

2018-19

PSAT™ 8/9

# Student Guide



Important  
information  
about the  
PSAT 8/9



Test-taking  
advice and tips



Directions  
and sample  
test questions



# About the College Board

The College Board is a mission-driven not-for-profit organization that connects students to college success and opportunity. Founded in 1900, the College Board was created to expand access to higher education. Today, the membership association is made up of more than 6,000 of the world's leading educational institutions and is dedicated to promoting excellence and equity in education. Each year, the College Board helps more than seven million students prepare for a successful transition to college through programs and services in college readiness and college success—including the SAT® and the Advanced Placement Program®. The organization also serves the education community through research and advocacy on behalf of students, educators, and schools.

For further information, visit [collegeboard.org](http://collegeboard.org).

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## The PSAT 8/9

The PSAT™ 8/9 is the first test in the SAT Suite of Assessments. It sets a readiness baseline, allowing students and teachers to pinpoint areas for focused practice as students progress through high school.

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## Contact Us

**EMAIL:** [psathelp@info.collegeboard.org](mailto:psathelp@info.collegeboard.org)

**PHONE:**

- 866-433-7728 (U.S.)
- +1-212-713-8105 (International)

**HOURS OF OPERATION:**

8 a.m.–9 p.m. ET

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# The PSAT 8/9: What Do You Need to Know?

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## Test Dates

September 24, 2018–March 29, 2019

April 1–April 26, 2019

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## What Does the PSAT 8/9 Measure?

The PSAT™ 8/9 measures reading, writing and language, and math skills learned both in and out of school.

You won't be asked to recall facts from literature, history, or science, or to complete math formulas, because this test measures your reasoning and critical thinking skills.

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## Why Take the Test?

- You'll see where your strengths are and where you can improve during middle or high school.
  - If you're in the ninth grade, your test results will let you know if you should check out AP® World History or AP European History. Go to [apstudent.collegeboard.org](http://apstudent.collegeboard.org) for more information.
  - Once you've taken the test, the College Board can connect you with educational access organizations that want to expand your opportunities. These nonprofit organizations include Jack Kent Cooke Foundation Young Scholars Program, The Jackie Robinson Foundation, United Negro College Fund, and Boys & Girls Clubs of America.
    - ◆ If you're interested, you can check the box on your answer sheet to opt in.
    - ◆ The College Board will only share your name, zip code, and email address with these organizations. These organizations won't receive your actual test scores or phone number.
  - When you get your test results, if you're age 13 or over, you can create College Board and Khan Academy® accounts and link them to get free, personalized study recommendations at [satpractice.org](http://satpractice.org).
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## Who Can Help If You Have Questions?

Your teacher or counselor will have the answers to most of your questions. For more help, see the contact information on page 2.

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## What Should You Bring on Test Day?

- No. 2 pencils with erasers (mechanical pencils are not allowed)
  - Acceptable calculator (see Acceptable Calculators on page 17)
  - Your Student ID number
  - Current and valid school or government issued photo ID, if you are not testing at the school you normally attend (more information about IDs is available at [sat.org/id-requirements](http://sat.org/id-requirements))
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## How Do You Prepare?

Review the information in this *Student Guide*, including the sample questions and directions, to become more familiar with the test. Go to [collegeboard.org/about-psat-8-9](http://collegeboard.org/about-psat-8-9) to get more information about preparing for the test.

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## PSAT 8/9 Scores

Around two months after taking the test, your school will receive your PSAT 8/9 Score Report, which will then be given to you. (If you're age 13 or over and provided your email address on the answer sheet, you'll receive an email letting you know when your scores are ready.) Your score report will include a total score, section scores, test scores, cross-test scores, and subscores—all of which will give you better insight into your performance. If you're age 13 or over, visit [studentscores.collegeboard.org](http://studentscores.collegeboard.org) when you get your score report to learn more about what these scores mean.

The score report will also show the correct answers, the answers you gave, and the difficulty level of each question. If you haven't received your score report within three months of taking the PSAT 8/9, see your teacher or counselor.

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## Testing Accommodations

Testing accommodations, such as braille, large-print test books, and extended time, are available for all College Board tests. If you need accommodations on the PSAT 8/9, your school will determine which accommodations are appropriate. (If you take other College Board tests, such as the PSAT/NMSQT® or SAT®, you or your school will need to submit a request to the College Board for approval to use accommodations.) If you have a disability and haven't been approved for accommodations by your school, speak to your counselor or teacher and have your parents talk to your school about its accommodations process.

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## Test Regulations

When you take the test, you'll be asked to read and sign a statement saying that you agree to follow the test guidelines and regulations. Those guidelines are detailed in this *Student Guide*, so please read it carefully.

Standard rules and regulations give all students the same opportunity and prevent any student from having an unfair advantage. If you don't follow these test regulations or any instructions given by the test coordinator, your scores may be canceled. See Grounds for Score Cancellation on this page.

These are the regulations you must follow:

- You need to mark your answers on the answer sheet. You will not receive credit for anything written in the test book or on the answer sheet instructions. You may not leave the room with your test book. You may use only your test book for scratch work (unless approved by your school for an accommodation).
- You may use an acceptable calculator (see Acceptable Calculators on page 17) only during the Math Test – Calculator portion of the PSAT 8/9. You may not have a calculator on your desk for any other part of the test, and you may not share a calculator during the test or during breaks. You may only use one calculator at any given time—if you brought a second one for backup, it must be kept under your desk.
- You may bring snacks or drinks to have during a break. They must be placed under your desk during testing.
- You may not use phones or other prohibited electronic devices or aids during the test or breaks.
- You may not give or receive assistance or disturb others during the test or breaks.
- You may not skip ahead or go back to a previous test section while taking the PSAT 8/9.
- You can take the PSAT 8/9 only once in each test administration (the PSAT 8/9 can be taken once in September through March and once in April).
- All students in your school taking the PSAT 8/9 must test at the same time. (Read about special arrangements and testing accommodations for students with disabilities in Testing Accommodations on page 5.)
- If you become ill and/or must leave during the test, or if for any other reason you don't want your test scored, you should let the test coordinator know before you leave the testing room. After you leave the testing room, any decision to withdraw your answer sheet from scoring must be reported immediately to the test coordinator. (See Contact Us on page 2.) If you are

testing as part of a statewide assessment, your scores may still be reported to the state, district, or school.

- You may not discuss the contents of the test with anyone else, or share them through any means, including but not limited to emails, text messages, the internet, and social media, until after score reports have been distributed.
- Members of your household or immediate family may not serve in any testing staff position with access to test books before test day, even at a different school, during the time period (September through March or in April) that you take the test.

