

10/14/2020

PSAT™

Practice Test #16

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Reading Test

60 MINUTES, 47 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 1-9 are based on the following passage.

This passage is adapted from Maxine Clair, *October Suite*.
©2001 by Maxine Clair.

When she began occasionally calling herself October, she was only ten years old. Others said it was ridiculous, said she was nobody trying to be somebody. But she made convincing noises about
5 given names, how you could give one to yourself, how it could be more like you than your real name. She never dared say she hated the name that her father had saddled on her, never said the new name had anything to do with the memory of her mother,
10 who had lost her life. Instead she had mentioned all the strange names of people they knew, like Daybreak Honor, and a classmate's aunt, Fourteen. The pastor of their church had named his daughter Dainty. Usually that fact had made people stop and
15 consider.

Then when she was girl-turned-grown-seventeen, struck by her own strangeness and by the whole idea of seasons, she had put it on like a coat and fastened it around her. October was her name.

20 Midmorning, on a flaming day in that season—a Saturday—October sat in the upstairs kitchenette at Pemberton House, sewing on her black iron Singer. It was 1950. She was twenty-three, and thanking her lucky stars for a room in the best house for Negro
25 women teachers in Wyandotte County. Situated in

the middle of the block on Ocoola Avenue, the two-story white clapboard set the standard for decent, with its deep front yard and arborlike pear trees, its clipped hedges and the painted wicker
30 chairs on the porch.

From her window she could look down on the backyard and see Mrs. Pemberton's precious marigolds bunched along the back fence, and in front of them, a few wilting tomato plants and short rows
35 of collards that waited to be tenderized by the first frost in Mr. Pemberton's garden.

A few months before, on the very same June day that Cora had pushed her to take advantage of the vacancy coming up at Pemberton House, October
40 Brown had knocked on the door, hoping. Word was that you had to know somebody. For her cadet-teacher year at Stowe School, she had lived with the Reverend Jackson and his wife. Not so bad, but farther away and further down the scale of nice. Mr.
45 Pemberton, in undershirt and suspenders, had opened the door, but his wife, Lydia Pemberton—gold hoops sparkling, crown of silvery braids—had invited her in.

"We don't take nothin but schoolteachers," Mrs. Pemberton had said. When October explained that
50 indeed, she was a teacher, Mrs. Pemberton had looked her up and down.

"Whereabouts?"

And October had told her about her cadet year at Stowe, her room at the Jacksons' place, mentioned Chillicothe, Ohio, where she had grown up, and—because Mrs. Pemberton had seemed unmoved and uninterested so far—spoken of her two aunts who had raised her and her sister Vergie with good home training.

“Y’all are getting younger every year. You know any of the other girls here?” Mrs. Pemberton had asked.

October explained that Cora Joycelyn Jones had been her lead teacher at Stowe, that they had become good friends. The mention of an established connection to a recognized good citizen had finally satisfied Mrs. Pemberton.

“Follow me,” she said, and led October on a two-story tour of hardwood floors and high ceilings, French Provincial sitting room (smoke blue), damask drapes and lace sheers, mahogany dining table that could comfortably seat twelve, at least, two buffets, china closets, curio cabinets full of whatnots. Upstairs, all the women’s rooms—Mrs. Pemberton did tap lightly before she charged in—had highly polished mahogany or oak beds, tables, desks, quilts or chenille bedspreads, no-nails-allowed papered walls. Photographs, though, on desks, and floor lamps and wing chairs, stuffed chairs, venetian blinds and valances. Then she showed her the kitchenette, a larger bedroom with a two-burner and a tiny icebox and “you see the sun goes down right outside that window right there.”

And as they went back down the stairs, Mrs. Pemberton told her in no uncertain terms that nobody under their roof smoked or drank, and that no men were allowed upstairs, but that the women could “have company” in the sitting room downstairs. Yes, October understood.

Yes, she was lucky to have her kitchenette.

1

In the passage, people react to October’s decision to rename herself by

- A) praising her originality.
- B) admitting that they are jealous of her new name.
- C) criticizing her as arrogant.
- D) urging her to choose another name instead.

2

At line 20, the focus of the passage shifts from

- A) an analysis of a key decision made by a character to a summary of its consequences.
- B) a description of how a character perceives herself to a description of how others perceive her.
- C) an affectionate portrait of a character to an objective survey of her interactions with others.
- D) a brief account of a character’s youth to a more detailed discussion of her adult life.

3

Which choice provides the best evidence that October had originally been uncertain about whether she could secure a room in Pemberton House?

- A) Lines 25-30 (“Situated . . . porch”)
- B) Lines 37-41 (“A few . . . somebody”)
- C) Lines 41-44 (“For her . . . nice”)
- D) Lines 49-52 (“We don’t . . . down”)

4

As used in line 57, “unmoved” most nearly means

- A) unimpressed.
- B) immobile.
- C) heartless.
- D) unspoken.

5

In the eleventh paragraph (lines 69-84), the description of the rooms in Pemberton House serves mainly to

- A) confirm that October and Mrs. Pemberton have similar tastes.
- B) establish that the house is well kept and carefully furnished.
- C) contrast the bedrooms with the rest of the house.
- D) justify October's sense of alienation amid her new surroundings.

6

The details of how Mrs. Pemberton enters the rooms upstairs serve mainly to

- A) portray her as somewhat unconcerned with her tenants' privacy.
- B) illustrate how her actions conflict with her professed ideals.
- C) demonstrate that she feels personal affection for her tenants.
- D) stress her impatience with formalities and social customs in general.

7

Based on the passage, which choice best identifies a nonnegotiable condition for residing at Pemberton House?

- A) Belonging to a family in good standing in the community
- B) Being recommended to Mrs. Pemberton by other residents of the house
- C) Abiding by certain notions of personal respectability
- D) Taking care to preserve the historical features of the house

8

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

- A) Lines 54-60 ("And October . . . training")
- B) Lines 64-68 ("October . . . Mrs. Pemberton")
- C) Lines 69-74 ("Follow . . . whatnots")
- D) Lines 85-90 ("And as . . . downstairs")

9

In context, the repetition of the word "yes" in lines 90-91 serves mainly to

- A) reiterate October's long-term plans to live at Pemberton House.
- B) illustrate a shift in October's attitude toward Mrs. Pemberton.
- C) underscore October's satisfaction with the realities of life at Pemberton House.
- D) emphasize Mrs. Pemberton's intolerance of viewpoints differing from her own.

Questions 10-18 are based on the following passage and supplementary material.

This passage and accompanying figure are adapted from Bharat Anand, *The Content Trap: A Strategist's Guide to Digital Change*. ©2016 by Bharat Anand. The author discusses changes in the music industry that began in the 1990s.

To understand the relation between music CDs and concerts, it's useful to first return to one of the central ideas in business strategy: the idea of complements. It's a simple idea, first coined a long time ago, and popularized recently by the economists Adam Brandenburger and Barry Nalebuff. It goes like this: Two products are complements if a user's value from consuming both is greater than the sum of her values from consuming each alone.

In other words, sell two complements together and a consumer will pay more for each than if they were sold individually.

Take hot dogs and ketchup. Each without the other isn't particularly enjoyable. Have them together and you're in grilled nirvana.

One way to think about complements is that the *value* of one product depends on the availability of another—as with hot dogs and ketchup. But complementary relationships can be stated in terms of *price* effects, too: Specifically, the demand for a product goes up when the price of its complement goes down.

What does this all mean for the music business? To start, note that CDs and concerts are complements. The cheaper one of them becomes (and therefore the more it's consumed), the greater the demand for the other. For many years concerts were the cheap complement that boosted CD sales. But as the price of recorded music fell, more fans could afford it—and were then drawn to live concerts.

Before the rise of the Internet, concerts were effectively “advertising” CD sales. After the explosion in file sharing,¹ the relationship effectively reversed: Free recorded music became the advertisement—and as a result, the ideal complement—for live concerts.

Concert promoters are quite forthright about this reversal. A senior vice president of AEG Live, one of the world's largest presenters of live music events, said, “As the recording business has gotten hit by

piracy, the fact that a lot of bands are getting played all over the Internet on sites like Myspace and YouTube that are exposing music—we're the beneficiaries, in all honesty.”

Concerts aren't the only complement to recorded music. There are many others. To see where they reside, return to ask the basic question regarding complements. As the price of music declines, which are the music-related products, services, or accessories that might benefit from this price decline? Music complements, it turns out, are many and varied. To start, there were CD burners,² blank CDs, and CD players; MP3 players became a leading complement in subsequent years. And then there's broadband access: As demand for file sharing increased (and with it, the loss in content sales for recording studios) so did demand for high-speed Internet (and with it, a dramatic increase in revenues for Internet service providers and cable operators).

Ask a music industry executive about the industry's challenges and you're likely to hear that “young people don't pay for products anymore.” It's a common refrain, often used to bemoan why the economics of so many digital businesses have turned south. But it's wrong.

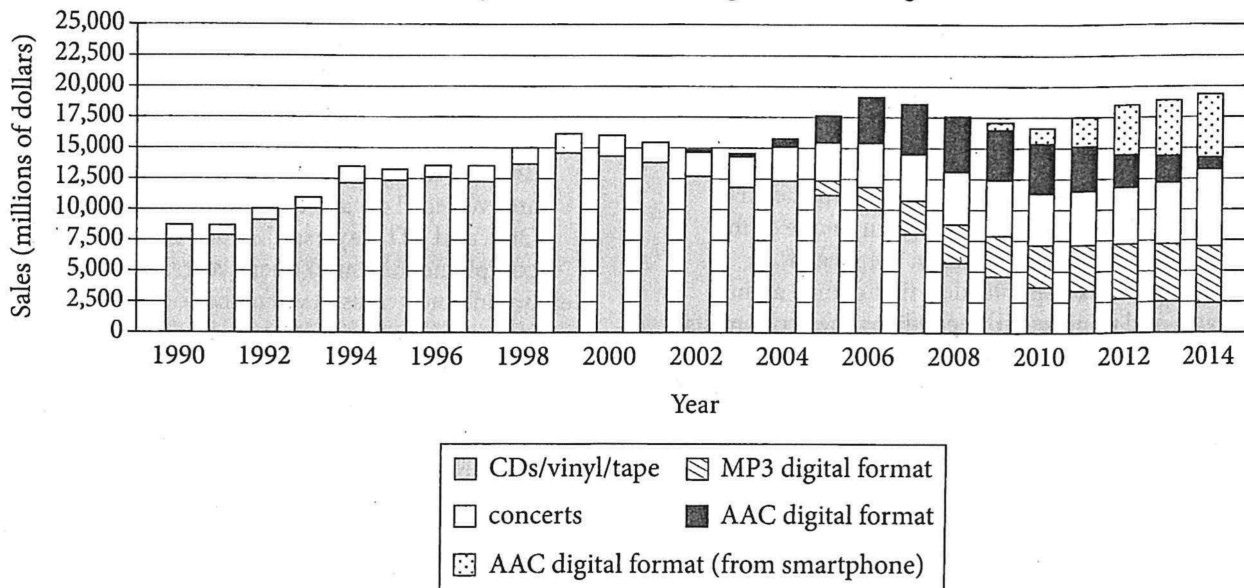
As a recording studio executive, if you define your business in terms of how many CDs you sell, you'll be right to berate the young. Define your business as music and *all its complements*—MP3 players, concerts, merchandising, broadband, and so on—and you'll realize that young people are spending more than ever.

