



## Practice Test 2

# Reading Test

65 MINUTES, 52 QUESTIONS

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

## DIRECTIONS

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

### Questions 1–10 are based on the following passage.

This passage is adapted from Chimamanda Ngozi Adichie, *Americanah*. © 2013 by First Anchor Books.

The first time Ifemelu saw Auntie Uju’s house in Dolphin Estate, she did not want to leave. The bathroom fascinated her, with its hot water tap, its gushing shower, its pink tiles. The bedroom curtains were made of raw silk, and she told Auntie Uju, “Ahn-ahn, it’s a waste to use this material as a curtain! Let’s sew a dress with it.” The living room had glass doors that slid noiselessly open and noiselessly shut. Even the kitchen was air-conditioned. She wanted to live there. It would impress her friends; she imagined them sitting in the small room just off the living room, which Auntie Uju called the TV room, watching programs on satellite. And so she asked her parents if she could stay with Auntie Uju during the week. “It’s closer to school, I won’t need to take two buses. I can go on Mondays and come home on Fridays,” Ifemelu said. “I can also help Auntie Uju in the house.”

“My understanding is that Uju has sufficient help,” her father said.

“It is a good idea,” her mother said to her father. “She can study well there, at least there will be light every day. No need for her to study with kerosene lamps.”

“She can visit Uju after school and on weekends. But she is not going to live there,” her father said.

Her mother paused, taken aback by his firmness. “Okay,” she said, with a helpless glance at Ifemelu.

For days, Ifemelu sulked. Her father often indulged her, giving in to what she wanted, but this time he ignored her pouts, her deliberate silences at the dinner table. He pretended not to notice when Auntie Uju brought them a new television. He settled back in his well-worn sofa, reading his well-worn book, while Auntie Uju’s driver put down the brown Sony carton. Ifemelu’s mother began to sing a church song—“the Lord has given me victory, I will lift him higher”—which was often sung at collection time.

“The General bought more than I needed in the house. There was nowhere to put this one,” Auntie Uju said, a general statement made to nobody in particular, a way of shrugging off thanks. Ifemelu’s mother opened the carton, gently stripped away the Styrofoam packaging.

“Our old one doesn’t even show anything anymore,” she said, although they all knew that it still did.

“Look at how slim it is!” she added. “Look!”

Her father raised his eyes from the book. “Yes, it is,” he said, and then lowered his gaze.

\* \* \* \*

Her father would not ask Auntie Uju for help, but if Auntie Uju presented him with the money, he would not refuse. It was better than being indebted to Akunne. Ifemelu told Auntie Uju how the landlord banged on their door, a loud, unnecessary banging for the benefit of the neighbors, while hurling insults at her father. “Are you not a real man? Pay me my money. I will throw you out of this flat if I don’t get that rent by next week!”

CONTINUE

As Ifemelu mimicked the landlord, a wan sadness crossed Aunt Uju's face. "How can that useless landlord embarrass Brother like this? I'll ask Oga to give me the money."

Ifemelu stopped. "You don't have money?"

"My account is almost empty. But Oga will give it to me. And do you know I have not been paid a salary since I started work? Every day, there is a new story from the accounts people. The trouble started with my position that does not officially exist, even though I see patients every day."

"But doctors are on strike," Ifemelu said.

"The military hospitals still pay. Not that my pay will be enough for the rent, sha."

"You don't have money?" Ifemelu asked again, slowly, to clarify, to be sure. "Ahn-ahn, Aunt, but how can you not have money?"

"Oga never gives me big money. He pays all the bills and he wants me to ask for everything I need. Some men are like that."

Ifemelu stared. Aunt Uju, in her big pink house with the wide satellite dish blooming from its roof, her generator brimming with diesel, her freezer stocked with meat, and she did not have money in her bank account.

"Ifem, don't look as if somebody died!" Aunt Uju laughed, her wry laugh. She looked suddenly small and bewildered among the detritus of her new life, the fawn-colored jewel case on the dressing table, the silk robe thrown across the bed, and Ifemelu felt frightened for her.

1

The passage states that Ifemelu reacts to Uju's new house with

- A) jealousy.
- B) joyfulness.
- C) indifference.
- D) fascination.

2

The author uses the images of the "gushing shower" (line 4), the "curtains . . . of raw silk" (lines 4–5) and the door that "slid noiselessly open" (line 8) most likely to

- A) describe the dream house that Ifemelu will likely never have.
- B) highlight Aunt Uju's extravagant spending habits.
- C) contrast Ifemelu's living conditions with those of her aunt.
- D) create a clear image of the house where Ifemelu will live when she goes to school.

3

Which choice best supports the claim that Ifemelu's father usually goes along with the requests of Ifemelu and her mother?

- A) Lines 18–19 ("My understanding . . . said")
- B) Line 25 ("But she . . . said")
- C) Lines 28–29 ("Her father . . . wanted")
- D) Lines 31–32 ("He pretended . . . television")

4

The author uses the word "well-worn" (line 33) mainly to emphasize

- A) the reluctance of Ifemelu's father to part with his favorite things.
- B) the contrast between the finances of Ifemelu's father and her aunt.
- C) the disdain Uju feels for her brother's lifestyle.
- D) the appearance of Uju's driver.

5

In the context of the conversation, Ifemelu’s mother’s statement in line 44 (“Our old . . . anymore”) mainly serves to

- A) relieve some of the awkwardness of the surprise gift.
- B) explain why the family had to buy a new television.
- C) convince Ifemelu’s father that they should keep the television.
- D) thank the General for sending them his old television.

6

According to the passage, how does Ifemelu try to help her family with the rent trouble?

- A) She tells her father to ask Uju for the money.
- B) She tells Uju about the landlord, hoping Uju will offer the money.
- C) She asks Akunne for a loan to cover the rent.
- D) She tries to negotiate with the landlord for an extension.

7

It can reasonably be inferred from the passage that Uju doesn’t have any money of her own because

- A) she has stopped working at the hospital.
- B) the military doctors are on strike.
- C) Uju and Oga are trying to save money.
- D) Oga is controlling Uju’s finances.

8

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

- A) Lines 66–68 (“The trouble . . . day”)
- B) Lines 70–71 (“The military . . . sha”)
- C) Lines 75–77 (“Oga never . . . that”)
- D) Lines 78–82 (“Aunty Uju . . . account”)

9

As used in line 79, “blooming from” most nearly means

- A) sprouting out.
- B) attached to.
- C) growing into.
- D) decorated with.

10

The main purpose of the final paragraph is to

- A) indicate the change of perspective Ifemelu experiences towards her aunt’s lifestyle.
- B) demonstrate the teasing way Uju usually interacts with Ifemelu.
- C) describe the details of Uju’s newer, fancier lifestyle.
- D) offer an example of a concern Uju has about her current situation.


 CONTINUE

**Questions 11–20 are based on the following passages.**

Passage 1 is adapted from Martin Luther King, Jr., “Birth of a New Nation.” Originally delivered in 1957. Passage 2 is adapted from Frantz Fanon, “The Wretched of the Earth.” Originally published in 1961.

**Passage 1**

If there had not been a Gandhi in India with all of his noble followers, India would have never been free. If there had not been an Nkrumah and his followers in Ghana, Ghana would still be a British colony. If there had not been abolitionists in America, both Negro and white, we might still stand today in the dungeons of slavery. And then because there have been, in every period, there are always those people in every period of human history who don’t mind getting their necks cut off, who don’t mind being persecuted and discriminated and kicked about, because they know that freedom is never given out, but it comes through the persistent and the continual agitation and revolt on the part of those who are caught in the system. Ghana teaches us that.

It says to us another thing. It reminds us of the fact that a nation or a people can break aloose from oppression without violence. Nkrumah says in the first two pages of his autobiography... that he had studied the social systems of social philosophers and he started studying the life of Gandhi and his techniques. And he said that in the beginning he could not see how they could ever get aloose from colonialism without armed revolt, without armies and ammunition, rising up. Then he says after he continued to study Gandhi and continued to study this technique, he came to see that the only way was through nonviolent positive action. And he called his program “positive action.” And it’s a beautiful thing, isn’t it? That here is a nation that is now free, and it is free without rising up with arms and with ammunition. It is free through nonviolent means. Because of that the British Empire will not have the bitterness for Ghana that she has for China, so to speak. Because of that, when the British Empire leaves Ghana, she leaves with a different attitude than she would have left with if she had been driven out by armies. We’ve got to revolt in such a way that after revolt is over we can live with people as their brothers and their sisters. Our aim must never be to defeat them or humiliate them.

The aftermath of nonviolence is the creation of the beloved community. The aftermath of nonviolence is redemption. The aftermath of nonviolence is reconciliation. The aftermath of violence, however, are emptiness and bitterness. This is the thing I’m concerned about. Let us fight passionately and unrelentingly for the goals of justice and peace, but let’s be sure that our hands are clean in this struggle. Let us never fight with falsehood and violence and hate and malice, but always fight with love, so that, when the day comes that the walls of segregation have completely crumbled in Montgomery... that we will be able to live with people as their brothers and sisters.

**Passage 2**

National liberation, national renaissance, the restoration of nationhood to the people, commonwealth: whatever may be the headings used or the new formulas introduced, decolonization is always a violent phenomenon... To tell the truth, the proof of success lies in a whole social structure being changed from the bottom up. The extraordinary importance of this change is that it is willed, called for, demanded.

Decolonization, which sets out to change the order of the world, is, obviously, a program of complete disorder. But it cannot come as a result of magical practices, nor of a natural shock, nor of a friendly understanding... In decolonization, there is therefore the need of a complete calling in question of the colonial situation. If we wish to describe it precisely, we might find it in the well-known words: “The last shall be first and the first last.” Decolonization is the putting into practice of this sentence. That is why, if we try to describe it, all decolonization is successful.

For if the last shall be first, this will only come to pass after a murderous and decisive struggle between the two protagonists. That affirmed intention to place the last at the head of things, and to make them climb at a pace (too quickly, some say) the well-known steps which characterize an organized society, can only triumph if we use all means to turn the scale, including, of course, that of violence.

You do not turn any society, however primitive it may be, upside down with such a program if you have not decided from the very beginning, that is to say from the actual formulation of that program, to overcome all the obstacles that you will come across in

**CONTINUE** 

so doing. The native who decides to put the program into practice, and to become its moving force, is ready for violence at all times. From birth it is clear to him that this narrow world, strewn with prohibitions, can  
90 only be called in question by absolute violence.

11

As used in line 17, “break” most nearly means

- A) separate.
- B) rupture.
- C) damage.
- D) alienate.

12

The sentence in lines 28–29 (“And it’s . . . it”) primarily serves which function in Passage 1?

- A) It acknowledges and celebrates an alternative plan of action.
- B) It condescends to and belittles a contemporary of King’s.
- C) It distracts and redirects the audience to another perspective.
- D) It introduces and qualifies the central argument of King’s speech.

13

As used in line 30, “free” most nearly means

- A) complimentary.
- B) liberated.
- C) exempt.
- D) able.

14

In Passage 1, King contends that nonviolent protest leads to which result?

- A) It causes divisions between countries.
- B) It creates feelings of emptiness and bitterness.
- C) It maintains relationships through transitions.
- D) It fails to achieve freedom from colonialism.

15

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

- A) Lines 4–7 (“If there . . . slavery”)
- B) Lines 22–24 (“he could . . . revolt”)
- C) Lines 44–45 (“The aftermath . . . bitterness”)
- D) Lines 49–53 (“Let us . . . sisters”)

16

In Passage 2, Fanon indicates that decolonization is a process that is

- A) turbulent and capable of changing everything.
- B) nonviolent and always successful.
- C) primitive and something to be avoided.
- D) natural and able to be controlled.