## Prohibited Devices and Aids

Devices must be powered off and placed under your desk, unless they are collected by your school before the test. If your watch has an alarm, you must turn that off as well. If your phone makes noise, or if you're seen using it at any time (including during breaks), you'll be dismissed immediately, your scores may be canceled, and the device may be collected and its contents inspected.

- Prohibited devices include, but are not limited to, phones; audio players/recorders, tablets, laptops, notebooks, or any other personal computing devices; timers of any type; cameras or other photographic equipment; and any devices (including smartwatches) that can be used to record, transmit, receive, or play back audio, photographic, text, or video content.
- Prohibited aids include, but are not limited to: protractors; compasses; rulers; cutting devices; earplugs; scratch paper, notes, books, dictionaries, or references of any kind; pamphlets; pens, mechanical pencils, highlighters, or colored pencils; listening, recording, copying, or photographic devices; or any other aids.

## Grounds for Score Cancellation

To report scores that accurately reflect performance, the College Board and the College Board's test administrator, Educational Testing Service (ETS), referred to together in these terms as "we" or "our," maintain test administration and security standards designed to give all students the same chance to show their skills and knowledge and to prevent any student from gaining an unfair advantage. We review irregularities and test scores we believe have been earned under unusual circumstances.

- Students may be dismissed from the testing room and their scores canceled if they don't follow test

regulations or instructions given by the proctor. Once answer sheets are submitted for scoring, we reserve the right not to score the answer sheet of a student who engaged in misconduct or was involved in a testing irregularity.

- We reserve the right to cancel scores if there is reason to doubt their validity. Before acting, we will let the student know the reasons for questioning the scores and will give the student an opportunity to provide additional information, confirm the scores by taking another PSAT 8/9, or cancel the scores. The student may also request arbitration in accordance with ETS's Standard Arbitration Agreement. If before, during, or after a review of questionable scores we find that misconduct has occurred in connection with a test, these options will not be available even if previously offered.
- Score reviews are confidential. If it's necessary to cancel reported scores, we will notify score users, but the reasons for cancellation will not be disclosed. This policy does not necessarily apply in group cases.

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## Test Fairness Review

All new PSAT 8/9 test questions and complete new editions of the tests are reviewed by external, independent educators throughout the United States. These reviews help ensure that wording and content are clear and relevant and use language that's not offensive to or inappropriate for any particular group of students based on race/ethnicity or gender. Assessment staff ensure that the test as a whole references men and women and individuals from varied racial, ethnic, and cultural backgrounds. Using statistics, we identify questions that are harder for a group of students to answer correctly than would be expected given their performance on other questions in the test; these questions are excluded from appearing on tests.

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## Questioning a Test Question

If you find what you consider to be an error or ambiguity in a test question, tell the test coordinator immediately after the test. You may also write to:

- Assessment Design and Development  
The College Board  
250 Vesey Street  
New York, NY 10281

Or send an email to [psatquestion@collegeboard.org](mailto:psatquestion@collegeboard.org).

- In your inquiry, state your full name and mailing address, the date you took the PSAT 8/9, the name and address of the school where you took the test, the test section, the test question (as well as you can remember), and an explanation of your concern about the question.
- The College Board will send you a written response after we review your inquiry.

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**NOTE:** *We will not respond by email, so please include your full name and mailing address.*

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## Additional Policies

Except as otherwise indicated in this guide, the College Board, including subcontractors, will not be liable for any damages including direct, indirect, special, or consequential damages, arising out of your testing. Other than score validity investigations where a student can request arbitration in accordance with ETS's Standard Arbitration Agreement (discussed previously in this guide) or infringement of the College Board's intellectual property rights, all disputes **against the College Board and/or any or all of its contractors**, that relate in any way to registering for or taking the PSAT 8/9, including but not limited to requesting or receiving test accommodations, score reporting, and the use of test taker data, shall exclusively be resolved by a single arbitrator through binding, individual arbitration administered by the American Arbitration Association ("AAA"), under the AAA Consumer Arbitration Rules in effect at the time a request for arbitration is filed with the AAA. Copies of the AAA Rules can be located at [www.adr.org](http://www.adr.org). Unless the parties mutually agree otherwise, the seat and the place of the arbitration shall be New York, New York. The parties agree that the Federal Arbitration Act ("FAA"), 9 U.S.C. § 1 *et seq.* governs this provision, and it is the intent of the parties that the FAA shall pre-empt all State laws to the fullest extent permitted by law. No arbitration may be maintained as a class action, and the arbitrator shall not have the authority to combine or aggregate the disputes of more than one individual, conduct any class proceeding, make any class award, or make an award to any person or entity not a party to the arbitration, without the express written consent of the College Board. By agreeing to arbitration in accordance with this section, you are waiving your right to have your dispute heard by a judge or jury. Each party will be responsible for its own fees and expenses incurred in connection with the arbitration, regardless of its outcome. For purposes of this provision, each College Board contractor is a third party beneficiary of this section, is entitled to the rights and benefits hereunder, and may enforce the provisions hereof as if it were a party hereto.

# Evidence-Based Reading and Writing

The Evidence-Based Reading and Writing section is composed of two tests that assess different but related skills and knowledge. The Reading Test gives you a chance to show how well you understand what you read. The Writing and Language Test asks you to revise and edit text.

This section has four distinctive features:

- **Emphasis on words in context:** Both tests measure your understanding of the meaning and use of words and phrases in the context of extended passages.
- **Emphasis on command of evidence:** Both tests require you to demonstrate your understanding of how authors use evidence to support and develop their claims and points.
- **Inclusion of informational graphics:** Both tests contain data presented in tables, graphs, and the like, which you must interpret and integrate with information in a passage.
- **Variations in text complexity:** The passages on both tests range in difficulty from those found in grades 9–10 to those found in college-entry, credit-bearing postsecondary courses.

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## Reading Test Overview

The Reading Test gives you a chance to show how well you understand what you read.

- **Total questions:** 42 questions with multiple-choice responses
- **Time allotted:** 55 minutes
- Calculators may not be used or be on your desk.

## About the Passages

Reading Test passages range in length from about 500 to 750 words and come from a variety of fields, including U.S. and world literature, history/social studies, and science. Some passages are accompanied by informational graphics, such as tables or graphs; questions ask you to interpret data and to synthesize information presented graphically with that in the associated passage. (Mathematical computation is not required to answer these questions.) Passages that have similar subject matter are sometimes paired and accompanied by questions that require you to make important connections between the passages as well as to understand each passage on its own.

## Tips for the Reading Test

To answer each question, consider what the passage or passages say directly, and use careful reasoning to draw supportable inferences and conclusions from the passage(s). The best answer to each question is derived from what is stated or implied in the passage(s) rather than from prior knowledge of the topics covered. All of the questions are passage based.

