

**Ivy Global**

**New PSAT Online Practice Test  
For the Redesigned PSAT**

# NEW PSAT ONLINE PRACTICE TEST

This publication was written and edited by the team at Ivy Global.

Editor-in-Chief: Sarah Pike

Producers: Lloyd Min and Junho Suh

Editors: Sacha Azor, Corwin Henville, Nathan Létourneau, and Kristin Rose

Contributors: Stephanie Bucklin, Alexandra Candib, Natalia Cole, Laurel Durning-Hammond, Lei Huang, Somin Lee, Mark Mendola, and Adam Wolsky

This product was developed by Ivy Global, a pioneering education company that delivers a wide range of educational services.

E-mail: [publishing@ivyglobal.com](mailto:publishing@ivyglobal.com)

Website: <http://www.ivyglobal.com>

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# Chapter 1

# **Introduction**



# HOW TO USE THIS PDF

## PART 1

Welcome, students and parents! This free PDF is intended to help students prepare for the PSAT, a test administered by the College Board. It contains an overview of the PSAT, a few basic test-taking tips, a full-length practice test, an answer key, and scoring directions.

The first key to succeeding on the PSAT is to know the test. This PDF will help you know what to expect and build your confidence. Reading the quick tips in this PDF can help you to avoid common mistakes. Taking this practice test will help you to become more familiar with the format, pacing, and content of the exam. Reviewing your scores, as well as any questions you missed, can help you determine what you might need to continue studying in order to do your best on test day.

This PDF is not a totally comprehensive test-prep book. For more information about the PSAT, we recommend Ivy Global's New PSAT 3 Practice Tests.

## THE TEST

The PSAT is a standardized test written and administered by the College Board, and cosponsored by the National Merit Scholarship Corporation. It is designed to assess students' skills in critical reading, mathematics, and writing.

Beginning in the fall of 2015, there will be three PSAT tests: the PSAT 8/9, the PSAT 10, and the PSAT/NMSQT (PSAT/National Merit Scholarship Qualifying Test). These tests will be taken by students in eighth or ninth grade, tenth grade, and tenth or eleventh grade, respectively. The test in this PDF is particularly geared towards preparation for the PSAT/NMSQT, and when we say "PSAT" that's the test we mean. However, the advice we give applies to all three tests.

The PSAT is a timed exam. You will be allowed a limited amount of time for each section. Set aside a total of 2 hours and 45 minutes for this exam. The amount of time that you will have for each section is given on the first page of each section. If you are taking a proctored exam, your proctor will also announce the time that you are allowed for each section.

Detailed directions are provided at the beginning of each section. Read these directions carefully when taking practice exams. You should try to be totally familiar with the directions for each section by the time that you take the real PSAT.

## QUICK TIPS

Read every question and answer option carefully. Many students select incorrect answers simply because they misread the questions or don't look at all of the answer options. Read carefully to avoid careless errors.

Use the process of elimination. Sometimes the easiest way to find the correct answer is to cross out the answers in your test booklet that you can be sure are incorrect. Don't cross answers out on your answer sheet as stray marks could be counted as incorrect answers.

Make your best guess on every problem. You should always try to find the correct answer, but if you find that you're stumped then you should try to make your best guess. There's no penalty for guessing.

Don't be afraid to write in your test booklet. Though you won't receive extra credit for showing your work, writing in your test booklet can help you work through questions and have a reference for later. You will only receive points for what you have marked on your answer sheet, so remember to mark something for every question.

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Chapter 2  
**Practice Test**





# PSAT

## Directions

- Work on just one section at a time.
- If you complete a section before the end of your allotted time, use the extra minutes to check your work on that section only. Do NOT use the time to work on another section.

## Using Your Test Booklet

- No credit will be given for anything written in the test booklet. You may use the test booklet for scratch paper.
- You are not allowed to continue answering questions in a section after the allotted time has run out. This includes marking answers on your answer sheet that you previously noted in your test booklet.
- You are not allowed to fold pages, take pages out of the test booklet, or take any pages home.

## Answering Questions

- Each answer must be marked in the corresponding row on the answer sheet.
- Each bubble must be filled in completely and darkly within the lines.

Correct  Incorrect      
   

- Be careful to bubble in the correct part of the answer sheet.
- Extra marks on your answer sheet may be marked as incorrect answers and lower your score.
- Make sure you use a No. 2 pencil.

## Scoring

- You will receive one point for each correct answer.
- Incorrect answers will NOT result in points deducted. Even if you are unsure about an answer, you should make a guess.

**DO NOT BEGIN THIS TEST  
UNTIL YOUR PROCTOR TELLS YOU TO DO SO**



SECTION

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## **Section 1**



# Reading Test

60 MINUTES, 47 QUESTIONS

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

## DIRECTIONS

Every passage or paired set of passages is accompanied by a number of questions. Read the passage or paired set of passages, then use what is said or implied in what you read and in any given graphics to choose the best answer to each question.

### Questions 1-9 are based on the following passage.

This passage is adapted from *Lilith*, a novel by George MacDonald, originally published in 1895.

I had just finished my studies at Oxford, and was taking a brief holiday from work before assuming definitely the management of the estate. My father died when I was yet a child; my mother followed  
5 him within a year, and I was nearly as much alone in the world as a man might find himself.

The house as well as the family was of some antiquity. It contained a fine library, whose growth began before the invention of printing, and had  
10 continued to my own time, greatly influenced, of course, by changes of taste and pursuit.

The library, although duly considered in many alterations of the house and additions to it, had nevertheless, like an encroaching state, absorbed one  
15 room after another until it occupied the greater part of the ground floor.

In the evening of a gloomy day of August I was sitting in my usual place, my back to one of the windows, reading. I cannot tell what made me turn  
20 and cast a glance to the farther end of the room, when I saw, or seemed to see, a tall figure reaching up a hand to a bookshelf. The next instant, my vision apparently rectified by the comparative dusk, I saw no one, and concluded that my optic nerves had been  
25 momentarily affected from within.

I resumed my reading, and would doubtless have forgotten the vague, evanescent impression, had it not been that, having occasion a moment after to consult a certain volume, I found but a gap in the  
30 row where it ought to have stood, and the same instant remembered that just there I had seen, or fancied I saw, the old man in search of a book. I looked all about the spot but in vain. The next morning, however, there it was, just where I had  
35 thought to find it! I knew of no one in the house likely to be interested in such a book.

I rang the bell; the butler came; I told him all I had seen, and he told me all he knew.

He had hoped, he said, that the old gentleman  
40 was going to be forgotten; it was well no one but myself had seen him. He had heard a good deal about him when first he served in the house, but by degrees he had ceased to be mentioned, and he had been very careful not to allude to him.

45 “The place was haunted by an old gentleman, was it?” I said.

He answered that at one time everybody believed it, but the fact that I had never heard of it seemed to imply that the thing had come to an end and was  
50 forgotten.

I questioned him as to what he had seen of the old gentleman.

CONTINUE 

He had never seen him, he said, although he had been in the house from the day my father was eight years old. My grandfather would never hear a word on the matter, declaring that whoever alluded to it should be dismissed without a moment's warning, but old Sir Ralph believed in nothing he could not see or lay hold of. Not one of the maids ever said she had seen the apparition, but a footman had left the place because of it.

"I hope it was but a friendly call on the part of the old gentleman!" he concluded, with a troubled smile.

1

Why has the narrator returned to his estate?

- A) He has agreed to help his aging grandfather manage the estate's affairs.
- B) He is taking a brief holiday from school and hoping to relax.
- C) He needs to oversee his parents' funerals after finishing his studies.
- D) He is preparing to take over management of the estate.

2

When the narrator first sees the figure of the old gentleman, he thinks it is

- A) his ancestor's ghost coming back to haunt him.
- B) a thief trying to steal from his family's ancient library.
- C) only a momentary misperception.
- D) his butler tidying up the shelves.

3

Which of the following provides the best evidence for the answer to the previous question?

- A) Lines 22-25 ("The next ... within")
- B) Lines 29-32 ("I found ... book")
- C) Lines 37-38 ("I rang ... knew")
- D) Lines 45-46 ("The place ... said")

4

The author's use of the phrase "encroaching state" (line 14) is primarily meant to convey that the library

- A) has been relegated to a smaller and smaller portion of the house.
- B) was originally built to extend over almost the entire bottom half of the house.
- C) is growing in unwelcome and worrisome ways.
- D) is slowly expanding to encompass more of the downstairs.

5

Which of the following clues leads the narrator to reconsider the presence of the old gentleman?

- A) He spotted the old gentleman again when his optic nerves had adjusted to the dark.
- B) He has a vague impression of another presence with him.
- C) He found the book he saw the old gentleman perusing missing from the library.
- D) He hears of a footman who just left his service after spotting the old gentleman.



6

As used in line 23, “rectified” most nearly means

- A) corrected.
- B) resolved.
- C) settled.
- D) repaired.

7

When the narrator brings up the old gentleman, the butler’s attitude may best be described as

- A) bemused.
- B) skeptical.
- C) uneasy.
- D) confused.

8

Which of the following provides the best evidence for the answer to the previous question?

- A) Lines 51-52 (“I questioned ... gentleman”)
- B) Lines 53-55 (“He had ... old”)
- C) Lines 59-61 (“Not one ... it”)
- D) Lines 62-64 (“I hope ... smile”)

9

Why did the narrator’s grandfather insist that whoever alluded to the old gentleman should be dismissed without warning?

- A) He was a religious man and disapproved of superstition.
- B) He feared the wrath of the ghost if spoken of.
- C) He worried servants would quit if they heard about the ghost.
- D) He refused to entertain the possibility that there was an apparition.

CONTINUE

**Questions 10-19 are based on the following passage and supplementary material.**

This passage is adapted from *Managers of the Arts*, “Backgrounds, Recruitment, and Careers,” a publication of the National Endowment for the Arts.

Many of the most critical managerial problems facing American arts institutions concern the careers of the individuals who manage them. An artistic discipline must induce capable managers to enter career paths that lead to executive positions. It must provide these individuals with the experience and knowledge they need to perform effectively as top executives, and it must reward talented executives sufficiently so they will remain in the field.