The music industry is far from dead. Quite the contrary. Billions of dollars of value were created within the music industry during the recent decade. It's just that value has been redistributed—from recording studios to artists, from music retailers to technology manufacturers, from CDs to live concerts. The value shifted from recorded music to its complements.

¹ Transmitting files from one computer to another over the Internet

² A device used to record data to a CD

Music Industry Sales from Recordings, Concerts, Digital, and MP3s



10

Over the course of the passage, the main focus shifts from

- A) an exploration of how a business approach was developed to an examination of how the approach has been modified.
- B) a definition of a business strategy to a consideration of why that strategy has been slowly declining in a particular business.
- C) an explanation of a business concept to a discussion of how the concept has operated in a specific context.
- D) a presentation of the history of a business idea to an analysis of why the idea continues to be relevant today.

11

As used in line 30, “drawn to” most nearly means

- A) invited to.
- B) marked by.
- C) attracted to.
- D) deduced from.

12

It can most reasonably be inferred from the passage that one implication of the idea of complements is that

- A) consumers will spend more on complementary products only if they initially valued one of those products individually.
- B) the creation of new kinds of complementary products may increase consumer interest in already existing products.
- C) a wider availability of complementary products can sometimes overwhelm consumers with too much choice.
- D) sales in an industry that uses a variety of complements in its business strategy will surpass sales in an industry that does not use complements.

13

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

- A) Lines 16-22 (“One . . . down”)
- B) Lines 23-25 (“What . . . complements”)
- C) Lines 25-27 (“The cheaper . . . other”)
- D) Lines 32-36 (“Before . . . concerts”)

14

As used in line 58, “dramatic” most nearly means

- A) impressive.
- B) theatrical.
- C) vivid.
- D) emotional.

15

It can most reasonably be inferred from the passage that the health of the music business has generally been viewed as dependent on the

- A) popularity of the performing arts as a whole.
- B) consumer behavior of young listeners.
- C) number of websites devoted to digital music.
- D) degree of variety among musical complements.

16

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

- A) Lines 48-51 (“As the . . . decline”)
- B) Lines 51-54 (“Music . . . years”)
- C) Lines 54-59 (“And then . . . operators”)
- D) Lines 60-65 (“Ask . . . south”)

17

The figure suggests that the overall increase in sales in the music industry from 1990 to 2014 can be explained because sales from

- A) CDs/vinyl/tape increased more than sales from concerts decreased.
- B) AAC digital format increased more than sales from AAC digital format (from smartphone) decreased.
- C) AAC digital format increased more than sales from all other complements combined decreased.
- D) all complements combined increased more than sales from CDs/vinyl/tape decreased.

18

The figure supports which conclusion regarding the music industry in the years 2006 and 2014?

- A) Although the sales from individual complements were different in 2006 and in 2014, the total sales in the music industry as a whole was approximately the same in both years.
- B) Although the total sales from concert tickets in 2006 was about the same as the total sales from AAC digital format in 2014, the total sales from CDs/vinyl/tape was greater in 2006 than it was in 2014.
- C) Although the total sales in the music industry was greater in 2014 than it was in 2006, the number of complements contributing to those sales was greater in 2006 than it was in 2014.
- D) Although the total sales from all complements in the music industry was greater in 2014 than it was in 2006, the proportion of individual complements sold during those years remained constant.

Questions 19-28 are based on the following passage.

This passage is adapted from Sid Perkins, “Scientists Solve Mystery of ‘Chinese Pompeii.’” ©2014 by American Association for the Advancement of Science.

Scientists have long marveled at the immaculately preserved fossils unearthed from ancient lake sediments in northeastern China. The former
 Line creatures—including fish, birds, small dinosaurs, and
 5 mammals—still sport the outlines of muscles, skin, and feathers thanks to the fine-grained volcanic ash that blanketed the carcasses and then hardened into rock. Now, new analyses of the remains show that
 10 them, overwhelming them in a hot cloud of ash akin to the one that destroyed the Roman city of Pompeii nearly 2000 years ago.

The so-called Jehol fossils, named after a mythical land of Chinese folklore, date to between 120 million
 15 and 130 million years ago and are noteworthy in a number of ways. Besides their remarkable preservation, which even saved traces of delicate structures like air bladders in fish, researchers have often found an unexpected juxtaposition of creatures
 20 in the same layer of ancient lake sediment. Small dinosaurs such as *Psittacosaurus* and birds such as *Confuciusornis* lie next to fish, for example. Scientists have long speculated that this odd mix was a sign of mass catastrophe, says Baoyu Jiang, a
 25 sedimentologist at Nanjing University in China, but they weren’t sure how it could have occurred. Also a mystery, he notes, is how the relatively undamaged carcasses of land animals—especially those of birds, whose remains typically float and are fragile due to
 30 their light bones—ended up intact at the bottom of a lake.

Now, Jiang and his colleagues have taken a closer look at the Jehol fossils—literally. Researchers have long noted that the remains of soft tissues were often
 35 sheathed in a thin, dark carbon-rich layer. But the team found that under the microscope, cells in the tissues of fossils from several sites had been blown open, and they had a charcoal-like appearance. In addition, the surfaces of bones often showed a
 40 distinct sort of cracking typically seen only when a living or freshly dead creature is exposed to intense heat, Jiang says. The postures of the Jehol fossils, with muscles and tendons contracted, is also a clue that the carcasses were exposed to extreme heat. But the

45 fossils of fish don’t appear to show this heat related damage.

Altogether, the evidence suggests that the land animals entombed in the ancient Chinese lakes were killed by a hot cloud of volcanic ash that then swept
 50 them into the lake, the researchers report. What is now northeastern China was rife with volcanic activity at the time, Jiang says. Although it’s possible that flying birds could have been overcome by poisonous volcanic gases and fallen directly into the
 55 ancient lakes, that doesn’t explain how the other nonaquatic animals got there, he says. It’s not likely that the carcasses were carried into the lakes by streams, Jiang explains, because that would have damaged the remains. Also, he notes, the fossils
 60 would have been surrounded by silt or mud rather than fine-grained volcanic ash. Although scientists had previously noted the Jehol fossils were surrounded by tiny bits of volcanic rock, they hadn’t
 65 linked the ash to the death of the creatures; they’d only suggested that the fine-grained material coincidentally rained down to blanket a normal lake-bottom accumulation of dead creatures, Jiang says.

The evidence uncovered by Jiang and his
 70 colleagues “is very convincing,” says Janet Monge, an anthropologist at the University of Pennsylvania Museum of Archaeology and Anthropology who has studied the remains unearthed at Pompeii. The Chinese fossils “have a very particular type of
 75 fracture pattern, a classic example of bone failure associated with extreme heat,” she notes. “I’ve never seen anything like it outside of Pompeii.”

19

Which choice best describes the overall structure of the passage?

- A) A back-and-forth dialogue between experts supporting different theories
- B) A series of descriptions of a theory’s successful application to several different phenomena
- C) A review of known information, a presentation of new information, and an analysis of various explanations
- D) A summary of an experimental technique, an acknowledgment of its limitations, and a consideration of an alternative

20

The main purpose of the second paragraph (lines 13-31) is to describe the

- A) history behind the naming of certain fossils.
- B) challenges of working with certain fossils.
- C) first of two theories regarding the origin of certain fossils.
- D) surprising locations of certain fossils.

21

In the context of the passage as a whole, a key detail given in the third paragraph (lines 32-46) is that the researchers

- A) observed characteristics of the fossils that indicated that the organisms had been exposed to extreme heat.
- B) noted that the grouping of the fossilized organisms was unlike that seen at other sites.
- C) studied the effects of river transport on fossils of birds, fish, and land animals.
- D) developed novel methods of nondestructive removal of dinosaur fossils from layers of silt and mud.

22

As used in line 35, “sheathed” most nearly means

- A) carried.
- B) coated.
- C) stored.
- D) provided.

23

According to the passage, the cracking observed on the bone surfaces of the Jehol fossils occurred

- A) when the bones were at the bottom of a lake.
- B) as a result of pressure from layers of silt, mud, and ash.
- C) primarily in the bones of birds and fish.
- D) when the organisms were either alive or recently deceased.

24

Which choice best supports the idea that the well-preserved nature of the Jehol fossils enabled Jiang and his colleagues to identify evidence of how the organisms died?

- A) Lines 42-44 (“The postures . . . heat”)
- B) Lines 50-52 (“What . . . says”)
- C) Lines 52-56 (“Although it’s . . . says”)
- D) Lines 69-73 (“The evidence . . . at Pompeii”)

25

Which finding, if accurate, would most weaken Jiang and his colleagues’ claim that the Jehol organisms were swept into the lake by a hot cloud of volcanic ash?

- A) Gases trapped in the Jehol lake sediments are found to be nontoxic.
- B) Bird fossils are found in the Jehol lake sediments.
- C) Damaged fossils of land animals are discovered in Jehol lake sediments.
- D) One of the Jehol lake sediments is found to have formed approximately 125 million years ago.

26

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

- A) Lines 35-38 (“But the team . . . appearance”)
- B) Lines 44-46 (“But the fossils . . . damage”)
- C) Lines 56-59 (“It’s not . . . remains”)
- D) Lines 61-68 (“Although . . . says”)

27

The main purpose of the phrase “rained down” in line 66 is to emphasize the

- A) high speed at which the ash cloud moved.
- B) large quantities of falling ash.
- C) intermittent nature of the eruptions.
- D) distinct possibility that ash mixed with water.

28

In the passage, Janet Monge’s response to Jiang and his colleagues’ work can best be described as that of

- A) a skeptic who ultimately endorses Jiang’s findings.
- B) an expert who believes that Jiang’s theories have merit.
- C) a novice who is grateful for the opportunities that Jiang has provided.
- D) a collaborator who provides an interpretation of Jiang’s observations.

Questions 29-38 are based on the following passages.

Passage 1 is adapted from Dwight D. Eisenhower’s 1955 remarks to the National Association of Radio and Television Broadcasters. Passage 2 is adapted from a 1958 speech by Edward R. Murrow. ©1958 by the Estate of Edward R. Murrow. Eisenhower was president of the United States. Murrow was an American broadcast journalist.

Passage 1

One of the things that has made us an informed public is the fact that we have had a free press, and now these great institutions, the radio and the television, have moved in to take their place
 Line 5 alongside the older media of mass communications.

There is a tremendous responsibility here—in some ways, I think, transcending that that is placed before the publisher. The publisher puts in your home a piece of print. It is essentially cold—
 10 although, of course, we admit that some writers have an ability to dress it up and make even disagreeable facts at times look fairly pleasant. But with the television or with the radio, you put an appealing voice or an engaging personality in the living room
 15 of the home, where there are impressionable people from the ages of understanding on up.

In many ways therefore the effect of your industry in swaying public opinion, and I think, particularly about burning questions of the moment, may be even
 20 greater than the press. . . . It is something different, and you do introduce personality as well as cold fact. I think, again, that places added responsibility to see that the news, in those areas of the radio and television field that have to do with the dissemination
 25 of facts, is truthfully told, with the integrity of the entire industry behind it.

I once heard an expression with respect to newspaper standards: the newspaper columns belong to the public and the editorial page belongs to the
 30 paper. And, for myself, I find that an easy standard to follow and to apply as I examine a newspaper. I should think that some such standard could be developed among you. Of course you want to entertain. Of course you want people to look at it,
 35 and I am all for it. And I think everybody else is. But when we come to something that we call news—and I am certain that I am not speaking of anything you haven’t discussed earnestly among yourselves—let us

simply be sure it is news. Let all of the rest of the time
 40 be given to entertainment or the telling of stories or
 the fanciful fairy tales that we sometimes find in
 other portions of publications.