17

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

- A) Lines 60–61 (“The extraordinary . . . demanded”)
- B) Lines 62–64 (“Decolonization, which . . . disorder”)
- C) Lines 64–66 (“But it . . . understanding”)
- D) Lines 71–72 (“That is . . . successful”)

18

The primary purpose of each passage is to

- A) present a historical overview of recent democratic revolutions.
- B) provide a set of specific guidelines to incite a revolt.
- C) criticize the actions of those who work against the goals of the people.
- D) describe an effective way for a society to work toward significant change.

19

Based on the passages, King would most likely describe the behavior that Fanon recommends in lines 88–90 (“From birth . . . violence”) as

- A) an acceptable alternative to positive action.
- B) a misunderstood cultural temptation.
- C) an unnecessary method for achieving a goal.
- D) a brave step taken by an oppressed group.

20

Based on the passages, one commonality in the stances King and Fanon take toward revolution and decolonization is that

- A) both authors believe the process will result in radical societal change.
- B) both authors rely heavily on the guidance of earlier leaders.
- C) neither author advocates the use of violence.
- D) neither author supports peace as a means to change society.

**CONTINUE** 

**Questions 21–31 are based on the following passage.**

The passage is adapted from Elsa Youngsteadt, “Free Upgrades, Unfortunately.” © 2006 by *American Scientist*.

Line  
5  
Contrary to infectious-disease dogma, the mutations that enable bacteria to resist antibiotics do not always result in weaker strains, according to a study published in the June 30 issue of the journal *Science*. This is bad news for public-health efforts, especially because the germ in question is the tuberculosis-causing *Mycobacterium tuberculosis*, once the leading cause of death in the United States.

10  
Classic laboratory experiments once suggested that bacteria pay a price for antibiotic resistance—that resistant bacteria are weaker than their susceptible counterparts and should not spread through the human population when forced to compete with harder strains.

15  
But the new study, headed by scientists at Stanford University, has undermined this comforting conventional wisdom. It shows that in real human patients, tuberculosis bacteria can evolve resistance to antibiotics and still be just as aggressive as their susceptible ancestors.

20  
“It’s generally bad news for the world that some tuberculosis strains can get something for nothing,” said Sebastien Gagneux, one of the lead authors of the study and a research associate at the Institute of Systems Biology. “Even though many drug-resistant strains are less hardy than susceptible strains, others evolve over the course of treatment and remain virulent.”

30  
The investigators looked at the evolution of resistance to the drug rifampin, one of the preferred first-line treatments for the disease. Rifampin binds to the molecule that makes, or polymerizes, bacterial RNA. The drug disables the so-called polymerase molecule and prevents the crucial flow of information from DNA to RNA. Without RNA, bacteria can’t make the proteins they need to survive. But simple mutations in the gene that encodes RNA polymerase can change its structure. The different shape decreases the drug’s ability to bind and allows *M. tuberculosis* to persist in the face of antibiotic onslaught. Classic studies suggested that such a change would carry some cost, such as decreased efficiency of the polymerase molecule. Such a penalty would cause the mutants to grow more slowly than unmodified strains, thereby

45  
retarding the spread of the antibiotic-resistant mutation in the population.

50  
Not so, according to the new study, which found that some resistant bugs are every bit as robust as unmodified strains. The Stanford group collected tuberculosis bacteria from the sputum of patients, first at the beginning of their infections, and a second time after some of those patients developed rifampin-resistant infections. The investigators then pitted the resistant strains against their susceptible counterparts in antibiotic-free competition assays. These tests force the two strains to compete for limited resources in a common culture flask, so the harder bug should take over as the weaker one gets crowded out. Contrary to expectations, five of the ten resistant strains held their own in these tests, and one actually dominated its antibiotic-susceptible ancestor.

60  
Just how clinical isolates outperform lab-generated strains with identical mutations remains a mystery. Some changes simply have a low cost to begin with, and, the study also found, the cost depends on the strain in which the mutation occurs. However, the real key is likely to be compensatory mutation—one or more additional changes, in the same RNA polymerase gene or in related genes, that make up for the diminished function caused by the original mutation. Gagneux is planning future studies to find these putative compensatory mutations and learn how they restore the performance of strains that acquire antibiotic-resistance mutations.

75  
The authors don’t want their study to fuel an alarmist panic. Indeed, the data don’t call for it, says Bruce Levin, an expert on the evolution of antibiotic resistance at Emory University who was not involved with the study. Levin points out that “the spread of tuberculosis does not depend solely on the efficacy or lack of efficacy of antibiotics.” He cites public-health practices and better nutrition as bulwarks against 19th-century-style epidemics.

80  
However, the paper does highlight a sobering trend in human epidemiology. Drug-resistant bacteria are here to stay, even if society stopped abusing antibiotics right now. Furthermore, evolution doesn’t just work on bacteria. Levin explains, “The drug-resistant mutations that aren’t costly are the ones that will take over, not only in the bacteria responsible for tuberculosis but also in [organisms] responsible for other diseases.”

**CONTINUE** 

21

The primary purpose of the passage is to

- A) support the findings of classic laboratory experimentation.
- B) assert that controversial findings should cause alarm.
- C) present concerns raised by the results of a study.
- D) criticize the methodology of an existing study.

22

What did the scientists in the Stanford University study discover about tuberculosis bacteria that “undermined this comforting conventional wisdom” (lines 16–17)?

- A) Bacteria have shown the ability to resist antibiotics through mutation without losing strength.
- B) *Mycobacterium tuberculosis* has become the leading cause of death in the United States.
- C) RNA and DNA interchangeability in tuberculosis has led to stronger antibiotics.
- D) Rifampin can no longer be used to treat disease due to proliferation of polymerase molecules.

23

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

- A) Lines 35–36 (“Without RNA . . . survive”)
- B) Lines 49–53 (“The Stanford . . . infections”)
- C) Lines 58–61 (“Contrary to . . . ancestor”)
- D) Lines 64–66 (“Some changes . . . occurs”)

24

As used in line 26, “hardy” most nearly means

- A) difficult.
- B) strong.
- C) terrible.
- D) thick.

25

Which statement about rifampin can be most reasonably inferred from the passage?

- A) It stopped tuberculosis from being the leading cause of death in the United States.
- B) It has successfully inhibited protein production in bacteria.
- C) It makes RNA for tuberculosis bacteria compatible with other DNA.
- D) It is the most effective known treatment for tuberculosis.

26

As presented in the passage, the Stanford University study relied on which type of evidence?

- A) Anecdotal opinion
- B) Secondhand observation
- C) Animal studies
- D) Clinical testing

27

The author indicates that prior to the Stanford University study the scientists generally believed that antibiotic-resistant strains of tuberculosis

- A) had a better chance of survival than their antibiotic-susceptible ancestors.
- B) would once again become the most deadly of diseases.
- C) resulted in lowered amounts of sputum in those they infect.
- D) did not have a survival rate equal to that of non-resistant strains.

**CONTINUE** 

28

According to the passage, Sebastien Gagneux plans to conduct further studies to answer which of the following questions?

- A) Are more virulent strains of tuberculosis likely to cause a panic?
- B) Do drug-resistant bacteria cost more to treat?
- C) How do antibiotic-resistant bacteria compensate for deficiencies caused by mutation?
- D) Why are some strains of bacteria more likely to resist antibiotics than others?

29

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

- A) Lines 71–74 (“Gagneux is . . . mutations”)
- B) Lines 79–81 (“the spread . . . antibiotics”)
- C) Lines 85–87 (“Drug-resistant bacteria . . . now”)
- D) Lines 88–89 (“The drug-resistant . . . over”)

30

The author mentions an “alarmist panic” (line 76) most likely in order to

- A) bring attention to the threat posed by antibiotic-resistant bacteria.
- B) state that 19th century public-health practices were unable to halt the spread of tuberculosis.
- C) identify the inevitable result of rampant societal antibiotic abuse.
- D) draw a contrast between an undesirable outcome and a reasonable response.

31

The primary function of the final paragraph (lines 84–91) is to

- A) reevaluate the hypothesis of the Stanford University study.
- B) provide a warning supported by results of the Stanford University study.
- C) credit the Stanford University study with changing society.
- D) explain the methodology of the Stanford University study.

**CONTINUE** 

**Questions 32–42 are based on the following passage and supplementary material.**

This passage is adapted from Tim Cushing, “Encyclopaedia Britannica: Civility in the Face of Adversity.” © 2012 by *Innovation*.

Encyclopaedia Britannica’s (EB) recent announcement that it would cease its printing operations was the culmination of the inevitable.

Line Many of its eulogizers seem to be laying the blame  
5 at Wikipedia’s feet, despite the fact that Microsoft’s Encarta software dealt the first blows to printed encyclopedias several years before Wikipedia’s development. While many words have been written about the revered encyclopedia’s history and stature,  
10 very few words have been written detailing EB’s adjustment to the digital age, which is as much about the things it *did do* as it is about the things it *didn’t do*. Shane Greenstein has written a very astute assessment of EB’s reactions to the evolving encyclopedia market,  
15 one that clearly shows how forward-looking Britannica was (and is), rather than bemoaning the loss of the print edition.

EB was a highly leveraged organization. It sold books with door to door salesmen. This was an  
20 expensive way to distribute a product, and it did not, could not, last under assault from the PC and the Encarta. More to the point, the management of the organization was forward looking. They sponsored a set of projects for DVDs and online experiments. The latter eventually went online in  
25 January 1994 with an html version. Its descendants still generate licensing revenue for the organization. Then Wikipedia came along and ate everyone’s lunch in the reference section, that is, everyone  
30 who made DVDs and books. Encarta had to close its doors a couple years ago. It was simply not getting enough sales any longer for Microsoft to find any reason to keep it going.

Britannica realized quicker than many legacy  
35 entities that the market it worked in was no longer viable and changed its focus early in the game. Countless industries have been upended by new technologies, but many have failed to react in time to take advantage of these changes. Not only did  
40 Britannica shift its focus while it still *could* compete,

but it greeted this upheaval with something even more rarely found in legacies: civility. Greenstein explains that what Britannica *didn’t* do is perhaps the most astonishing aspect of this story.

45 Here is my point. Notice what happened as the market evolved. The once leading firm changed its organizational form. It adopted a new form too, both DVD and online licensing. It still survives today with the latter, albeit, at a much smaller scale  
50 than during its peak. In short, this transformation came about in a rather civilized way. Do you hear any whining or fussing from EB about unfair trade practices, as so many firms have done? Do you see EB suing anybody for patent infringement, as  
55 seems so common today in high tech? No, in the last decade EB did the classy thing, restructuring as best they could to make due in the new world. Other firms should pay heed to that example. This is how it is supposed to happen, as one new market  
60 replaces an old. This is how markets should evolve. Let’s hear it for Encyclopaedia Britannica, for evolving with a sense of class, and for moving along with everyone else as we all move along into the new age.

65 This “evolving with a sense of class” has escaped many legacy industries who have made serious efforts to stop the clock, if not actually turn the clock back to when they had control of their respective fields. Many have the ear of legislators, who often confuse death  
70 throes for growing pains, especially when trying to hear over the hubbub of omnipresent lobbyists. As graceful and civil as EB has been, its self-appointed mourners (of what exactly? paper?) have also issued eulogies of their own, offering bizarrely-worded attacks  
75 on Wikipedia, as though its only reason for existence was to destroy every other encyclopedia, online or off. All in all, Britannica comes out of this sounding like it would rather focus on the future while its biggest fans sound like they’d rather it was 25 years ago all  
80 over again. It’s one thing for an industry to make some atrocious noises when confronted with massive upheaval. It’s quite another when supporters make incoherent sympathetic noises simply because they’ve been surprised by the silence.