In short, for a field to attract and retain talented managers, it must provide careers—sequences of jobs that lead to desired end points—to motivate people to participate. Orderly careers allow individuals to compare their progress with that of their peers, to seek goals with some certainty that they will lead to valued outcomes, and to work from day to day with some confidence that competent performance will be rewarded. In fields where careers are chaotic (the paths to higher positions being irregular and unpredictable) or where opportunities are few, it is difficult to attract talented managers or to persuade them to stay.

Individuals and service organizations in all artistic disciplines are concerned about administrative recruitment. But, as yet, we have known little about who art managers are: their background, their education, their preparation, and their success (or lack of success) in their chosen fields. Where concern is great and information meager, stereotypes abound. Managerial careers in the arts are said to be characterized by instability and job-hopping. Arts managers are sometimes portrayed as failed artists, frustratedly accepting executive positions for which they are unqualified as substitutes for artistic roles they would rather play. Or, alternatively, arts administrators are alleged to be “just” managers, knowledgeable about

accounting and marketing but insensitive to the particular needs of their artistic disciplines. The results of our research, however, suggest that these stereotypes are not well-founded.

Each set of administrators was divided into four quartiles based on the dollar operating budget of their institutions. Not surprisingly, managers of the largest institutions by and large had spent more years in their fields than administrators of small organizations, which suggests that the latter group tends either to move to larger organizations or to leave the field. Managers of wealthy institutions also tended to be slightly older than managers of small organizations, especially in the case of the resident theaters. Directors of the largest art museums were more likely than other directors to have attended private secondary schools and colleges in the north-east, and to have earned Ph.D.s; most striking was the finding that almost 40 percent of art museum directors from the largest museums and more than 25 percent of those from the next largest hold undergraduate or graduate degrees awarded by a specific American university, compared with just 5 percent of those from smaller museums.

Data from this study reveal that careers—i.e., ordered sequences of jobs leading from conventional entry portals to predictable destinations—did not exist in these fields. Further, mobility within organizations is limited by size: relatively few arts institutions have enough levels of management to routinely promote all competent personnel.

The disorderly nature of managerial careers in these artistic fields may provide opportunities for organizations to hire talented individuals from unusual backgrounds and for individuals willing to take risks to build successful careers. But many people find it stressful to work in environments in which promotion opportunities are few and career strategies obscure and poorly understood. Such individuals, if they face career stagnation or uncertainty, may choose to leave arts administration for other pursuits.

Budget Ranges by Category and Discipline (in thousands of dollars)				
Discipline	Lowest quartile	2 <sup>nd</sup> quartile	3 <sup>rd</sup> quartile	Top quartile
CAAs*	Less than 50	50-100	101-300	More than 300
Theaters	Less than 260	260-500	501-1200	More than 1200
Orchestras	Less than 320	320-700	701-1700	More than 1700
Art Museums	Less than 500	500-1000	1001-2000	More than 2000

\*CAAs = Community Arts Agencies

10

The passage primarily focuses on which of the following?

- A) The backgrounds and career paths of art managers
- B) The incentives that art centers use to recruit and maintain talent
- C) The decreasing salary and benefits of managers in the arts
- D) The differences between jobs in theaters, museums, and orchestras

11

The author's attitude toward jobs in the arts can best be described as

- A) dismissive.
- B) supportive.
- C) amused.
- D) frightened.

12

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

- A) Lines 5-9 (“It must ... field”)
- B) Lines 13-18 (“Orderly careers ... rewarded”)
- C) Lines 18-22 (“In fields ... stay”)
- D) Lines 25-29 (“But, as ... fields”)

13

According to the passage, arts administrators

- A) enjoy relatively stable, linear careers in theaters, orchestras, and museums.
- B) are failed artists who then turn to management.
- C) suffer from some unfair assumptions about their careers.
- D) are vocal about their disgust for the job-hopping they must do.

14

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

- A) Lines 23-25 (“Individuals and ... recruitment”)
- B) Lines 30-32 (“Managerial careers ... job-hopping”)
- C) Lines 39-41 (“The results ... well-founded”)
- D) Lines 44-49 (“Not surprisingly ... field”)



15

As used in line 55, “striking” most nearly means

- A) magnificent.
- B) surprising.
- C) distinctive.
- D) obvious.

16

As used in line 63, “conventional” most nearly means

- A) mainstream.
- B) prevalent.
- C) orthodox.
- D) common.

17

The primary purpose of lines 73-79 is to

- A) argue that only the entrepreneurial and strong-willed should undertake careers in the arts.
- B) suggest that arts organizations need to provide better stress management techniques for employees.
- C) reveal why arts organizations are rapidly losing top talent to environmental careers.
- D) warn that talented candidates may choose different careers unless certain issues are remedied.

18

It can reasonably be inferred from the graphic that

- A) the salaries of art museum managers were the highest in the business.
- B) budget ranges for theaters were, on average, lower than those for orchestras.
- C) 25% of orchestras earned less than \$320,000 per year.
- D) theater and orchestra managers are often incentivized to transfer to art museums.

19

Information from the graphic and passage best supports which of the following statements?

- A) Orchestra managers in organizations with budgets of \$701,000-\$1,700,000 have likely spent more years in their fields than orchestra managers in organizations with budgets of less than \$320,000.
- B) Theater managers in organizations with budgets of \$701,000-\$1,700,000 have likely spent more years in their fields than orchestra managers in organizations with budgets of less than \$320,000.
- C) Art museum managers in organizations with budgets of over \$1,700,000 likely have the same amount of experience as theater managers in organizations with the same budgets.
- D) Art museum managers in organizations with budgets of over \$1,700,000 likely have less experience than theater managers in organizations with the same budgets.


 CONTINUE

**Questions 20-28 are based on the following passage.**

The following is adapted from a presidential campaign speech given by Theodore Roosevelt in 1912.

The great fundamental issue now before our people can be stated briefly. It is: are the American people fit to govern themselves, to rule themselves, to control themselves? I believe they are. My opponents do not.

I believe in the right of the people to rule. I believe that the majority of the plain people of the United States will, day in and day out, make fewer mistakes in governing themselves than any smaller class or body of men, no matter what their training, will make in trying to govern them. I believe, again, that the American people are capable of self-control and of learning by their mistakes. Our opponents pay lip-loyalty to this doctrine; but they show their real beliefs by the way in which they champion every device to make the nominal rule of the people a sham.

I have scant patience with this talk of the tyranny of the majority. Wherever there is tyranny of the majority, I shall protest against it with all my heart and soul. But we are today suffering from the tyranny of minorities. It is a small minority that is grabbing our coal-deposits, our water-powers, and our harbor fronts. A small minority is battenning on the sale of adulterated foods and drugs. It is a small minority that lies behind monopolies and trusts. It is a small minority that stands behind the present law of master and servant, the sweatshops, and the whole calendar of social and industrial injustice. It is a small minority that is today using our convention system to defeat the will of a majority of the people in the choice of delegates to the Chicago Convention.

This is the question that I propose to submit to the people. How can the prevailing morality or a preponderant opinion be better and more exactly ascertained than by a vote of the people? The people know what their own morality and their own opinion is.

The only tyrannies from which men, women, and children are suffering in real life are the tyrannies of minorities. If the majority of the American people were in fact tyrannous over the minority, if democracy had no greater self-control than empire, then indeed no written words which our forefathers put into the Constitution could stay that tyranny.

No sane man who has been familiar with the government of this country for the last twenty years will complain that we have had too much of the rule of the majority. The trouble has been a far different one. At many times and in many localities, there have been men who held public office in the States and in the nation who have, in fact, served not the whole people, but some special class or special interest. I am not thinking only of those special interests which by grosser methods, by bribery and crime, have stolen from the people. I am thinking as much of their respectable allies and figureheads, who have ruled and legislated and decided as if in some way the vested rights of privilege had a first mortgage on the whole United States, while the rights of all the people were merely an unsecured debt.

Am I overstating the case? Have our political leaders always, or generally, recognized their duty to the people as anything more than a duty to disperse the mob, see that the ashes are taken away, and distribute patronage? Have our leaders always, or generally, worked for the benefit of human beings, to increase the prosperity of all the people, to give each some opportunity of living decently and bringing up his children well? The questions need no answer.

CONTINUE 

20

The tone of the passage is best described as

- A) optimistic.
- B) despondent.
- C) fervent.
- D) resigned.

21

Which situation is most analogous to the problem Roosevelt presents in the passage?

- A) A town assembly with an overfilled agenda
- B) A sports team with an unpopular captain
- C) A boss who only accepts feedback from managers
- D) A club that has instituted a democratic voting process

22

In the context of the passage, Roosevelt's use of the phrase "pay lip-loyalty" in lines 13-14 is meant to convey the idea that his opponents

- A) agree that Americans are capable of self-control and self-improvement.
- B) say they agree that Americans are capable of self-control while acting otherwise.
- C) support the American people's right to rule but make exceptions during wartime.
- D) give many speeches in support of the doctrine that Americans are capable of self-control and learning.

23

Which of the following best represents Roosevelt's views on the tyranny of the majority?

- A) He is determined to fight against this prevalent problem with all his heart and soul.
- B) It is behind such pressing issues as monopolies, trusts, and sweatshops.
- C) Along with the tyranny of the minority, it is responsible for the loss of resources like coal, water, and certain foods.
- D) It is not a major problem in America, despite the talk of many political figures.

24

Which of the following provides the best evidence for the answer to the previous question?

- A) Lines 11-13 ("I believe ... mistakes")
- B) Lines 18-19 ("I have ... majority")
- C) Lines 55-57 ("I am ... people")
- D) Lines 64-68 ("Have our ... patronage")

25

As used in line 46, "stay" most nearly means

- A) halt.
- B) visit.
- C) remain.
- D) delay.

26

Which of the following does Roosevelt use to illustrate how leaders have served the interests of only a small minority?

- A) A list of named offenders
- B) A financial metaphor
- C) A commissioned report
- D) A recent trial

27

Roosevelt asserts that some men in public office have

- A) listened too much to the rule of the majority.
- B) focused too much on social policy at the expense of economic policy.
- C) exaggerated their accomplishments to the upper classes.
- D) often favored the privileged portions of the population.

28

Which of the following provides the best evidence for the answer to the previous question?