Passage 2

One of the basic troubles with radio and television
 news is that both instruments have grown up as an
 45 incompatible combination of show business,
 advertising and news. Each of the three is a rather
 bizarre and demanding profession. And when you
 get all three under one roof, the dust never settles.
 The top management of the networks, with a few
 50 notable exceptions, has been trained in advertising,
 research, sales or show business. But by the nature of
 the corporate structure, they also make the final and
 crucial decisions having to do with news and public
 affairs. Frequently they have neither the time nor the
 55 competence to do this. It is not easy for the same
 small group of men to decide whether to buy a new
 station for millions of dollars, build a new building,
 alter the rate card, buy a new Western, sell a soap
 opera, decide what defensive line to take in
 60 connection with the latest Congressional inquiry,
 how much money to spend on promoting a new
 program, what additions or deletions should be made
 in the existing covey or clutch of vice-presidents, and
 at the same time—frequently on the same long
 65 day—to give mature, thoughtful consideration to the
 manifold problems that confront those who are
 charged with the responsibility for news and public
 affairs.

Sometimes there is a clash between the public
 70 interest and the corporate interest. A telephone call
 or a letter from the proper quarter in Washington is
 treated rather more seriously than a communication
 from an irate but not politically potent viewer. It is
 tempting enough to give away a little air time for
 75 frequently irresponsible and unwarranted utterances
 in an effort to temper the wind of criticism.

Upon occasion, economics and editorial
 judgment are in conflict. And there is no law which
 says that dollars will be defeated by duty. Not so long
 80 ago the President of the United States delivered a
 television address to the nation. He was discoursing
 on the possibility or probability of war between this
 nation and the Soviet Union and Communist
 China—a reasonably compelling subject. Two
 85 networks, CBS and NBC, delayed that broadcast for
 an hour and fifteen minutes. If this decision was

dictated by anything other than financial reasons, the
 networks didn't deign to explain those reasons. . . . It
 90 is difficult to believe that this decision was made by
 men who love, respect and understand news.

29

Based on Passage 1, Eisenhower would most likely agree that typical viewers of broadcast news

- A) are strongly opposed to efforts to turn facts into entertainment.
- B) might be too easily influenced by a likeable and persuasive newscaster.
- C) would rather get news from print sources than from television or radio.
- D) are indifferent as to whether most newscasters are well trained as journalists.

30

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

- A) Lines 12-16 (“But with . . . on up”)
- B) Lines 20-21 (“It is . . . fact”)
- C) Lines 22-26 (“I think . . . behind it”)
- D) Lines 33-34 (“Of course . . . entertain”)

31

Which claim about editorial standards in print journalism and in broadcast journalism is implied by Eisenhower in Passage 1?

- A) Neither print journalism nor broadcast journalism has been able to adapt their editorial standards to a changing news environment.
- B) The editorial standards for print journalism are somewhat outmoded compared with the standards that prevail in radio and television.
- C) Rigorous editorial standards are enthusiastically endorsed by executives in both print and broadcast journalism.
- D) Broadcast journalism has not yet established adequate editorial standards for presenting the news in the way that print journalism has.

32

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

- A) Lines 27-30 (“I once . . . paper”)
- B) Lines 30-31 (“And, for . . . newspaper”)
- C) Lines 31-33 (“I should . . . you”)
- D) Lines 34-35 (“Of course . . . else is”)

33

As used in line 67, “charged with” most nearly means

- A) entrusted with.
- B) assaulted with.
- C) assessed for.
- D) accused of.

34

In Passage 2, lines 70-73 (“A telephone . . . viewer”) serve primarily to suggest that

- A) pressuring a news organization into pursuing a particular course of action can be difficult.
- B) broadcast networks do not give equal attention to all concerns voiced.
- C) the volume of complaints made about broadcasters has increased sharply.
- D) viewers can become angry in response to perceived flaws in news broadcasts.

35

As used in line 87, “dictated” most nearly means

- A) transcribed.
- B) spoken.
- C) determined.
- D) confirmed.

36

An important difference between the two passages’ respective discussions of broadcast news is that unlike Eisenhower in Passage 1, Murrow in Passage 2

- A) identifies key differences between print journalism and broadcast news.
- B) assumes financial considerations play only a minor role in the news business.
- C) sees a conflict between news values and entertainment values.
- D) explains how the development of the broadcast news business has shaped that industry.

37

Based on Passage 2, Murrow would most likely view Eisenhower's appeal to broadcast network executives in lines 35-42 ("But . . . publications"), Passage 1, as

- A) convincing, since network executives would likely improve the quality of news broadcasts when made aware of Eisenhower's concerns.
- B) nuanced, since Eisenhower acknowledges that properly defining what counts as news is a difficult task.
- C) unrealistic, since separating broadcast news from entertainment is a more complex task than Eisenhower recognizes.
- D) vague, since Eisenhower does not specify the amount of time that broadcast networks should devote to news.

38

Based on the passages, Murrow (Passage 2) would likely disagree most strongly with Eisenhower's assumption in Passage 1 that

- A) radio and television are media that can be used to educate the public.
- B) audiences tend to prefer fictional stories to factual accounts.
- C) publishers of print journalism are mostly capable of upholding certain editorial standards for content included in newspapers.
- D) decision makers in the broadcast industry share a common concern for the integrity of how news is presented.

Questions 39-47 are based on the following passage and supplementary material.

This passage is adapted from Bernd Heinrich, *The Nesting Season: Cuckoos, Cuckolds, and the Invention of Monogamy*. ©2010 by the President and Fellows of Harvard College.

Food amount and distribution has long been thought to affect mating systems. It continues to generate much interest, and the effects of food distribution on the mating system as such can probably be seen most clearly within a single species where monogamy (having only one mate), polygyny (males mating with more than one female), and polyandry (females mating with more than one male) are all involved in response to changing food supply. One recent study on this topic was conducted within sight of my home in Vermont (on Mount Mansfield) on an enigmatic, little-known bird, the Bicknell's thrush. It was not officially recognized as a new species until 1995.

The Bicknell's thrush breeds in dense spruce-fir thickets on isolated mountaintops in northeastern North America. It lives in an environment where it encounters frequent strong winds, near-freezing temperatures, heavy rain, and marginal food supply (insects). A female of this species typically lays only one set of four eggs per summer, and if she is lucky, brings off the one clutch. To accomplish even that, it turns out, involves a remarkable breeding strategy in which monogamy involving the commitment of one male, such as that practiced by most thrushes and other perching birds, is usually inadequate. Female Bicknell's thrushes usually have more than one mate; each nest has only one female, but the young in it are sired by several males and several males also help feed the young.

The main part of this story was unraveled in a tour de force of work (and fun?) by James E. Goetz from the State University of New York and Kent P. McFarland and Christopher C. Rimmer from the Vermont Institute of Natural Science, with the aid of a small army of twenty eager and able assistants who helped in finding and monitoring nests and catching and marking adult birds with individually identified color-coded rings. They then worked in the laboratory with molecular techniques to determine relatedness and parentage of broods. They found out that in these thrushes, although they superficially appeared to be monogamous pairs, the females were often polyandrous and the males polygynous. In their study of eighteen broods, only four consisted of

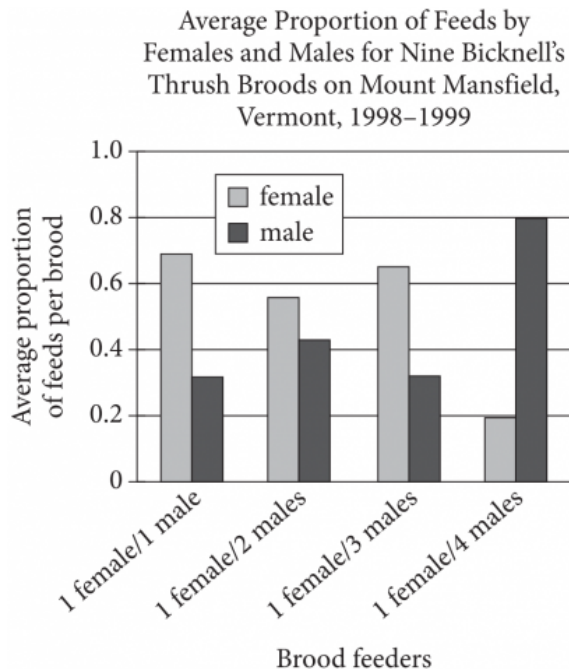
the traditional male-female pairs. The other fourteen broods were each attended by one female, but with the assistance of two to four males who had also mated with the females (as determined by molecular techniques to evaluate parentage of the young). Thirteen males also fed the broods in which they had sired young.

Optimization theory predicts that males should prefer monogamy over having polyandrous females so that they could be assured of the paternity of all of the young that they help feed. But assurance of paternity would add a considerable cost—mate-guarding—and it may be impossible for the Bicknell's thrush in a foggy environment with dense thickets. Much attention is required to secure scarce food, leaving little time for other activities. Where mate-guarding is not possible but moving around is instead required, the males then mate with several females and offer help taking care of the young of their mates. The females, in turn, “should” mate with several males to thus coerce them to help raise her (their) young. That is, by being polyandrous females gain more support in raising the kids, and the males, by being polygynous, make up for what they lose by relaxing their mate-guarding.

Figure 1

Paternalism and Feeding Relationships among Bicknell's Thrush on Mount Mansfield, Vermont, 1999

| Mother of Brood | Known Sire(s) of Brood | Male(s) Feeding Brood |
|-----------------|------------------------|---------------------------------------|
| Female #1 | Male #8 | Male #8 |
| Female #3 | Male #3, Male #18 | Male #3 |
| Female #5 | Male #3 | Male #3, Male #5 |
| Female #7 | Male #7, Male #14 | Male #14 |
| Female #8 | Male #9, Male #16 | Male #9, Male #15, Male #16, Male #20 |
| Female #9 | Male #18 | Male #10 |
| Female #10 | Male #19 | Male #4, Male #12, Male #19 |

Figure 2

Figures adapted from James E. Goetz, Kent P. McFarland, and Christopher C. Rimmer, "Multiple Paternity and Multiple Male Feeders in Bicknell's Thrush (*Catharus bicknelli*)," ©2003 by American Ornithological Society.

39

The main purpose of the passage is to

- A) discuss research that assisted scientists in identifying a particular bird species.
- B) detail challenges a particular bird species faces when competing for mates.
- C) summarize studies on the mating practices of several bird species.
- D) present research on how food supply affects mating behavior in a bird species.

40

As used in line 13, "recognized" most nearly means

- A) acknowledged.
- B) remembered.
- C) rewarded.
- D) glimpsed.

41

The passage suggests that the mating system of the Bicknell's thrush should be considered

- A) ineffective, since it yields relatively few offspring in a given year.
- B) efficient, because a high percentage of offspring survive in harsh environmental conditions.
- C) elusive, since scientists are unable to explain why the system first evolved.
- D) unusual, since it differs from the strategy of closely related bird species.

42

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

- A) Lines 15-17 ("The Bicknell's . . . America")
- B) Lines 20-22 ("A female . . . clutch")
- C) Lines 22-26 ("To accomplish . . . inadequate")
- D) Lines 26-30 ("Female . . . young")

43

As used in line 31, "unraveled" most nearly means

- A) figured out.
- B) declined.
- C) picked apart.
- D) detached.