**CONTINUE** 

Research Tools That Students Are Most Likely to Use,  
According to Teachers

Type of Resource	Very Likely	Some-what Likely	Not too Likely	Not at all Likely
Google or other online search engine	94%	5%	1%	0%
Wikipedia or other online encyclopedias	75%	19%	4%	2%
YouTube or other social media sites	52%	33%	13%	3%
Their peers	42%	46%	10%	2%
SparkNotes, Cliff-Notes, or other study guides	41%	34%	19%	6%
News sites such as the New York Times or CNN	25%	49%	23%	3%
Textbooks (print or electronic)	18%	48%	28%	5%
Online databases such as EBSCO, JSTOR, or Grolier	17%	29%	36%	18%
A research librarian at a school or library	16%	37%	34%	14%
Printed books (other than textbooks)	12%	38%	41%	9%
Student-oriented search engines such as Sweet Search	10%	34%	39%	17%

Source: The Pew Research Center's Internet & American Life Project Online Survey of Teachers, March 7 to April 23, 2012.  $n = 2,462$  middle and high school teachers.

32

The main purpose of the passage is to

- A) review attitudes in response to the changing role of an established brand.
- B) demonstrate how evolving with a sense of class altered the encyclopedia market.
- C) confront the misplaced notion that digital encyclopedias caused massive upheaval.
- D) examine the evolving mechanisms by which encyclopedia companies adapted to include DVDs and online materials.

33

As used in line 31, “doors” most nearly means

- A) openings.
- B) operations.
- C) entrances.
- D) lights.

34

According to the passage, which action should legacy companies take in an unviable market?

- A) They should focus on providing the best possible product.
- B) They should gracefully accept that their products are no longer relevant.
- C) They should endeavor to integrate new business practices.
- D) They should eliminate obsolete methods and systems.

35

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

- A) Lines 8–12 (“While . . . *didn't do*”)
- B) Lines 34–36 (“Britannica realized . . . game”)
- C) Lines 42–44 (“Greenstein explains . . . story”)
- D) Lines 48–50 (“It still . . . peak”)

**CONTINUE** 

36

The extended quotation in lines 45–64 is most likely included to

- A) illustrate an unusual response.
- B) condemn common activities.
- C) discuss successful techniques.
- D) show futile actions.

37

According to the passage, a company in a changing market should avoid

- A) changing a new product into an antiquated form.
- B) reworking its products for alternative social classes.
- C) maintaining flexibility and understanding of new technologies.
- D) attempting to cling to outdated success.

38

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

- A) Lines 18–19 (“It sold . . . salesmen”)
- B) Lines 28–30 (“Then Wikipedia . . . books”)
- C) Lines 65–68 (“This ‘evolving . . . fields’”)
- D) Lines 80–82 (“It’s one . . . upheaval”)

39

As used in line 83, “noises” most nearly means

- A) sounds.
- B) screams.
- C) apologies.
- D) complaints.

40

Based on the table, it is very likely that what percent of students will use an online encyclopedia as a resource?

- A) 2%
- B) 4%
- C) 19%
- D) 75%

41

Which statement is best supported by the data in the table?

- A) Comparing printed books and Sweet Search, teachers feel that students are twice as likely to utilize printed books.
- B) Comparing online databases such as EBSCO and a research librarian, teachers feel that similar percentages of students are very likely to use those resources.
- C) Comparing SparkNotes and online databases, teachers feel that more students are very likely to use SparkNotes, and fewer are somewhat likely to use SparkNotes.
- D) Comparing Google and textbooks, Google is a far superior research tool.

42

The data in the table most strongly supports the claim that

- A) “[t]his was an expensive way to distribute a product” (lines 19–20).
- B) “Wikipedia came along and ate everyone’s lunch in the reference section” (lines 28–29).
- C) “what Britannica *didn’t* do is perhaps the most astonishing aspect” (lines 43–44).
- D) “[t]he once leading firm changed its organizational form” (lines 46–47).



**Questions 43–52 are based on the following passage and supplementary material.**

This passage is adapted from Joe Turner, “Fill Up Your Gas Tank with Bamboo?” © 2015 by *Science*.

2014 was a banner year for making automotive fuel from nonfood crops, with a series of major new production plants opening in the United States.

Line However, producing this so-called cellulosic ethanol  
5 remains considerably more expensive than gasoline. So researchers are always on the lookout for new ways to trim costs. Now they have a new lead, a microbe that can use abundant nitrogen gas as the fertilizer it needs to produce ethanol from plants.

10 The discovery is “a major commercial accomplishment for biofuel production,” says Steven Ricke, a microbiologist and editor of a textbook on biofuel production at the University of Arkansas, Fayetteville, who was not involved in the study.

15 Scientists have long eyed biofuels as a cleaner and more sustainable alternative to traditional fossil fuels. Instead of pumping oil from the ground, researchers harvest plants like cassava and sugarcane, grind them up, add enzymes to break down the plant matter, and  
20 sprinkle in yeast. The microbe ferments sugars in the plants to produce ethanol, a form of alcohol, which is now commonly mixed with gasoline and used in cars and buses around the world.

But biofuels are controversial. The majority are  
25 derived from food crops, like corn. Critics say the increased demand for these crops could increase food prices. And although direct emissions of carbon dioxide from burning biofuels are less than those from traditional fuels, some scientists now argue  
30 that once indirect emissions from land use changes and producing the crop are considered, the overall emissions from some biofuels can actually be higher.

So in recent years, researchers have turned to nonfood crops—like trees and bamboo—for biofuel  
35 production. These crops need less fertilizer than traditional biofuel crops, and they often have less detrimental impact on the land. In an ideal world, biofuels would be produced only from plant materials that cannot be eaten, such as trees and parts of plants  
40 that are left in fields after harvest, like straw.

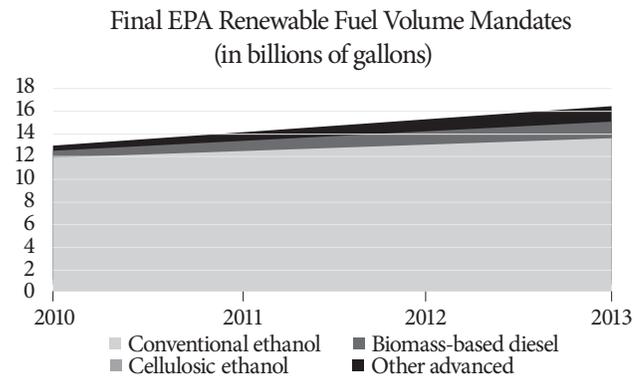
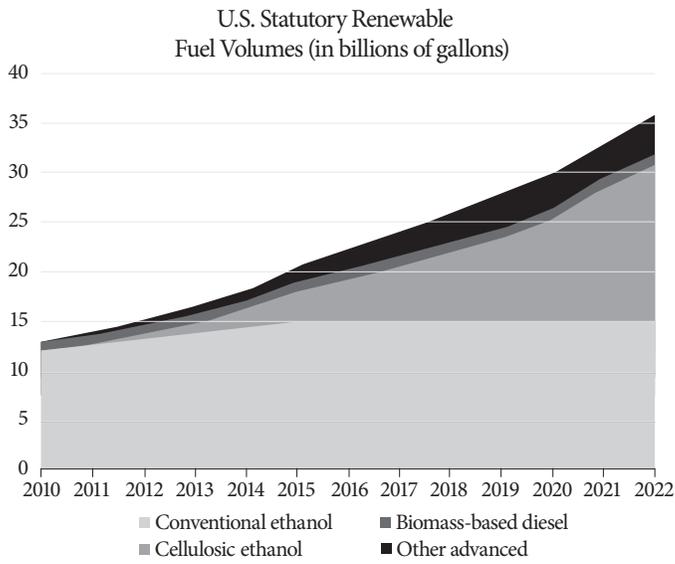
But there are problems. The enzymes needed to break down plants’ primary structural components—cellulose and hemicellulose—into simple sugars are expensive. To ferment the simple sugars, the microbes  
45 also need nitrogen to grow and divide. So researchers add fertilizer to their fermentation vats to boost the ethanol yields. It is estimated that an ethanol production plant may be spending more than \$1 million on this a year.

50 Instead of using yeast to ferment their plants into fuel, microbiologists at Indiana University, Bloomington, turned to *Zymomonas mobilis*, a bacterium also capable of doing the job. So the researchers looked at the amount of ethanol that the  
55 microbe could produce with and without additional nitrogen fertilizer being supplied and found that it did better without it. The study, published in the *Proceedings of the National Academy of Sciences*, even showed that the bacterium produces ethanol  
60 more quickly and uses more of the plant material when it uses nitrogen gas than when it is fed nitrogen in fertilizer. If the same holds true in a production plant, this could reduce biofuel production costs, the authors say. The process is also more environmentally friendly,  
65 they add, because there are greenhouse gas emissions associated with producing nitrogen fertilizer.

However, questions remain about how well this process will work in a large biofuel plant. Whereas using *Z. mobilis* might make it cheaper for producers  
70 to use inexpensive, nonfood crops, there could also be added costs and problems.

The overall environmental benefits may also be slim. Even if nitrogen fertilizers are not used in the fermentation process, they might still be needed to  
75 grow the crops. And the new advance doesn’t address other environmental impacts from biofuels, such as the greenhouse gas emissions from growing, harvesting, and transporting the plants. According to Fengqi You, a chemical engineer at Northwestern University in  
80 Evanston, Illinois, further studies would be needed to consider all the environmental and economic costs and benefits of doing this on an industrial scale so that it can be compared with existing systems.

**CONTINUE** 



Figures adapted from data by Center for Climate and Energy Solutions.

43

- The passage is written from the perspective of an
- A) advocate arguing for more project funding.
  - B) educator explaining textbook chemistry concepts.
  - C) expert lauding the successes of an industry.
  - D) objective observer evaluating new research.

44

The last sentence of the first paragraph primarily serves to

- A) assess recent commercial accomplishments.
- B) explain why one fuel is more expensive than another.
- C) propose a potential solution to a known problem.
- D) restate the results of a banner year.

45

According to the passage, nonfood crops produce fewer indirect land use emissions by

- A) occupying land that would otherwise produce corn.
- B) curtailing sudden increases in food prices.
- C) limiting the fertilizer required to produce biofuels.
- D) stopping the proliferation of fossil fuel use.

46

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

- A) Lines 35–37 (“These crops . . . land”)
- B) Lines 37–40 (“In an . . . straw”)
- C) Lines 41–44 (“The enzymes . . . expensive”)
- D) Lines 47–49 (“It is . . . year”)

47

As used in line 37, “ideal world” most nearly means

- A) best-case scenario.
- B) dream sequence.
- C) perfect model.
- D) utopian society.

**CONTINUE**

48

It can most reasonably be inferred from the results of the Indiana University study involving *Zymomonas mobilis* that

- A) all bacteria can ferment corn and trees into fuel.
- B) total greenhouse gas emissions will remain unchanged.
- C) researchers would prefer biofuels to be used as a food source.
- D) biofuel plant materials are less expensive than nitrogen fertilizer.

49

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

- A) Lines 59–63 (“the bacterium . . . costs”)
- B) Lines 64–66 (“The process . . . fertilizer”)
- C) Lines 68–71 (“Whereas using . . . problems”)
- D) Lines 73–75 (“Even if . . . crops”)

50

As used in line 73, “slim” most nearly means

- A) brittle.
- B) negligible.
- C) skinny.
- D) useless.

51

According to Figure 1, in what year is the required statutory volume of conventional ethanol closest to that of another fuel type?

- A) 2010
- B) 2012
- C) 2018
- D) 2022

52

According to Figure 2, which of the following fuels is least likely to meet the volume requirements shown in Figure 1?