- Reading carefully is the key to finding the best answer to each question. The information you need to answer each Reading Test question is always in the passage(s). Don't be misled by an answer that looks correct but isn't supported by the actual text of the passage(s).
- The questions don't increase in difficulty from easy to hard. Instead, they are presented as logically as possible, with general questions about central ideas and themes, point of view, overall text structure, and the like coming early in the sequence. After that come more specific questions about such matters as facts, details, and words in context.
- Stay with a passage until you have answered as many questions as you can before you proceed to the next passage. Don't jump from passage to passage.
- The questions often include references to help direct you to relevant part(s) of the passage(s). You may have to look elsewhere in the passage, however, in order to find the best answer to the question.
- In your test booklet, mark each question you skip so that you can easily go back to it later if you have time.
- Remember that all questions are worth one point regardless of the type or difficulty. You do not lose points for guessing wrong, so you should try to answer each question as best you can.

## Sample Reading Test Materials

On the following pages are samples of the kinds of Reading Test passages and questions that you may see on your test. For each set of sample materials:

- Read the passage carefully.
- Decide on the best answer to each question.
- Read the explanation for the best answer.

The directions provided match what you'll see on the actual test.



## Reading Test: Sample Questions

### DIRECTIONS

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

US and World Literature  
Passage

Higher Text Complexity

#### Questions 1-4 are based on the following passage.

This passage is adapted from David Foster Wallace, "All That."  
©2009 by Condé Nast.

Once when I was a little boy I received as a gift a toy cement mixer. It was made of wood except for its wheels—axles—which, as I remember, were thin metal rods.

Line

5 It was the same overlarge miniature as many other toy vehicles—about the size of a breadbox. It weighed three or four pounds. It was a simple toy—no batteries. It had a colored rope, with a yellow handle, and you held the handle and walked pulling  
10 the cement mixer behind you—rather like a wagon, although it was nowhere near the size of a wagon.

I liked the cement mixer and played with it as much as or more than I played with the other toy vehicles I owned. At some point, several weeks or  
15 months after the holidays, however, my biological parents led me to believe that it was a magic and/or highly unusual cement mixer. Probably my mother told me this in a moment of adult boredom or whimsy, and then my father came home from  
20 work and joined in, also in a whimsical way. The magic—which my mother likely reported to me from her vantage on our living room's sofa, while watching me pull the cement mixer around the room by its rope, idly asking me if I was aware that it had  
25 magical properties, no doubt making sport of me in the bored half-cruel way that adults sometimes do with small children, playfully telling them things that they pass off to themselves as "tall tales" or "childlike inventions," unaware of the impact those  
30 tales may have (since magic is a serious reality for small children). The "magic" was that, unbeknown to me, as I happily pulled the cement mixer behind me, the mixer's main cylinder or drum—the thing that,

in a real cement mixer, mixes the cement; I do not  
35 know the actual word for it—rotated, went around and around on its horizontal axis, just as the drum on a real cement mixer does. It did this, my mother said, only when the mixer was being pulled by me and only, she stressed, when I wasn't looking. She insisted  
40 on this part, and my father later backed her up: the magic was not just that the drum of a solid wood object without batteries rotated but that it did so only when unobserved, stopping whenever observed. If, while pulling, I turned to look, my parents somberly  
45 maintained, the drum magically ceased its rotation. How was this? I never, even for a moment, doubted what they'd told me. This is why it is that adults and even parents can, unwittingly, be cruel: they cannot imagine doubt's complete absence. They  
50 have forgotten.

The point was that months were henceforward spent by me trying to devise ways to catch the drum rotating. Evidence bore out what they had told me: turning my head obviously and unsubtly around  
55 always stopped the rotation of the drum. I also tried sudden whirls. I tried having someone else pull the cement mixer. I tried incremental turns of the head while pulling ("incremental" meaning turning my head at roughly the rate of a clock's minute hand).  
60 I tried peering through a keyhole as someone else pulled the cement mixer. Even turning my head at the rate of the hour hand. I never doubted—it didn't occur to me. The magic was that the mixer seemed always to know. I tried mirrors—first pulling the  
65 cement mixer straight toward a mirror, then through rooms that had mirrors at the periphery of my vision, then past mirrors hidden such that there was little chance that the cement mixer could even "know" that there was a mirror in the room. My strategies became  
70 very involved. I was in kindergarten and home half the day. The seriousness with which I tried must have caused my parents no little anguish of conscience.

1

The main purpose of the second paragraph (lines 5-11) is to

- A) describe the toy cement mixer.
- B) list the narrator's favorite toys.
- C) show that simple toys are as fun as complicated ones.
- D) explain why the narrator liked the toy cement mixer.

**Content:** Rhetoric/Analyzing purpose

**Focus:** Students must determine the most likely purpose of a particular part of a text.

**Key:** A      **Estimated Difficulty:** Easy

**Choice A** is the best answer because the second paragraph primarily offers a description of the toy cement mixer. In the paragraph, the narrator describes the size, appearance, and mechanisms of the toy, noting, for example, that it was “about the size of a breadbox,” had “a colored rope, with a yellow handle,” and was pulled “rather like a wagon.”

**Choice B** is incorrect because although the narrator refers in the second paragraph to “many other toy vehicles” and compares the toy cement mixer to a wagon, he does not list his toys or indicate which toys were his favorites.

**Choice C** is incorrect because although the narrator states in the second paragraph that the toy cement mixer was “a simple toy,” he does not compare it to complicated toys or indicate that simple toys and complicated toys are equally fun to play with.

**Choice D** is incorrect because although the narrator describes in the second paragraph the size, appearance, and mechanisms of the toy cement mixer, he does not explain why the mixer appealed to him.

2

The narrator’s interest in trying to see the toy cement mixer’s drum rotate can best be described as

- A) momentary.
- B) satisfying.
- C) reluctant.
- D) intense.

**Content:** Information and Ideas/Reading closely/  
Determining implicit meanings

**Focus:** Students must draw a logical conclusion from a text.

**Key:** D      **Estimated Difficulty:** Hard

**Choice D** is the best answer because the narrator describes his numerous attempts to see the toy cement mixer’s drum rotate, the “months” he spent on this task, and the “seriousness with which [he] tried” to complete the task.

**Choice A** is incorrect because the narrator indicates that he spent “months ... trying to devise ways to catch the drum rotating.”

**Choice B** is incorrect because the narrator describes as unintentionally cruel his biological parents’ claim that the toy cement mixer’s drum rotated and indicates that his parents must have experienced “no little anguish of conscience” after seeing how earnestly he believed the claim.