44

The passage suggests that mate-guarding behavior is likely to be more feasible when

- A) competition for mates is high.
- B) a bird's habitat is relatively isolated.
- C) food is plentiful in a bird's habitat.
- D) a brood contains relatively few young.

45

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

- A) Lines 53-56 ("Optimization . . . feed")
- B) Lines 60-61 ("Much . . . activities")
- C) Lines 65-67 ("The females . . . young")
- D) Lines 67-70 ("That . . . mate-guarding")

46

Based on the passage and figure 1, which choice best helps explain why male #4 and male #12 fed the brood of female #10?

- A) They had each mated with female #10.
- B) They were competing to mate with female #10.
- C) They were engaging in the practice of mate-guarding female #10.
- D) They divided feeding duties so female #10 could search for food.

47

According to figure 2, females were the primary feeders of the nine studied Bicknell's thrush broods except when

- A) there were more male offspring than female offspring in the brood.
- B) the brood was fed by four males and one female.
- C) the brood was fed by an equal number of males and females.
- D) there was an equal number of female and male offspring in a brood.

STOP

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

No Test Material On This Page

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.

Texting to Keep a Language Alive

According to a recent survey, the traditional language of the **1** Saanich a First Nations indigenous community with roots on Canada’s Vancouver Island, has fewer than twenty fluent **2** speakers. All of them over the age of sixty. Those numbers suggest a language

1

- A) NO CHANGE
- B) Saanich,
- C) Saanich;
- D) Saanich—

2

- A) NO CHANGE
- B) speakers, all of whom
- C) speakers; all of whom
- D) speakers, all of them

at risk **3** for being lost forever. Because the cultural identity and memory of a group of people are so closely bound to language, members of the Saanich community worry that such a loss would be disastrous. **4** By contrast, members of the Saanich community are working to revive their language by expanding its speaker base, and are doing so in an unexpected manner: via text messaging.

Until the 1970s, the language of the Saanich was strictly oral. But in that decade a Saanich man named Dave Elliott embarked on a project of capturing as much of it as he could **5** in written form through writing. Because numerous letters from the A-Z Roman alphabet are required to reproduce phonetically the **6** language's complex sounds, resulting in excessively lengthy words, Elliott decided to create his own Saanich alphabet. Unlike the Roman alphabet, Elliott's new alphabet utilized only one letter to denote each sound. Elliott's work made it possible to teach the language—written as SENĆOŦEN—in a classroom and to preserve it in dictionaries.

3

- A) NO CHANGE
- B) of being
- C) to be
- D) being

4

- A) NO CHANGE
- B) For instance,
- C) As a result,
- D) In addition,

5

- A) NO CHANGE
- B) in writing.
- C) by hand, rendering it in written form.
- D) by taking down the language in writing.

6

- A) NO CHANGE
- B) language's complex sound's,
- C) languages complex sounds,
- D) languages' complex sounds',

Now, the Saanich **7** include SENĆOTEN in the local school curriculum. Texting has been **8** criticized as a form of communication that weakens language by allowing abbreviations and nonstandard usage. Yet FirstVoices Chat, a smartphone app used by SENĆOTEN texters, actually strengthens the language by enabling, and encouraging, **9** its use to spread beyond those few aging speakers. The app, which was created by First Peoples' Cultural Council, an organization working to revitalize indigenous culture, allows users to download keyboards tailored to different indigenous languages, including SENĆOTEN.

7

Which choice best introduces the main topic of the paragraph?

- A) NO CHANGE
- B) have up to one hundred second-language speakers.
- C) can use SENĆOTEN to text.
- D) are looking to young people to revitalize the language.

8

Which choice is most consistent with the way texting is characterized in the sentence?

- A) NO CHANGE
- B) evaluated
- C) analyzed
- D) reprimanded

9

- A) NO CHANGE
- B) one's
- C) his or her
- D) their

FirstVoices Chat has made great strides since Elliott’s initial work by facilitating the language’s movement out of classrooms and dictionaries **10** and introducing the ability to type different characters. Most importantly, the texting app puts SENĆOŦEN in the hands of younger generations. Children and teens are widely recognized as the most frequent of texters, but they are also a group crucial to preserving a language. “Young people,” the linguist Gregory Anderson explains, “are the key stakeholders and the ones who may or may not pass it down to their own children.” As the Saanich and especially their youth text in SENĆOŦEN, then, **11** they are changing how older members of the Saanich community view texting.

10

Which choice most effectively supports the point made earlier in the sentence?

- A) NO CHANGE
- B) in a process that many languages around the world have undergone.
- C) due to Elliott’s recognition of the language’s decline.
- D) and into the everyday life of Saanich communities.

11

The writer wants a conclusion that restates the main idea of the passage. Which choice best accomplishes this goal?

- A) NO CHANGE
- B) they are becoming less reliant on traditional dictionaries and courses for language learning.
- C) the number of texts sent in SENĆOŦEN has increased significantly in recent years.
- D) they are taking an important step toward ensuring the continued vitality of their traditional language.

Questions 12-22 are based on the following passage.

Little Films with Great Implications

Throughout the natural world, microorganisms, including bacteria and algae, can organize on surfaces and form colonies called biofilms. **12** Because they can form on both living and nonliving surfaces, they are more protected from outside forces than they would be as single organisms. Some biofilms can **13** cause health problems, and others can have a negative effect on ecosystems. While medical and scientific communities have been interested in exploring biofilms, technical limitations have hampered **14** they're efforts. However, recent research is changing that. An international team of biologists and physicists has had great success in its investigation of this subject by focusing on how biofilms form from one type of bacteria, *Vibrio cholerae*.

The complex three-dimensional structures of biofilms cannot be studied with traditional microscopes, so the scientists started out by building a custom microscope that allowed them to capture images at different depths within biofilm layers. Special software was then developed to combine these images and reconstruct the layers so the researchers could see each cell in relation to the biofilm as a whole. With these tools, the scientists could **15** witness the size and shape of thousands of cells that live in biofilms at various growth stages.

12

Which choice provides the best transition from the previous sentence?

- A) NO CHANGE
- B) Generating a sticky substance,
- C) In this arrangement,
- D) Since most bacteria and algae are invisible to the naked eye,

13

Which choice is most consistent with the overall style and tone of the passage?

- A) NO CHANGE
- B) make you real sick,
- C) mess with people's physical well-being,
- D) perniciously affect an individual's constitution,

14

- A) NO CHANGE
- B) its
- C) there
- D) their

15

- A) NO CHANGE
- B) regard
- C) behold
- D) observe

16 In fact, the researchers grew *Vibrio cholerae* in a liquid solution in tiny tubes made of glass and silicone and examined the resulting biofilms with their new tools. By studying the computerized models they compiled **17** using images captured by a specially built microscope, they found that small groups (1–6 cells) are typically arranged in a single-file line; medium groups (20–100 cells) spread out in an asymmetrical two-dimensional **18** shape; and large groups (200–1,000 cells) generally form a three-dimensional cluster. Once a biofilm **19** reach 2,000 or more microorganisms, the cluster forms a symmetrical and highly organized dome, with cells arranged in a dense **20** pattern, it provides a growth advantage and optimal access to nutrients.

16

- A) NO CHANGE
- B) Next,
- C) However,
- D) Despite complications,

17

The writer is considering deleting the underlined portion, adjusting the punctuation as needed. Should the underlined portion be kept or deleted?

- A) Kept, because it explains how the researchers proceeded to gather information.
- B) Kept, because it provides a transition to the discussion that follows in the sentence.
- C) Deleted, because it needlessly repeats information provided earlier in the passage.
- D) Deleted, because it contradicts details about the study provided later in the paragraph.

18

- A) NO CHANGE
- B) shape, and
- C) shape—and
- D) shape and,

19

- A) NO CHANGE
- B) reached
- C) reaches
- D) have reached

20

- A) NO CHANGE
- B) pattern, but providing
- C) pattern that provides
- D) pattern; providing

Because the researchers were able to track the progression of complexity in biofilm formation, they now have a greater understanding of just what makes these structures unique, **21** but they concede that additional studies are necessary to fully understand why biofilms develop. As Robin Gerlach, a chemical and biological engineering **22** professor at Montana State University notes, “We are continuing to learn about how to control them better.” With the knowledge gained from this investigation, scientists may be able to not only develop ways of treating dangerous biofilms, such as bacteria that have become resistant to antibiotics, but also design and build biofilms of beneficial microorganisms, such as those that can treat wastewater.

21

Which choice most effectively sets up the information that follows in the paragraph?

- A) NO CHANGE
- B) as well as how they are structured internally.
- C) and they published their findings in *Proceedings of the National Academy of Sciences*.
- D) which lays the groundwork for future advances.

22

- A) NO CHANGE
- B) professor at Montana State University, notes,
- C) professor, at Montana State University, notes
- D) professor, at Montana State University notes

Questions 23-33 are based on the following passage and supplementary material.

Hybrid Careers in Technology

An increasingly important development in the workplace is the rise of hybrid **23** careers; careers that combine training in one discipline, such as marketing or physics, with expertise in information technology (IT) fields, such as computer science and information systems. More than ever, technology skills function as a supplement to knowledge from another field. In fact, attaining expertise in a traditional career path often requires familiarity with computer science to take advantage of cutting-edge developments. Students preparing to enter the job market should **24** nevertheless consider how developing hybrid skills can give them access to a range of rewarding careers.

23

- A) NO CHANGE
- B) careers. Careers
- C) careers; those careers
- D) careers: careers

24

- A) NO CHANGE
- B) even
- C) instead
- D) therefore

Animator Kira Lehtomaki’s career illustrates the value of studying technology in combination with a more conventional profession. Lehtomaki was inspired **25** to become an animator. The inspiration happened when she was a child and watched animated films like *Sleeping Beauty*. In college, she recognized that computers were becoming dominant in the world of animation, **26** she majored in computer science rather than art, pursuing her artistic interests through an online school called Animation Mentor. Lehtomaki regards the technological skills she learned in college as vital to her professional success. “Computer science taught me how to think about things, how to break down and solve complex problems,” she says. She now applies those analytical skills in her **27** job and using modeling and

25

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

- A) to become an animator by watching animated films like *Sleeping Beauty* when she was a child.
- B) when she was a child watching animated films like *Sleeping Beauty*, which led her to become an animator.
- C) by *Sleeping Beauty*, the watching of which, along with other animated films, in childhood led her to become an animator.
- D) as a child to become an animator who was watching animated films like *Sleeping Beauty*.

26

- A) NO CHANGE
- B) so she
- C) therefore, she
- D) DELETE the underlined portion.

27

- A) NO CHANGE
- B) job; using
- C) job, uses
- D) job, using

graphics software to help create films for a major film studio. **28** As evidenced by this skill set, Lehtomaki has come a long way from the summer job she once had at Disneyland decorating cookies.

28

Which choice provides the most effective conclusion to the paragraph?

- A) NO CHANGE
- B) However, by focusing on skills such as how to use spreadsheets and word processors, introductory courses in computer science have not done enough to prepare future IT workers.
- C) Lehtomaki's trajectory shows how multidisciplinary training can allow workers to construct career paths that suit their interests and passions.
- D) Computational thinking is the skill most closely associated with the kind of problem-solving that Lehtomaki deploys on the job.