- A) Biomass-based diesel
- B) Cellulosic ethanol
- C) Conventional ethanol
- D) Other advanced renewable fuels

**STOP**

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

# 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.

### The Base Borden Aquifer

Located about 60 kilometers northwest of Toronto, the aquifer at the Borden experimental site has been repeatedly exposed to a variety of **1** pollutants—since 1978, researchers have been running controlled experiments in which they release potentially hazardous chemicals into the groundwater. Often these chemicals in the aquifer **2** is excavated before concentrations can reach dangerous levels, but some pollutants are allowed free movement if the researchers determine that the concentrations will ultimately drop back into an environmentally acceptable range.

1

- A) NO CHANGE
- B) pollutants, since 1978,
- C) pollutants: since 1978—
- D) pollutants. Since 1978:

2

- A) NO CHANGE
- B) are excavated
- C) excavate
- D) was excavated

CONTINUE 

3 This process may seem objectionable, but the experiments provide valuable insights into the behavior of some of the most dangerous and prevalent groundwater pollutants. Chlorinated solvents, such as TCE and PCE, are the most commonly tested sources of groundwater pollution at the site. These solvents, used in dry-cleaning and other industries, are responsible for a significant portion of the groundwater contamination in North America. 4 When the solvents are improperly disposed of, they can seep into the groundwater. Contaminated groundwater causes a variety of health problems, including nervous system damage, liver damage, and cancer.

3

Which choice provides the best transition from the previous paragraph to this one?

- A) NO CHANGE
- B) Groundwater in the United States is polluted with a variety of harmful chemicals.
- C) Despite the constant influx of pollution, the water in the aquifer remains remarkably clean.
- D) Since it is on a Canadian Forces base, very few civilians are exposed to the contaminated water in this aquifer.

4

Which choice most effectively combines the underlined sentences?

- A) When the solvents are improperly disposed of, they can seep into the groundwater; the groundwater pollution caused by this release of solvents is harmful to human health and leads to nervous system damage, liver damage, and cancer.
- B) When the solvents are improperly disposed of, they can seep into the groundwater, and groundwater contaminated with these solvents causes a variety of health problems, including nervous system damage, liver damage, and cancer.
- C) When the solvents are improperly disposed of, they can seep into the groundwater, causing a variety of health problems, including nervous system damage, liver damage, and cancer.
- D) When the solvents are improperly disposed of, they can seep into the groundwater—the result of the groundwater being contaminated with these solvents is a variety of health problems, including nervous system damage, liver damage, and cancer.

Traditional laboratory experiments cannot replicate the variation in geologic features that exists in nature.

**5** For instance, researchers cannot accurately model the behavior of these contaminants based on laboratory studies. The data gathered at the Borden experimental site allow researchers to make improvements to their models and better predict the movement and concentrations of these hazardous chemicals. **6** However, some people are still skeptical of the value of these experiments.

Researchers at the University of Waterloo conducted the initial experiment at the site in **7** 1978, they selected the location to perform a salt tracer experiment. The researchers injected chloride ions into the aquifer **8** plus then allowed the ions to migrate naturally for months. The results showed that the dispersal of the ions was less **9** uniform and, predictable, than had previously been assumed.

5

- A) NO CHANGE
- B) As a result,
- C) Although,
- D) Next,

6

Which choice provides the most effective response to a possible relevant counterclaim of the argument in support of the controlled studies at the Borden experimental site?

- A) NO CHANGE
- B) Hazardous chemicals should be better regulated to prevent groundwater contamination.
- C) Traditional laboratory experiments still provide plenty of useful information.
- D) The researchers remain aware that field studies carry greater risk than laboratory studies, so the risks of each study are carefully examined before any study proceeds.

7

- A) NO CHANGE
- B) 1978. When they selected
- C) 1978, selecting
- D) 1978. Selecting

8

- A) NO CHANGE
- B) while also allowing
- C) plus also allowed
- D) and allowed

9

- A) NO CHANGE
- B) less uniform and predictable than
- C) less uniform, and predictable than
- D) less uniform and predictable than,



The unexpected results were **10** respected for a breakthrough that demonstrated the value of conducting experiments in the field, and the site was converted into a long-term research facility.

For the first decade, the site was used mainly to gain understanding of the transport of the contaminants in an effort to improve mathematical models of dispersion. However, in more recent years, the site has been used to test new technologies aimed at containing or removing contaminants in groundwater. **11** The research conducted at the site has directly led to some of the most advanced methods of removing groundwater pollutants in use today. So even though polluting an aquifer does not sound very environmentally conscious, by polluting this particular aquifer under controlled conditions, scientists have been able to come up with more effective methods of removing pollutants from the aquifers that millions of people rely on for safe drinking water every day.

10

- A) NO CHANGE
- B) worshipped as
- C) recognized as being
- D) hailed as

11

At this point, the author wants to add an example of one of the technologies tested at the Borden site. Which choice best accomplishes this goal?

- A) The Waterloo barrier, a vertical treatment wall that can be inserted into the ground to disrupt the flow of pollutants and allow contaminants to be removed, is one such innovation that has shown promise here.
- B) Many of the procedures used to contain chemicals at the Borden site are now in use in industrial sites around the world.
- C) Edward Sudicky, a professor at the University of Waterloo, published a paper detailing the results of decades worth of experiments conducted by academics from across the globe.
- D) In 1988, a group of universities in Canada and the United States established a University Consortium Solvents-in-Groundwater Research Program to run these studies.

Questions 12–22 are based on the following passage.

### Yes, We Canal

**12** Because we may take it for granted now that various modes of transportation can make it over or through just about any natural obstacle, the **13** ease to move is in fact relatively new. After the Louisiana Purchase of 1803, the United States approximately doubled in size, adding what is now about the middle third of U.S. territory. **14** There was just one problem—journeys over the Appalachian Mountains in the North could make travel to the fertile West more trouble than it was worth.

12

- A) NO CHANGE
- B) After
- C) While
- D) For

13

- A) NO CHANGE
- B) easy moving
- C) ease of movement
- D) ease to movement

14

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

Additionally, the new territories provided great resources for the nation, including fertile farmlands and the seemingly endless Mississippi River.

Should the writer make this addition here?

- A) Yes, because it lists some of the West's positive attributes with which the next sentence will contrast.
- B) Yes, because it restates the first sentence's central argument in a more concise way.
- C) No, because it repeats information that is given throughout the paragraph.
- D) No, because it is not relevant to the paragraph's main discussion of the United States.

**CONTINUE** 

At the time, the developed states were primarily along the Atlantic coast. By the **15** 1840s the population, had expanded, a great deal into the new territories of Illinois, Tennessee, and especially Ohio. What made it possible? With such a vast movement of people, the answer should be hugely complex, but this time it can be summed up in just three words: the Erie Canal.

Horses and wagons were effective means of transporting goods across short distances, but **16** these became unreliable when faced with mountains and inhospitable conditions. The most efficient method of travel, especially for large quantities of goods, was water. After all, the new Americans had been trading with **17** their English counterparts across the ocean for centuries already.

15

- A) NO CHANGE
- B) 1840s: the population had expanded
- C) 1840s, the population had expanded
- D) 1840s, the population had, expanded

16

Which choice best supports the main point of the paragraph?

- A) NO CHANGE
- B) not everyone could afford to keep a horse or a wagon.
- C) many Americans during this time were not even aware that there were such vast territories to the West.
- D) there were few places to sleep and water one's horses on the journey.

17

- A) NO CHANGE
- B) their English counterparts
- C) they're English counterparts
- D) they're English counterpart's

**CONTINUE** 

[1] Linking North America and Europe was simple enough due to modern sailing technologies, and rivers and streams had been well charted throughout the thirteen original colonies. [2] The lakes would allow boats to avoid the most **18** treacherous parts of the mountain range, and one lake in particular, Lake Erie, provided access to a variety of points to the West, including modern-day Buffalo, Cleveland, and Detroit. [3] Any ship that could access these places **19** by getting there from the great shipping ports in the East could easily create many new markets for goods. [4] The Erie Canal would allow for that access. [5] The missing link came from what **20** a man named George Washington called “America’s Mediterranean,” the Great Lakes. **21**

After nearly a decade of work, the Erie Canal was completed in 1825. The canal ran from Albany to Buffalo in New York State. This manmade **22** waterway, having dug by workers and horses without the benefit of electricity or combustible engines, stretched approximately 363 miles. After the canal was built, boats could pass easily between the Hudson River, the gateway to New York and the Atlantic, and Lake Erie, the gateway to the new West.

18

- A) NO CHANGE
- B) hassling
- C) prevaricating
- D) annoying

19

- A) NO CHANGE
- B) by way of getting to it
- C) —in the process of getting there—
- D) DELETE the underlined portion.

20

- A) NO CHANGE
- B) the one known as
- C) the world-renowned man
- D) DELETE the underlined portion.

21

To make this paragraph most logical, sentence 5 should be

- A) placed before sentence 1.
- B) placed before sentence 2.
- C) placed before sentence 3.
- D) DELETED from the paragraph.

22

- A) NO CHANGE
- B) waterway; digging
- C) waterway, it was
- D) waterway, dug

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

### Minimum Wage, Maximum Debate

**23** The American workforce experiences rises and falls in employment. They might be flipping burgers, tearing movie **24** tickets, or, operating amusement-park rides. These jobs don't pay well, but they're not quite meant to—they are just ways for kids who are out of school for the summer to make a little extra spending cash. But how could a minimum-wage **25** job affect someone whose family depends on it? Could minimum wage support a family with children and mortgage or rent payments?

These questions are part of a larger discussion about ways to combat poverty in the modern world. People who work at jobs that pay poverty **26** wages, yearly earnings below \$24,300 for a family of four in 2016 need to be able to live, and often they are unable to do so because their wages are so low that not even 80 hours of work could cover all of their expenses. An obvious solution to this problem would be to raise the minimum wage, so even those at the bottom of the pay scale can afford life's necessities.

23

Which choice is the best introduction to the paragraph?

- A) NO CHANGE
- B) The number of jobs that have been outsourced to other countries has risen steadily.
- C) Getting a job is an exciting prospect and often an unpredictable one.
- D) Many teens have grueling summer jobs at which they make minimum wage.

24

- A) NO CHANGE
- B) tickets, or
- C) tickets: or
- D) tickets; or

25

- A) NO CHANGE
- B) job affect someone who's
- C) job affect someone whose
- D) job affect someone, whose

26

- A) NO CHANGE
- B) wages: yearly earnings below \$24,300 for a family of four in 2016,
- C) wages yearly earnings below \$24,300 for a family of four in 2016,
- D) wages (yearly earnings below \$24,300 for a family of four in 2016)

**CONTINUE** 

**27** Some small-business owners, for instance, argue that a higher minimum wage would cut so much into their profit that they would be forced to hire fewer workers.

**28** However, a higher minimum wage would actually destroy jobs rather than create them, leading to higher unemployment and slower economic growth. Bosses at larger businesses, too, particularly fast-food chains and big-box stores, argue that **29** they're prices can only be so low because they are able to pay low wages. These business leaders argue that they cannot continue to offer such bargain prices, at least compared to **30** what's next to their competitors, if they pay their workers more.

27

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

Even though pay increase proposals have been offered to address the earnings gap, the issue remains controversial.

Should the writer make this addition here?

- A) Yes, because it introduces the subject matter of this paragraph in a general way.
- B) Yes, because it inserts the author's opinion as a turning point in the essay.
- C) No, because it does not adequately cite the range of issues in the political sphere.
- D) No, because it does not give a specific value for the minimum wage.

28

- A) NO CHANGE
- B) Nevertheless,
- C) Subsequently,
- D) Conversely,

29

- A) NO CHANGE
- B) their
- C) there
- D) one's

30

- A) NO CHANGE
- B) those of
- C) that of
- D) DELETE the underlined portion.