**Choice C** is incorrect because the narrator’s interest in seeing the drum rotate was so compelling that he spent “months ... trying to devise ways to catch the drum rotating” and because there is no evidence in the passage that the narrator felt any reluctance about the task he had set for himself.

3

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

- A) Lines 31-37 (“The ‘magic’ ... does”)
- B) Lines 43-45 (“If ... rotation”)
- C) Lines 47-49 (“This ... absence”)
- D) Lines 51-53 (“The point ... rotating”)

**Content:** Information and Ideas/Citing textual evidence

**Focus:** Students must cite the textual evidence that best supports a given point.

**Key:** D      **Estimated Difficulty:** Medium

**Choice D** is the best answer because in this sentence, the narrator states that after being told by his biological parents that the toy cement mixer’s drum would only rotate when he was pulling the mixer and when he was not looking at it, he spent “months ... trying to devise ways to catch the drum rotating.” That the narrator devoted a long period of time to numerous attempts to see the drum rotating suggests that his interest in seeing it rotate was very strong.

**Choice A** is incorrect because this sentence reveals only that the narrator’s biological parents told him that the toy cement mixer’s drum would magically rotate as the narrator pulled the mixer. The sentence does not show that the narrator’s interest in seeing the drum rotate was very strong.

**Choice B** is incorrect because this sentence reveals only that the narrator’s biological parents told him that the toy cement mixer’s drum would stop its magical rotation whenever the narrator looked at it. The sentence does not show that the narrator’s interest in seeing the drum rotate was very strong.

**Choice C** is incorrect because this sentence focuses on the narrator’s claim that parents can be unintentionally cruel when they fail to realize that children will unquestioningly believe what they say. Although the sentence suggests that the narrator did

not doubt his biological parents' claim that the toy cement mixer was magical, it does not convey the strength of his interest in seeing the drum rotate.

4

As used in line 52, "catch" most nearly means

- A) overtake.
- B) receive.
- C) witness.
- D) meet with.

**Content:** Information and Ideas/Interpreting words and phrases in context

**Focus:** Students must determine the meaning of a word in context.

<b>Key:</b> C	<b>Estimated Difficulty:</b> Medium
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**Choice C** is the best answer because it is clear from this context that as a child, the narrator tried to find ways to *witness*, or observe, the toy cement mixer's drum rotating.

**Choice A** is incorrect because it does not make sense in this context to say that as a child, the narrator tried to find ways to *overtake*, or physically catch up with and pass, the toy cement mixer's drum rotating.

**Choice B** is incorrect because it does not make sense in this context to say that as a child, the narrator tried to find ways to *receive*, or take possession of, the toy cement mixer's drum rotating.

**Choice D** is incorrect because it does not make sense in this context to say that as a child, the narrator tried to find ways to *meet with* the toy cement mixer's drum rotating.

## Writing and Language Test Overview

In the Writing and Language Test, you'll be asked to make revision and editing decisions to improve the text within a passage.

- **Total questions:** 40 passage-based revision and editing questions with multiple-choice responses
- **Time allotted:** 30 minutes
- Calculators may not be used or be on your desk.

## About the Passages

Writing and Language Test passages range in length from about 350 to 400 words, and they are well-written pieces covering topics related to careers, history/social studies, the humanities, and science. As in the Reading Test, some passages are accompanied by informational graphics, such as tables or graphs; some questions require you to revise or edit a passage in relation to the information conveyed graphically. (Again, mathematical computation is not required to answer these questions.)

## Tips for the Writing and Language Test

The test comprises a series of passages and associated multiple-choice questions that put you in the role of someone revising or editing the work of an unspecified writer. You are revising the passages for development, organization, and effective language use as well as editing the passages to ensure that they follow the conventions of standard written English grammar, usage, and punctuation.

- Rote recall of language rules isn't tested, nor are any questions based on short snippets of text taken out of context. The best answer to each question represents how a writer should develop, organize, and use language in a multiparagraph passage. You are demonstrating that you can make context-based improvements to the text.
- The most common format for the questions offers three alternatives to an underlined portion of the passage along with the option of not changing the passage's original wording. Remember to answer these questions in the context of the whole passage.

## Sample Writing and Language Test Materials

On the following pages are samples of the kinds of Writing and Language Test passages and questions that you may see on your test. For each set of sample materials:

- Read the passage carefully.
- Decide on the best answer to each question.
- Read the explanation for the best answer.

On the actual test, the passages and questions will be in side-by-side columns, with each passage (spread over multiple pages) in the left-hand column and associated questions in the right-hand column. In this guide, however, the sample questions follow the passages.

The directions provided match what you'll see on the actual test.

## Writing and Language Test: Sample Questions

### DIRECTIONS

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

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

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

### Careers Passage

**Focus:** Students must make revising and editing decisions in the context of a passage on a topic related to careers.

**Questions 1-4 are based on the following passage.**

#### The Online World of Job Searching

Job search sites, websites that help job seekers find open positions, have grown in popularity. These sites typically allow users to customize their job searches to focus on specific industries, employers, skills, or geographic areas. Many job search sites have features such as automatic alerts that will send job seekers an e-mail or text message when a relevant job has been posted. Knowing how to use these features and

navigate the sites makes it much easier for job seekers to connect with employers.

**1** For instance, job seekers can use a site to find the name of the hiring manager of a company and contact that manager directly. The job search website can also provide job seekers with valuable information about a company’s mission and history. This information will help job seekers determine whether the company seems like a good fit for them.

Online job sites can also make it easier for employers to find job seekers. Another useful feature of these sites is that résumés can be made searchable, which means that employers can use a keyword search to select résumés for further consideration. This is why **2** I’m telling you what a big deal it is for job seekers to include in their résumés keywords such as “leadership” or “CPR certification” that describe their skills, training, and education.

Although job search sites can be very helpful, it’s important to be selective and focused while using them. One mistake many inexperienced, and even experienced, job seekers sometimes make is to apply for jobs that are outside of their areas of expertise. This mistake can result in unanswered job applications and wasted time for both job seekers and employers. Perhaps for this reason, job coaches **3** reassure their clients to use job search websites sparingly. They recommend that job seekers spend most of the time they devote to job hunting on other activities, such as networking, and just 10 percent of their job-hunting time on these websites. **4** In other words, people spend almost triple that amount. A recent poll conducted by Climber.com revealed that job seekers spend 29.94 percent of their time looking for work on these sites.

Networking and face-to-face contact have always been important parts of any job search. However, when used strategically, job search websites can also be powerful tools for researching and ultimately finding a job.

1

Which choice, if added here, would most effectively establish the main topic of the paragraph?

- A) Job seekers can think of job search websites as strategic “intelligence-gathering” tools.
- B) New job postings are sometimes flagged to indicate that they’re recent additions.
- C) Instead of placing an advertisement in the “help wanted” section of a newspaper, an employer is more likely to post on an online job site.
- D) Some people use online job sites just to become aware of job opportunities in their area, even if they’re not actively looking for a new job.