A study of job growth in the IT sector in the United States shows that Lehtomaki is far from unique in making the most of such a combination to improve **29** our career prospects. For example, there were 45,991 digital marketing and marketing automation **30** jobs positions that merge statistical and IT roles with traditional marketing skills advertised from April 2014 to

29

- A) NO CHANGE
- B) their
- C) her
- D) your

30

- A) NO CHANGE
- B) jobs (positions that merge statistical and IT roles with traditional marketing skills)
- C) jobs positions that merge statistical and IT roles with traditional marketing skills,
- D) jobs—positions that merge statistical and IT roles with traditional marketing skills

March 2015; the field experienced **31** 135 percent job growth from 2011 to March 2015. Data analysts—professionals **32** who are wizards at both statistics and the software used to organize sets of data—**33** were almost as in demand, with 41,000 open positions from April 2014 to March 2015. Their field saw a remarkable 372 percent increase in jobs from 2011 to March 2015.

Hybrid Job Openings in the US IT Sector

| Job type | Job openings, April 2014–March 2015 | Percent increase in jobs, 2011–March 2015 |
|--|-------------------------------------|---|
| Web development and design | 67,250 | 3% |
| Mobile development | 41,032 | 135% |
| Product management | 40,752 | 7% |
| Digital marketing and marketing automation | 45,991 | 145% |
| Data analytics | 41,000 | 372% |
| User interface/user experience | 29,825 | 15% |
| All IT jobs (hybrid and nonhybrid) | 1,975,788 | 7% |

Adapted from General Assembly and Burning Glass Technologies, “Blurring Lines: How Business and Technology Skills Are Merging to Create High Opportunity Hybrid Jobs.” ©2015 by General Assembly and Burning Glass Technologies.

Developing competencies in two different areas may require additional time in school, but the extra effort is likely to pay off. In the words of Scott Erker, a senior vice president of human-resources consulting firm DDI, “What’s called a hybrid job today will be the standard job of tomorrow.” Preparing for the contemporary workplace means considering the exciting opportunities that training across multiple fields can reveal.

31

Which choice provides accurate information from the table?

- A) NO CHANGE
- B) 145
- C) 15
- D) 3

32

Which choice best maintains the style and tone of the passage?

- A) NO CHANGE
- B) who have what it takes for
- C) possessed of high-caliber skills in
- D) proficient in

33

Which choice is best supported by the information in the passage and the table?

- A) NO CHANGE
- B) saw twice that number of job openings,
- C) didn’t see as many jobs added as product managers did,
- D) were hired less often than any other IT professionals were,

Questions 34-44 are based on the following passage.

“I’m Just Like My Country”: Lin-Manuel Miranda’s *Hamilton*

Composer and lyricist Lin-Manuel Miranda was inspired to create the award-winning Broadway musical *Hamilton* after, on a whim, he picked up a best-selling biography of US founding father Alexander Hamilton **34** while looking through top-selling books, including biographies, at a bookstore: “I was just browsing the biography section. It could have been [former president] Truman [that I selected].” The biography he read **35** encloses Hamilton’s most well-known **36** roles: military captain during the Revolutionary War, cowriter of *The Federalist* papers, the nation’s first secretary of the treasury, and creator of the federal banking system. What fascinated Miranda, however, was Hamilton’s life story as an American immigrant and as an ambitious youth navigating a contentious political environment.

To **37** study the lesser-known aspects of Hamilton’s life, Miranda drew on inspiration from his family’s experiences and his own career choices. Miranda saw parallels between Hamilton’s early life **38** and his own father, who migrated to New York from Puerto Rico as a teenager and went on to establish a successful political consulting company. Hamilton, who was raised on the

34

- A) NO CHANGE
- B) while at a bookstore that sells popular books:
- C) when the impulse hit him at a bookstore:
- D) at a bookstore:

35

- A) NO CHANGE
- B) supports
- C) documents
- D) demonstrates

36

- A) NO CHANGE
- B) roles military
- C) roles. Military
- D) roles; military

37

- Which choice provides the best transition from the previous paragraph to this one?
- A) NO CHANGE
 - B) learn more about Hamilton’s accomplishments as a founding father,
 - C) highlight Hamilton’s prolific writing career,
 - D) turn Hamilton’s life and legacy into a musical,

38

- A) NO CHANGE
- B) and that of
- C) and those of
- D) compared with

Caribbean island of St. Croix, also moved to New York as a teenager. **39** Remarkably hardworking and enterprising, Hamilton became a **40** protégé, of George Washington, within five years of his arrival in New York. In the musical, **41** Miranda presents Hamilton’s qualities as quintessentially American: Hamilton declares, “I’m just like my country / I’m young, scrappy and hungry / and I’m not throwing away my shot.”

39

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

To get a better sense of Hamilton’s life, Miranda read the founding father’s letters and other writings and consulted with historians.

Should the writer make this addition here?

- A) Yes, because it supports the paragraph’s implication that Miranda, like his father and Hamilton, is hardworking.
- B) Yes, because it explains how Miranda knew about the similarities between Hamilton and his father.
- C) No, because it interrupts the paragraph’s description of Hamilton’s experience as an immigrant.
- D) No, because it fails to specify the historians with whom Miranda consulted.

40

- A) NO CHANGE
- B) protégé, of George Washington
- C) protégé of George Washington
- D) protégé of George Washington:

41

Which choice most effectively sets up the quotation that follows in the sentence?

- A) NO CHANGE
- B) the American Revolution is underway:
- C) many of the highlights of Hamilton’s political career are dramatized:
- D) most of the dialogue is sung instead of spoken:

Miranda also drew from his experiences working for his father, a former advisor to New York City mayor Ed Koch. Miranda’s own involvement in politics gave him a unique vantage point from which to observe the inner workings of governmental legislation. “The real [stuff] happens in the backroom,” he explained. “I’ve seen it firsthand.” **42** He finished reading Hamilton’s biography, Miranda discovered that the founding fathers similarly used informal private gatherings to influence Washington’s administration. In the musical, Hamilton’s adversary Aaron Burr jealously remarks on Hamilton’s ability to shape policy measures by getting into “the room where it happens.” Hamilton supports this **43** claim. When he tells Burr that “decisions are happening over dinner”—a remark that could also be used to describe twenty-first-century political life.

44 A success on Broadway, *Hamilton* won the Grammy award for Best Musical Theater Album. Miranda’s emphasis on Hamilton’s youthful industriousness and the intricacies of political decision-making shows audiences that the environment of the founding of America resonates with the politics of today.

42

- A) NO CHANGE
- B) After he read Hamilton’s biography;
- C) Upon reading Hamilton’s biography,
- D) Having read Hamilton’s biography—

43

- A) NO CHANGE
- B) claim and when telling
- C) claim; when he tells
- D) claim when he tells

44

Which choice provides the most effective introduction to the paragraph?

- A) NO CHANGE
- B) A gifted cast brought Hamilton’s life to the stage.
- C) Even with its contemporary style, *Hamilton* is timeless.
- D) The political environment has changed dramatically since Hamilton’s day.

STOP

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

No Test Material On This Page



Math Test – No Calculator

25 MINUTES, 17 QUESTIONS

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

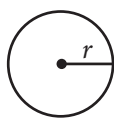
DIRECTIONS

For questions 1-13, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 14-17, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 14 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

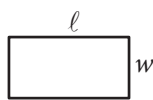
- The use of a calculator is **not permitted**.
- All variables and expressions used represent real numbers unless otherwise indicated.
- Figures provided in this test are drawn to scale unless otherwise indicated.
- All figures lie in a plane unless otherwise indicated.
- Unless otherwise indicated,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

REFERENCE

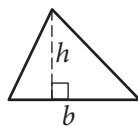


$$A = \pi r^2$$

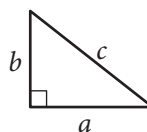
$$C = 2\pi r$$



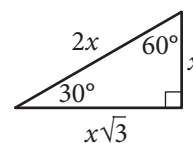
$$A = \ell w$$



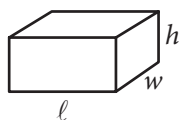
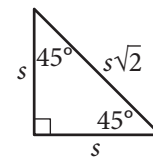
$$A = \frac{1}{2}bh$$



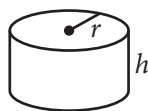
$$c^2 = a^2 + b^2$$



Special Right Triangles



$$V = \ell wh$$



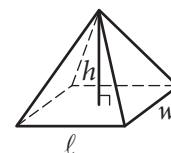
$$V = \pi r^2 h$$



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



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



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

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.



1

$$4p + 8 = 32$$

What value of p satisfies the given equation?

- A) 0
- B) 6
- C) 10
- D) 36

2

The total cost to rent an inflatable slide for a birthday party is \$23 per hour with an initial \$15 setup fee. Which of the following equations represents the relationship between the total cost c , in dollars, and the number of hours, h , to rent the inflatable slide?

- A) $c = 15h$
- B) $c = 23h$
- C) $c = 15h + 23$
- D) $c = 23h + 15$

3

Which expression is equivalent to $(y - 4)(y + 5)$?

- A) $y^2 + y - 20$
- B) $y^2 + y + 20$
- C) $y^2 + y - 1$
- D) $y^2 + y + 1$

4

The function f is defined by $f(x) = 5x^2 + 2x + 5$. What is the value of $f(2)$?

- A) 19
- B) 25
- C) 27
- D) 29

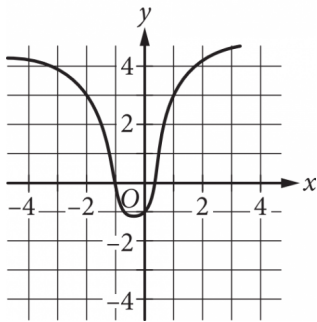


5

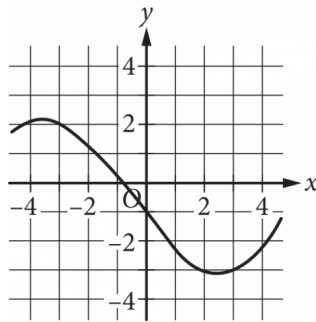
| x | $g(x)$ |
|-----|--------|
| -3 | 2 |
| 0 | -1 |
| 3 | 1 |

The table gives some values of x and their corresponding values of $g(x)$. Which of the following could be the graph of $y = g(x)$ in the xy -plane?

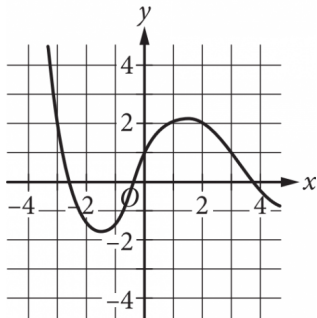
A)



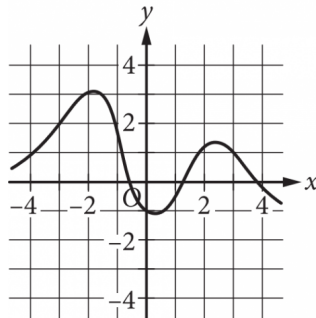
B)



C)



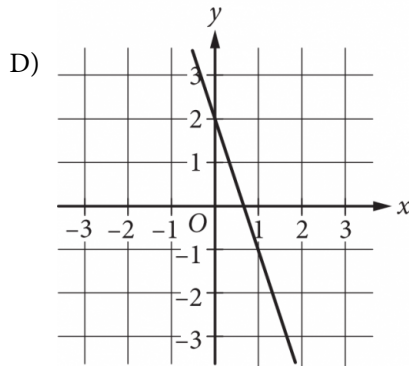
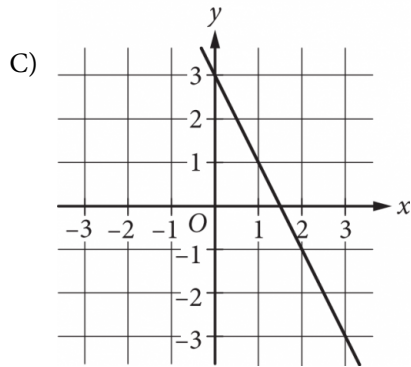
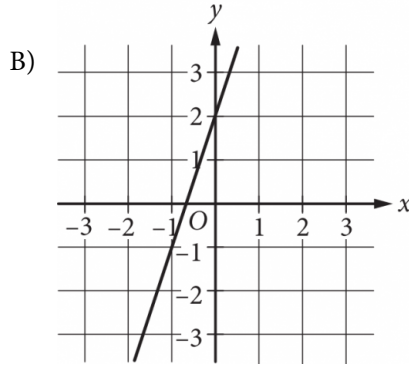
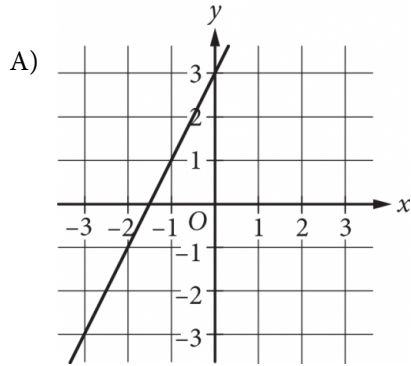
D)





6

The function f is defined by $f(x) = 3x + 2$. Which of the following is the graph of $y = f(x)$ in the xy -plane?



