGE
B) merely connecting
C) as a mere connection of
D) to merely connect

14

The writer wants to add the following sentence to the paragraph.

> They hauled the sofa to a nearby bridge over a small creek.

To make the paragraph most logical, the sentence should be placed

A) before sentence 1.
B) after sentence 1.
C) after sentence 2.
D) after sentence 4.

CONTINUE

In 2008, while still a student, Araghian submitted a bridge design for a competition that had challenged participants to devise creative ways to connect 15 two divided parks separated by a major highway in Tehran. 16 Never expecting she'd win the competition, Araghian designed a pedestrian bridge that would not only connect the two parks but also create an extension of them. As Araghian would later explain in an interview with the *Guardian* newspaper, 17 "I used to say it's just a piece of design on the paper, I couldn't believe it would actually be built one day." Araghian's design won the competition and within a few years went into construction.

15

A) NO CHANGE
B) a couple of divided
C) a pair of two
D) two

16

At this point, the writer wants to make a connection back to the previous paragraph. Which choice best accomplishes this goal?

A) NO CHANGE
B) In response to this call for proposals,
C) Inspired by that afternoon on the sofa,
D) Encouraged by one of her professors,

17

The writer wants to elaborate on the previous sentence's description of Araghian's design concept with a direct quotation from the architect herself. Which of the following quotations by Araghian best accomplishes this goal?

A) NO CHANGE
B) "It gives me more confidence for my future work but when I come to think of it, it's one of those things that you get to do only once in your lifetime."
C) "It's a good feeling to see people are enjoying it."
D) "I didn't want it to be just a bridge which people would use to get from one park to another. I wanted it to be a place for people to stay and ponder, not simply pass."

CONTINUE

When Pol-e-Tabiat opened to the public in October 2014, it boasted the longest span of any pedestrian bridge in 18 Tehran: 270 meters, or 886 feet. Its steel structure is supported by three pillars, which Araghian conscientiously positioned so as to preserve the trees in the parks below. The path of the 19 bridge doesn't cross over the highway in a straight line. It curves at several points to provide travelers with new views as 20 they make their journey across. The floorway is constructed of warm-toned wood slats and lined with greenery, natural materials that create strong textural and visual contrasts with the gleaming steel beams of the bridge's main structure. The bridge offers a variety of seating accommodations, such as benches and amphitheater-style steps, which encourage people to linger. The multilevel structure even has a covered café with a full seating area.

18

A) NO CHANGE
B) Tehran, 270 meters;
C) Tehran; 270 meters
D) Tehran, 270 meters:

19

Which choice most effectively combines the sentences at the underlined portion?

A) bridge crosses over the highway (but not in a straight line), so it
B) bridge, instead of crossing over the highway in a straight line,
C) bridge doesn't cross over the highway in a straight line, and it
D) bridge, though not crossing over the highway in a straight line,

20

A) NO CHANGE
B) you make your
C) you make you're
D) they make they're

CONTINUE

Pol-e-Tabiat received numerous accolades from the global architecture community and 21 were quickly embraced by the public. 22 Situated in a part of Tehran rich with cultural institutions such as museums and libraries, the bridge itself has become a treasured local monument and, just as Araghian had hoped, a popular place to visit and relax.

21

A) NO CHANGE
B) was
C) have been
D) is

22

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

> The bridge is built over the Modares Expressway, a highway that runs from the north of Tehran to Haft-e Tir Square in the city's central business district.

Should the writer make this addition here?

A) Yes, because it adds details that help explain why the bridge was of interest within the global architecture community.
B) Yes, because it supports the claim made in the previous sentence by pinpointing where in Tehran the bridge was built.
C) No, because it disrupts the conclusion of the passage by introducing irrelevant information about the highway.
D) No, because it introduces a poorly addressed counterclaim that undermines the passage's argument about pedestrian bridges.

CONTINUE

Questions 23-33 are based on the following passage.

The Mystery of the Lost Colony

What happened to the "Lost Colony" of Roanoke? 23 This tantalizing question from American history may be one step closer to being answered. It's thanks to the recent discovery.

The English explorer John White and more than one hundred settlers established an outpost on Roanoke Island, which is just off the coast of North Carolina, in 1587. Attempting to return to England for more supplies, White sailed right into the middle of a naval war between England and Spain. 24 As a result, White was unable to get back to Roanoke until 1590. When he did, he found that all of the settlers had vanished. Only one clue existed, carved on a post: the word "CROATOAN," which may have referred to a nearby island (Croatoan Island) or a local Native American group (the Croatan).

Over the years, 25 the reasons historians have given for the settlers' disappearance have become more and more far-fetched. Some historians hypothesize that they fell victim to disease or splintered into factions. Others think that the group moved to a safer or more advantageous 26 location, one that was less dangerous, perhaps even joining with a group such as the Croatan for protection. However, the near-total lack of evidence has frustrated historians' attempts to uncover the truth.

23

Which choice most effectively combines the underlined sentences?

A) It's thanks to a recent discovery, and this tantalizing question from American history may be one step closer to being answered.

B) However, the fact that this tantalizing question from American history may be one step closer to being answered is thanks to a recent discovery.

C) Thanks to a recent discovery, this tantalizing question from American history may be one step closer to being answered.

D) Although this tantalizing question from American history may be one step closer to being answered, it's thanks to a recent discovery.

24

A) NO CHANGE

B) Nevertheless,

C) At the same time,

D) In contrast,

25

Which choice best sets up the information that follows in the paragraph?

A) NO CHANGE

B) historians have searched for any documents regarding the missing settlers.

C) many historians have attributed the events surrounding the settlers to political factors.

D) there has been much speculation among historians about the fate of the missing settlers.