**Content:** Development/Proposition

**Focus:** Students must add a topic sentence to structure text and convey information and ideas clearly and effectively.

**Key:** A      **Estimated Difficulty:** Hard

**Choice A** is the best answer because it would clearly establish the main topic of the paragraph: ways that job seekers can use job search websites to collect information about job opportunities and the companies associated with them.

**Choice B** is incorrect because it would begin the paragraph with a detail that continues the previous paragraph’s discussion of the features of job search sites and therefore would not clearly establish the main topic of the paragraph.

**Choice C** is incorrect because it would begin the paragraph with a statement about employers and job search sites that is largely irrelevant to the focus of the paragraph and therefore would not clearly establish the main topic of the paragraph.

**Choice D** is incorrect because it would begin the paragraph with a loosely related detail about how some people use job search sites and therefore would not clearly establish the main topic of the paragraph.

2

- A) NO CHANGE
- B) it’s so huge
- C) it’s important
- D) I cannot overemphasize how crucial it is

**Content:** Effective language use/Style and tone

**Focus:** Students must revise text as necessary to ensure consistency of style and tone within a text.

**Key:** C      **Estimated Difficulty:** Easy

**Choice C** is the best answer because “it’s important” is consistent with the established style and tone of the passage, which is in the third person and provides information formally and directly, without exaggeration.

**Choice A** is incorrect because “I’m telling you what a big deal it is” varies from the established style and tone of the passage by shifting from third to first person and by using overly casual language that suggests exaggeration.

**Choice B** is incorrect because “it’s so huge” varies from the established style and tone of the passage by using overly casual language that suggests exaggeration.

**Choice D** is incorrect because “I cannot overemphasize how crucial it is” varies from the established style and tone of the passage by shifting from third to first person and by using language that suggests exaggeration.

3

- A) NO CHANGE
- B) encourage
- C) energize
- D) provoke

**Content:** Effective language use/Precision

**Focus:** Students must revise text as needed to improve the exactness and content appropriateness of word choice.

**Key:** B      **Estimated Difficulty:** Medium

**Choice B** is the best answer because “encourage” is a contextually appropriate way to indicate that job coaches are offering their clients advice about how best to use job search websites.

*Choice A* is incorrect because while “reassure” does offer some sense of job coaches’ encouraging role in this context, it would be awkward and unconventional to say that job coaches reassure their clients to use job search websites sparingly.

*Choice C* is incorrect because while “energize” does offer some sense of job coaches’ encouraging role in this context, it would be awkward and unconventional to say that job coaches energize their clients to use job search websites sparingly.

*Choice D* is incorrect because it would be awkward and unconventional to say that job coaches “provoke” their clients to use job search websites sparingly.

4

- A) NO CHANGE
- B) Because of this,
- C) In reality,
- D) For example,

---

**Content:** Organization/Introductions, conclusions, and transitions

**Focus:** Students must revise text as needed to ensure that a transition phrase is used effectively to connect information and ideas.

---

<b>Key:</b> C	<b>Estimated Difficulty:</b> Medium
---------------	-------------------------------------

**Choice C** is the best answer because “in reality” effectively contrasts the recommendation in the previous sentence (“that job seekers spend ...

just 10 percent of their job-hunting time on these websites”) with the much higher amount people actually spend (“almost triple,” “29.94 percent”) presented in this and the next sentence.

*Choice A* is incorrect because “in other words” improperly sets up a restatement (something said in a different, often simpler way than previously) and does not convey the necessary contrast between the recommended amount of time job seekers should spend on job search websites (“just 10 percent of their job-hunting time”) and the much higher amount people actually spend (“almost triple,” “29.94 percent”).

*Choice B* is incorrect because “because of this” suggests an illogical cause-effect relationship and does not convey the necessary contrast between the recommended amount of time job seekers should spend on job search websites (“just 10 percent of their job-hunting time”) and the much higher amount people actually spend (“almost triple,” “29.94 percent”).

*Choice D* is incorrect because “for example” sets up an example that does not actually appear in the sentence and does not convey the necessary contrast between the recommended amount of time job seekers should spend on job search websites (“just 10 percent of their job-hunting time”) and the much higher amount people actually spend (“almost triple,” “29.94 percent”).

# Math

The Math Test assesses your ability to solve problems and use appropriate approaches and tools strategically. It measures math skills across three areas:

- Heart of Algebra
- Problem Solving and Data Analysis
- Passport to Advanced Math: these questions require the manipulation of complex equations

## Math Test Overview

The Math Test includes a portion that allows the use of a calculator and a portion that does not.

- Total questions: 38
- 31 multiple-choice questions
- 7 student-produced response questions
- Time allotted for Math Test – No Calculator: 20 minutes
- Time allotted for Math Test – Calculator: 40 minutes

Some questions are like those you may have seen in your math courses. The ability to reason logically in a variety of situations, including ones related to career, science, and social studies, is tested throughout. You will also encounter at least three sets of questions that include more than one question about a given scenario.

### Tips for the Math Test

- Familiarize yourself with the directions ahead of time.
- You don't have to memorize formulas. Commonly used formulas are provided in the test booklet at the beginning of each portion of the Math Test. Other formulas that are needed are provided in the test questions themselves. It's up to you to decide which formula is appropriate to a question.
- Read the problem carefully. Look for key words that tell you what the problem is asking. Ask yourself the following questions before you solve each problem: What is the question asking? What do I know?
- With some problems, it may be useful to draw a sketch or diagram of the given information.
- Use the test booklet for scratch work. You're not expected to do all the reasoning and figuring in your head. You won't receive credit for anything written in the booklet, but you'll be able to check your work easily later.

- In the portion of the test that allows calculator use, be strategic when choosing to use your calculator. (See Calculator Tips on page 16.)
- Eliminate choices. If you don't know the correct answer to a question, try some of the choices. It's sometimes easier to find the wrong answers than the correct one. On some questions, you can eliminate all the incorrect choices. Remember that you won't lose points for incorrect answers, so plan to make your best guess if you don't know the answer.
- Check your answer to make sure it's a reasonable reply to the question asked. This is especially true for student-produced response questions, where no answer choices are given.
- All figures are drawn to scale unless otherwise indicated.