7

$$\begin{aligned} -3x &= y \\ (5x + y)^2 &= 64 \end{aligned}$$

If (x, y) is a solution to the system of equations above, what is the value of xy ?

- A) -3
- B) -24
- C) -48
- D) -96

8

In the xy -plane, line ℓ contains the point $(1, 3)$ and has slope 2. Which of the following is an equation of line ℓ ?

- A) $y = 3x + 2$
- B) $y = 2x + 3$
- C) $y = 2x + 1$
- D) $y = x + 2$



9

$$10 - 3(x + 2) = 3x + 4$$

How many different values of x satisfy the equation above?

- A) None
- B) One
- C) Two
- D) More than two

10

In the xy -plane, the graph of a linear inequality contains the points $(0, 2)$, $(1, 1)$, and $(4, 0)$. Which of the following could be the inequality?

- A) $y \leq -\frac{1}{2}x + 2$
- B) $y \geq -\frac{1}{2}x + 2$
- C) $y \leq -2x + 4$
- D) $y \geq -2x + 4$

11

$$g(x) = \frac{1}{5}(5)^{x+4}$$

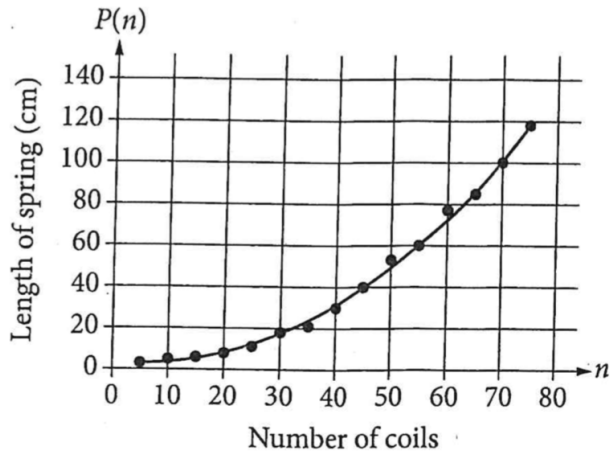
For the given function g , which of the following equivalent forms shows the y -coordinate of the y -intercept of the graph of $y = g(x)$ in the xy -plane as a constant or coefficient?

- A) $g(x) = 125(5)^x$
- B) $g(x) = 25(5)^{x+1}$
- C) $g(x) = 5(5)^{x+2}$
- D) $g(x) = (5)^{x+3}$



12

Springs are made from different numbers of coils. Each spring is hung vertically with one end attached to a rod, and each spring stretches from its own weight. The total length, in centimeters (cm), of each hanging spring is recorded, as shown in the graph.



A parabola that models the data is also shown. Which of the following functions P best models the recorded length, in centimeters, of a spring as a function of the number of coils, n , in the spring, where $5 \leq n \leq 75$?

- A) $P(n) = n^2 + 4.3$
- B) $P(n) = n^2 - 0.3n + 4.3$
- C) $P(n) = 0.24n^2 + 4.3$
- D) $P(n) = 0.024n^2 - 0.3n + 4.3$

13

A scholarship program increases the total value of scholarships awarded each year by 7% of the total value awarded the previous year. For the third year of the program, the total value of scholarships awarded was \$750,000. Which of the following equations best models the total value of scholarships awarded, in dollars, in the n th year of the scholarship program?

- A) $y = 750,000(0.07)^n$
- B) $y = 750,000(1.07)^n$
- C) $y = 750,000(0.07)^{n-3}$
- D) $y = 750,000(1.07)^{n-3}$



DIRECTIONS

For questions 14-17, 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 $\begin{array}{|c|c|c|c|} \hline 3 & 1 & / & 2 \\ \hline \bullet & \bullet & \bullet & \bullet \\ \hline 0 & 0 & 0 & 0 \\ \hline 1 & 1 & 1 & 1 \\ \hline 2 & 2 & 2 & 2 \\ \hline 3 & 3 & 3 & 3 \\ \hline 4 & 4 & 4 & 4 \\ \hline 5 & 5 & 5 & 5 \\ \hline 6 & 6 & 6 & 6 \\ \hline 7 & 7 & 7 & 7 \\ \hline 8 & 8 & 8 & 8 \\ \hline 9 & 9 & 9 & 9 \\ \hline \end{array}$ 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: $\frac{7}{12}$

Write answer in boxes. →

| | | | |
|---|---|---|---|
| 7 | / | 1 | 2 |
| • | • | • | • |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| • | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

← Fraction line

Grid in result.

Answer: 2.5

| | | | |
|---|---|---|---|
| | 2 | . | 5 |
| • | • | • | • |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | • | • | • |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | • |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

← Decimal point

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

| | | | |
|---|---|---|---|
| | 2 | / | 3 |
| • | • | • | • |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | • | • | • |
| 3 | 3 | 3 | • |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |

| | | | |
|---|---|---|---|
| . | 6 | 6 | 6 |
| • | • | • | • |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | • | • | • |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |

| | | | |
|---|---|---|---|
| . | 6 | 6 | 7 |
| • | • | • | • |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | • | • | • |
| 7 | 7 | 7 | • |
| 8 | 8 | 8 | 8 |

Answer: 201 – either position is correct

| | | | |
|---|---|---|---|
| | 2 | 0 | 1 |
| • | • | • | • |
| 0 | • | • | • |
| 1 | 1 | 1 | • |
| 2 | • | • | • |
| 3 | 3 | 3 | 3 |

| | | | |
|---|---|---|---|
| 2 | 0 | 1 | |
| • | • | • | • |
| • | • | 0 | 0 |
| 1 | 1 | • | 1 |
| • | • | • | • |
| 3 | 3 | 3 | 3 |

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



14

In 1947, milk cost \$0.75 per gallon and bananas cost \$0.15 per pound. Donna bought two gallons of milk and some bananas for a total of \$2.25 in 1947. How many pounds of bananas did she buy?

15

$$(x - 4)(x - 5)(x + 3) = 0$$

What is one possible positive value of x that satisfies the given equation?

16

Triangle RST is congruent to triangle XYZ , where $\angle R$ corresponds to $\angle X$ and $\angle S$ corresponds to $\angle Y$. If the measure of $\angle R$ is 28° and the measure of $\angle S$ is 54° , what is the measure of $\angle Z$? (Disregard the degree symbol when gridding your answer.)

17

$$4x - 5y = 24$$

$$x - 2y = 3$$

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

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

45 MINUTES, 31 QUESTIONS

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

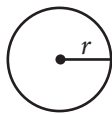
DIRECTIONS

For questions 1-27, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 28-31, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 28 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

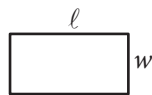
1. The use of a calculator is permitted.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE

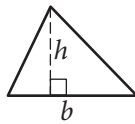


$$A = \pi r^2$$

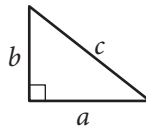
$$C = 2\pi r$$



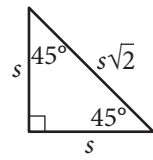
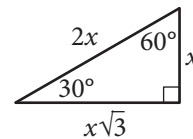
$$A = \ell w$$



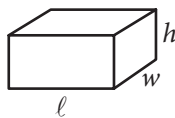
$$A = \frac{1}{2}bh$$



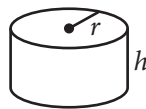
$$c^2 = a^2 + b^2$$



Special Right Triangles



$$V = \ell wh$$



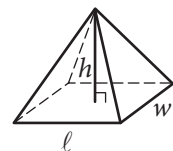
$$V = \pi r^2 h$$



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



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



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

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.



1

The ratio of j to 40 is 1 to 2. What is the value of j ?

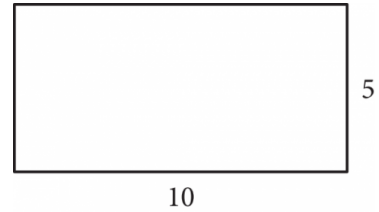
- A) 1
- B) 10
- C) 20
- D) 80

2

The length of line segment AB is 380. The length of line segment CD is 95% of the length of line segment AB . What is the length of line segment CD ?

- A) 285
- B) 361
- C) 380
- D) 400

3



What is the perimeter of the rectangle shown?

- A) 15
- B) 25
- C) 30
- D) 50

4

Which of the following lengths, in centimeters (cm), is closest to 17.25 inches? (1 inch = 2.54 cm)

- A) 0.15 cm
- B) 6.79 cm
- C) 19.79 cm
- D) 43.82 cm



5

$$2x + 4y = 12$$

$$3x + 6y = b$$

In the given system of equations, b is a constant. If the system has infinitely many solutions, what is the value of b ?

- A) 3
- B) 6
- C) 12
- D) 18

6

| | Type A | Type B | Total |
|---------|--------|--------|-------|
| Batch 1 | 30 | 15 | 45 |
| Batch 2 | 20 | 40 | 60 |
| Batch 3 | 20 | 25 | 45 |
| Total | 70 | 80 | 150 |

The table shows the batch number and type of item for 150 items. If an item from batch 2 is selected at random, what is the probability that the item is type A?

- A) $\frac{20}{40}$
- B) $\frac{20}{60}$
- C) $\frac{20}{70}$
- D) $\frac{20}{150}$

7

$$g(t) = 10,000(2)^{\frac{t}{2}}$$

The function g gives the number of green algae growing in a beaker, where t represents the amount of time, in hours, since the algae were placed in the beaker. What amount of time, in hours, is needed for the number of green algae in the beaker to double?

- A) 0.5
- B) 1.0
- C) 2.0
- D) 4.0

8

The table shows the undergraduate enrollments of two colleges for 4 years.

Undergraduate Enrollment

| Year | 2012 | 2013 | 2014 | 2015 |
|-----------|--------|--------|--------|--------|
| College A | 16,500 | 16,900 | 17,300 | 19,500 |
| College B | 16,500 | 17,400 | 17,800 | 18,500 |

Based on the data, which of the following is true about the undergraduate enrollments of College A and College B during these 4 years?