Even on what may seem like a relatively **31** hot button issue, the debate surrounding how to ease poverty is complicated. In a way, the issue is as old as the nation itself. How can a nation guarantee all of its citizens a chance to enjoy the benefits of citizenship? Wages should adjust with the inflation of currency, but how is it possible to know when we've set them at the right levels to succeed? Some say our current minimum is high enough. **32**



Adapted from "Minimum Relative to Average Wages of Full Time Workers," at [www.OECD.org](http://www.OECD.org), by the Organisation for Economic Co-operation and Development.

In recent years, as the debate surrounding the minimum wage **33** fires up, a new idea, the guaranteed minimum income, has begun to gain some traction. With this proposal, all citizens would be given a minimum living salary by the government, thus guaranteeing that, even in times of high unemployment, everyone can live with a certain amount of dignity. While there may never be an answer that everyone can agree on, the goal of eliminating poverty remains a good one, particularly as it benefits rich and poor alike.

31

- A) NO CHANGE
- B) hot topic
- C) honest
- D) straightforward

32

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

Indeed, the United States has a minimum wage to median income ratio that is one of the top 10 such ratios worldwide.

Should the writer make this addition here?

- A) Yes, because it provides a conclusive bit of evidence amid the vagueness of the questions asked in this paragraph.
- B) Yes, because it provides support for the arguments made by the small and large businesses mentioned in this essay.
- C) No, because it repeats information that is given elsewhere in this paragraph.
- D) No, because it does not accurately reflect data from the graph given in the passage.

33

- A) NO CHANGE
- B) blazes a trail,
- C) rages on,
- D) burns it down,

**CONTINUE**

Questions 34–44 are based on the following passage.

### Truth, Fiction, and Reality

**34** Viewers' expectations of what "reality" means tend to shift as they watch more documentary films. Documentary films have become normal features of many people's viewing regimens. Documentaries typically present themselves as long-form journalism, using the medium of feature-length film to explore a story or a concept. These films use "real" people and experts rather than actors. Therefore, as people watch more documentaries, their expectations change for what "realistic" **35** films, even fiction films—should look like.

34

Which choice most effectively combines the underlined sentences?

- A) As documentary films shift the viewers' expectations of what "reality" means after watching so many of them, documentaries have become normal features of many viewing regimens.
- B) Many people's viewing regimens include many documentary films and shift the expectations of what "reality" means when documentaries become part of how they watch films, including fictional ones.
- C) Viewers expect "reality" to shift when watching fiction films, and this has changed their expectations of what "reality" means when people's viewing regimens begin featuring many documentary films.
- D) As documentary films increasingly become normal features of many people's viewing regimens, those viewers' expectations of what "reality" means tend to shift.

35

- A) NO CHANGE
- B) films—
- C) films:
- D) films;



A recent Japanese film takes these notions of reality to a particular extreme. Director Ryusuke Hamaguchi **36** released a film, in 2015 called *Happy Hour*. The film can be difficult to find and watch in theaters because of its five-and-a-half-hour length, but this is partially the point. *Happy Hour* is concerned with representing a fictional version of life as it is actually lived by a certain cross-section of women in Japan. Four women, each in their 30s, live out the consequences of their long friendships and marriages as undetectable shifts alter them slowly. There are none of the rapid-fire edits, glamorous superstar actors, or **37** long ticketholder lines that characterize speedier films. Indeed, the length of the film and the quietness of the direction, as in all of **38** Hamaguchi's work's, make us feel that we are experiencing something other than a movie—these aspects can almost make it feel that we are experiencing life itself.

36

- A) NO CHANGE
- B) released a film
- C) released: a film
- D) released, a film

37

Which choice is most consistent with the previous examples in the sentence?

- A) NO CHANGE
- B) superimposed English subtitles
- C) explosive special effects
- D) professional advertising campaigns

38

- A) NO CHANGE
- B) Hamaguchi's work,
- C) Hamaguchi's work's,
- D) Hamaguchi's' work's,

**CONTINUE** 

In fact, *Happy Hour* is **39** so realistic that viewers can wonder whether this fictional film is itself a kind of authentic reality. However, that idea has been one that artists have used their works to **40** research all along. Isn't it possible that all of our experiences are in a sense constructed and that film is just another lens through which we view our own experiences as well? Watching a film from the 1940s, we may consider the acting awkward and stilted. The films today seem much more realistic. If audiences 70 years from now watch our films with a similar sense of superiority, **41** therefore, what would that mean for our own sense of reality?

39

The writer wants a conclusion to the sentence and introduction to the paragraph that logically completes the discussion of *Happy Hour* and provides an effective transition into this paragraph's discussion. Which choice best accomplishes these goals?

- A) NO CHANGE
- B) a film that is too long to be shown in traditional theaters because it can only be shown once a day.
- C) atypical of the kind of movies coming out of Japan, which are very similar to Hollywood films.
- D) the work of an accomplished director that is not likely possible for a younger director.

40

- A) NO CHANGE
- B) hunt
- C) scout
- D) explore

41

- A) NO CHANGE
- B) moreover,
- C) however,
- D) so,



The convergence of documentary and fiction filmmaking is one of the most interesting cultural developments of our time. It has great consequences for the medium itself and **42** incorporates innovations not yet seen in Hollywood films. We all **43** were creating online personalities for ourselves, but perhaps our in-the-world personalities are just as fabricated as **44** those of our online avatars. Both constructed identities are ultimately reflections of the information we digest, and whether that content is called a “documentary,” “journalism,” or “fiction” is inconsequential the moment we allow ourselves to be influenced.

42

Which choice most effectively sets up the main idea of the remainder of the paragraph?

- A) NO CHANGE
- B) could impact how people generally interact with the world.
- C) has significantly changed the way people watch movies today.
- D) requires a patience on the part of the audience that is rare.

43

- A) NO CHANGE
- B) would create
- C) have created
- D) would have created

44

- A) NO CHANGE
- B) them
- C) that
- D) DELETE the underlined portion.

**STOP**

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



# Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

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

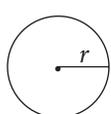
## DIRECTIONS

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

## NOTES

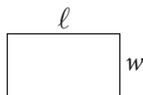
1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated,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

## REFERENCE

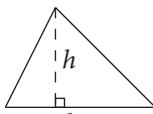


$$A = \pi r^2$$

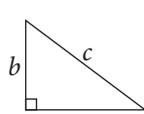
$$C = 2\pi r$$



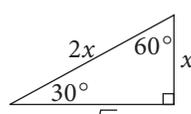
$$A = \ell w$$



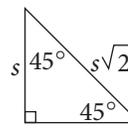
$$A = \frac{1}{2}bh$$



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

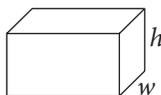


$$x\sqrt{3}$$

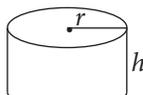


$$s$$

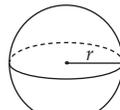
Special Right Triangles



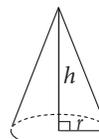
$$V = \ell wh$$



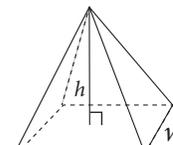
$$V = \pi r^2 h$$



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



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



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

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is  $2\pi$ .

The sum of the measures in degrees of the angles of a triangle is 180.

CONTINUE



1

What is the sum of the complex numbers  $6 + 2i$  and  $3 + 5i$ , where  $i = \sqrt{-1}$ ?

- A)  $9 + 7i$
- B)  $18 + 10i$
- C) 16
- D)  $16i$

2

Mary has decided to earn extra money by landscaping yards. In addition to her hourly rate, she charges each customer a flat fee for travel and supplies. The equation  $C = 9h + 14$  represents the total cost  $C$ , in dollars, Mary will charge for  $h$  hours of work. What does 14 represent in the equation?

- A) The total cost, in dollars, Mary charges a customer for one hour of work
- B) The total cost, in dollars, Mary charges a customer for any amount of work
- C) The amount of the flat fee, in dollars
- D) The hourly rate, in dollars

3

Jeff has two different brands of trail mix. Trail Mix X contains 30% peanuts by volume and Trail Mix Y contains 70% peanuts by volume. Combined, the two trail mixes Jeff purchased contain a total of 12 cups of peanuts. Which equation models this relationship, where  $a$  is the number of cups of Trail Mix X and  $b$  is the number of cups of Trail Mix Y?

- A)  $12 = 0.3a + 0.7b$
- B)  $12 = 0.7a + 0.3b$
- C)  $12 = 30a + 70b$
- D)  $12 = 70a + 30b$

4

If  $p = \frac{3}{4}q$  and  $q = 12$ , what is the value of  $3p - 4$ ?

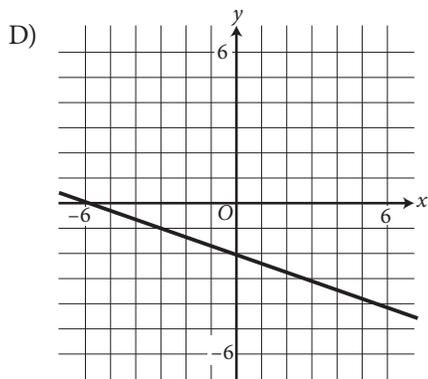
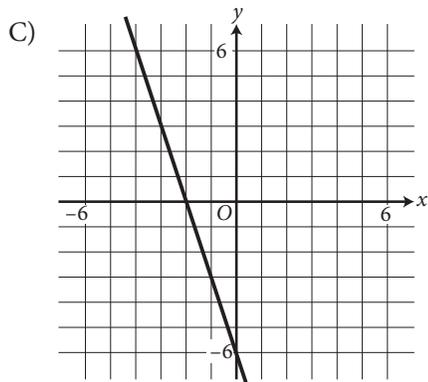
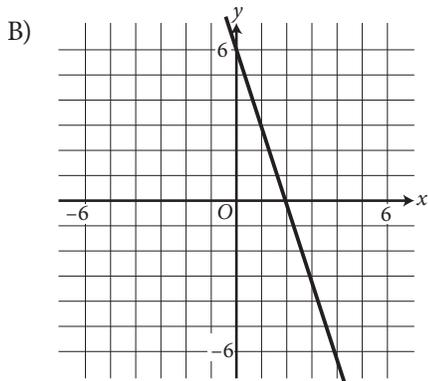
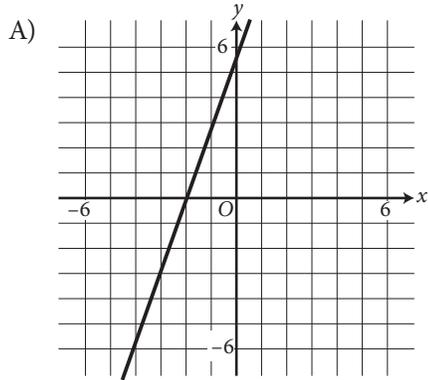
- A) 8
- B) 9
- C) 17
- D) 23

**CONTINUE** 



5

Which of the following is the graph of the equation  $y = -3x + 6$  in the  $xy$ -plane?



6

$$9y^2 - 16 = (zy + r)(zy - r)$$

In the equation above,  $z$  and  $r$  are constants. Which of the following could be the value of  $z$ ?

- A) 16
- B) 9
- C) 4
- D) 3

7

$x$	-2	-1	0	1	2
$f(x)$	5	3	1	-1	1
$g(x)$	3	4	3	2	1

The table above shows some values of the functions  $f$  and  $g$ . For which value of  $x$  is  $f(x) - g(x) = x$ ?

- A) 2
- B) 1
- C) 0
- D) -1

8

If  $\sqrt{t} + \sqrt{4} = \sqrt{36}$ , what is the value of  $t$ ?

- A) 32
- B) 16
- C) 4
- D)  $\sqrt{4}$

CONTINUE



9

A physics student uses the formula  $E = 10mh$  to estimate the potential energy,  $E$ , of a ball that has a mass of  $m$  kilograms and is at a height of  $h$  meters above the ground. Which of the following correctly expresses  $m$ , in terms of  $E$  and  $h$ ?