- A) Lines 47-50 (“No sane ... majority”)
- B) Lines 51-55 (“At many ... interest”)
- C) Line 64 (“Am I ... case”)
- D) Lines 68-72 (“Have our ... well”)

CONTINUE

**Questions 29-38 are based on the following passage and supplementary material.**

This passage is adapted from Yoel Stuart, “Invasive Species Trigger Rapid Evolution for Lizards in Florida.” © 2014 by Yoel Stuart.

Invasive species colonize and spread widely in places where they are not normally found. Invasives often affect native species by eating them, out-  
 Line competing them and introducing unfamiliar parasites  
 5 and pathogens. For example, the invasive kudzu plant, native to southeast Asia, overgrows seemingly anything in its path in the southeast US.

Natural selection wrought by invasive species can often be strong, and natives will either go extinct  
 10 or adapt. During adaptation, selection will favor those individuals with characteristics that best allow them to survive and reproduce in the face of the invader. The offspring of the survivors will inherit  
 15 their parents’ beneficial traits, and the population will evolve.

In the 1950s, the brown anole lizard, *Anolis sagrei*, arrived in South Florida from Cuba. The effects of this invasion might not be very noticeable to humans. But the brown anole certainly makes an  
 20 impression on Florida’s only native anole species, the green anole, *Anolis carolinensis*. This is because the green and the brown anoles enjoy similar lifestyles. They eat similar food—mostly insects and  
 25 spiders—and use similar habitats—the ground and lower parts of trees and bushes. Because of these similarities, we expect the invasive brown anole to impose strong natural selection on the native green.

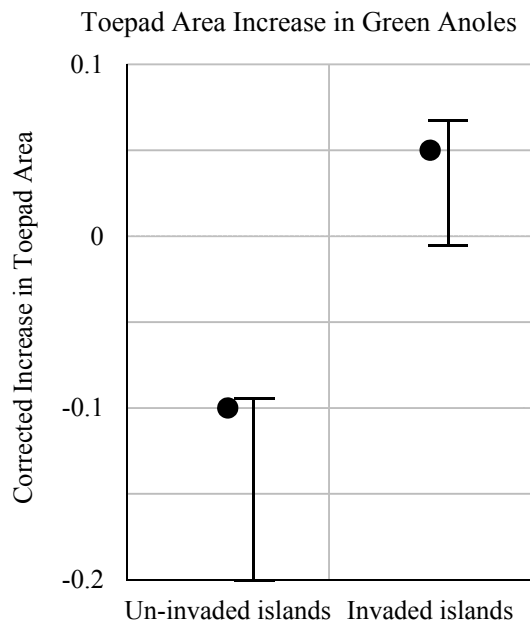
Previous researchers had observed that green  
 30 anoles living with brown anoles tend to live higher up in the trees, presumably to escape competition for food and space. To obtain definitive evidence, our research team conducted an experiment on the small, man-made islands near Cape Canaveral. In 1995, we introduced the brown anole to three islands that—  
 35 until then—had only green anoles. Within a few months, the green anole moved up into the trees and stayed there.

Fifteen years later, we wondered whether the green anoles had adapted anatomically to their new  
 40 life up in the trees. We were specifically interested in toepads on their feet; other anole species that live high in trees tend to have large toepads, the better to grasp smoother, narrower branches higher up. We would have liked to study toepad evolution in the  
 45 same populations we’d looked at earlier. But the original control islands, with only green anoles, had been invaded by the brown anole by the time we revisited them in 2010. So instead, we chose five large islands that had just green anoles. We  
 50 compared their green anoles to the green anoles on six large islands that had been naturally invaded by the brown anole. We did know that the brown anoles had hit the scene sometime between 1995 and 2010 because we had surveyed the islands in 1995 and  
 55 found them free of brown anoles at that time.

We found that on the invaded islands, green anoles evolved larger toepads. It took only 20  
 generations—less than 15 years—for the toepads to increase by about 5%. That may not sound like  
 60 much, but that’s a rapid evolutionary pace. Our findings further support the notion that when natural selection is strong, evolution can proceed quite quickly.

Why did selection favor larger toepads? Like  
 65 geckos, anoles’ toes have specialized scales with fine hairs on them that cling to surfaces. Anoles with larger toepads are better at clinging. We think that the green anoles were under selection to get better at maneuvering on narrow, flexible and slippery twigs  
 70 and leaves high in trees. Thus, green anole hatchlings that were born with larger toepads were better able to grow, survive, and reproduce. In this case, it appears that the green anole has been able to adapt to coexist with the brown anole.





This graph shows an increase in toepad area in green anoles caught on invaded islands.

29

Which choice best describes the structure of the passage as a whole?

- A) An anecdote from a scientist with a personal stake in his research
- B) A description of a region's wildlife and topography
- C) An impassioned argument supported by experimental evidence
- D) A broad discussion of a phenomenon followed by a specific example

30

Based on the passage, which choice best describes the relationship between brown anoles and green anoles in Florida?

- A) Brown anoles are an invasive species, and green anoles are a native species.
- B) Green anoles are an invasive species, and brown anoles are a native species.
- C) Brown and green anoles are native species, and geckos are an invasive species.
- D) Geckos are a native species, and brown and green anoles are invasive species.

31

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

- A) Lines 2-5 (“Invasives often ... pathogens”)
- B) Lines 19-21 (“But the ... *carolinensis*”)
- C) Lines 23-25 (“They eat ... bushes”)
- D) Lines 28-31 (“Previous researchers ... space”)

CONTINUE

32

Based on the passage, which of the following statements would the author most likely agree with?

- A) Though native species adapt in the face of invasive species, they do so slowly over a long period of time.
- B) Native species have the ability to adapt surprisingly quickly in the face of pressure from invasive species.
- C) Invasive species adapt in unpredictable but surprisingly rapid ways when introduced into new environments.
- D) Though invasive species adapt to their new environments, they do so slowly over many years.

33

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

- A) Lines 13-15 (“The offspring ... evolve”)
- B) Lines 38-40 (“Fifteen years ... trees”)
- C) Lines 45-48 (“But the ... 2010”)
- D) Lines 57-59 (“It took ... 5%”)

34

The primary purpose of lines 5-7 (“For example ... US”) is to

- A) show that not all invasive species are domestic.
- B) suggest that the country needs more stringent controls on foreign plants.
- C) illustrate the problem of native weeds in America.
- D) provide an example of an invasive plant in a new environment.

35

As used in line 10, “favor” most nearly means

- A) accommodate.
- B) care for.
- C) prefer.
- D) like.

36

The author lists the brown and green anoles’ similarities in order to

- A) explain why they expected to see adaptations in the green lizards.
- B) show the compatibility of the species to coexist.
- C) argue that previous distinctions between the species are arbitrary.
- D) suggest that both species are uniquely suited to the environment in South Florida.

37

As used in line 27, “impose” most nearly means

- A) exploit.
- B) urge.
- C) charge.
- D) inflict.

38

Information from the graph best supports which of the following statements?

- A) Toepad size of green anoles increased in environments shared with brown anoles.
- B) Toepad size of both green and brown anoles increased in environments they shared.
- C) Toepad size of green anoles was almost twice that of brown anoles.
- D) Toepad size of green anoles decreased when they moved to isolated islands.

CONTINUE

**Questions 39-47 are based on the following passages.**

**Passage 1**

This passage is adapted from Cynan Ellis-Evans, “First Direct Evidence of Microbial Life Under 1 km of Antarctic Ice.” © 2014 by Cynan Ellis-Evans.

Microbial life can exist in the most extreme environments on Earth. In a recent study, researchers reported the first direct evidence of life in a lake located almost a kilometer below an ice sheet in Antarctica. The ice provides an effective “duvet,” trapping the heat naturally emitted through the Earth’s crust.

There is growing evidence that many of the Antarctic lakes are connected by a network of channels. These channels control the flow of overlying ice streams, and liquid water at the base of ice sheets lubricates the passage of ice. The lakes associated with ice streams are thought to act as reservoirs for this lubrication process, filling and partly emptying on a fairly regular basis so the water in the lake is replaced every few years.

Subglacial Lake Whillans, described in the study, is an example of a dynamic subglacial lake. It receives no light to support photosynthesis, has constantly low temperatures (just a little below zero) and is under pressure eighty times atmospheric pressure due to the 800m of overlying ice.

With relatively frequent changing of the lake water, the availability of organic matter, which humans and many other life forms—collectively termed heterotrophs—use for energy and growth, will be limited. The only things that can support the heterotrophs in this ecosystem are the underlying ancient seabed geology, which can provide small amounts of organic carbon from the rock material, and the recycling of carbon from dead microbes. Thus, what a dynamic subglacial ecosystem such as this needs to really succeed is to also use the much more plentiful non-organic energy sources.

When the samples were analyzed, the researchers found that the lake contained organisms from both Bacteria and Archaea trees of life. While some of

the organisms could be identified from gene databases as also occurring elsewhere, particularly in cold environments, many of the lake’s microbes appear to be completely new. Along with a range of heterotrophic microbes, the most prevalent organisms were those that can consume inorganic chemicals, such as iron, manganese, sulfur and, especially, nitrogen. These organisms are called chemoautotrophs.

The “chemoautotrophic” lifestyle is representative of the earliest life on Earth. This existed long before photosynthesis created an oxygen-rich world and powered the explosion of biological diversity and organic carbon biomass to support the heterotrophic lifestyle dominating the modern Earth.

**Passage 2**

This passage is adapted from Ceridwen Fraser, “Antarctic Volcanoes Help Preserve Life in the Freezer.” © 2014 by Ceridwen Fraser.

These days, Antarctica is 99.7% covered in ice, and the 0.3% of land that is ice-free is home to diverse and unique ecosystems on considerably smaller scales, made up of mosses, lichens and various invertebrate animals such as mites and tiny nematode worms. New evidence provides an intriguing solution to the mystery of how Antarctic species could have clung on through ice ages.

There are many volcanoes in Antarctica and some have large magma chambers that can provide heat to the surface for hundreds of thousands of years. When we examined species richness patterns across the whole continent, we found there are more species close to these volcanoes, and fewer further away. These patterns indicate that the volcanoes have sheltered diverse life over long periods, including during ice ages. The volcanoes would have provided warmth, and helped to ward off the encroaching ice, as the planet entered a period of deep freeze.