26

A) NO CHANGE

B) and less dangerous location,

C) place, one that was better located,

D) location,

CONTINUE

In 2012, though, an American historian 27 who glanced at John White's map of the area and asked a question that had likely never been asked before: 28 What's behind those patches? Mapmakers of White's era regularly used 29 patches, small bits of paper glued on top of the map—to edit mistakes in their work, so the two patches covering parts of White's sixteenth-century "Virginea Pars" map weren't unusual. What is 30 unusual in retrospect: is that no one had ever tried to see through the patches to White's original map.

27

A) NO CHANGE
B) has glanced
C) glancing
D) glanced

28

Which choice best sets up the information that follows in the paragraph?

A) NO CHANGE
B) Where did the Croatan people live?
C) What is the best place to look for evidence?
D) Is this map accurate?

29

A) NO CHANGE
B) patches—
C) patches;
D) patches:

30

A) NO CHANGE
B) unusual in retrospect,
C) unusual, in retrospect
D) unusual, in retrospect,

CONTINUE

Using advanced imaging technologies (including infrared light and X-ray spectroscopy), researchers found that the first patch was a simple correction of White's original topography. Under the second patch, on the other hand, they found an exciting clue to the settlers' whereabouts. At the fork of two rivers near the settlement was a red star outlined in blue, a symbol historians believe **31** indicate a secret fort—the obvious place that Roanoke's settlers, if facing a crisis, would have moved.

[1] Unfortunately, in history, new information tends to lead not to answers **32** but: to new questions. [2] If White knew about the fort, and the settlers went there, why is there no record of him ever finding them again? [3] And why did White, or someone else, cover up the symbol to hide the evidence? [4] Archaeologists are longing to excavate the site of the fort, but it is now home to a private golf course. [5] The mystery of the Lost Colony may remain unsolved for years to come. **33**

31

A) NO CHANGE
B) to indicate
C) indicated
D) indicating

32

A) NO CHANGE
B) but—
C) but,
D) but

33

To make this paragraph most logical, sentence 2 should be placed

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

CONTINUE

Questions 34-44 are based on the following passage and supplementary material.

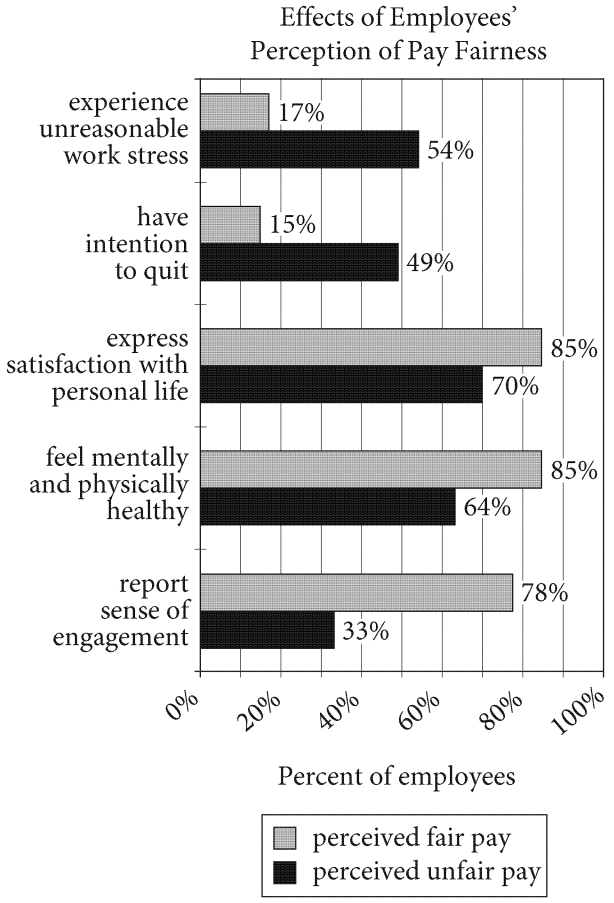
A Sense of Fair Pay

According to a 2013 survey of employees in various industries, companies benefit greatly when their employees believe they are fairly compensated. Among employees who perceived their pay to be fair, 78 percent reported feeling a sense of engagement (a measure of their belief in the 34 companies values and their commitment to the success of the organization). In contrast, only 33 percent of employees who did not believe pay practices were fair reported feeling engaged with their work.

34

A) NO CHANGE
B) company's values
C) companies' values'
D) company's values'

CONTINUE



Adapted from Rena Rasch and Mark Szypko, "Perception Is Reality: The Importance of Pay Fairness to Employees and Organizations." ©2013 by WorldatWork.

Engagement is important not only for employee satisfaction but also for employee retention, which affects a company's budget. The survey found that 35 fully 85 percent of employees who believed that their

35

Which choice provides accurate data from the graph?

A) NO CHANGE
B) exactly 33 percent
C) only 15 percent
D) roughly half

CONTINUE

employers compensated employees fairly indicated an intention to quit. On the other hand, 36 49 percent of employees who felt that their employers had unfair pay practices intended to leave their jobs. Given the costs associated with hiring and training new employees, it appears that companies could realize huge savings by addressing employee perceptions of pay practices. But 37 what can a business do to persuade its employees that their salaries are fair.

36

Which choice completes the sentence with relevant information from the graph?

A) NO CHANGE

B) 17 percent of employees who considered their employers to have fair pay practices found their levels of work stress to be unreasonable.

C) 85 percent of employees who regarded their employers' pay practices as fair reported satisfaction with their personal lives.

D) 64 percent of employees who thought that their employers had unfair pay practices felt mentally and physically healthy.

37

A) NO CHANGE

B) how does a business persuade its employees that their salaries are fair?

C) businesses consider how to persuade their employees that their salaries are fair?

D) businesses consider, how do they persuade their employees that their salaries are fair.