### Tips for Student-Produced Response Questions

- Review the directions on page 20 for gridding the student-produced response questions.
- Know the rules for gridding mixed numbers and repeating decimals before taking the test.
- Check your work if your answer doesn't fit on the grid. If you obtain a negative value or a value greater than 9999, you have made an error.
- A zero cannot be gridded in the leftmost column of the answer grid. For example, if your answer is 0.25, you must grid .25 or convert it to the fraction  $\frac{1}{4}$ .
- A fraction doesn't have to be reduced unless it will not fit on the grid. For example, if  $\frac{3}{5}$  is the correct answer to a question, both  $\frac{6}{10}$  and  $\frac{9}{15}$  are considered correct and don't need to be reduced before you enter them in the grid.

### Calculator Policy

- You may not share calculators.
- You will be dismissed and your scores will be invalidated if you use your calculator to share information during the test or to remove test questions or answers from the testing room.

## Calculator Tips

- Remember to bring your calculator on test day. You should be familiar with how to use the calculator you bring to the test.
- Make sure your calculator is in good working order and that its batteries are fresh. If your calculator fails during testing and you have no backup, you will have to complete the test without it (or cancel your scores for the entire test).
- Don't buy an expensive, sophisticated calculator just to take the test. Although you can use them for the test, more sophisticated calculators are not required for any problem.
- Don't try to use a calculator on every question in the calculator portion. First, decide how you'll solve the problem, and then decide whether to use the calculator. The calculator is meant to help you solve problems, not to get in the way.
- All questions in the calculator portion can be answered without a calculator, but for some questions a calculator may be helpful. Look first for algebra structures to solve problems before reaching for your calculator.
- Answer the Math Test – Calculator practice questions with a calculator at hand. This will help you practice determining which types of questions you should use your calculator to answer.

## Unacceptable Calculators

Do NOT bring these types of calculators to the test (unless approved by the school to use as an accommodation):

- Laptops or other computers, tablets, cell phones, or smartphones
- Models that can access the internet or have wireless, Bluetooth, cellular, audio/video recording and playing, camera, or any other smartphone-type features
- Models that have a QWERTY (typewriter-like) keypad, pen input, or stylus
- Models that use electrical outlets, make noise, or use paper tape

In addition, the use of hardware peripherals such as a stylus with an approved calculator is not permitted. Some models with touch-screen capability are not permitted (e.g., Casio ClassPad). Check the list of acceptable calculators on the next page for models that are permitted.



## Acceptable Calculators

For the Math Test – Calculator section, most graphing and all scientific calculators are acceptable; all four-function calculators are allowed, but not recommended. Check the list of acceptable graphing calculators below for models that are permitted.

### THE FOLLOWING GRAPHING CALCULATORS ARE PERMITTED:

#### CASIO

FX-6000 series	CFX-9800 series
FX-6200 series	CFX-9850 series
FX-6300 series	CFX-9950 series
FX-6500 series	CFX-9970 series
FX-7000 series	FX 1.0 series
FX-7300 series	Algebra FX 2.0 series
FX-7400 series	FX-CG-10
FX-7500 series	FX-CG-20 series
FX-7700 series	FX-CG-50
FX-7800 series	FX-CG-500 (Use of the stylus is not permitted.)
FX-8000 series	Graph25 series
FX-8500 series	Graph35 series
FX-8700 series	Graph75 series
FX-8800 series	Graph95 series
FX-9700 series	Graph100 series
FX-9750 series	
FX-9860 series	

#### HEWLETT-PACKARD

HP-9G	HP-48 series
HP-28 series	HP-49 series
HP-38G	HP-50 series
HP-39 series	HP Prime
HP-40 series	

#### RADIO SHACK

EC-4033	EC-4037
EC-4034	

#### OTHER

Datexx DS-883	NumWorks
Micronta	Smart <sup>2</sup>

#### SHARP

EL-5200	EL-9600 series (Use of the stylus is not permitted.)
EL-9200 series	EL-9900 series
EL-9300 series	

#### TEXAS INSTRUMENTS

TI-73	TI-85
TI-80	TI-86
TI-81	TI-89
TI-82	TI-89 Titanium
TI-83/TI-83 Plus	TI-Nspire
TI-83 Plus Silver	TI-Nspire CX
TI-84 Plus	TI-Nspire CM-C
TI-84 Plus CE	TI-Nspire CAS
TI-84 Plus Silver	TI-Nspire CX CAS
TI-84 Plus C Silver	TI-Nspire CM-C CAS
TI-84 Plus CE-T	TI-Nspire CX-C CAS
TI-84 Plus T	

## Sample Math Test Materials

On the following pages are samples of the kinds of Math Test – No Calculator and Math Test – Calculator questions that may appear on your test. For these sample materials:

- Review the notes and reference materials.
- Decide on the best answer to each multiple-choice question.
- Read the explanation for the best answer to each question.

The notes and reference materials will appear at the beginning of both portions on the actual test. The explanation of the student-produced responses will appear in both portions of the actual test, but only once in these sample materials. The directions provided here match what you will see on the actual test.

## Math Test – No Calculator: Sample Questions

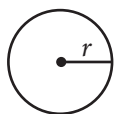
### DIRECTIONS

For questions 1-2, solve each problem, choose the best answer from the choices provided, and fill in the corresponding bubble on your answer sheet. For question 3, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 3 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

### NOTES

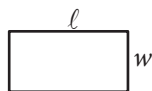
- The use of a calculator is **not permitted**.
- All variables and expressions used represent real numbers unless otherwise indicated.
- Figures provided in this test are drawn to scale unless otherwise indicated.
- All figures lie in a plane unless otherwise indicated.
- Unless otherwise indicated,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

### REFERENCE

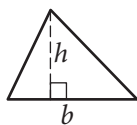


$$A = \pi r^2$$

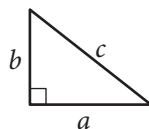
$$C = 2\pi r$$



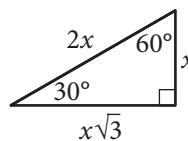
$$A = \ell w$$



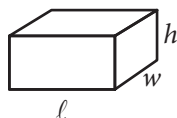
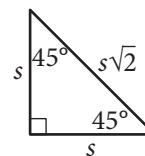
$$A = \frac{1}{2}bh$$



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



Special Right Triangles



$$V = \ell wh$$



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



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



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



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

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

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

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

**1**

A banquet hall is divided into two sections that both have tables with chairs arranged around them. In the smaller section, there are 9 tables with 6 chairs each. In the larger section, there are currently 4 tables with 8 chairs each. More tables, each with 8 chairs, will be added to this larger section so that there will be 126 total chairs in the banquet hall. Which equation could be used to determine how many more tables,  $t$ , each with 8 chairs, are needed in the larger section?