As well as melting areas of ice on the surface, steam from volcanoes can cause the formation

CONTINUE

of extensive cave systems beneath the glaciers, tens of degrees warmer than outside. These geothermally warmed environments could have supported biodiversity through the most intense glacial periods. Then, as the world warmed and more ice-free areas became available, chance events would have allowed some species to disperse away, stepping-stone style, to new habitats.

The further away from the source, the fewer the species that would be likely to establish, leading to the diversity gradient we see today, with decreasing species richness away from volcanoes. Most people think of volcanoes as destructive and frightening, but this research shows that for many species in icy regions, volcanoes might represent something much more positive—a chance for survival in an extreme and harsh climate.

39

As used in line 1, “extreme” most nearly means

- A) sensational.
- B) drastic.
- C) dangerous.
- D) fanatical.

40

Which of the following is NOT a reason the author of Passage 1 gives to support his statement that Lake Whillans is an extreme environment?

- A) It receives no sunlight.
- B) It has subzero temperatures.
- C) It contains no oxygen.
- D) It is under enormous pressure.

41

Based on the passage, which of the following environments would likely be more hospitable to chemoautotrophs than other organisms?

- A) A biodiverse but polluted tropical ocean
- B) An island only seasonally populated by birds
- C) A mineral-rich but otherwise barren lake bed
- D) The intestinal tract of a large mammal

42

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

- A) Lines 27-31 (“The only ... microbes”)
- B) Lines 32-34 (“Thus, what ... sources”)
- C) Lines 37-41 (“While some ... new”)
- D) Lines 42-45 (“the most ... nitrogen”)

43

Passage 2 serves primarily to

- A) argue that Antarctica is more diverse than once previously thought.
- B) explain how many species were able to survive in Antarctica during glacial periods.
- C) protest the intense drilling disrupting the life in Antarctica’s sheltered caves.
- D) illustrate the author’s experiments with volcanic life in Antarctica.

44

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

- A) Lines 54-59 (“These days ... worms”)
- B) Lines 68-70 (“These patterns ... ages”)
- C) Lines 74-77 (“As well ... outside”)
- D) Lines 85-89 (“The further ... volcanoes”)

45

Based on the information in Passage 2, which of the following would the author likely agree with?

- A) Once the volcanoes in Antarctica become active again, Antarctica will move out of its latest glacial age.
- B) Species closest to the volcanoes occasionally suffer from heat exposure.
- C) Both the heat of the volcanoes and the coldness of the glaciers are required to support life in Antarctica.
- D) When temperatures in Antarctica rise, species can spread to larger parts of the continent.

46

As used in line 88, “richness” most nearly means

- A) affluence.
- B) decadence.
- C) abundance.
- D) luxuriance.

47

Which of the following best describes the relationship between the two passages?

- A) Passage 1 focuses on life adapted to extreme environments, while Passage 2 focuses on environments that have sheltered life from extreme conditions.
- B) Passage 1 argues that life can exist in extreme conditions, while Passage 2 argues that life requires warmth to survive.
- C) Passage 1 states that most Antarctic species date back thousands of years, while Passage 2 states that most of Antarctica’s diversity is recent.
- D) Passage 1 fears melting ice will destroy current species in Antarctica, while Passage 2 suggests warmth could boost survival.

# STOP

**If you complete this section before the end of your allotted time, check your work on this section only. Do NOT use the time to work on another section.**

## Section 2





# Writing and Language Test

35 MINUTES, 44 QUESTIONS

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

## DIRECTIONS

Every passage comes with a set of questions. Some questions will ask you to consider how the writer might revise the passage to improve the expression of ideas. Other questions will ask you to consider correcting potential errors in sentence structure, usage, or punctuation. There may be one or more graphics that you will need to consult as you revise and edit the passage.

Some questions will refer to a portion of the passage that has been underlined. Other questions will refer to a particular spot in a passage or ask that you consider the passage in full.

After you read the passage, select the answers to questions that most effectively improve the passage's writing quality or that adjust the passage to follow the conventions of standard written English. Many questions give you the option to select "NO CHANGE." Select that option in cases where you think the relevant part of the passage should remain as it currently is.

Questions 1-11 are based on the following passage.

### The (Appropriately Named) Supremes

In 1958, three junior high school girls from Detroit started **1** singing together and performing at sockhops and talent shows. Within ten years, Diana Ross, Florence Ballard, and Mary Wilson would become The Supremes. Producing more number one Billboard hits than any other vocal group to date, they were the most successful American vocal group of the twentieth century.

1

- A) NO CHANGE
- B) to sing together and were performing
- C) singing together and were performing
- D) to sing and performing

CONTINUE 

Originally **2** called themselves The Primettes, Ross, Ballard, and Wilson performed popular songs at small venues in the Detroit area throughout junior high and high school. They developed a local fan base and wanted to break into the recording **3** industry. Ross had been the neighbor of Smokey Robinson, the lead singer of The Miracles, when she was young. She asked him if he could try to get The Primettes an audition with Berry Gordy, the head executive at Motown Records. **4** Gordy attributes his success to the lessons he learned about the importance of grit and determination while training as a boxer in his youth. When the girls auditioned, Gordy gave them positive feedback but said that they should come back when they had finished high school. **5** Refusing, to back down. The Primettes went to his recording studio every day after school and convinced him to let them sing back up vocals and clap on other artists' tracks. Eventually, he signed them with the label, although under the condition that they change their group name. Thus, they became The Supremes.

2

- A) NO CHANGE
- B) calling
- C) had called
- D) being called

3

- A) NO CHANGE
- B) industry. Ross
- C) industry ... Ross
- D) industry? Ross

4

The writer is considering deleting the underlined sentence. Should the sentence be kept or deleted?

- A) Kept, because it provides background information about Berry Gordy
- B) Kept, because it sheds light on qualities that can lead to success
- C) Deleted, because it does not provide enough details about Gordy's youth
- D) Deleted, because it does not relate to The Supremes

5

- A) NO CHANGE
- B) Refusing to back, down,
- C) Refusing to back down,
- D) Refusing, to back, down,

After finding minimal success during their first two **6** years: The Supremes began to work with the songwriting team Holland-Dozier-Holland and Gordy decided that Ross would sing lead vocals for the group. **7** These changes had a major impact: in 1964, the group skyrocketed to the top of the Billboard charts with four consecutive number one hits. Touring domestically and around the world, Diana Ross and the Supremes were an international **8** impression by 1965. They sang on the soundtracks of movies and were frequently asked to endorse products—they even had a brand of bread named after **9** them. Can you believe it?

6

- A) NO CHANGE
- B) years,
- C) years:
- D) years

7

Which choice results in the most effective transition to the information that follows in the paragraph?

- A) NO CHANGE
- B) Then it turned out that
- C) Despite their initial challenges,
- D) Thus,

8

- A) NO CHANGE
- B) sensation
- C) experience
- D) feeling

9

- A) NO CHANGE
- B) them, for goodness' sake.
- C) their name!
- D) them.

The achievements of Ross, Ballard, and Wilson were **10** historically and socially significant. They were also musically significant. The Supremes were one of the first African-American female groups to gain widespread popularity with both African-American and white audiences. Their complete crossover success led the way for other groups like Martha Reeves and The Vandellas to achieve enormous mainstream popularity.

Eventually, Ross went on to have her own solo career, and there was some changeover between the other members of the group. In 1977, The Supremes formally disbanded after nearly twenty years of music-making. **11**

**10**

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

- A) significant historically, significant socially, and significant musically.
- B) historically and socially significant and significantly musical.
- C) historically and socially significant, and musically significant.
- D) historically, socially, and musically significant.

**11**

The writer wants to conclude the passage with a sentence that emphasizes the enduring legacy of The Supremes' work. Which choice would best accomplish this goal?

- A) Motown Records made major contributions to American music and is still operating today.
- B) Diana Ross's successful solo career solidified her reputation as a formidable performer in her own right.
- C) However, their songs remain widely played, and their influence on generations of musicians can still be heard today.
- D) When Holland-Dozier-Holland left Motown Records because of a financial dispute, The Supremes produced fewer high-ranking songs.

CONTINUE

Questions 12-22 are based on the following passage.

### In Defense of Termites

When many people think about termites, **12** you think about having to call the exterminator. It's true that termites cause serious structural damage to homes and crops—they cost the United States \$2 billion annually in **13** repairs. However, to say that termites are just pests that cause more harm than good would be entirely inaccurate. Out of the three thousand or so species of termites, only a few cause problems for people. The rest are crucial to the health of many ecosystems and are largely responsible for the successful growth of vegetation, upon which all animal life depends. Furthermore, they are capable of astonishing feats of construction and participate in sophisticated social structures.

**12**

- A) NO CHANGE
- B) they think
- C) we think
- D) one thinks

**13**

- A) NO CHANGE
- B) repairs? However,
- C) repairs, however
- D) repairs however



CONTINUE

**14** From woodlands to a desert to rainforests, termites **15** augment entire ecosystems. As they dig through the dirt, they create holes called *macropores*, which allow rain to soak deeply into the ground instead of evaporating or running off. The **16** termite's excretions provide the soil with additional structural integrity, helping to prevent erosion. **17** Furthermore as termites dig, they mix organic matter like leaves, dead insects, and the remains of other organisms with inorganic clay and sand, helping the soil **18** preserve and retain its nutrients.

14

- A) NO CHANGE
- B) From woodlands to deserts to rainforests,
- C) From woodlands to a desert to a rainforest,
- D) From woodlands to deserts to a rainforest,

15

- A) NO CHANGE
- B) benefit
- C) promote
- D) bless

16

- A) NO CHANGE
- B) termites
- C) termite
- D) termites'

17

- A) NO CHANGE
- B) Furthermore as termites dig
- C) Furthermore, as termites dig,
- D) Furthermore, as termites dig

18

- A) NO CHANGE
- B) in the preservation of its nutrients.
- C) in the retention of its nutrients.
- D) preserve its nutrients.


 CONTINUE

**19** [1] Termite mounds can reach up to thirty feet high. [2] To provide some perspective: termites are a quarter of an inch long and build structures that are approximately 1,500 times their height. [3] The human-scale equivalent would be building a skyscraper over 8,000 feet tall, but the tallest skyscraper in the world is not even 3,000 feet tall. [4] The enormous mounds support local ecosystems, allowing water to penetrate deep into the ground and creating moist oases where plants can flourish in arid terrain. [5] Animals also benefit from the presence of the mounds. [6] Many animals, including lizards, aardvarks, and mongooses, burrow into these mounds and use them as homes. **20**

**19**

Which choice most effectively establishes the main topic of the paragraph?