- A) The range of the undergraduate enrollment of College A is less than the range of the undergraduate enrollment of College B.
- B) The range of the undergraduate enrollment of College A is equal to the range of the undergraduate enrollment of College B.
- C) The mean undergraduate enrollment of College A is less than the mean undergraduate enrollment of College B.
- D) The mean undergraduate enrollment of College A is equal to the mean undergraduate enrollment of College B.



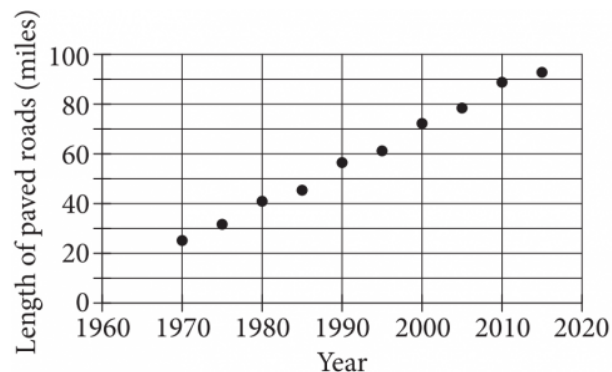
9

According to a NASA study of satellite data, the mass of the Antarctic ice sheet increased by 112 billion tons of ice each year from 1992 to 2001. For these years, which of the following types of functions best models the mass, in tons, of the Antarctic ice sheet as a function of time, in years?

- A) Increasing linear
- B) Decreasing linear
- C) Increasing exponential
- D) Decreasing exponential

10

The total length, in miles, of paved roads in a certain town was measured every five years. The resulting data are shown in the scatterplot.



In 1970, a civil engineer predicted that the existing length of the town's paved roads, 25 miles, would increase by 10 miles every 5 years. Which of the following is closest to the difference between the civil engineer's predicted length of paved roads in 2015 and the measured length of paved roads in 2015 shown in the scatterplot?

- A) 20
- B) 40
- C) 60
- D) 100



11

| | | | | | |
|--------|---|---|----|----|----|
| p | 4 | 8 | 12 | 20 | 24 |
| $f(p)$ | 1 | 4 | 9 | 25 | 36 |

For the function f , the table above shows several values of p and their corresponding values of $f(p)$, where $f(p)$ is the area, in square inches, of a square with perimeter p , in inches. Which of the following equations defines f ?

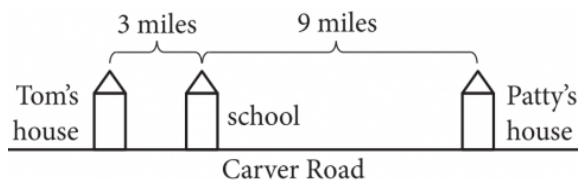
- A) $f(p) = 16p^2$
- B) $f(p) = 4p^2$
- C) $f(p) = \frac{p^2}{4}$
- D) $f(p) = \frac{p^2}{16}$

12

Timothy can paint $\frac{2}{7}$ of a wall in 1 hour. Jean can paint $\frac{1}{3}$ of the same wall in 1 hour. If Timothy and Jean, working together at their respective rates, can paint the entire wall in t hours, which of the following equations represents this situation?

- A) $\frac{2}{7}t + \frac{1}{3}t = 1$
- B) $\frac{2}{7}t + \frac{1}{3} = 1$
- C) $\frac{2}{7} + \frac{1}{3}t = 1$
- D) $\frac{2}{7} + \frac{1}{3} = t$

13



The figure above shows the distances from Tom's house and from Patty's house to the school on Carver Road. It takes Tom and Patty the same amount of time to arrive at school from their respective homes. Tom rides his bike from his house to school along Carver Road at an average rate of t miles per hour, and Patty rides a bus from her house to school along Carver Road at an average rate of p miles per hour. What is t in terms of p ?

- A) $\frac{1}{3}p$
- B) $\frac{1}{27}p$
- C) $3p$
- D) $9p$

14

$$y = x^2 - 1$$

$$4 = x + y$$

The graphs in the xy -plane of the two equations above have how many points of intersection?

- A) None
- B) One
- C) Two
- D) Three



Questions 15 and 16 refer to the following information.

Facts about Four Planets

| Planet | Mean distance from the Sun (millions of kilometers) | Surface gravity as a percentage of Earth's gravity |
|---------|---|--|
| Mercury | 57.9 | 37.8% |
| Venus | 108.2 | 90.7% |
| Earth | 149.6 | 100.0% |
| Mars | 227.9 | 37.7% |

(1 million = 1×10^6)

The table lists four planets and gives their mean distances from the Sun, in millions of kilometers, and their surface gravities as percentages of Earth's surface gravity. The gravity at Earth's surface, also called the acceleration due to gravity, is 9.8 meters per second per second (m/s^2).

For an object with mass m kilograms (kg), the weight w , in newtons (N), of the object on a planet's surface can be found using the equation $w = ma$, where a is the acceleration due to gravity, in meters per second per second, at the planet's surface. If an object is moved from one planet to another, the object's mass does not change but its weight does.

15

The mean distance of Mars from the Sun is k times the mean distance of Mercury from the Sun. Which of the following is closest to the value of k ?

- A) 0.254
- B) 0.394
- C) 2.54
- D) 3.94

16

If Jing would weigh 200 N on the surface of Mars, which of the following is closest to what her weight would be on the surface of Venus?

- A) 80 N
- B) 180 N
- C) 480 N
- D) 530 N

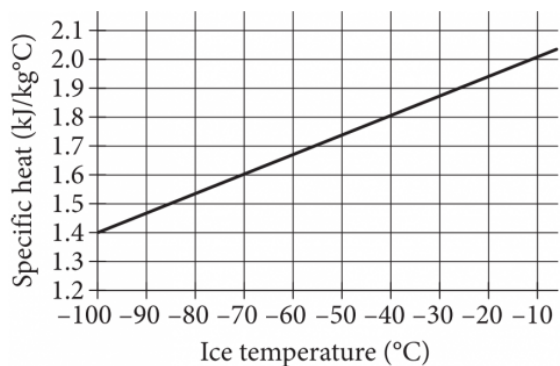


Questions 17 and 18 refer to the following information.

Both the density and the specific heat of a substance can change based on the temperature of the substance. Density is mass per unit volume, and specific heat is the amount of heat, in kilojoules (kJ), required to raise the temperature of one kilogram of a substance by 1°C .

The equation $d = -0.08x + 918$ models the relationship between temperature and density of ice (frozen water), where x is the temperature, in degrees Celsius ($^{\circ}\text{C}$), and d is the density, in kilograms per cubic meter (kg/m^3).

The line shown in the graph models the relationship between temperature and the specific heat of ice.



17

Based on the graph, which of the following is the best approximation of the slope of the line that models the relationship between temperature and the specific heat of ice?

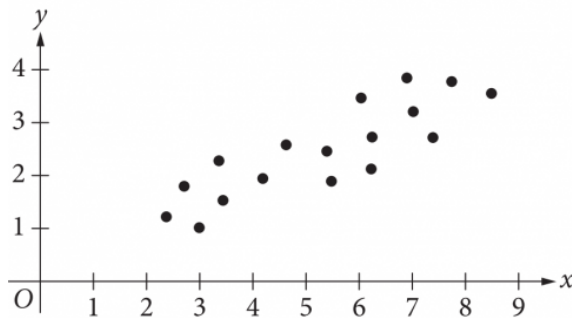
- A) -2.078
- B) -0.007
- C) 0.007
- D) 2.078

18

A piece of ice has a density of 920.4 (kg/m^3). Based on the graph, which of the following is closest to the specific heat of this piece of ice?

- A) 1.4 $\text{kJ}/\text{kg}^{\circ}\text{C}$
- B) 1.9 $\text{kJ}/\text{kg}^{\circ}\text{C}$
- C) 2.1 $\text{kJ}/\text{kg}^{\circ}\text{C}$
- D) 2.4 $\text{kJ}/\text{kg}^{\circ}\text{C}$

19



A line of best fit will be drawn for the data in the scatterplot shown. Which of the following is true about the slope m of the line?

- A) $-1 < m < 0$
- B) $0 < m < 1$
- C) $1 < m < 2$
- D) $2 < m < 3$



20

If $2x - 1 = 5 - 2x$, what is the value of $2x$?

- A) 0
- B) 0.5
- C) 1.5
- D) 3

21

The lengths of the sides of a rectangle are a and b , where $a > b$. The sum of the lengths of the two shorter sides and one of the longer sides of the rectangle is 36. What value of a maximizes the area of the rectangle?

- A) 9
- B) 12
- C) 18
- D) 24

22

Data set X: 2, 3, 5, 5, 8

Data set Y: 4, 4, 5, 7, 8

Two data sets are shown. If a number is selected at random from data set X, what is the probability that the selected number is also a number in data set Y?

- A) $\frac{1}{5}$
- B) $\frac{2}{5}$
- C) $\frac{3}{5}$
- D) $\frac{4}{5}$



Questions 23 and 24 refer to the following information.

At a science museum, a robotics club hosted a fund raising event for no more than 650 people. The club sold x member tickets and y nonmember tickets. Member tickets sold for \$20 each and nonmember tickets sold for \$40 each. The cost to rent the museum for the event was a flat fee of \$3,000 plus \$12.50 per ticket sold. The equation shown gives the total profit P , in dollars, earned from selling tickets to the event.

$$P = (20 - 12.50)x + (40 - 12.50)y - 3,000$$

23

The robotics club made a total profit of \$8,125 from selling tickets to the event. If 200 member tickets were sold, how many nonmember tickets were sold?

- A) 450
- B) 350
- C) 240
- D) 131

24

What is the best interpretation of the term $(20 - 12.50)$ in this context?

- A) The cost per member ticket sold
- B) The total cost for all member tickets sold
- C) The increase in the total profit for every additional member ticket sold
- D) The increase in the total profit for all member tickets sold

25

If $(x - 2)^2 + 5(x - 2) = -6$, which of the following could be the value of $x - 2$?

- A) -1
- B) -3
- C) -4
- D) -5



26

Which of the following is equivalent to $\sqrt{4x}$ for all $x > 0$?

- A) $2x^{\frac{1}{2}}$
- B) $4x^{\frac{1}{2}}$
- C) $2x^2$
- D) $4x^2$

27

The expression $1.60w$ represents the result of increasing a quantity w by what percent?

- A) 160%
- B) 60%
- C) 40%
- D) 16%


DIRECTIONS

For questions 28-31, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

- 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.
- Mark no more than one bubble in any column.
- No question has a negative answer.
- Some problems may have more than one correct answer. In such cases, grid only one answer.
- Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or $7/2$. (If

| | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 3 | 1 | / | 2 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

 is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
- 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: $\frac{7}{12}$

Write answer in boxes. →

| | | | |
|----------------------------------|-----------------------|----------------------------------|----------------------------------|
| 7 | / | 1 | 2 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 1 | 0 | 0 | 0 |
| 1 | 1 | <input checked="" type="radio"/> | 1 |
| 2 | 2 | 2 | <input checked="" type="radio"/> |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| <input checked="" type="radio"/> | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

← Fraction line

Grid in result.