- A)  $m = \frac{h}{10E}$   
 B)  $m = \frac{E}{10h}$   
 C)  $m = \frac{10}{Eh}$   
 D)  $m = \frac{E}{10 + h}$

10

Which of the following is equivalent to  $\frac{3b^2 + 9b}{3b + 6}$ ?

- A)  $b - \frac{6}{3b + 6}$   
 B)  $b$   
 C)  $b + 1 - \frac{6}{3b + 6}$   
 D)  $b + 3$

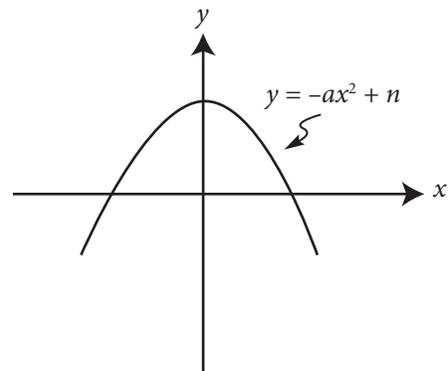
11

Taylor is training for a gymnastics competition. Her goal is to practice an average of at least 45 hours per month for 5 months. She practiced for 39 hours the first month, 48 hours the second month, 46 hours the third month, and 49 hours the fourth month. Which inequality can be used to represent the number of hours,  $h$ , Taylor could practice in the 5th month to meet her goal?

- A)  $39 + 46 + 48 + 49 + h \geq 5(45)$   
 B)  $\frac{39 + 46 + 48 + 49}{4} + h \geq 45$   
 C)  $39 + 46 + 48 + 49 \geq h(45)$   
 D)  $\frac{39}{5} + \frac{46}{5} + \frac{48}{5} + \frac{49}{5} + h \geq 45$

12

The vertex of the parabola in the  $xy$ -plane below is  $(0, n)$ . Which of the following is true about the parabola with the equation  $y = a(x + m)^2 + n$ ?



- A) The vertex is  $(-m, n)$  and the graph opens downward.  
 B) The vertex is  $(m, n)$  and the graph opens downward.  
 C) The vertex is  $(-m, n)$  and the graph opens upward.  
 D) The vertex is  $(m, n)$  and the graph opens upward.

**CONTINUE**



13

A restaurant owner is buying potatoes and carrots from her vegetable supplier. The supplier will deliver no more than \$500 worth of product in each delivery. Each pound of potatoes costs \$3.25 and each pound of carrots costs \$2.47. The owner needs to buy at least three times as many pounds of potatoes as pounds of carrots. Let  $p$  represent the number of pounds of potatoes and let  $c$  represent the number of pounds of carrots, where  $p$  and  $c$  are nonnegative integers. Which of the following systems of inequalities best represents this situation?

- A)  $3.25p + 2.47c \leq 500$   
 $3p \geq c$
- B)  $3.25p + 2.47c \leq 500$   
 $p \geq 3c$
- C)  $9.75p + 2.47c \leq 500$   
 $p \geq 3c$
- D)  $9.75p + 2.47c \leq 500$   
 $3p \geq c$

14

Which of the following is equivalent to  $\left(r + \frac{s}{3}\right)^2$ ?

- A)  $r^2 + \frac{rs}{3} + \frac{s^2}{3}$
- B)  $r^2 + \frac{2rs}{3} + \frac{s^2}{9}$
- C)  $r^2 + \frac{s^2}{3}$
- D)  $r^2 + \frac{s^2}{9}$

15

$$3x^2 + 6x = d$$

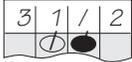
In the equation above,  $d$  is a constant. If the equation has no real solutions, which of the following could be the value of  $d$ ?

- A) 4
- B) 2
- C) -2
- D) -4



**DIRECTIONS**

For questions 16–20, 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 circles accurately. You will receive credit only if the circles are filled in correctly.
- Mark no more than one circle 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  is entered into the grid, it will be interpreted as  $\frac{31}{2}$ , not as  $3\frac{1}{2}$ .)
- 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
.	●	/	●	●
1	0	0	0	0
2	1	1	1	1
3	2	2	2	2
4	3	3	3	3
5	4	4	4	4
6	5	5	5	5
7	6	6	6	6
8	7	7	7	7
9	8	8	8	8
●	9	9	9	9

Grid in result. →

← Fraction line

Answer: 2.5

	2	.	5
.	/	/	●
1	0	0	0
2	1	1	1
3	2	2	2
4	3	3	3
5	4	4	4
6	5	5	5
7	6	6	6
8	7	7	7
9	8	8	8
●	9	9	9

← Decimal point

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

	2	/	3
.	/	●	●
1	0	0	0
2	1	1	1
3	2	2	2
4	3	3	3
5	4	4	4
6	5	5	5
7	6	6	6
8	7	7	7
9	8	8	8
●	9	9	9

.	6	6	6
●	/	/	●
1	0	0	0
2	1	1	1
3	2	2	2
4	3	3	3
5	4	4	4
6	5	5	5
7	6	6	6
8	7	7	7
9	8	8	8
●	9	9	9

.	6	6	7
●	/	/	●
1	0	0	0
2	1	1	1
3	2	2	2
4	3	3	3
5	4	4	4
6	5	5	5
7	6	6	6
8	7	7	7
9	8	8	8
●	9	9	9

Answer: 201 – either position is correct

	2	0	1
.	/	/	●
1	0	0	0
2	1	1	1
3	2	2	2
4	3	3	3
5	4	4	4
6	5	5	5
7	6	6	6
8	7	7	7
9	8	8	8
●	9	9	9

2	0	1	
.	/	/	●
1	0	0	0
2	1	1	1
3	2	2	2
4	3	3	3
5	4	4	4
6	5	5	5
7	6	6	6
8	7	7	7
9	8	8	8
●	9	9	9

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



16

$$\frac{3}{2} = \frac{2}{7}n$$

What value of  $n$  is the solution of the equation above?

17

How many pints of a 30% sugar solution must be added to 5 pints of a 5% sugar solution to obtain a 20% sugar solution?

18

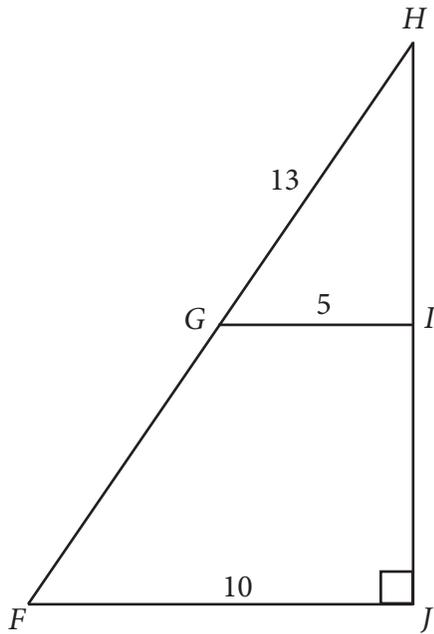
If  $x^{\frac{y}{3}} = 81$  for positive integers  $x$  and  $y$ , what is one possible value of  $y$ ?

19

Points  $R$  and  $S$  lie on circle  $O$  with radius 2, and the area of sector  $ROS$  is  $\frac{\pi}{2}$ . What fraction of the area of the circle is the area of sector  $ROS$ ?



20



In the figure above,  $\overline{GI}$  is parallel to  $\overline{FJ}$ . What is the length of  $\overline{HJ}$ ?

**STOP**

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



# Math Test – Calculator

55 MINUTES, 38 QUESTIONS

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

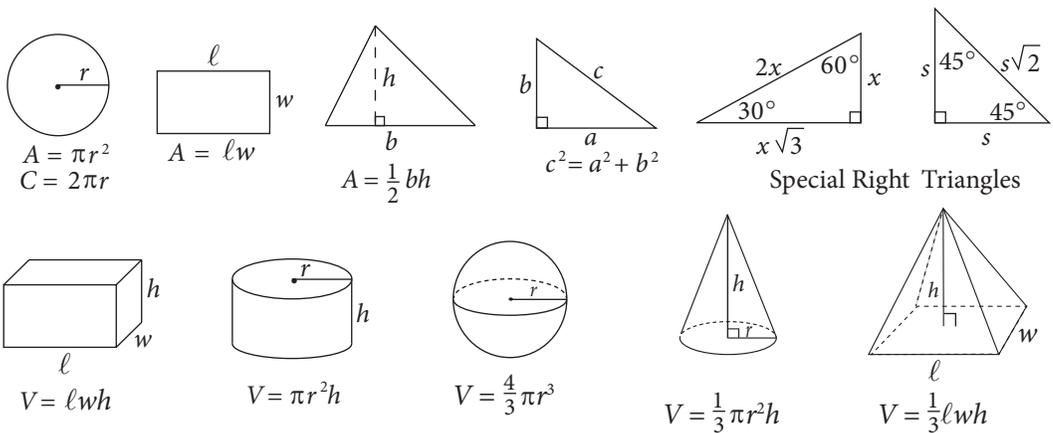
## DIRECTIONS

For questions 1–30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 31–38, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 31 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 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



The number of degrees of arc in a circle is 360.

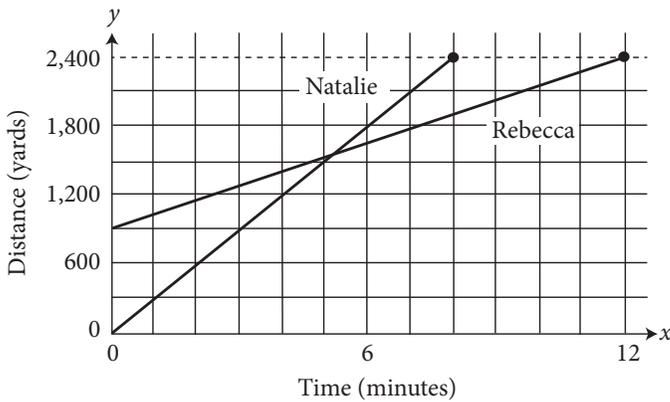
The number of radians of arc in a circle is  $2\pi$ .

The sum of the measures in degrees of the angles of a triangle is 180.

CONTINUE



1



Rebecca and Natalie begin bicycling from their homes at the same time to a destination that is 2,400 yards from Natalie's house. The graph shows the distance that Rebecca and Natalie are from Natalie's house along the route. Natalie and Rebecca each bicycle at a constant rate and Rebecca's house is on the way from Natalie's house to the destination. Natalie reached the destination in 8 minutes and Rebecca reached the destination in 12 minutes. According to the graph, Rebecca's trip is how many yards shorter than Natalie's?

- A) 2,400
- B) 900
- C) 600
- D) 300

2

Alejandro began driving to work and then stopped in a store for some time. Once he began again, he continued to work at a slower speed. Which of the following graphs could model the total distance traveled by Alejandro versus time?

- A)
- B)
- C)
- D)

CONTINUE



3

Which expression is equivalent to  $(4y^2 - 5) - (-6y^2 + 3y - 11)$ ?

- A)  $-2y^2 + 3y - 16$
- B)  $-2y^2 - 3y - 16$
- C)  $10y^2 + 3y - 6$
- D)  $10y^2 - 3y + 6$

4

$$12a + 9b < 36$$

Which of the following inequalities is equal to the inequality shown above?

- A)  $a + b < 3$
- B)  $3a + 4b < 12$
- C)  $4a + 3b < 12$
- D)  $4a + 3b < 3$

5

What Is the Most Important Issue in the Election?