- A) Termites are able to survive in many different climates.
- B) Termites have engineered more complicated structures than those designed by humans.
- C) Some termites build immense mounds that are structural marvels and that benefit a multitude of other organisms.
- D) Tourists visiting countries where termites build mounds are often in awe of these extraordinary structures.

**20**

To make the paragraph most logical, sentence 4 should be placed

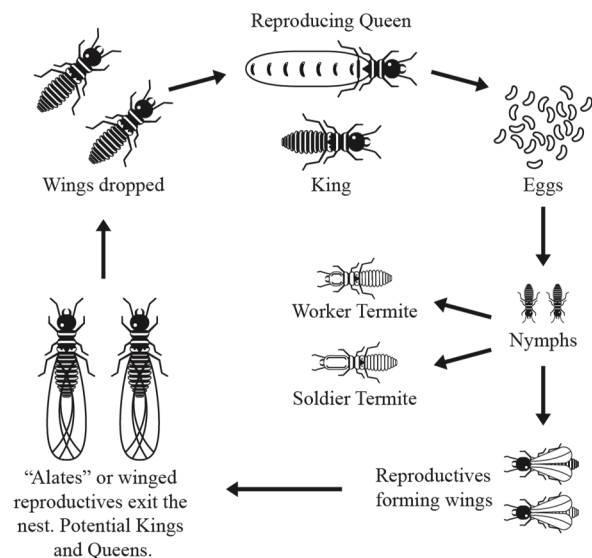
- A) where it is now.
- B) after sentence 1.
- C) before sentence 3.
- D) after sentence 5.

CONTINUE

Termites were among the first animal species to organize socially, and for the last two hundred million years have developed a sophisticated system of labor distribution. The queen **21** gives birth to nymphs, sometimes 20,000-30,000 per day. After hatching, the nymphs differentiate into classes with distinct tasks. Soldiers protect the mound from ant invasions. Reproductives fly off to form new colonies. Workers build mounds, care for nymphs, and tend fungal gardens that feed the colony. When termites need to evacuate the mound, they do not panic, trample each other, and get stuck in exits as humans often do. **22** Instead, they form orderly lines and wait their turn to leave. If one termite falls, the rest wait for it to stand back up and then they all continue on together.

Having termites in your house is a problem, but they are remarkable, accomplished creatures that make the world habitable for us all.

### Termite Life Cycle



21

Which choice best completes the sentence with accurate information based on the graphic?

- A) NO CHANGE
- B) develops wings
- C) lays eggs
- D) differentiates into workers, soldiers, and reproductives

22

- A) NO CHANGE
- B) Instead, they do form orderly lines
- C) Instead, they form lines that are orderly
- D) They are forming, instead, orderly lines

CONTINUE



Questions 23-33 are based on the following passage.

### Bringing it to a Boil

A river dam needs reinforcement. A nuclear reactor dome at a power plant needs to be repositioned. **23** Steel tubes are being cut by a gas torch as needed by a construction company. What do these tasks have in common? They are all responsibilities of boilermakers.

Boilers are large containers for liquids such as water, chemicals, and oil, or for gases such as steam and methane, and are used to create power and heat. Boilermakers build, install, and fix boilers, as well as forging and welding other metal products. The work of boilermakers can be found just about everywhere in industrialized countries: furnaces provide heat during cold weather to many homes and businesses, power plant facilities generate energy for cities and towns, and **24** other technical sites are responsible for additional services. Many of these structures require continual repairs to address **25** stress fractures, leaks, and a corroded part.

23

Which choice best maintains the sentence pattern already established in the paragraph?

- A) NO CHANGE
- B) Steel tubes cut with a gas torch are necessary for a construction company.
- C) Steel tubes need to be cut with a gas torch for a construction company.
- D) Cutting steel tubes with a gas torch meets a construction company's needs.

24

The writer wants to complete the sentence with a third example of the work of boilermakers in industrialized countries. Which choice best accomplishes this goal?

- A) NO CHANGE
- B) groups of boilermakers gather at refineries and other field sites.
- C) wrenches, pliers, bull pins, and chisels are used to treat boiler metal.
- D) water treatment facilities retain and prepare water for community use.

25

- A) NO CHANGE
- B) stress fractures, leak, and corroded parts.
- C) stress fracture, leaks, and corroded parts.
- D) stress fractures, leaks, and corroded parts.



**26** [1] Most students learn the trade through a four-year apprenticeship with experienced boilermakers. [2] Compared to liberal arts universities or colleges, **27** boilermakers receive more specialized, vocational training. [3] Students gain practical experience and hands-on knowledge through working on projects with advanced professionals, as well as putting in a minimum of 144 classroom hours per year. [4] In class, students learn about the physical and chemical properties of the liquids and gases with which they will be working. [5] Once they are prepared to join the workforce, they can join the boilermakers' union, which **28** create supportive local communities and advocates for the rights and welfare of all its members. [6] Local unions foster the development of young boilermakers by sponsoring many of the aforementioned apprenticeships. **29**

26

Which choice most effectively establishes the main topic of the paragraph?

- A) Boilermakers embarking on their careers can look forward both to learning the trade and to developing strong community ties.
- B) Unions have historical and contemporary significance in the lives of technical workers.
- C) Many trades require apprenticeship programs so that students can learn by doing.
- D) Boilermaking bears similarities to blacksmithing and forging.

27

- A) NO CHANGE
- B) these programs provide
- C) these students receive
- D) practical experience necessitates

28

- A) NO CHANGE
- B) are creating
- C) creates
- D) are in charge of creating

29

To make this paragraph most logical, sentence 4 should be placed

- A) where it is now.
- B) before sentence 1.
- C) after sentence 5.
- D) after sentence 6.

**30** Thus, boilermaking is not for those **31** adverse to physical activity. Boilermakers work with their hands just about every day and are often outside.

**32** As large as 750,000 gallons and requiring tall ladders to access, at times boilermakers construct and repair structures at extreme heights. Physical strength is **33** super important for boilermakers, as they load and unload heavy materials, assemble scaffolding, and erect steel support beams. They must be comfortable enough working in these environments to calmly and critically assess the conditions of their structures, discern what must be done in each individual circumstance, and make a plan to accomplish their goals. For people who like to move around and use their hands as well as their intellect, boilermaking can present an excellent opportunity for active, thoughtful work.

30

- A) NO CHANGE
- B) Boilermaking
- C) Subsequently, boilermaking
- D) In fact, boilermaking

31

- A) NO CHANGE
- B) avert
- C) averse
- D) overt

32

- A) NO CHANGE
- B) At times boilermakers work at extreme heights; the structures they construct and repair can be as large as 750,000 gallons and require tall ladders to access.
- C) The structures boilermakers construct and repair can be at extreme heights; they can be as large as 750,000 gallons and require tall ladders to access.
- D) Boilermakers construct and repair structures at extreme heights; they can be as large as 750,000 gallons and require tall ladders to access.

33

- A) NO CHANGE
- B) a big deal for
- C) of markedly high value for
- D) an important characteristic of


 CONTINUE

Questions 34-44 are based on the following passage.

### The King's Flight

After weeks of **34** convert planning and indecisive delays, on June 20, 1791, the royal family was ready. In the middle of the night, King Louis XVI, his wife Marie Antoinette, their children, and a few other close relations huddled into a small carriage and fled the city of Paris.

The king left behind a letter to his political rivals, outlining his **35** injustices with the new Constitution that diminished the power of the monarchy and of the Catholic Church. Now disguised as a middle-class family and their servants, the family headed toward the Belgium border to join Loyalist troops and other nobles in the hopes of initiating a counter-revolution.

**34**

- A) NO CHANGE
- B) covert
- C) covet
- D) convent

**35**

- A) NO CHANGE
- B) hardships
- C) resentments
- D) grievances

CONTINUE 

[1] The carriage was cramped as they drove through forests and past small towns. [2] In the small town of Sainte-Menehould, the postmaster was outside after dinner and saw the carriage driving by. [3] They traveled for about one hundred miles over the course of the day, only stopping occasionally so that the horses could rest. [4] He had seen the queen before and thought that he recognized her, and observed that the man next to her looked very much like the image of the king on the coins in his pocket. [5] Suspicious **36** for not wanting to cause a false alarm, he did not say anything to the coachmen. [6] However, he quickly took a back road with the intention of **37** beating the coach and surpassing it before it got to the next town, Varennes. [7] He succeeded, and there he told men at a local inn that he thought the king would be arriving soon and that something strange was going on. [8] They blocked off the bridge on the other side of town so that **38** it would not be able to proceed, gathered some men from the national guard, and awaited the king's arrival. **39**

**36**

- A) NO CHANGE
- B) nor
- C) but
- D) so

**37**

- A) NO CHANGE
- B) beating the coach
- C) surpassing and beating the coach
- D) beating the coach before it got

**38**

- A) NO CHANGE
- B) the bridge
- C) the coach
- D) the national guard

**39**

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

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


 CONTINUE

40 Just before midnight, the coach arrived, and the men questioned 41 its inhabitants. The queen said that she was the Baroness de Korff, and that she was on her way to Frankfurt, Germany. She said that she was in a hurry and hoped to be allowed to pass shortly. The soldiers took the family to the district attorney's house for the night, where the king revealed his identity. The next day the family was forced back to Paris by the national guard, accompanied by hundreds of angry villagers.

40

Which choice most effectively establishes the main topic of the paragraph?

- A) The royal family would not make it much farther on their journey before being forced back to the capital.
- B) The royal family demonstrated an inability to understand the priorities and needs of the majority of their subjects.
- C) The king overestimated the peasant farmers' loyalty to the monarchy.
- D) With her lavish wardrobe and jewels, the queen had alienated the peasants during their struggles with poor crops and perpetual hunger.

41

- A) NO CHANGE
- B) it's
- C) its'
- D) its's

Before this attempted escape, many French people had been open **42** with the idea of creating a constitutional monarchy, which would allow Louis to retain the throne but seriously limit his power. However, this perceived betrayal destroyed whatever credibility the king still had. **43** Moreover, the Legislative Assembly suspended the king's powers in favor of the creation of a republic. In December of 1792, the royal family was convicted of treason, and in January of 1793, the king was sent to the guillotine.