CONTINUE

Business leaders have 38 sized up different models for achieving a sense of fair pay in their organizations. Some have taken the bold step of instituting company-wide salary disclosure. In this model, all employee salary information is made public. Although salary disclosure increases 39 transparency, critics worry that it causes jealousy among workers and costs the company time and money. 40 Marketing research company SumAll instituted salary disclosure. When SumAll did so, CEO Dane Atkinson noted that managers started spending more time discussing salaries with employees: "You have many more hard conversations, for sure."

38

Which choice best maintains the tone established throughout the passage?

A) NO CHANGE
B) played around with
C) experimented with
D) tried their hands at

39

A) NO CHANGE
B) transparency, while
C) transparency, but
D) transparency; still,

40

Which choice most effectively combines the sentences at the underlined portion?

A) Marketing research company SumAll instituted salary disclosure, and, once this was accomplished,
B) SumAll, a marketing research company, instituted salary disclosure, so
C) When marketing research company SumAll instituted salary disclosure,
D) Marketing research company SumAll instituted salary disclosure; next,

CONTINUE

41 Whether or not companies decide such disclosure is beneficial, they may find merit in calculating salaries according to a formula that is shared with employees. Social media company Buffer, for example, determines salaries by taking into account job type, seniority, experience, and location. Each Buffer engineer makes a fixed base salary; a senior team leader merits an additional 7 percent, and intermediate experience multiplies the salary by 1.1. If the engineer lives in a major metropolitan area with a high cost of living, such 42 as New York City or London, the salary will be increased by a fixed 43 amount. Those engineers in less expensive locations receive smaller adjustments. 44 In making consideration for seniority, companies like Buffer hope to show their employees that they are committed to fair pay practices. Buffer CEO Joel Gascoigne sums up the benefits this way: "Transparency breeds trust, and trust is the foundation of great teamwork."

41

Which choice provides the best transition from the previous paragraph?

A) NO CHANGE
B) Since companies want to protect their reputations in the business community,
C) Although full salary disclosure works best for smaller companies,
D) In light of the fact that businesses provide other benefits besides salaries,

42

A) NO CHANGE
B) as, New York City or London,
C) as, New York City, or London,
D) as, New York City or London—

43

A) NO CHANGE
B) amount, those
C) amount; and, those
D) amount: those

44

Which choice provides the most effective transition from the preceding discussion in the paragraph?

A) NO CHANGE
B) By paying some employees less because of where they live,
C) By disclosing their salary formulas,
D) Through offering employees a reasonable salary,

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

Turn to Section 3 of your answer sheet to answer the questions in this section.

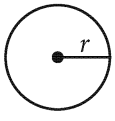
DIRECTIONS

For questions 1-15, solve each problem, choose the best answer from the choices provided, and fill in the corresponding bubble on your answer sheet. **For questions 16-20**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

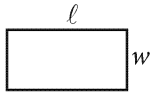
NOTES

1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

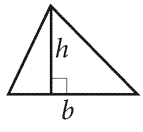
REFERENCE



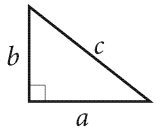
$A = \pi r^2$
$C = 2\pi r$



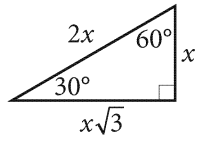
$A = \ell w$

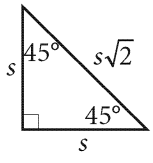


$A = \frac{1}{2}bh$

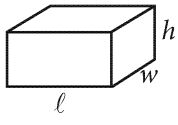


$c^2 = a^2 + b^2$

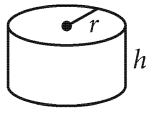




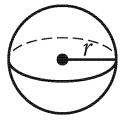
Special Right Triangles



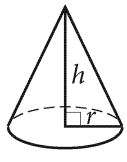
$V = \ell wh$



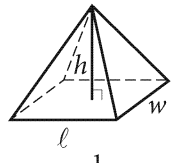
$V = \pi r^2 h$



$V = \frac{4}{3}\pi r^3$



$V = \frac{1}{3}\pi r^2 h$



$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

CONTINUE

1

Cary spent a total of $7.00 on apples and bananas. Apples cost $1.00 per pound, and bananas cost $0.80 per pound. If Cary bought 3 pounds of bananas, how much money did he spend on apples?

A) $2.40

B) $4.60

C) $5.00

D) $7.00

2

Carry-on bags for a certain airline must meet the following two restrictions. The weight w, in pounds, of the bag cannot be greater than 22. The sum s, in inches, of the length, width, and height of the bag cannot be greater than 45. Which of the following represents these restrictions on w and s ?

A) $w \leq 22$ and $s \leq 45$

B) $w \leq 22$ and $s \geq 45$

C) $w \leq 45$ and $s \leq 22$

D) $w \leq 45$ and $s \geq 22$

3

$$4x - 25 = -9$$

Which of the following values of x satisfies the equation above?

A) $-\frac{34}{4}$

B) 4

C) $\frac{34}{4}$

D) 16

4

The function f is defined as $f(x) = 2x^3 - 5x + 6$. What is the value of $f(1)$?

A) 3

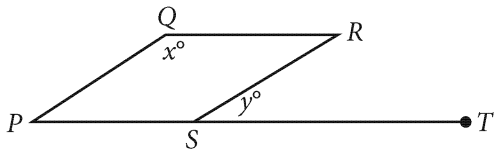
B) 6

C) 7

D) 13

CONTINUE

5



Note: Figure not drawn to scale.

In the figure above, $PQRS$ is a parallelogram and side $\overline{PS}$ is extended to point T. If $y = 27$, what is the value of x ?

A) 27
B) 63
C) 117
D) 153

6

If $y = x^2 + 1$ is graphed in the xy-plane, what are the coordinates of the y-intercept?

A) $(0, -1)$
B) $(-1, 0)$
C) $(0, 1)$
D) $(1, 0)$

7

What is the volume of a cube with a side length of 10?