- A)  $(6)(4 + 9) + 8t = 126$   
 B)  $9(t + 4) + 6(8) = 126$   
 C)  $6(9) + 8(t + 4) = 126$   
 D)  $(9 + 4 + t)(6 + 8) = 126$

**Content:** Heart of Algebra/Linear equations in one variable

**Focus:** Students must interpret a given scenario and create an equation in one variable to represent the scenario.

**No Calculator**

**Key:** C      **Estimated Difficulty:** Medium

**Choice C** is correct. The smaller section of the banquet hall has 9 tables with 6 chairs each, so the total number of chairs in that section is  $(6)(9)$ . In the larger section, there are currently 4 tables and  $t$  more will be added, so the total number of tables will be  $(t + 4)$ . If each of these tables has 8 chairs, the number of chairs in the larger section is  $8(t + 4)$ . The total number of chairs in the banquet hall can be found by adding the number of chairs in the smaller section to the number of chairs in the larger section, and it is given that the total number of chairs in the banquet hall is 126, so the equation  $(6)(9) + 8(t + 4) = 126$  is the correct answer.

**Choice A** is incorrect. This answer is the result of correctly identifying that each new table,  $t$ , will have 8 chairs and that each of the 9 tables in the smaller section will have 6 chairs, but incorrectly calculating that each of the 4 tables currently in the larger section has 6 chairs, rather than the correct number of 8 chairs each.

**Choice B** is incorrect. This answer is the result of finding the product of the number of tables in each section and adding it to the product of the number of chairs at a table in each section.

**Choice D** is incorrect. This answer is the result of multiplying the total number of tables in the banquet hall by the sum of the number of chairs at each size of table.

**2**

The amount of energy used by a light, in kilowatt-hours, is calculated by multiplying the number of kilowatts of the light's bulb by the number of hours the light is on. The expression  $0.075x + 0.060y$  represents the total amount of energy used by two different lights, A and B, where  $x$  is the number of hours Light A is on and  $y$  is the number of hours Light B is on. What does 0.075 represent in the expression?

- A) Light A has a 0.075 kilowatt bulb in it.  
 B) Light A has a 75 kilowatt bulb in it.  
 C) Light B has a 0.075 kilowatt bulb in it.  
 D) Light B has a 75 kilowatt bulb in it.

**Content:** Passport to Advanced Math/Nonlinear functions

**Focus:** Students must demonstrate conceptual understanding and interpret the meaning of a constant in terms of the given context.

**No Calculator**

**Key:** A      **Estimated Difficulty:** Medium

**Choice A** is correct. The given expression represents the total amount of energy, in kilowatt-hours, used by the two lights, A and B. Because  $x$  represents the number of hours that Light A is on,  $0.075x$  represents the total number of kilowatt-hours used by Light A. Therefore, it follows that the coefficient, 0.075, must represent the number of kilowatts of Light A's bulb.

**Choice B** is incorrect. This answer may be the result of correctly identifying that the coefficient associated with the variable  $x$  is related to the energy output of Light A's bulb; however, the coefficient has been erroneously multiplied by 1,000.

**Choice C** is incorrect. This answer may be the result of erroneously assigning  $x$  to be the number of hours that Light B is on;  $x$  is actually defined in the question as the number of hours that Light A is on.

**Choice D** is incorrect. This answer may be the result of both erroneously assigning  $x$  to be the number of hours that Light B is on (instead of Light A) and also erroneously multiplying the coefficient by 1,000.

**DIRECTIONS**

For question 3, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

**NOTES**

- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the bubbles accurately. You will receive credit only if the bubbles are filled in correctly.
- Mark no more than one bubble in any column.
- No question has a negative answer.
- Some problems may have more than one correct answer. In such cases, grid only one answer.
- Mixed numbers** such as  $3\frac{1}{2}$  must be gridded as 3.5 or 7/2. (If 

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

 is entered into the grid, it will be interpreted as  $\frac{31}{2}$ , not  $3\frac{1}{2}$ .)
- Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

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

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

Write answer in boxes. →

← Fraction line

Grid in result. →

Answer: 2.5

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

← Decimal point

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

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

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

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

**3**

$$2x + 3y = 14$$

$$3x = y + 10$$

If  $(x, y)$  satisfies the system of equations above, what is the value of  $y$ ?

**Content:** Heart of Algebra/Systems of two linear equations in two variables

**Focus:** Students must demonstrate fluency in solving systems of equations in two variables.

**Key:** 2      **Estimated Difficulty:** Medium

There are many approaches to solve the system given. One approach is to rewrite the second equation as  $y = 3x - 10$  and to substitute this value of  $y$  into the first equation. This yields  $2x + 3(3x - 10) = 14$ , which can be rewritten as  $11x - 30 = 14$ . Adding 30 to both sides and then dividing by 11 gives  $x = 4$ . If this value of  $x$  is substituted into the equation  $y = 3x - 10$ , it results in  $y = 12 - 10 = 2$ . Therefore, the solution  $(x, y)$  to the system of equations is  $(4, 2)$  and the value of  $y$  in the solution is 2.

Answer: 201— either position is correct

	2	0	1
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4

2	0	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4

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

# Math Test – Calculator: Sample Questions

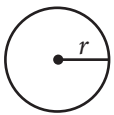
## DIRECTIONS

For questions 1-3, solve each problem, choose the best answer from the choices provided, and fill in the corresponding bubble on your answer sheet. For question 4, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 4 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

## NOTES

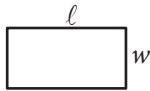
- The use of a calculator **is permitted**.
- All variables and expressions used represent real numbers unless otherwise indicated.
- Figures provided in this test are drawn to scale unless otherwise indicated.
- All figures lie in a plane unless otherwise indicated.
- Unless otherwise indicated, the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

## REFERENCE

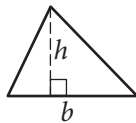


$$A = \pi r^2$$

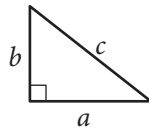
$$C = 2\pi r$$



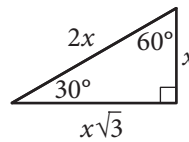
$$A = \ell w$$



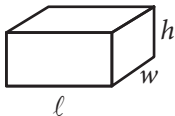
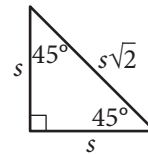
$$A = \frac{1}{2}bh$$



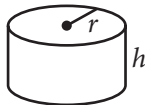
$$c^2 = a^2 + b^2$$



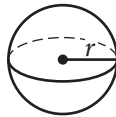
Special Right Triangles



$$V = \ell wh$$



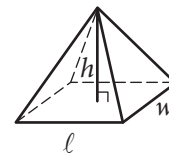
$$V = \pi r^2 h$$



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



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



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

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

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

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

1

A real estate broker earns a fixed percentage of the selling price of a house as a commission. The broker sold a house for \$278,000 and earned a commission of \$16,680. What would the broker's commission be on a house that sells for \$324,000?