**44**

**42**

- A) NO CHANGE
- B) for
- C) to
- D) on

**43**

- A) NO CHANGE
- B) On the other hand,
- C) Not to mention,
- D) Shortly thereafter,

**44**

The writer is considering deleting the final paragraph. Should the paragraph be kept or deleted?

- A) Kept, because it provides insight about the views of the French people, thus offering an alternative interpretation of the events of the passage
- B) Kept, because it helps to place the episode in a broader historical context and provides information about its consequences
- C) Deleted, because the events depicted in the final paragraph took place after the king's flight to Varennes, which is the main focus of the passage
- D) Deleted, because it brings up the previously-unmentioned Legislative Assembly, which may be distracting for the reader

## STOP

**If you complete this section before the end of your allotted time, check your work on this section only. Do NOT use the time to work on another section.**





## Section 3





# Math Test – No Calculator

25 MINUTES, 17 QUESTIONS

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

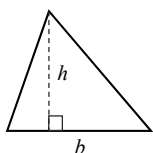
## DIRECTIONS

Questions **1-13** ask you to solve a problem, select the best answer among four choices, and fill in the corresponding circle on your answer sheet. Questions **14-17** ask you to solve a problem and enter your answer in a grid provided on your answer sheet. There are detailed instructions on entering answers into the grid before question 14. You may use your test booklet for scratch work.

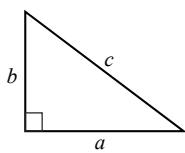
## NOTES

1. You **may not** use a calculator.
2. Variables and expressions represent real numbers unless stated otherwise.
3. Figures are drawn to scale unless stated otherwise.
4. Figures lie in a plane unless stated otherwise.
5. The domain of a function  $f$  is defined as the set of all real numbers  $x$  for which  $f(x)$  is also a real number, unless stated otherwise.

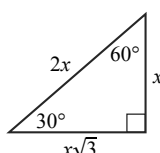
## REFERENCE



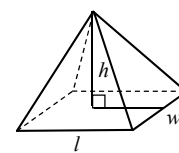
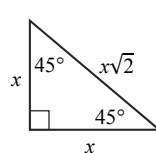
$$A = \frac{1}{2}bh$$



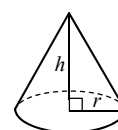
$$a^2 + b^2 = c^2$$



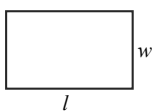
Special Triangles



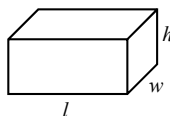
$$V = \frac{1}{3}lwh$$



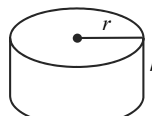
$$V = \frac{1}{3}\pi r^2 h$$



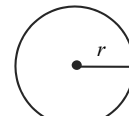
$$A = lw$$



$$V = lwh$$

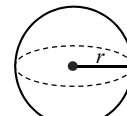


$$V = \pi r^2 h$$



$$A = \pi r^2$$

$$C = 2\pi r$$



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

There are  $360^\circ$  in a circle.

The sum of the angles in a triangle is  $180^\circ$ .

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

CONTINUE



1

Madison leaves her house and bikes north at a constant speed of 10 miles per hour. If her dad leaves the same house two hours later, driving north at a constant speed of 15 miles per hour, how long will it take him, in hours, to reach Madison?

- A) 2
- B) 3
- C) 4
- D) 5

2

If  $(x - 1)(x + 4) = 0$ , what are the values for  $x$ ?

- I. 4
  - II. 1
  - III. -1
  - IV. -4
- A) I and III
  - B) II and IV
  - C) III and IV
  - D) I and II

3

Bats detect the locations of objects by bouncing sound waves off of objects, in a process known as echolocation. The speed of a sound wave is approximately 350 meters per second. A bat emits a sound wave towards a tree 525 meters away. What is the time, in seconds, that it takes for the sound wave to reach the tree?

- A) 0.5
- B) 1
- C) 1.5
- D) 2

4

$$w = \frac{l}{8}$$
$$h = 3w$$

An engineer determined that a bridge he is designing has maximum stability when its length,  $l$ , width,  $w$ , and height,  $h$ , are defined by the equations above. If he wants to build a bridge with a height of 9 meters, what should be the length of the bridge, in meters?

- A) 48
- B) 24
- C) 12
- D) 6

CONTINUE 



5

If the sum of two consecutive integers is 15, what is their product?

- A) 36
- B) 48
- C) 56
- D) 64

6

$x$	$f(x)$
-3	8
-2	3
-1	0
0	-1
1	0

Which of the following equations describes the chart above?

- A)  $f(x) = x - x^2$
- B)  $f(x) = x - 1$
- C)  $f(x) = x^2 - 1$
- D)  $f(x) = x^2$

7

In DNA sequencing, a machine is able to identify the sequence of units of DNA, called base pairs. It costs approximately 10 cents to sequence 1000 base pairs. If an investigator would like to sequence a gene consisting of 120,000 base pairs from each of 100 samples, how much would it cost for him to obtain the sequences?

- A) \$120
- B) \$480
- C) \$720
- D) \$1200

8

$$2x^2 - x = 15$$

Which of the following is a correct value for  $x$  in the equation above?

- A) 3
- B) 2
- C) -2
- D) -4



9

The velocity of a ball that is thrown upwards is represented by the equation  $v = -5t^2 - 20t + 60$ , where  $v$  represents velocity and  $t$  represents time, in seconds. After how many seconds does the velocity of the ball become zero?

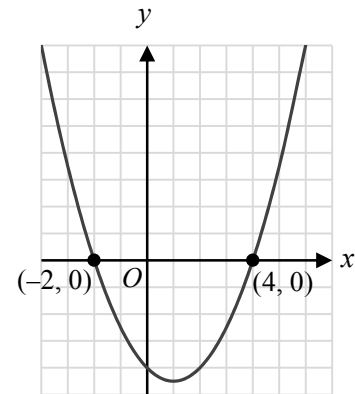
- A) 2
- B) 3
- C) 6
- D) 12

10

If  $x = 4y + 3$  and  $y = -2x - 3$ , what is the value of  $xy$ ?

- A) -1
- B) 0
- C) 1
- D) 3

11



The graph above could be a representation of which of the following equations?

- A)  $y = x - 1$
- B)  $y = x^2 - 2x - 9$
- C)  $y = (x - 1)^2 - 9$
- D)  $y = x^2$



12

If  $3^{2x+2} = 27^2$ , what is the value for  $x$ ?

- A) 0
- B) 1
- C) 2
- D) 3

13

If  $\sqrt{12 \times \sqrt{k}} = 6a$ , what is the value of  $k$  in terms of  $a$ ?

- A)  $3a$
- B)  $3a^2$
- C)  $9a^2$
- D)  $9a^4$

A grey arrow pointing to the right with the word "CONTINUE" written inside it in a bold, sans-serif font.

CONTINUE


**DIRECTIONS**

Questions **14-17** ask you to solve a problem and enter your answer in the grid provided on your answer sheet.

When completing grid-in questions:

- You are required to bubble in the circles for your answers. It is recommended, but not required, that you also write your answer in the boxes above the columns of circles. Points will be awarded based only on whether the circles are filled in correctly.
- Fill in only one circle in a column.
- You can start your answer in any column as long as you can fit in the whole answer.
- For questions 14-17, no answers will be negative numbers.
- Mixed Numbers**, such as  $4\frac{2}{5}$ , must be gridded as decimals or improper fractions, such as 4.4 or as  $\frac{22}{5}$ . "42/5" will be read as "forty-two over five," not as "four and two-fifths."
- If your answer is a **decimal** with more digits than will fit on the grid, you may round it or cut it off, but you must fill the entire grid.
- If there are **multiple correct solutions** to a problem, all of them will be considered correct. Enter only **one** on the grid.

5	/	1	1
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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

	8	.	4
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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

	3	/	7
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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

.	4	2	2
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②	②	②	②
③	③	③	③
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦

.	3	2	6
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③	③	③	③
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦

	1	2	5
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③	③	③	③
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦





14

If the sum of the even integers between 1 and  $k$ , inclusive, is equal to  $2k$ , what is the value of  $k$ ?

15

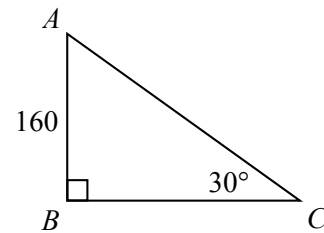
If  $a$  is a non-zero digit in the numbers  $1a2a$  and  $a31$ , what is the value of  $a$  when  $1a2a + a31 = 2659$ ?

16

$f(x) = x^2 + d$  and  $g(x) = 2x^2$ , where  $d$  is a constant.

If  $\frac{f(g(2))}{f(2)} = 4$ , what is the value of  $d$ ?

17



What is the length of  $\overline{AC}$  in the diagram above?

# STOP

If you complete this section before the end of your allotted time, check your work on this section only. Do NOT use the time to work on another section.



## Section 4





# Math Test – Calculator

45 MINUTES, 31 QUESTIONS

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

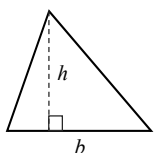
## DIRECTIONS

Questions **1-27** ask you to solve a problem, select the best answer among four choices, and fill in the corresponding circle on your answer sheet. Questions **28-31** ask you to solve a problem and enter your answer in a grid provided on your answer sheet. There are detailed instructions on entering answers into the grid before question 28. You may use your test booklet for scratch work.

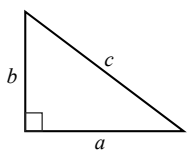
## NOTES

1. You **may** use a calculator.
2. Variables and expressions represent real numbers unless stated otherwise.
3. Figures are drawn to scale unless stated otherwise.
4. Figures lie in a plane unless stated otherwise.
5. The domain of a function  $f$  is defined as the set of all real numbers  $x$  for which  $f(x)$  is also a real number, unless stated otherwise.