A) 30
B) 100
C) 300
D) 1,000

8

$$r = pn$$

The equation above expresses the total amount of revenue, r, a company earns by selling n products that each have price p. Which of the following equations correctly expresses the number of products sold in terms of revenue and price?

A) $n = \frac{r}{p}$

B) $n = \frac{p}{r}$

C) $n = rp$

D) $n = r - p$

CONTINUE

9

If $4 - 8x = 2$, what is the value of $1 - 2x$?

A) $-\frac{1}{2}$

B) $-\frac{1}{4}$

C) $\frac{1}{4}$

D) $\frac{1}{2}$

10

$$a^2 - b^2 = 40$$
$$a + b = 8$$

If (a, b) is the solution to the system of equations above, what is the value of $a - b$?

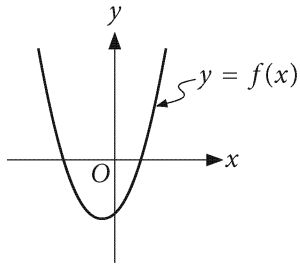
A) 5

B) 10

C) 24

D) 32

11



The graph of the quadratic function g is shown in the xy-plane above. Which of the following could define g ?

A) $g(x) = x^2$

B) $g(x) = (x - 2)(x - 1)$

C) $g(x) = (x + 2)(x - 1)$

D) $g(x) = (x + 2)(x + 1)$

CONTINUE

12

Which of the following is equivalent to $\frac{4}{x+2} - 2$?

A) $\frac{4}{x}$

B) $\frac{2}{x+2}$

C) $\frac{-2x}{x+2}$

D) $\frac{6-2x}{x+2}$

13

The measure of angle A is 38°. If $\cos(A) - \sin(B) = 0$, which of the following could be the measure of angle B ?

A) 38°

B) 52°

C) 83°

D) 142°

14

$$f(x) = 2(5^x)$$

The function f is defined as shown. In the xy-plane, in how many points does the graph of $y = f(x)$ intersect the x-axis?

A) None

B) One

C) Two

D) More than two

15

$$y = x + 3$$
$$y = ax - 3a$$

In the system of equations above, a is a constant. If the system has no solution, what is the value of a ?

A) −2

B) −1

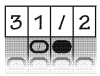
C) 0

D) 1

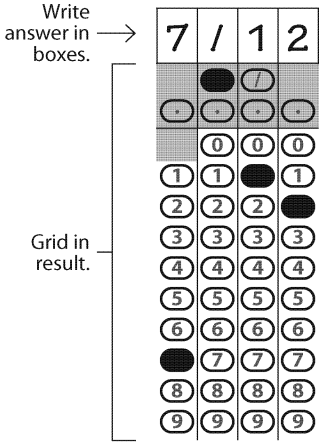
CONTINUE

DIRECTIONS

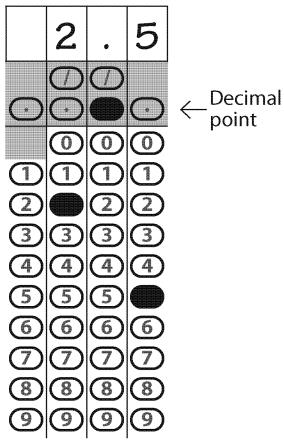
For questions 16-20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the bubbles accurately. You will receive credit only if the bubbles are filled in correctly.
2. Mark no more than one bubble in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

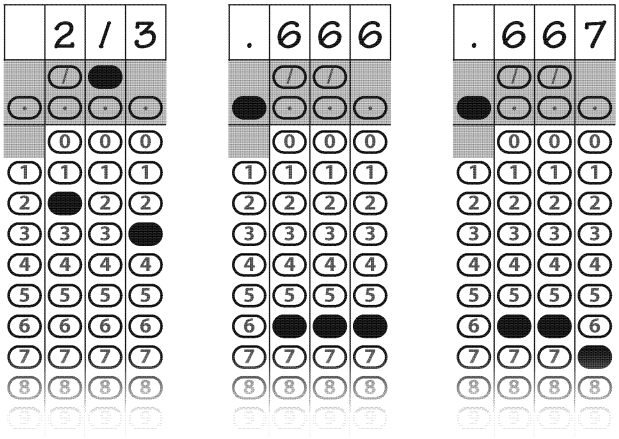
Answer: $\frac{7}{12}$ are:



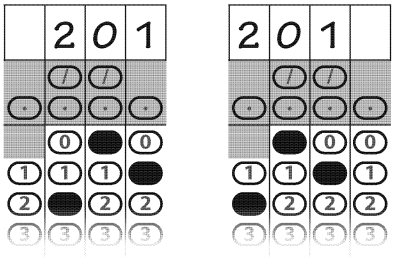
Answer: 2.5



Acceptable ways to grid $\frac{2}{3}$ are:



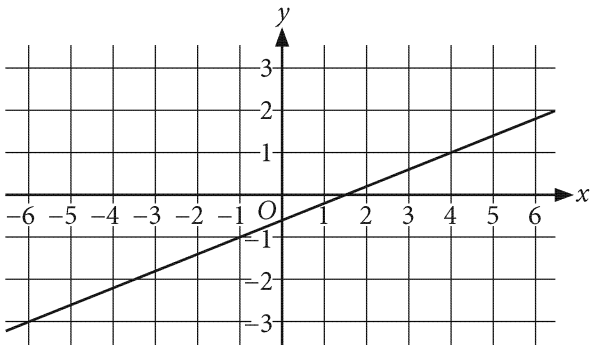
Answer: 201 – either position is correct



NOTE:
You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

CONTINUE

16



The equation of the graph in the xy-plane above is written in the form $y = mx + b$. What is the value of m ?