Answer: 2.5

| | | | |
|-----------------------|----------------------------------|----------------------------------|----------------------------------|
| | 2 | . | 5 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | <input checked="" type="radio"/> | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | <input checked="" type="radio"/> |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

← Decimal point

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

| | | | |
|-----------------------|----------------------------------|----------------------------------|----------------------------------|
| | 2 | / | 3 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | <input checked="" type="radio"/> | 2 | 2 |
| 3 | 3 | 3 | <input checked="" type="radio"/> |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |

| | | | |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| . | 6 | 6 | 6 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |

| | | | |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| . | 6 | 6 | 7 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | <input checked="" type="radio"/> | <input checked="" type="radio"/> | 6 |
| 7 | 7 | 7 | <input checked="" type="radio"/> |
| 8 | 8 | 8 | 8 |

Answer: 201 – either position is correct

| | | | |
|-----------------------|----------------------------------|----------------------------------|----------------------------------|
| | 2 | 0 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | 0 | <input checked="" type="radio"/> | 0 |
| 1 | 1 | 1 | <input checked="" type="radio"/> |
| 2 | <input checked="" type="radio"/> | 2 | 2 |
| 3 | 3 | 3 | 3 |

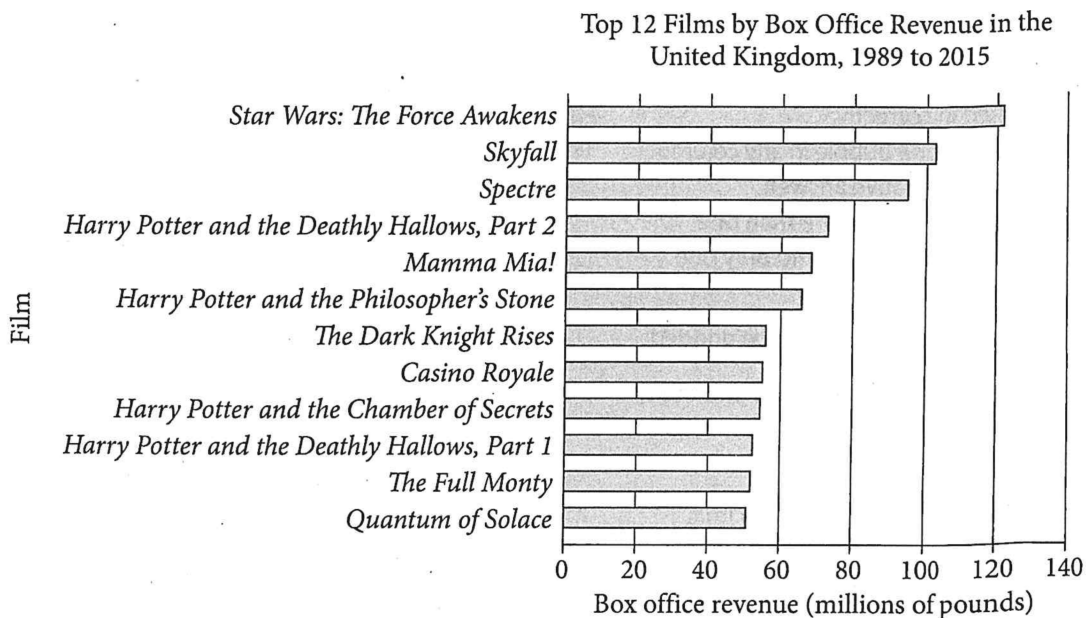
| | | | |
|----------------------------------|----------------------------------|----------------------------------|-----------------------|
| 2 | 0 | 1 | |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input checked="" type="radio"/> | 0 | 0 |
| 1 | 1 | <input checked="" type="radio"/> | 1 |
| <input checked="" type="radio"/> | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |

NOTE:

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



28



The bar graph shows the United Kingdom (UK) box office revenue for the top 12 films in the UK from 1989 to 2015. How many of the films had UK box office revenue between 60 million and 100 million pounds?

29

If 125% of x is 225, what is the value of x ?



30

$$5x + y = 13$$

$$ax - y = -7$$

In the system of equations above, a is a positive constant. If the graphs of the equations are perpendicular lines in the xy -plane, what is the value of a ?

31

| Value | Frequency |
|-------|-----------|
| 33 | 4 |
| 34 | 7 |
| 35 | 6 |
| 36 | 5 |
| 37 | 3 |
| 38 | 2 |
| 39 | 2 |
| 40 | 1 |
| 41 | 1 |

The table above shows the frequencies for the 9 different values that occur in a 31 item data set. What is the median value of the data set?

STOP

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

| Raw Score (# of correct answers) | Reading Test Score | Writing and Language Test Score | Math Test Score |
|---|-------------------------------|--|----------------------------|
| 47 | 38 | | 37.5 |
| 46 | 38 | | 36.5 |
| 45 | 38 | | 35.5 |
| 44 | 37 | 38 | 34.5 |
| 43 | 37 | 38 | 33.5 |
| 42 | 36 | 37 | 33 |
| 41 | 36 | 36 | 32 |
| 40 | 35 | 35 | 31.5 |
| 39 | 35 | 34 | 31 |
| 38 | 34 | 34 | 30.5 |
| 37 | 34 | 33 | 30 |
| 36 | 33 | 33 | 29.5 |
| 35 | 32 | 32 | 29 |
| 34 | 32 | 32 | 29 |
| 33 | 31 | 31 | 28.5 |
| 32 | 30 | 30 | 28 |
| 31 | 29 | 30 | 27.5 |
| 30 | 29 | 29 | 27.5 |
| 29 | 28 | 29 | 27 |
| 28 | 27 | 28 | 26.5 |
| 27 | 27 | 28 | 26 |

| Raw Score (# of correct answers) | Reading Test Score | Writing and Language Test Score | Math Test Score |
|---|-------------------------------|--|----------------------------|
| 26 | 26 | 27 | 26 |
| 25 | 25 | 26 | 25.5 |
| 24 | 25 | 26 | 25 |
| 23 | 24 | 25 | 24.5 |
| 22 | 24 | 25 | 24 |
| 21 | 23 | 24 | 23.5 |
| 20 | 23 | 23 | 23 |
| 19 | 22 | 22 | 22.5 |
| 18 | 21 | 22 | 22 |
| 17 | 21 | 21 | 21.5 |
| 16 | 20 | 20 | 21 |
| 15 | 19 | 20 | 20.5 |
| 14 | 19 | 19 | 20 |
| 13 | 18 | 18 | 19 |
| 12 | 17 | 17 | 18.5 |
| 11 | 17 | 16 | 18 |
| 10 | 16 | 16 | 17 |
| 9 | 16 | 15 | 16.5 |
| 8 | 15 | 14 | 15.5 |
| 7 | 14 | 14 | 14.5 |
| 6 | 13 | 13 | 13.5 |

READING

| Question # | Correct | Your Answer | Difficulty |
|------------|---------|-------------|------------|
| 1 | C | | ■ ■ ■ |
| 2 | D | | ■ ■ ■ |
| 3 | B | | ■ ■ ■ |
| 4 | A | | ■ ■ ■ |
| 5 | B | | ■ ■ ■ |
| 6 | A | | ■ ■ ■ |
| 7 | C | | ■ ■ ■ |
| 8 | D | | ■ ■ ■ |
| 9 | C | | ■ ■ ■ |
| 10 | C | | ■ ■ ■ |
| 11 | C | | ■ ■ ■ |
| 12 | B | | ■ ■ ■ |
| 13 | D | | ■ ■ ■ |
| 14 | A | | ■ ■ ■ |
| 15 | B | | ■ ■ ■ |
| 16 | D | | ■ ■ ■ |
| 17 | D | | ■ ■ ■ |
| 18 | A | | ■ ■ ■ |
| 19 | C | | ■ ■ ■ |
| 20 | D | | ■ ■ ■ |
| 21 | A | | ■ ■ ■ |
| 22 | B | | ■ ■ ■ |
| 23 | D | | ■ ■ ■ |
| 24 | A | | ■ ■ ■ |
| 25 | C | | ■ ■ ■ |
| 26 | C | | ■ ■ ■ |
| 27 | B | | ■ ■ ■ |
| 28 | B | | ■ ■ ■ |
| 29 | B | | ■ ■ ■ |
| 30 | A | | ■ ■ ■ |
| 31 | D | | ■ ■ ■ |
| 32 | C | | ■ ■ ■ |
| 33 | A | | ■ ■ ■ |
| 34 | B | | ■ ■ ■ |
| 35 | C | | ■ ■ ■ |
| 36 | D | | ■ ■ ■ |
| 37 | C | | ■ ■ ■ |
| 38 | D | | ■ ■ ■ |
| 39 | D | | ■ ■ ■ |
| 40 | A | | ■ ■ ■ |
| 41 | D | | ■ ■ ■ |
| 42 | C | | ■ ■ ■ |
| 43 | A | | ■ ■ ■ |
| 44 | C | | ■ ■ ■ |
| 45 | B | | ■ ■ ■ |
| 46 | A | | ■ ■ ■ |
| 47 | B | | ■ ■ ■ |

WRITING AND LANGUAGE

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

MATH – CALCULATOR

| Question # | Correct | Your Answer | Difficulty |
|------------|---------|-------------|------------|
| 1 | C | ✓ | ■ ■ ■ |
| 2 | B | | ■ ■ ■ |
| 3 | C | | ■ ■ ■ |
| 4 | D | | ■ ■ ■ |
| 5 | D | | ■ ■ ■ |
| 6 | B | | ■ ■ ■ |
| 7 | C | | ■ ■ ■ |
| 8 | D | | ■ ■ ■ |
| 9 | A | | ■ ■ ■ |
| 10 | A | | ■ ■ ■ |
| 11 | D | | ■ ■ ■ |
| 12 | A | | ■ ■ ■ |
| 13 | A | | ■ ■ ■ |
| 14 | C | | ■ ■ ■ |

| Question # | Correct | Your Answer | Difficulty |
|------------|---------|-------------|------------|
| 28 | 4 | | ■ ■ ■ |
| 29 | 180 | | ■ ■ ■ |
| 30 | .2, 1/5 | | ■ ■ ■ |
| 31 | 35 | | ■ ■ ■ |

MATH – NO CALCULATOR

| Question # | Correct | Your Answer | Difficulty |
|------------|---------|-------------|------------|
| 1 | B | | ■ ■ ■ |
| 2 | D | | ■ ■ ■ |
| 3 | A | | ■ ■ ■ |
| 4 | D | | ■ ■ ■ |
| 5 | D | | ■ ■ ■ |
| 6 | B | | ■ ■ ■ |
| 7 | C | | ■ ■ ■ |

| Question # | Correct | Your Answer | Difficulty |
|------------|---------|-------------|------------|
| 14 | 5 | | ■ ■ ■ |
| 15 | 5, 4 | | ■ ■ ■ |
| 16 | 98 | | ■ ■ ■ |
| 17 | 11 | | ■ ■ ■ |

| Question # | Correct | Your Answer | Difficulty |
|------------|---------|-------------|------------|
| 15 | D | | ■ ■ ■ |
| 16 | C | | ■ ■ ■ |
| 17 | C | | ■ ■ ■ |
| 18 | B | | ■ ■ ■ |
| 19 | B | | ■ ■ ■ |
| 20 | D | | ■ ■ ■ |
| 21 | C | | ■ ■ ■ |
| 22 | C | | ■ ■ ■ |
| 23 | B | | ■ ■ ■ |
| 24 | C | | ■ ■ ■ |
| 25 | B | | ■ ■ ■ |
| 26 | A | | ■ ■ ■ |
| 27 | B | | ■ ■ ■ |

| Question # | Correct | Your Answer | Difficulty |
|------------|---------|-------------|------------|
| 8 | C | | ■ ■ ■ |
| 9 | B | | ■ ■ ■ |
| 10 | A | | ■ ■ ■ |
| 11 | A | | ■ ■ ■ |
| 12 | D | | ■ ■ ■ |
| 13 | D | | ■ ■ ■ |