Issue	Percent of Those Surveyed
Economy	54%
Crime	15%
Environment	12%
Health Care	7%
Education	3%
Other	9%

The table above shows a summary of 1,800 responses to a survey question. Based on the information in the table, how many of those surveyed believe that the most important issue in the election is the economy or crime?

- A) 1,242
- B) 1,296
- C) 1,328
- D) 1,384

6

A cable company charges customers a one-time installation fee of \$150 plus  $x$  dollars for each month. If a customer paid \$960 for the first 18 months, including the installation fee, what is the value of  $x$ ?

- A) 45
- B) 55
- C) 65
- D) 75

CONTINUE



7

Coffee Selection

		Milk	
		Yes	No
Sugar	Yes	5	7
	No	6	13

The table above shows the coffee selections of the people at an office. Of people who select milk, what fraction also select sugar?

- A)  $\frac{6}{11}$   
 B)  $\frac{5}{11}$   
 C)  $\frac{6}{31}$   
 D)  $\frac{5}{31}$

8

The administrative staff of a high school wanted to gauge the preference of its entire student body for increasing funding to the athletic department. The staff surveyed 200 students who play a sport. The survey showed that the majority of those surveyed were in favor of increasing funding to the athletic department. Which of the following is true about the administrative staff's survey?

- A) The survey should have included more students who play a sport.  
 B) The survey sample is biased because it is not representative of the entire student body.  
 C) It shows that a majority of students favored increased funding to the athletic department.  
 D) The survey sample should have only included students who did not play a sport.

9

Between 1839 and 1860, the United Kingdom and China engaged in the two wars known as the Opium Wars. The length of the First Opium War was 218 days shorter than the Second, and the two wars together lasted a total of 2,738 days. How many days did the First Opium War last?

- A) 1,140  
 B) 1,180  
 C) 1,260  
 D) 1,480

10

In 2011, Toronto had a population of 2.615 million people, which was an increase of 0.134 million people from the population in 2001. In 2001, there were 43 hospitals located within Toronto. Which of the following is the approximate number of residents served per hospital in Toronto in 2001 ?

- A) 320  
 B) 3,100  
 C) 57,700  
 D) 60,800

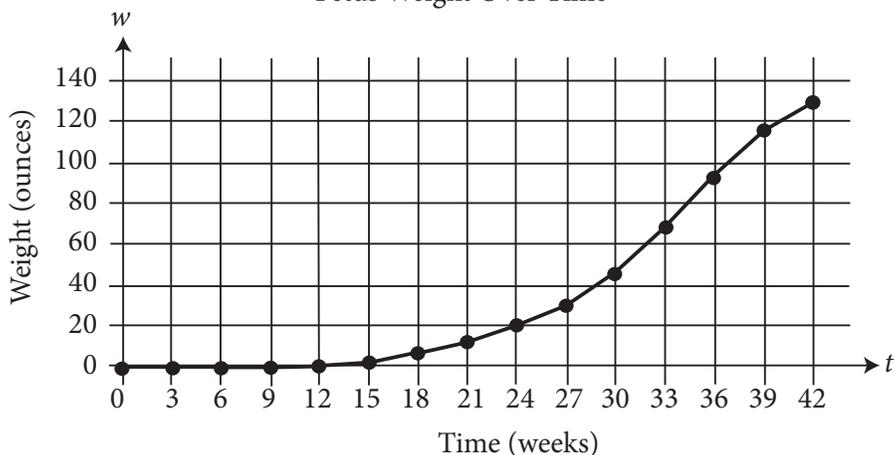


Questions 11–13 refer to the following information.

Fetal Growth

Week	Weight (oz)
0	0.00
3	0.02
6	0.04
9	0.07
12	0.49
15	2.47
18	6.70
21	12.70
24	21.12
27	30.88
30	46.56
33	67.68
36	92.48
39	116.00
42	129.92

Fetus Weight Over Time



A team of research obstetricians conducted a study to determine the growth rate of a fetus. The graph and table above model the weight,  $w$ , in ounces, of a fetus  $t$  weeks after conception.

11

Over which time period is the average growth of a fetus the greatest?

- A) Week 0 to Week 12
- B) Week 12 to Week 24
- C) Week 30 to Week 39
- D) Week 39 to Week 42

12

The growth rate of a fetus from Week 33 to Week 39 is nearly constant. On this interval, which of the following best models the weight,  $w$ , in ounces, of a fetus  $t$  weeks after conception?

- A)  $w = 2.5t - 220$
- B)  $w = 5.8t - 180$
- C)  $w = 8.1t - 200$
- D)  $w = 12.4t - 150$

13

The function  $w$ , defined by  $w(t) = ct + d$ , where  $c$  and  $d$  are constants, models the weight, in ounces, of a fetus after  $t$  weeks of growth during a time period in which the growth is approximately linear. What does  $c$  represent?

- A) The predicted total increase in weight, in ounces, of a fetus during the period
- B) The predicted number of ounces of growth per week during the period
- C) The predicted weight, in ounces, of a fetus at the beginning of the period
- D) The predicted weight, in ounces, of a fetus at the end of the period



14

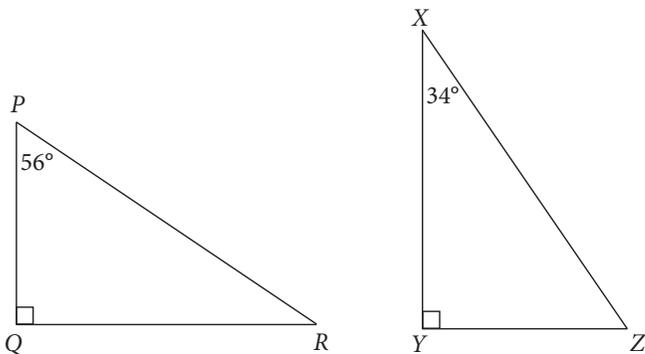
$$6x + 5y = 9$$

$$5x - 5y = 2$$

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

- A)  $-\frac{8}{5}$   
 B)  $\frac{1}{5}$   
 C)  $\frac{2}{5}$   
 D)  $\frac{8}{5}$

15



Triangles  $PQR$  and  $XYZ$  are shown above. Which of the following is equal to the ratio  $\frac{PQ}{PR}$ ?

- A)  $\frac{YZ}{XY}$   
 B)  $\frac{XY}{XZ}$   
 C)  $\frac{XZ}{YZ}$   
 D)  $\frac{YZ}{XZ}$

16

$x$	$y$
1	$\frac{31}{4}$
2	$\frac{49}{4}$
3	$\frac{67}{4}$
4	$\frac{85}{4}$
5	$\frac{103}{4}$

Which of the following equations relates  $y$  to  $x$  for the values in the table above?

- A)  $y = \frac{1}{2} \cdot \left(\frac{7}{2}\right)^x$   
 B)  $y = \frac{47}{4}x - 4$   
 C)  $y = \frac{9}{2}x + \frac{13}{4}$   
 D)  $y = 2 \cdot \left(\frac{47}{4}\right)^x$

**CONTINUE**



Questions 17–19 refer to the following information.

Player	Gold ( $g$ )	Gold ( $\times 3$ )	Silver ( $s$ )	Total
Johnny				
Melissa				
Dulce				
Ezekiel				
Juliet				

$$\text{Gold} \times 3 + \text{Silver} = 38$$

In a certain board game, players mine for gold and silver at the beginning of each round. Players are restricted in the amount of gold and silver they can mine using the equation  $3g + s = 38$ , where  $g$  is amount of gold, in ounces, the player mines and  $s$  is the amount of silver, in ounces, the player mines.

A player can choose the amount of gold and silver to mine at the beginning of the first round and will receive the same amount of each in each succeeding round.

17

Juliet wants to use a strategy in which she mines at least 4 ounces of gold and at least 14 ounces of silver at the beginning of each round. According to the game's equation, which of the following inequalities represents the set of all possible amounts of gold that she can mine to meet this strategy?

- A)  $8 \leq g \leq 14$
- B)  $4 \leq g \leq 8$
- C)  $g \geq 4$
- D)  $0 \leq g \leq 4$

18

Johnny wants to create a strategy designed to mine 6 pounds of gold, taking between 10 and 15 ounces per round for a game in which there is an even number of rounds. Within Johnny's strategy, which of the following must be the amount of silver, in ounces, Johnny mines? (16 ounces = 1 pound)

- A) 2
- B) 8
- C) 9.6
- D) 12

19

Which of the following expresses the amount of gold mined each round in terms of the amount of silver mined in that round?

- A)  $g = -\frac{1}{3}(38 + s)$
- B)  $g = -\frac{1}{3}(38 - s)$
- C)  $g = \frac{1}{3}(38 + s)$
- D)  $g = \frac{1}{3}(38 - s)$



20

A study was conducted on the heights of fourth-graders in a particular county. A random sample of girls was taken with each girl's height measured and recorded. The sample contained 250 girls, and 20% of the girls were more than 57 inches tall. Which of the following conclusions is best supported by the sample data?

- A) Approximately 20% of all fourth-grade girls in the county were taller than 57 inches.
- B) Approximately 20% of all fourth-graders in the county were taller than 57 inches.
- C) The average height of all fourth-graders in the county was 57 inches.
- D) The majority of all fourth-graders in the county are shorter than 57 inches.

21

What is the sum of the solutions to  $(x + 5)(x - 0.4) = 0$ ?

- A) -5.4
- B) -4.6
- C) 4.6
- D) 5.4

22

During his previous visit, a customer's bill at a restaurant was \$91.94. At his current visit, the bill is \$86.53. To the nearest tenth of a percent, by what percent did the customer's bill decrease?

- A) 5.4%
- B) 5.9%
- C) 6.2%
- D) 6.3%

23

Entry Year into the European Union

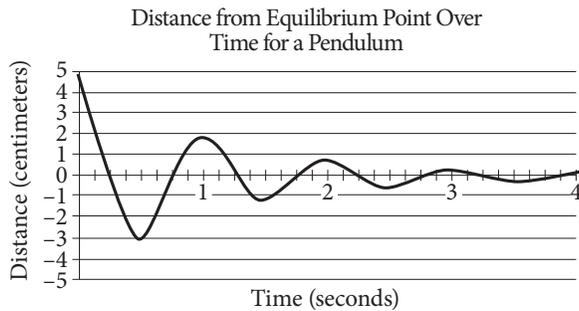
Year	Number of Countries
1957	6
1973	3
1981	1
1986	2
1995	3
2004	10
2007	2

In 2012, there were 27 nations in the European Union, as shown in the table above. Based on the table, what is the median entry year for the 27 countries?

- A) 1981
- B) 1986
- C) 1995
- D) 2004



24



A pendulum was released 5 centimeters to the right of its equilibrium point and allowed to swing until it came to a rest. The graph above represents the relationship between time elapsed after the pendulum was released and the distance from the equilibrium point with negative distances representing distances to the left of the equilibrium point and positive distances representing distances to the right of the equilibrium point. After it was released, how many times was the pendulum 1 centimeter to the left of the equilibrium point?

- A) One
- B) Two
- C) Three
- D) Four

25

In the  $xy$ -plane, the graph of  $2x^2 + 2x + 2y^2 - 10y = 85$  is a circle. What is the radius of the circle?

- A)  $\sqrt{95}$
- B) 9.5
- C)  $\sqrt{90}$
- D) 7

26

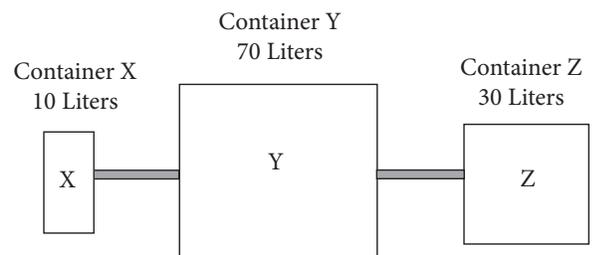
$x$	$g(x)$
0	-3
3	3
9	15

Some of the values of the linear function  $g$  are shown in the table above. What is the value of  $g(4)$ ?