17

$$f(n) = 180(n - 2)$$

For a polygon with n sides, the function f defined above gives the sum of the measures, in degrees, of the interior angles of the polygon in terms of n. If a polygon has 11 sides, what is the sum of the measures of its interior angles, in degrees? (Disregard the degree symbol when gridding your answer.)

18

$$\frac{2}{3t^2 + 2} = \frac{1}{5}$$

If t is a solution to the equation above, what is the value of t^2 ?

CONTINUE

19

If $\sqrt{(x+y)^3} = 27$ and $x + y > 0$, what is the value of $(x+y)^{\frac{1}{2}}$?

20

$$f(x) = \frac{x}{2} - 6$$

The function f is defined above. If the function g is defined by $g(x) = f(x) + 2x$, what is the x-coordinate of the x-intercept of the graph of $y = g(x)$ in the xy-plane?

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

Math Test – Calculator

55 MINUTES, 38 QUESTIONS

Turn to Section 4 of your answer sheet to answer the questions in this section.

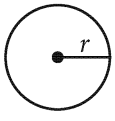
DIRECTIONS

For questions 1-30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding bubble on your answer sheet. **For questions 31-38**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

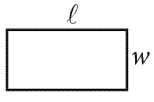
NOTES

1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

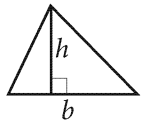
REFERENCE



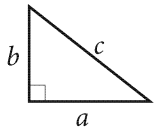
$A = \pi r^2$
$C = 2\pi r$



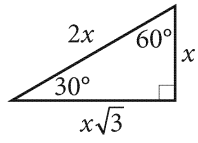
$A = \ell w$

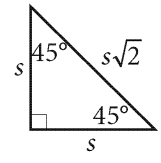


$A = \frac{1}{2}bh$

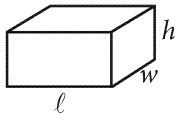


$c^2 = a^2 + b^2$

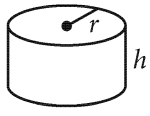




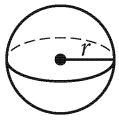
Special Right Triangles



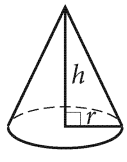
$V = \ell wh$



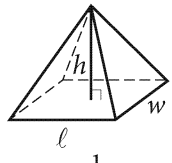
$V = \pi r^2 h$



$V = \frac{4}{3}\pi r^3$



$V = \frac{1}{3}\pi r^2 h$



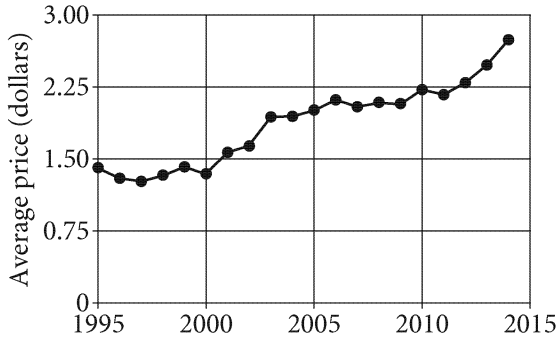
$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

CONTINUE

1

The line graph below shows the average price, in dollars, of one kilogram of navel oranges in the United States each year from 1995 through 2014.



What was the first year since 1995 that the average price of one kilogram of oranges was greater than $1.50 ?

A) 1996

B) 2001

C) 2006

D) 2011

2

Fabric is sold by length. If Sean spent $42 on fabric that cost $5.25 per yard, how many yards of fabric did Sean purchase?

A) 4

B) 8

C) 64

D) 220.5

3

Halley's comet is visible from Earth without a telescope approximately every 76 years. The comet was visible in the year 1066. Based on the approximation, what is the number of times Halley's comet would have been visible without a telescope after the year 1067 through the year 2000?

A) 10

B) 12

C) 14

D) 26

CONTINUE

Questions 4 and 5 refer to the following information.

Density and Melting Points of Selected Solid Metals

Metal	Density (g/cm^3)	Melting point (°C)
Aluminum	2.70	660
Calcium	8.65	321
Cobalt	8.90	1,495
Nickel	8.91	1,453
Titanium	4.51	1,670

The density of a solid piece of metal can be calculated by dividing its mass, in grams (g), by its volume, in cubic centimeters (cm^3). The table above shows the densities, in grams per cubic centimeter (g/cm^3), and melting points, in degrees Celsius (°C), of five metals.

4

The melting point, in °C, of osmium is 275 less than 5 times the melting point of aluminum. What is the melting point, in °C, of osmium?

A) 3,575

B) 3,425

C) 3,300

D) 3,025

5

Of the following, which best approximates the mass, in grams, of a 50 cm^3 sample of nickel?

A) 5.6

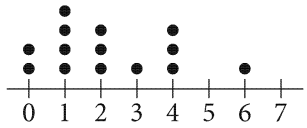
B) 225.5

C) 445.5

D) 72,650.0

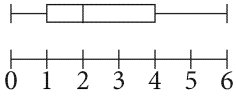
6

The dot plot below shows the number of days it rained in a certain week for 14 cities in the southeastern United States.

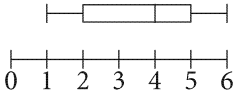


Which of the following box plots correctly represents these data?

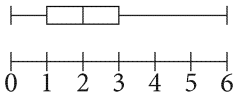
A)



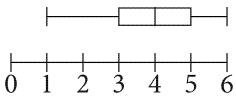
B)



C)



D)



CONTINUE

7

At a game center, Gabriella redeemed 24 tickets for 9 items. The 9 items consisted of r erasers and s stickers. Each eraser required 3 tickets for redemption, and each sticker required 2 tickets for redemption. Which of the following systems of equations can be used to determine the number of erasers and stickers Gabriella received?