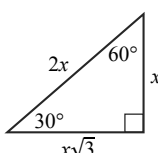
## REFERENCE



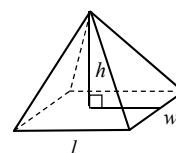
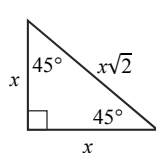
$$A = \frac{1}{2}bh$$



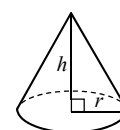
$$a^2 + b^2 = c^2$$



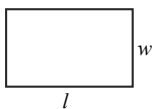
Special Triangles



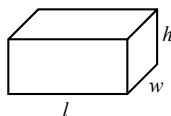
$$V = \frac{1}{3}lwh$$



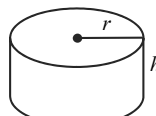
$$V = \frac{1}{3}\pi r^2 h$$



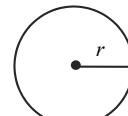
$$A = lw$$



$$V = lwh$$

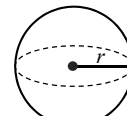


$$V = \pi r^2 h$$



$$A = \pi r^2$$

$$C = 2\pi r$$



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

There are  $360^\circ$  in a circle.

The sum of the angles in a triangle is  $180^\circ$ .

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

CONTINUE



1

Which of the following expressions is equivalent to  $(3x - 2)(x + 1)$ ?

- A)  $3x^2 - 2$
- B)  $4x - 2$
- C)  $3x^2 - x - 2$
- D)  $3x^2 + x - 2$

2

An athlete throws a javelin, a long metal spear, at a track and field competition. The javelin's height in feet,  $h$ , as a function of the number of seconds since it was thrown,  $t$ , is modelled by the equation  $h(t) = -16t^2 + 128t$ . What is the height of the javelin after 5 seconds?

- A) 0 feet
- B) 8 feet
- C) 240 feet
- D) 480 feet

3

$$\boxed{x} - \boxed{y} = 2x - 3y$$

If  $x$  and  $y$  are integers in the diagram above, what is the value of  $\boxed{-3} - \boxed{4}$ ?

- A)  $-18$
- B)  $-6$
- C)  $6$
- D)  $18$

4

Depreciation is the decrease in value of an item. Three years ago, Aaron bought a computer for \$930. The computer is now worth \$570. Assuming that the value of the computer depreciates linearly, what is its yearly depreciation?

- A) \$120
- B) \$180
- C) \$200
- D) \$240



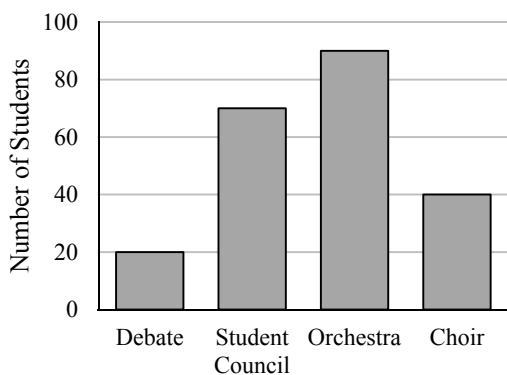
5

On a house blueprint, 2 feet is represented by 1 inch. If a room on the blueprint measures 5 inches by 6 inches, what is the area of the actual room?

- A) 30 square feet
- B) 60 square feet
- C) 90 square feet
- D) 120 square feet

6

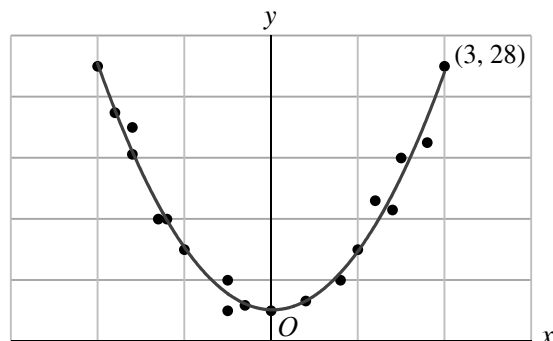
Club Participation at a School



The graph above shows the student participation for 4 school clubs. Each student is allowed to participate in only one club. If the school has 250 students, how many students are not in a club?

- A) 220
- B) 90
- C) 60
- D) 30

7



Which of the following equations best describes the trend line for the scatterplot above?

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

8

Costs Comparison of Tools

Item	Cost at John's Tools	Cost at Lin's Tools
Hammer	\$15	\$18
Drill	\$50	\$55
Electric saw	\$30	\$25

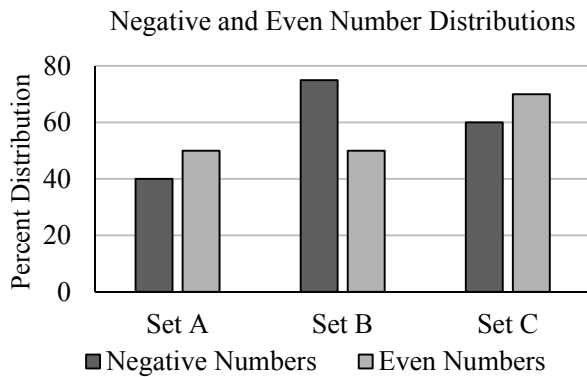
If a distributor receives a 10% discount from John's Tools and a 15% discount from Lin's Tools, how much more would they pay, in dollars, to buy a drill and electric saw from John's Tools than Lin's Tools?

- A) 4
- B) 5
- C) 6
- D) 7

CONTINUE



Questions 9 and 10 refer to the following information.



The graph above shows the distribution of negative and even numbers in three sets of numbers.

9

How many sets had more even than negative numbers?

- A) 0
- B) 1
- C) 2
- D) 3

10

If Set B has 200,000 elements, how many more negative numbers than even numbers would we expect to find in the set?

- A) 25,000
- B) 50,000
- C) 100,000
- D) 155,000

11

One byte is a unit of memory size used with computers. One megabyte contains approximately  $10^6$  bytes and Paul's computer hard-drive accesses information at a rate of 150 megabytes per second. If Paul wants to work with 5 files on his computer that are  $2,340 \times 10^6$  bytes each, approximately how long will it take his computer to access them?

- A) 15.6 seconds
- B) 39 seconds
- C) 1.3 minutes
- D) 78 minutes





12

	5 cent coins	10 cent coins	25 cent coins	Total coins
Offer 1	20	15	4	39
Offer 2	25	5	8	38
Total	45	20	12	77

Maria has been offered an exchange of coin collections for her wood carving. A summary of the coin collections is found in the table above. If she evaluates the offers based only on the face value of the coins, which collection is Maria most likely to choose?

- A) The coins are worth the same so Maria is equally likely to pick either one.
- B) Offer 1 is worth more than Offer 2, so Maria will pick Offer 1.
- C) Offer 2 is worth more than Offer 1, so Maria will pick Offer 2.
- D) Offer 1 has the greater number of coins, so Maria will pick Offer 1.

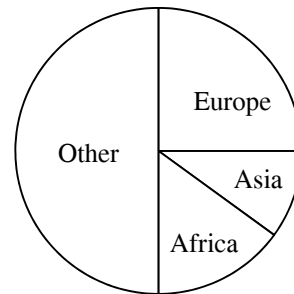
13

During the first month of life, a newborn's weight increases by 30%. If a newborn weighs  $w$  pounds when it is one month old, which of the following expressions represent the baby's weight at birth?

- A)  $(0.3)w$
- B)  $(1.3)w$
- C)  $\frac{w}{1.3}$
- D)  $\frac{1.3}{w}$

Questions 14 and 15 refer to the following information.

Immigration Demographics



The pie chart above shows the distribution of immigrants in a city, based on continent of origin.

14

25% of the immigrant population originated in which of the following continents?

- A) Asia and Europe
- B) Asia and Africa
- C) Africa and Europe
- D) Other

15

20% of the immigrant population from Europe are from France. If there are a total of 1500 immigrants in the city, how many immigrants are from France?

- A) 50 people
- B) 75 people
- C) 100 people
- D) 120 people



16

If 10% of a number is 12, then what is the value of 5% of half of the original number?

- A) 2
- B) 3
- C) 4
- D) 5

17

$$\begin{aligned}a &= -2b - 3 \\ b - a &= -24\end{aligned}$$

What is the value of  $a + b$  in the system of equations above?

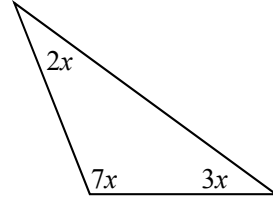
- A) -27
- B) -9
- C) 6
- D) 15

18

Which of the following is the sum of 3 consecutive odd integers?

- A) 23
- B) 26
- C) 105
- D) 290

19



What is the value of the largest angle in the triangle above?

- A) 120 degrees
- B) 115 degrees
- C) 110 degrees
- D) 105 degrees

20

The average in Set A is 85 and the average in Set B is 65. If the combined average of all the elements in Set A and Set B is 70, and Set A has 5 elements, how many elements are in Set B?

- A) 45
- B) 30
- C) 15
- D) 5



21

A species of shark spends 25% of a day,  $d$ , sleeping, and 50% of the remaining time hunting. Which of the following expressions represents how many hours in one day are left for other activities?

- A)  $\frac{3d}{2}$   
B)  $\frac{3d}{4}$   
C)  $\frac{3d}{8}$   
D)  $\frac{3d}{12}$

22

Age	Male	Female	Total
0-18 years old	56	50	106
19-40 years old	108	90	198
41-65 years old	126	135	261
66+ years old	90	95	185
Total	380	370	750

The age of a random sample of people from a population is summarized in the table above. The whole population consists of 31,000 people. Which of the following statements is true?

- A) We expect that there are 15,200 females in the population.  
B) We expect there to be 5580 females 65 years old and younger in the population.  
C) We expect there to be 9300 females between 19 and 65 years old in the population.  
D) We cannot determine the number of females in the population with the information given.

23

If  $2x^2 - 2y^2 = 72$  and  $x + y = 18$  what is the value of  $x - y$ ?

- A) 2  
B) 4  
C) 6  
D) 8

CONTINUE 



24

If  $\sqrt{10x + 35} = x + 6$  what is/are the value(s) of  $x$  divided by two?