- A) \$14,311
- B) \$19,440
- C) \$46,000
- D) \$62,680

**Content:** Problem Solving and Data Analysis/Ratios, rates, proportional relationships, and units

**Focus:** Students must use a proportional relationship between two variables to solve a multistep problem in an applied scenario.

**No Calculator**

<b>Key:</b> B	<b>Estimated Difficulty:</b> Easy
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**Choice B** is correct. The rate of the commission can be found by setting up a proportion comparing the commission on each sale to the selling price of each house,  $\frac{16,680}{278,000} = \frac{x}{324,000}$ . Cross-multiplying produces the equation  $278,000x = (16,680)(324,000)$ , which results in  $x = 19,440$ . Therefore, the amount of commission that will be earned for a house with a selling price of \$324,000 is \$19,440.

**Choice A** is incorrect. This answer may be the result of incorrectly setting up the

proportion as  $\frac{16,680}{324,000} = \frac{x}{278,000}$ , solving

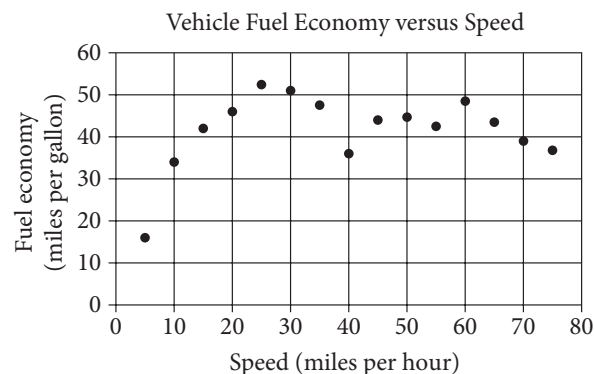
$16,680 \times 278,000 = 324,000x$ , and then rounding the answer down to \$14,311.

**Choice C** is incorrect. This answer may be the result of not using a proportion, but instead finding the difference in the two selling prices, yielding  $324,000 - 278,000 = 46,000$ .

**Choice D** is incorrect. This answer may be the result of not using a proportion, but instead subtracting the two selling prices ( $324,000 - 278,000 = 46,000$ ) and then adding the commission from the first sale ( $46,000 + 16,680 = 62,680$ ).

**Questions 2 and 3 refer to the following information.**

The scatterplot below shows the relationship between the speed of a certain vehicle, in miles per hour, and its fuel economy, in miles per gallon.



2

Based on the scatterplot, over which speed intervals, in miles per hour, does the relationship between the speed and fuel economy appear to be negative?

- A) 5–25 and 40–50
- B) 15–35 and 40–50
- C) 20–35, 40–55, and 60–75
- D) 25–40, 50–55, and 60–75

**Content:** Problem Solving and Data Analysis/ Two-variable data: models and scatterplots

**Focus:** Students must carefully inspect the scatterplot to determine the interval of speed that meets the required criteria.

<b>Key:</b> D	<b>Estimated Difficulty:</b> Medium
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**Choice D** is correct. The relationship is negative when the y-values consistently decrease as the x-values increase. Visual inspection of the scatterplot shows a negative relationship for the data points over the following speed intervals: 25 to 40, 50 to 55, and 60 to 75 miles per hour.

**Choice A** is incorrect. This answer corresponds to intervals of speed over which the relationship between the speed and fuel economy appears to be positive.

**Choice B** is incorrect. This answer corresponds to intervals of speed over which the relationship between the speed and fuel economy is not always negative.

**Choice C** is incorrect. This answer corresponds to intervals of speed over which the relationship between the speed and fuel economy is not always negative.

**3**

Based on the trend in the data shown for a car traveling between 5 and 20 miles per hour, which of the following is the best estimate of the fuel economy, in miles per gallon, for the vehicle when it travels 17 miles per hour?

- A) 48
- B) 44
- C) 40
- D) 36

**Content:** Problem Solving and Data Analysis/ Two-variable data: models and scatterplots

**Focus:** Students must estimate a line of best fit for a given interval and then use the line to make a prediction about a value within the interval.

**Calculator**

<b>Key:</b> B	<b>Estimated Difficulty:</b> Medium
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**Choice B** is correct. From visual inspection of a plausible line of best fit in the interval of 5 to 20 miles per hour (mph), the student can determine that the best estimate of the fuel economy at 17 mph will be greater than 40 miles per gallon (mpg) and less than 45 mpg, which leaves 44 mpg as the best estimate among the given choices.

**Choice A** is incorrect. The data points over the interval from 5 to 20 miles per hour (mph) have a positive linear trend. This means that over this interval, as the speed increases, the fuel economy also increases. Similarly, as the speed decreases, the fuel economy also decreases. The data point at 20 mph corresponds to a fuel economy of 48 miles per gallon (mpg). Therefore, based on the line of best fit for the interval from 5 to 20 mph, it is likely that the fuel economy corresponding to a data point at 17 mph would be lower than 48 mpg.

**Choice C** is incorrect. The data points over the interval from 5 to 20 miles per hour (mph) have

a positive linear trend. This means that over this interval, as the speed increases, the fuel economy also increases. The data point at 15 mph corresponds to a fuel economy that is just over 40 miles per gallon (mpg). Therefore, based on the line of best fit for the interval from 5 to 20 mph, it is likely that the fuel economy corresponding to a data point at 17 mph would be higher than 40 mpg.

**Choice D** is incorrect. The data points over the interval from 5 to 20 miles per hour (mph) have a positive linear trend. This means that over this interval, as the speed increases, the fuel economy also increases. The data point at 15 mph corresponds to a fuel economy that is just over 40 miles per gallon (mpg). Therefore, based on the line of best fit for the interval from 5 to 20 mph, it is likely that the fuel economy corresponding to a data point at 17 mph would be higher than 40 mpg and consequently higher than 36 mpg.

**For question 4**, solve the problem and enter your answer in the grid, as described on page 20.

**4**

If  $f(x) = 4 - x$  and  $g(x) = 2x^2 - 1$ , what is the value of  $f(1) - g(1)$ ?

**Content:** Passport to Advanced Math/Nonlinear functions

**Focus:** Students must use function notation to solve a conceptual problem.

**Calculator**

<b>Key:</b> 2	<b>Estimated Difficulty:</b> Hard
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The problem states that  $f(x) = 4 - x$ . The value of  $f(1)$  can be found by substituting  $x = 1$  into the expression for  $f(x)$ , so  $f(1) = 4 - 1 = 3$ . It is also stated that  $g(x) = 2x^2 - 1$ , and so  $g(1) = 2(1)^2 - 1 = 1$ . It follows, then, that  $f(1) - g(1) = 3 - 1 = 2$ .