A) $3r + 2s = 24$
$r + s = 9$

B) $3r + 2s = 9$
$r + s = 24$

C) $2r + 3s = 24$
$r + s = 9$

D) $2r + 3s = 9$
$r + s = 24$

8

A journalism teacher can spend up to $25 on copies of 2 different newspapers for her class. The inequality $1.75x + 1.25y \leq 25$ represents this situation, where x is the number of copies of Newspaper X she will buy and y is the number of copies of Newspaper Y she will buy. Which of the following is the best interpretation of the number 1.25 in this context?

A) The price, in dollars, of one copy of Newspaper X

B) The price, in dollars, of one copy of Newspaper Y

C) The total number of copies of Newspaper X she will buy

D) The total number of copies of Newspaper Y she will buy

9

$$c(t) = 1{,}820(1.07)^t$$

A centenarian is a person who is 100 years old or older. The function c above models the number of centenarians in the United States t years after 1950. Which of the following best describes what the number 1,820 estimates in this context?

A) The number of centenarians in the United States in 1950

B) The year in which there was only one centenarian in the United States

C) The number of US citizens who were at least 107 years old in 1950

D) The number of years it takes for the number of centenarians in the United States to double

10

A breakfast cereal manufacturer is considering using one of two advertisements to launch a new cereal. To investigate which advertisement is preferred by shoppers, the manufacturer surveyed a random sample of 250 shoppers at a local supermarket. A coin flip was used to determine which advertisement the shopper would view first. Which of the following is the best reason that the survey results cannot be generalized to all supermarket shoppers?

A) The sample contained only 250 shoppers.

B) The same advertisement was not shown first each time.

C) The sample consisted of only shoppers from one supermarket.

D) The survey consisted of only two advertisements.

CONTINUE

Questions 11-13 refer to the following information.

Month	Rainfall (inches)	Mean temperature (°F)
January	3.7	30
February	3.2	32
March	4.2	40
April	4.5	50
May	4.2	61
June	4.4	70
July	4.6	76
August	4.5	74
September	4.3	66

The table above shows, for each of nine months, the amount of rainfall, measured to the nearest tenth of an inch, and the mean daily high temperature, in degrees Fahrenheit, in a city through the first nine months of 2010.

11

For the months shown, in which month did the median amount of rainfall occur in the city?

A) March
B) May
C) June
D) September

12

If one month from the table is selected at random, what is the probability that the mean daily high temperature in the city that month was less than 60°F and the amount of rainfall was greater than 4.1 inches?

A) $\frac{2}{9}$
B) $\frac{1}{3}$
C) $\frac{4}{9}$
D) $\frac{2}{3}$

13

For January through September in 2011, the rainfall amount was 25% greater than the amount for the same months of 2010. What was the total rainfall amount, in inches, from January through September of 2011?

A) 28.2
B) 42.0
C) 43.5
D) 47.0

CONTINUE

14

$$P = 400{,}000 + 10{,}000t$$

In the year 1910, a town had a population of 400,000. The population P of the town t years after the year 1910 can be modeled by the equation above. Based on the model, how many years after 1910 did it take for the population to triple?

A) 50

B) 60

C) 70

D) 80

15

Percentage of anorthite in samples of plagioclase feldspars from various locations
28
25
24
22
22
21
19
15

Plagioclase feldspar are solid mixtures of several closely related minerals, including anorthite. The list above gives the percentage of anorthite in a collection of 8 samples of plagioclase feldspar taken from various locations. Another sample is added to the collection. If the new sample is 52% anorthite, how does that affect the mean and median of the percentage of anorthite for the collection?

A) The mean and median both remain unchanged.

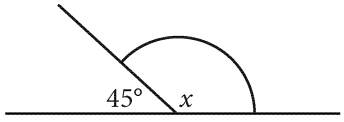
B) The mean remains unchanged, and the median increases.

C) The mean increases, and the median remains unchanged.

D) The mean and median both increase.

CONTINUE

16



In the figure above, what is the value of x, in radians?

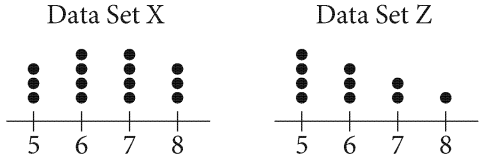
A) $\frac{\pi}{4}$

B) $\frac{3\pi}{4}$

C) $\frac{5\pi}{4}$

D) $\frac{3\pi}{2}$

17



The dot plots above show the distribution of the values of two data sets. Which of the following is(are) true?

I. The median of the values in data set X is greater than the median of the values in data set Z.

II. The mean of the values in data set X equals the mean of the values in data set Z.

A) Neither I nor II

B) I only

C) II only

D) Both I and II

CONTINUE

18

$$f(x) = 2x - 3$$
$$g(x) = 2x - 1$$

The functions f and g are defined above. In the xy-plane, translating the graph of f by 2 units in which of the following directions results in the graph of g ?

A) Upward

B) Downward

C) To the left

D) To the right

19

The value, in dollars, of an office machine t years after it has been purchased is modeled by the equation $V(t) = 24{,}000(0.88)^t$. By what percent does the value of the machine decrease each year?

A) 12%

B) 76%

C) 88%

D) 112%

CONTINUE

20

The function f is defined by $f(x) = 4x - 5$. If $f(a) + 1 = 3a$, what is the value of a ?

A) -1

B) 1

C) 4

D) 7

21

In the xy-plane, the graph of the quadratic function $y = f(x)$ contains the points $(r, 0)$ and $(s, 0)$, where r and s are positive constants. Which of the following could define the function f ?

A) $f(x) = (x + r)(x + s)$

B) $f(x) = (x - r)(x - s)$

C) $f(x) = (x - r)^2 + s$

D) $f(x) = x^2 + rx + s$

22

x	-2	-1	0	1	2
y	-24	-18	-12	-6	0

The table above shows selected values of x and their corresponding values of y that satisfy the equation $ax + by = 12$, where a and b are constants. What is the value of $a + b$?