- A) 5
- B) 6
- C) 7
- D) 8

27

At a constant temperature, if the ratio of the volumes of two containers filled with equal amounts of gas is  $p:q$ , then the ratio of the pressures in the containers is  $q:p$ . In the diagram below, Container X is filled with gas and the pressure in Container X is measured. Then all the gas is pumped into Container Y. Once the pressure in Container Y is measured, the gas is finally pumped into Container Z, and the pressure in Container Z is measured.



If the pressure in Container X is 300 torr, what is the pressure, in torr, in Container Z after the gas has been pumped into it?

- A) 100
- B) 330
- C) 900
- D) 9,000

**CONTINUE**



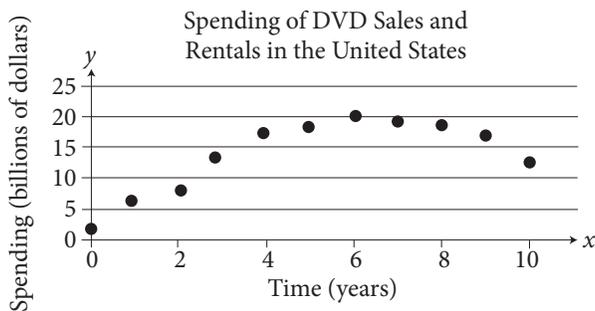
28

The mean distance,  $d$ , in micrometers, glucose travels in free solution in  $t$  seconds can be determined using the formula  $d = 10\sqrt{5t}$ . Which of the following gives the average speed of the glucose, in micrometers per second, over the first  $t$  seconds after it begins to move?

- A)  $10t\sqrt{5t}$
- B)  $\frac{10}{\sqrt{5t}}$
- C)  $\frac{10\sqrt{5t}}{t}$
- D)  $\frac{100\sqrt{5t}}{t}$

29

The scatterplot below shows spending, in billions of dollars, on DVD rentals and sales in the United States over a 10-year period.



Of the following equations, which best models the scatterplot?

- A)  $y = -0.4339x^2 + 5.6673x + 0.7685$
- B)  $y = 0.4339x^2 + 5.6673x + 0.7685$
- C)  $y = -0.4339x^2 - 5.6673x - 0.7685$
- D)  $y = 0.4339x^2 + 5.6673x - 0.7685$

30

Two distinct points on the number line are at a distance of 2 units from the point with coordinate  $-5$ . The solution to which of the following equations gives the coordinates of both points?

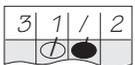
- A)  $|x - 2| = 5$
- B)  $|x + 2| = 5$
- C)  $|x - 5| = 2$
- D)  $|x + 5| = 2$


**DIRECTIONS**

For questions 31–38, 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 circles accurately. You will receive credit only if the circles are filled in correctly.
- Mark no more than one circle 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.

5. **Mixed numbers** such as  $3\frac{1}{2}$  must be gridded

as 3.5 or 7/2. (If  is entered into

the grid, it will be interpreted as  $\frac{31}{2}$ , not as  $3\frac{1}{2}$ .)

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
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0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
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6	6	6	6
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8	8	8	8
9	9	9	9

← Fraction line

Grid in result. →

Answer: 2.5

	2	.	5
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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	7
8	8	8	8
9	9	9	9

← Decimal point

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

	2	/	3
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8	8	8	8
9	9	9	9

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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
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8	8	8	8
9	9	9	9

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0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
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6	6	6	6
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8	8	8	8
9	9	9	9

Answer: 201 – either position is correct

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2	2	2	2
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5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

2	0	1	
.	.	.	.
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	7
8	8	8	8
9	9	9	9

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

**CONTINUE**



31

A homeowner is choosing between different sizes of cylindrical swimming pools. If she wants a pool with a radius of 3 feet and a height between 5.75 feet and 6 feet, what is one possible volume, rounded to the nearest cubic foot, of a pool the homeowner could select?

32

A group of roommates equally shared the \$6,000 rent for an apartment. When four of the roommates moved out, those roommates remaining still shared the \$6,000 rent equally, but each roommate's share of the rent increased by \$250. How many roommates were there originally?

33

$$5(3y - 12) - (23 + 11y) = 13$$

What value of  $y$  satisfies the equation above?

34

The line with the equation  $\frac{3}{4}x + \frac{2}{7}y = 1$  is graphed on the  $xy$ -plane. What is the  $y$ -coordinate of the  $y$ -intercept of the line?

**CONTINUE** 



35

	GPAs					
Jennifer	3.5	3.2	2.7	3.7	3.6	3.1
Michael	2.8	3.3	2.9	3.3	3.1	$y$

Jennifer and Michael have each spent six semesters in college, and their GPAs during these six semesters are shown in the table above. The mean of the GPAs for Michael's six semesters is 0.2 less than the mean of the GPAs for Jennifer's six semesters. What is the value of  $y$ ?

36

In the  $xy$ -plane, the graph of  $y = 2x^2 + 13x$  intersects the graph of  $y = -x$  at the points  $(0, 0)$  and  $(-k, k)$ . What is the value of  $k$ ?

37

A local homeowner association has voted to alter current fines for noise violations. Of the members who voted, 35% voted to raise fines, 10% voted to keep the fines the same, 30% voted to lower the fines, and the remaining 15% voted to eliminate the fines completely. How many more members voted to raise the fines than to lower the fines?

38

The number of people in Oxford County who support a proposed highway system was  $p$  people on January 1, 2006. The number of people who support the highway system triples every year until there are 675 who support the proposal on January 1, 2009. What is the value of  $p$ ?

**STOP**

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

# SAT Essay

## ESSAY BOOK

### DIRECTIONS

The essay gives you an opportunity to show how effectively you can read and comprehend a passage and write an essay analyzing the passage. In your essay you should demonstrate that you have read the passage carefully, present a clear and logical analysis, and use language precisely.

Your essay must be written on the lines provided in your answer sheet booklet; except for the planning page of the answer booklet, you will receive no other paper on which to write. You will have enough space if you write on every line, avoid wide margins, and keep your handwriting to a reasonable size. Remember that people who are not familiar with your handwriting will read what you write. Try to write or print so that what you are writing is legible to those readers.

**You have 50 minutes to read the passage and write an essay in response to the prompt provided inside this booklet.**

### REMINDER

- Do not write your essay in this booklet. Only what you write on the lined pages of your answer booklet will be evaluated.
- An off-topic essay will not be evaluated.

CONTINUE 

As you read the passage below, consider how Robert Sterling Yard uses

- evidence, such as facts or examples, to support claims.
- reasoning to develop ideas and to connect claims and evidence.
- stylistic or persuasive elements, such as word choice or appeals to emotion, to add power to the ideas expressed.

**Adapted from Robert Sterling Yard, “Making a Business of Scenery.” © June 1916 by *The Nation’s Business*.**

- 1 Casting about for the cause of a business loving nation’s impressive apathy toward its national parks, I find that it lies in an entire failure to perceive the hard-fisted reasons for their existence. Until recently—it is a matter of almost months—the incomparable scenery of this land has been commonly regarded as an aesthetic luxury.
- 2 That scenery, handled in a business way, has commercial value is, of course, a recognized fact; but that our national parks so handled, on a national scale, can be quickly turned into an economic asset of incalculable value to this nation is a new idea to the public, although by no means new to the group of earnest men behind the present administration of these great properties. The proposition is neither new nor untried. Its success is incontestably proved. Switzerland lives on her scenery.
- 3 The Swiss are a business people. They perceived that snow-covered peaks were as good as gold mines; that glaciers and precipices paid like factories; that lake shores were as profitable as ocean fronts. So they developed their properties. The State built fine roads and the people put their profits into hotels and chalets. When they over-developed their market the State sought increased custom abroad. It established tourist agencies in France and Germany and Russia and England; later, and extensively, in America. It spent good money in ever-increasing sums in advertising, testing each venture with its resulting increase of gross income, until Switzerland’s scenery business became, previous to the present war, a great national business...
- 4 There are few Americans today who know, or hearing it, actually realize that American scenery in quality, variety, and quantity outclasses Switzerland’s decisively. But recently another people in this hemisphere realized it. A few years ago Canada observed, heeded and acted. Canada has entered the scenery business energetically and thoroughly. She studied Swiss methods and improved upon them. She put business men in charge and gave them power. Having railroad prosperity and local business for her object, she planned carefully and executed boldly. Picking out the Lake Louise region as her point of first concentration, she set about the establishment of its trademark. She began to advertise extensively and well.
- 5 And the results?

**CONTINUE** 

- 6 These countries, Switzerland and Canada, today share the scenic reputation of the world. It has been estimated that in normal times the Alps draw a hundred million American dollars a year. Abroad, the Canadian Rockies are supposed to be the only scenery in North America worth looking at, and before last summer (and perhaps today), it was the fixed belief of most Americans that they excelled anything in the United States...
- 7 But here are the facts:
- 8 The Swiss Alps may be offset by our Glacier National Park alone. Glory for glory, beauty for beauty, Glacier will match points and usually score. But who ever heard of the Glacier National Park? And, besides, we have the spectacular glaciers of Mount Rainier National Park, and the marvelous mountain scenery of our Sierra parks, to say nothing of the new Rocky Mountain National Park, less than fifty miles from Denver, whose average timberline is loftier than most of Switzerland's summits, and whose rocky peaks challenge the world for sheer beauty and accessibility. So much for the Alps...
- 9 The closing of Europe turned the eyes of this people upon its own land. The pacific expositions drew attention westward. The cry of "See America First" focused the national gaze. American scenery was discovered.
- 10 Since then the doctrine has spread with American rapidity. What this people wants, its Congress grants; and we want our national parks developed. We want roads and trails like Switzerland's. We want hotels of all prices from lowest to highest... We want adequate facilities and supplies for camping out at lowest prices. We want good fishing. We want our wild animal life conserved and developed. We want special facilities for nature study.
- 11 All these things this people wants and must have, but it does not want them at the expense of the United States Treasure. This is a business proposition and must be built up soundly. We have the biggest and finest stock of scenery in the world and there is an enormous market for it. We can sell it at a profit, and the profit will buy our development. The bigger the business grows the greater the reduction of costs and the lower the charges. When we are doing a national business on Switzerland's scale, we can match Switzerland's low prices.
- 12 There is the story in a paragraph. It is a business proposition.

Write an essay in which you explain how Robert Yard builds an argument to persuade his audience that the national parks should be run like a private business. In your essay, analyze how Yard uses one or more of the features listed in the box above (or features of your own choice) to strengthen the logic and persuasiveness of his argument. Be sure that your analysis focuses on the most relevant aspects of the passage.

Your essay should not explain whether you agree with Yard's claims, but rather explain how Yard builds an argument to persuade his audience.

**END OF TEST**

**DO NOT RETURN TO A PREVIOUS SECTION.**



**Test 2**

Start with number 1 for each new section.  
If a section has fewer questions than answer spaces, leave the extra answer spaces blank.

**Section 3—Mathematics: No Calculator**

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)
4. (A) (B) (C) (D)
5. (A) (B) (C) (D)
6. (A) (B) (C) (D)
7. (A) (B) (C) (D)
8. (A) (B) (C) (D)
9. (A) (B) (C) (D)
10. (A) (B) (C) (D)
11. (A) (B) (C) (D)
12. (A) (B) (C) (D)
13. (A) (B) (C) (D)
14. (A) (B) (C) (D)
15. (A) (B) (C) (D)

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**Section 4—Mathematics: Calculator**

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
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29. (A) (B) (C) (D)
30. (A) (B) (C) (D)

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9	9	9	9

35. 

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36. 

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