- A)  $-\frac{1}{2}$   
 B)  $-\frac{7}{2}$   
 C)  $-\frac{1}{2}$  and  $-\frac{7}{2}$   
 D) 0 and  $-\frac{1}{2}$

25

Employees at a Hospital

Years Worked	Nurse	Doctor	Technician	Total
Less than 2	20	10	20	50
2 to 5	15	15	10	40
6 to 10	13	18	18	49
More than 10	12	10	12	34
Total	60	53	60	173

The table above shows the years worked by employees at a hospital. What is the probability that a technician has worked for 6 or more years?

- A) 90%  
 B) 75%  
 C) 65%  
 D) 50%

26

$$f(x) = 2x^2 + a$$

If  $a$  is a constant and  $f(2) + f(3) = f(5)$ , what is the value of  $a$ ?

- A) 6  
 B) 12  
 C) 24  
 D) 48

27

$$3x + 4y = 12$$

$$4x + 3y = -5$$

What is the value of  $x + y$ , in the system of equations shown above?

- A) 4  
 B) 3  
 C) 2  
 D) 1


**DIRECTIONS**

Questions **28-31** ask you to solve a problem and enter your answer in the grid provided on your answer sheet. When completing grid-in questions:

- You are required to bubble in the circles for your answers. It is recommended, but not required, that you also write your answer in the boxes above the columns of circles. Points will be awarded based only on whether the circles are filled in correctly.
- Fill in only one circle in a column.
- You can start your answer in any column as long as you can fit in the whole answer.
- For questions 28-31, no answers will be negative numbers.
- Mixed Numbers**, such as  $4\frac{2}{5}$ , must be gridded as decimals or improper fractions, such as 4.4 or as  $\frac{22}{5}$ . "42/5" will be read as "forty-two over five," not as "four and two-fifths."
- If your answer is a **decimal** with more digits than will fit on the grid, you may round it or cut it off, but you must fill the entire grid.
- If there are **multiple correct solutions** to a problem, all of them will be considered correct. Enter only **one** on the grid.

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

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

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

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

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

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



28

If  $(x^2 + 5) = 7$  and  $(x^2 + 5)k = 21$ , what is the value of  $k$ ?

29

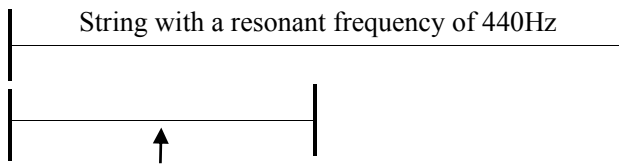
There are 42 integers in a group. If there are 5 times as many odd integers as there are even integers, how many numbers are even integers?

CONTINUE



**Questions 30-31 refer to the following information.**

One Hz is a measure of frequency and is equal to one cycle per second. The A string on a violin is tuned to a resonant frequency of 440Hz. If the string length is decreased, its resonant frequency, measured in Hz, is increased. The decrease in string length changes the string frequency according to the equation  $f = \frac{v}{2l}$ , where  $f$  is the frequency in Hz,  $v$  is a constant, and  $l$  is the string length. An application of this equation is demonstrated in the diagram below:



The same string is decreased by half, resulting in a resonant frequency of 880Hz

30

If the length of an A string on a violin is decreased by one quarter, what is the resonant frequency of the string, rounded to the nearest Hz?

31

The violin has another string, called the D string, which is tuned to resonate at 293.7Hz. If the lengths of a violin A and D string are decreased by half, what is the difference in resonant frequency between these two strings? (Round your answer to the nearest Hz.)

# STOP

**If you complete the problem set before time elapses, you may review your responses for this section. Do not view or begin working on any other sections.**





Chapter 3  
**Answers and Scoring**



# ANSWERS

## PART 1

### SECTION 1

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

### SECTION 2

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

### SECTION 3

- |      |       |       |         |
|------|-------|-------|---------|
| 1. C | 6. C  | 11. C | 16. 16  |
| 2. B | 7. D  | 12. C | 17. 320 |
| 3. C | 8. A  | 13. D |         |
| 4. B | 9. A  | 14. 6 |         |
| 5. C | 10. C | 15. 8 |         |

### SECTION 4

- |      |       |       |         |
|------|-------|-------|---------|
| 1. D | 9. C  | 17. C | 25. D   |
| 2. C | 10. B | 18. C | 26. C   |
| 3. A | 11. C | 19. D | 27. D   |
| 4. A | 12. C | 20. C | 28. 3   |
| 5. D | 13. C | 21. C | 29. 7   |
| 6. D | 14. B | 22. C | 30. 587 |
| 7. A | 15. B | 23. A | 31. 293 |
| 8. A | 16. B | 24. A |         |

# THE SCORING SYSTEM

## PART 2

The new PSAT will have three **test scores** on a scale from 8 to 38. There will be one test score for each test: the Reading Test, the Writing Test, and the Math Test. The Reading Test score and the Writing and Language Test score will be added together and converted to a single **section score** in Evidence-Based Reading and Writing; there will also be a section score in Math based on the Math Test Score. The section scores will be on a scale from 160 to 760. Added together, they will form the **composite score** for the whole test, on a scale from 320 to 1520.

PSAT Scoring	
Test Scores (8 to 38)	<ul style="list-style-type: none"><li>• Reading Test</li><li>• Writing Test</li><li>• Math Test</li></ul>
Section Scores (160 to 760)	<ul style="list-style-type: none"><li>• Evidence-Based Reading and Writing</li><li>• Math</li></ul>
Composite Score (320 to 1520)	<ul style="list-style-type: none"><li>• Math (Section Score) + Evidence-Based Reading and Writing (Section Score)</li></ul>

## SUBSCORES

The College Board will also be reporting new types of PSAT scores. There will be seven **subscores** based on particular question types within each test section. Some subscores will be based on question types found in the Reading and Writing Tests, while others will relate only to questions found on the Math Test. Subscores will be reported on a scale from 1 to 15.

Seven subscores will be reported: Heart of Algebra, Problem Solving and Data Analysis, Passport to Advanced Math, Expression of Ideas, Standard English Conventions, Words in Context, and Command of Evidence. Each score will be based on a range of 14 to 24 questions that test the particular skill named.

Find scoring sheets with detailed scoring information at:  
[ivyglobal.com/study](http://ivyglobal.com/study)

# SCORING YOUR TEST

## PART 3

To score your test, first use the answer key to mark each of your responses right or wrong. Then, calculate your **raw score** for each section by counting up the number of correct responses. Use the table below to help you calculate your scores:

Raw Score	
Section	# of Questions Correct
1. Reading	_____
2. Writing and Language	_____
3. Math: No-Calculator	_____
4. Math: Calculator	_____
<b>Raw Score for Reading (Section 1):</b> _____	
<b>Raw Score for Writing and Language (Section 2):</b> _____	
<b>Raw Score for Math (Section 3 + 4):</b> _____	

## SCALED SCORES

Once you have found your raw score for each section, convert it into an approximate **scaled test score** using the following charts. To find a scaled test score for each section, find the row in the Raw Score column that corresponds to your raw score for that section, and then check the column for the section you are scoring in the same row. For example, if you had a raw score of 39 for reading, then your scaled reading test score would be 33. Keep in mind that these scaled scores are estimates only. Your actual SAT score will be scaled against the scores of all other high school students taking the test on your test date.

Raw Score	Math Scaled Score	Reading Scaled Score	Writing Scaled Score	Raw Score	Math Scaled Score	Reading Scaled Score	Writing Scaled Score
48	38			23	24	22	21
47	38	38		22	23	21	20
46	37	38		21	22	20	20
45	37	37		20	21	19	19
44	36	36	38	19	20	18	18
43	35	35	38	18	19	18	17
42	35	35	37	17	18	17	16
41	34	34	36	16	17	15	15
40	34	34	35	15	16	14	14
39	33	33	34	14	15	13	13
38	33	33	33	13	14	12	12
37	32	32	32	12	13	11	11
36	32	32	31	11	12	10	10
35	31	31	30	10	11	9	10
34	31	30	29	9	10	8	9
33	31	30	28	8	9	8	9
32	30	29	27	7	8	8	8
31	30	29	26	6	8	8	8
30	29	28	25	5	8	8	8
29	29	27	24	4	8	8	8
28	28	27	23	3	8	8	8
27	27	26	23	2	8	8	8
26	27	25	22	1	8	8	8
25	26	24	22	0	8	8	8
24	25	23	21				

Use the table below to record your scaled scores:

<b>Scaled Scores</b>	
Scaled Score for Reading (Out of 40):	_____
Scaled Score for Writing and Language (Out of 40):	_____
Scaled Score for Math (Out of 40):	_____

## SECTION SCORE CONVERSION

You can look up your section score out of 760 below. To find your overall score, combine your section score for Reading + Writing with your section score for Math to get your total score out of 1520.

### READING + WRITING

Scaled Score	Section Score	Scaled Score	Section Score	Scaled Score	Section Score
76	720-760	55	510-590	35	310-390
75	710-760	54	500-580	34	300-380
74	700-760	53	490-570	33	290-370
73	690-760	52	480-560	32	280-360
72	680-760	51	470-550	31	270-350
71	670-750	50	460-540	30	260-340
70	660-740	49	450-530	29	250-330
69	650-730	48	440-520	28	240-320
68	640-720	47	430-510	27	230-310
67	630-710	46	420-500	26	220-300
66	620-700	45	410-490	25	210-290
65	610-690	44	400-480	24	200-280
64	600-680	43	390-470	23	190-270
63	590-670	42	380-460	22	180-260
62	580-660	41	370-450	21	170-250
61	570-650	40	360-440	20	160-240
60	560-640	39	350-430	19	160-230
59	550-630	38	340-420	18	160-220
58	540-620	37	330-410	17	160-210
57	530-610	36	320-400	16	160-200
56	520-600				



**MATH**

Total Points	Section Score	Total Points	Section Score
38	720-760	22	400-480
37	700-760	21	380-460
36	680-760	20	360-440
35	660-740	19	340-420
34	640-720	18	320-400
33	620-700	17	300-380
32	600-680	16	280-360
31	580-660	15	260-340
30	560-640	14	240-320
29	540-620	13	220-300
28	520-600	12	200-280
27	500-580	11	180-260
26	480-560	10	160-240
25	460-540	9	160-220
24	440-520	8	160-200
23	420-500		

Use the tables below to record your section scores and to calculate your overall scores:

Reading + Writing Section Score		Math Section Score		Overall Score (320-1520)
_____	+	_____	=	_____