A) -3

B) -1

C) 5

D) 6

23

If $|-2x + 6| = 4$, which of the following expressions equals 2 ?

I. $|x - 3|$

II. $|-x + 3|$

A) Neither

B) I only

C) II only

D) I and II

CONTINUE

24

A journal article reported the results of a study in which the mean time spent exercising per month was estimated as 10.7 hours, with an associated margin of error of 0.4 hours. A second study of the same population was conducted and included a larger random sample than the random sample from the first study. Based on the change in the sample size, which of the following is the most likely impact on the results?

A) The mean decreases.

B) The mean increases.

C) The margin of error decreases.

D) The margin of error increases.

25

$$y = x^2 - 4x + 2$$
$$y = 3x - 10$$

Based on the system of equations above, which of the following is a possible value of xy ?

A) -12

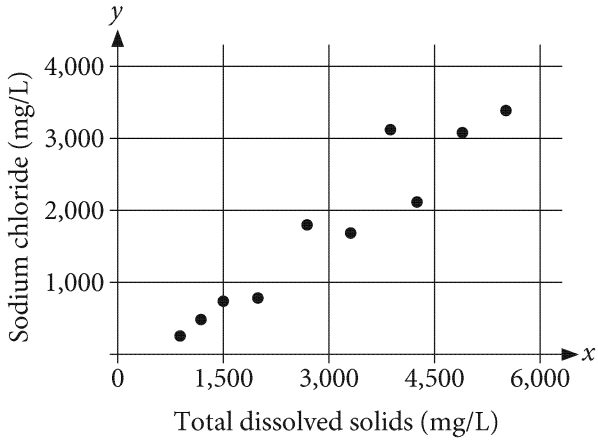
B) 3

C) 7

D) 8

26

The scatterplot below shows the concentration x of total dissolved solids, in milligrams per liter (mg/L), and the concentration y of sodium chloride, in mg/L, in groundwater taken from ten different locations.



Of the following equations, which best models the relationship between the concentration of total dissolved solids, in mg/L, and the concentration of sodium chloride, in mg/L?

A) $y = 374(0.7)^x$

B) $y = 374(0.7)^{-x}$

C) $y = 374 - 0.7x$

D) $y = -374 + 0.7x$

CONTINUE

27

Line k in the xy-plane passes through the points $(2, 5)$, $(-4, 8)$, and $\left(a, \frac{5}{2}\right)$, where a is a constant.

What is the value of a ?

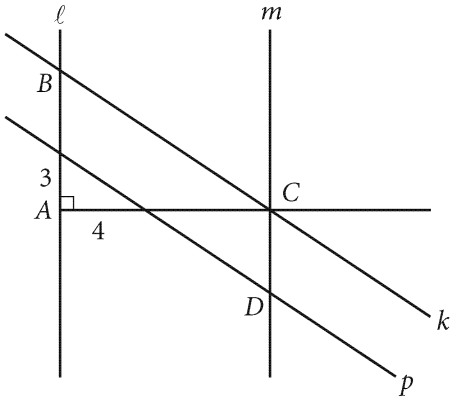
A) 5

B) 6

C) 7

D) 8

28



In the figure above, line ℓ is parallel to line m, and line k is parallel to line p. If $CD = 4.5$, what is the perimeter of triangle ABC ?

A) 12

B) 28

C) 30

D) 33

29

$$x(2x - 3)^2(x + 1) - x(2x - 3)(x + 1)(x - 1)$$

The expression above can be rewritten in the form $x(2x - 3)(x + 1)(x + a)$, where a is a constant. What is the value of a ?

A) -4

B) -2

C) 0

D) 2

30

$$P(x) = -5x^2 + 1{,}250x - 50{,}000$$

A management company uses the model above to estimate the monthly profit $P(x)$, in dollars, from renting x units of the 150 units in an apartment complex. If the company's monthly profit is maximized when n units are rented, which of the following methods can be used to find the value of n ?

A) Rewrite as $P(x) = -5(x - 125)^2 + 28{,}125$. The constant 125 represents n.

B) Rewrite as $P(x) = -5(x - 125)^2 + 28{,}125$. The constant 28,125 represents n.

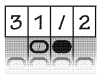
C) Rewrite as $P(x) = -5(x - 50)(x - 200)$. The constant 50 represents n.

D) Rewrite as $P(x) = -5(x - 50)(x - 200)$. The constant 200 represents n.

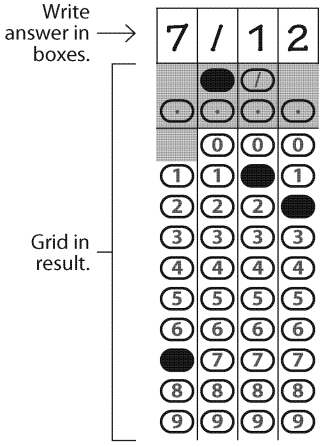
CONTINUE

DIRECTIONS

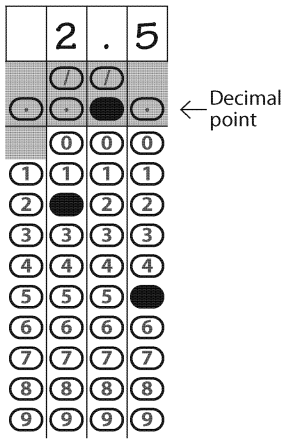
For questions 31-38, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the bubbles accurately. You will receive credit only if the bubbles are filled in correctly.
2. Mark no more than one bubble in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

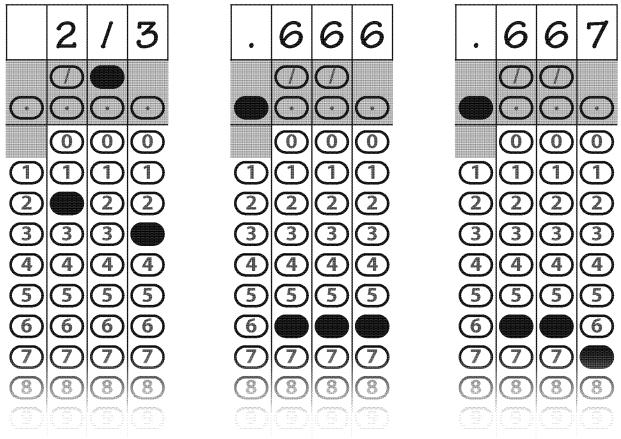
Answer: $\frac{7}{12}$ are:



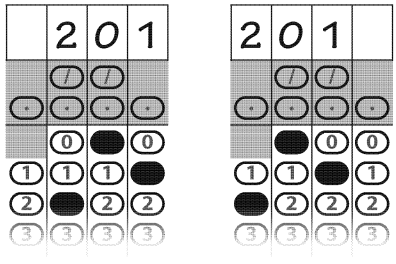
Answer: 2.5



Acceptable ways to grid $\frac{2}{3}$ are:



Answer: 201 – either position is correct



NOTE:
You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

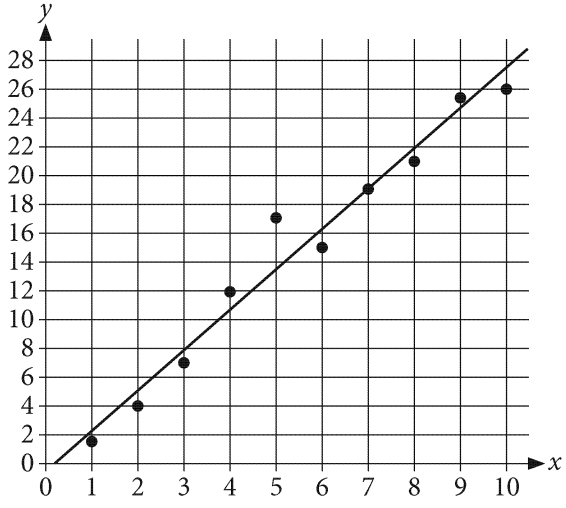
CONTINUE

31

State	Occupation				
	Farmer	Judge	Lawyer	Merchant	Other
CT	0	2	1	1	0
MA	0	1	1	2	1
MD	0	2	1	1	0
NJ	1	1	1	0	2
PA	0	3	1	2	3
VA	5	0	2	0	0

The table above classifies the signers of the United States Declaration of Independence from six states by state and occupation. What fraction of the signers from Pennsylvania (PA) are classified as judges?

32



In the scatterplot above, a line of best fit for the data is shown. What is the x-coordinate of the data point with the least difference between its predicted and actual value?

33

What is the value of the complex number $i^6 + 5$?

(Note: $i = \sqrt{-1}$)

34

x	1	2	3
$f(x)$	8	6	4

For the linear function f, the table above shows selected values of x and their corresponding values of $f(x)$. In the xy-plane, the graph of $y = f(x)$ contains the point $(k, 0)$. What is the value of k ?

35

$$10x + 4y = 16$$
$$5x + 8y = 20$$

If (x, y) is the solution to the system of equations above, what is the value of $15x + 12y$?

36

The expression cx, where c is a constant, represents the result of increasing the quantity x by 20%. What is the value of c ?

CONTINUE

Questions 37 and 38 refer to the following information.

In a survey, 1445 people were asked about a nation's economic status compared to the previous year. The results are summarized in the table below.

Response	Frequency
Improved	381
Stayed the same	636
Worsened	428

37

If p% of people responded "improved," what is the value of p, to the nearest tenth? (Disregard the % sign when gridding your answer. For example, if your answer is 42.1%, grid 42.1)

38

A second sample of 50 people were asked the same question about the same nation's economy as the participants in the original survey. If the proportion of people in the second sample who responded "stayed the same" was as close as possible to the proportion of people in the original survey who responded "stayed the same," what is the best estimate of the number of people who responded "stayed the same" among the 50 people in the second sample?

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

December 1, 2018 US

ANSWER KEY

Reading Test Answers

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

READING TEST RAW SCORE (NUMBER OF CORRECT ANSWERS)

Writing and Language Test Answers

1 C	12 B	23 C	34 B
2 A	13 B	24 A	35 C
3 C	14 C	25 D	36 A
4 D	15 D	26 D	37 B
5 D	16 C	27 D	38 C
6 B	17 D	28 A	39 A
7 C	18 A	29 B	40 C
8 A	19 B	30 D	41 A
9 A	20 A	31 C	42 A
10 D	21 B	32 D	43 A
11 B	22 C	33 A	44 C

WRITING AND LANGUAGE TEST RAW SCORE (NUMBER OF CORRECT ANSWERS)

Math Test – No Calculator Answers

1 B	11 C
2 A	12 C
3 B	13 B
4 A	14 A
5 D	15 D
6 C	16 2/5, .4
7 D	17 1620
8 A	18 8/3, 2.66, 2.67
9 D	19 3
10 A	20 12/5, 2.4

MATH TEST – NO CALCULATOR RAW SCORE (NUMBER OF CORRECT ANSWERS)

Math Test – Calculator Answers

1 B	11 D	21 B	31 1/3, .333, .334
2 B	12 A	22 C	32 7
3 B	13 D	23 D	33 4
4 D	14 D	24 C	34 5
5 C	15 C	25 D	35 36
6 A	16 B	26 D	36 1.2
7 A	17 B	27 C	37 26.4
8 B	18 A	28 C	38 22
9 A	19 A	29 B	
10 C	20 C	30 A	

MATH TEST – CALCULATOR RAW SCORE (NUMBER OF CORRECT ANSWERS)