

Taking the

S.A.T.

MATH TEST...

it isn't so bad after all! 😊

SAT Test Dates 2017-18

Date	Registration Deadline	Late Registration Deadline
August 26, 2017	July 28, 2017	August 8, 2017 (Mailed) August 15, 2017 (Online/phone)
October 7, 2017	September 8, 2017	September 19, 2017 (Mailed) September 27, 2017 (Online/phone)
November 4, 2017	October 5, 2017	October 17, 2017 (Mailed) October 25, 2017 (Online/phone)
December 2, 2017	November 2, 2017	November 14, 2017 (Mailed) November 21, 2017 (Online/phone)
March 10, 2018	February 9, 2018	February 20, 2018 (Mailed) February 28, 2018 (Online/phone)
May 5, 2018	April 6, 2018	April 17, 2018 (Mailed) April 25, 2018 (Online/phone)
June 2, 2018	May 3, 2018	May 15, 2018 (Mailed) May 23, 2018 (Online/phone)
<i>*deadlines expire at 11:59 EST</i>		



ANTICIPATED: SAT Test Dates 2018-19
Date
August 25, 2018
October 6, 2018
November 3, 2018
December 1, 2018
March 9, 2019
May 4, 2019
June 1, 2019



TEST-TAKING STRATEGIES

The SAT is different from the tests you are used to taking in school. The good news is that you can use the SAT's particular structure to your advantage. For example, on a test given in school, you probably go through the questions in order. You spend more time on the harder questions than on the easier ones because the harder ones are usually worth more points. You probably often show your work because your teacher requires you to do so, for partial credit, because the approach is an important part of getting the correct answer in class.

This approach is *not optimal* for the SAT. On the SAT, you benefit from moving around WITHIN a section if you come across tough questions because the harder questions are worth the same number of points as the easier questions. It doesn't matter how you arrive at the correct answer - only that you bubble in the correct answer choice.

STRATEGY #1 – TRIAGING THE TEST

You do not need to complete questions on the SAT in order. Every student has different strengths and should attack the test with those strengths in mind. Your main objective on the SAT should be to score as many points as you can. While approaching questions out of order may seem counterintuitive, it is a surefire way to achieve your best score.

You can skip around WITHIN each section, but you CANNOT work on a section other than the one you've been instructed to work on.

To triage the test effectively, do the following:

1. Work through all the easy questions that you can do quickly. Skip questions that are hard or time-consuming
2. Work through the questions that are doable but time-consuming
3. Work through the hard questions
4. If you run out of time, pick a Letter of the Day for remaining questions

(A Letter of the Day is an answer choice letter (A, B, C, or D) that you choose before Test Day to select for questions you guess on)

STRATEGY #2 – ELIMINATION

Even though there is no wrong-answer penalty on the SAT, Elimination is still a crucial strategy. If you can determine that one or more answer choices are definitely incorrect, you can increase your chances of getting the right answer by paring the selection down.

To eliminate answer choices, do the following:

- Read each answer choice
- Cross out the answer choices that are incorrect
- Remember: There is no wrong-answer penalty, so take your best guess

STRATEGY #3 – GUESSING

Each multiple-choice question on the SAT has four answer choices and no wrong-answer penalty. That means if you have no idea how to approach a question, you have a 25% chance of randomly choosing the correct answer. Even though there's a 75% chance of selecting the incorrect answer, you won't lose any points for doing so. The worst that can happen on the SAT is that you'll earn zero points on a question, which means you should ALWAYS at least take a guess, even if you have NO IDEA! When guessing on a question, ALWAYS try to strategically eliminate answer choices before guessing. If you run out of time, or have no idea what a question is asking, pick a Letter of the Day.

COMMON TEST MYTHS

Myth: There is a wrong-answer penalty on the SAT to discourage guessing.

Fact: While this statement was true a few years ago, it is no longer true. Older versions of the SAT had a wrong-answer penalty so that students who guessed on questions would not have an advantage over students who left questions blank. This penalty has been removed; make sure you never leave an SAT question blank!

Myth: Answer choice C is most likely to be the correct answer.

Fact: This rumor has roots in human psychology. Apparently, when people such as high school teachers, for example, design an exam, they have a slight bias toward answer choice C. When assigning correct answers, while humans do write SAT questions a computer randomizes the distribution of correct choices; statistically, therefore, each answer choice is equally likely to be the correct answer.

Myth: The SAT is just like another test in school.

Fact: While the SAT covers some of the content as your high school math class, it also presents concepts in way that are fundamentally different. While you might be able to solve a math problem in a number of different ways on an algebra test, the SAT places a heavy emphasis on working through questions as quickly and efficiently as possible.

Myth: You have to get all the questions right to get a perfect score.

Fact: Many students have reported missing several questions on the SAT and being pleasantly surprised to receive perfect scores. Their experience is not typical. Usually, you can miss a few questions and still get a perfect score. The makers of the SAT use a technique called scaling to ensure that a SAT score conveys the same information from year to year, so you might be able to miss a couple more questions on a slightly harder SAT exam and miss fewer questions on an easier SAT exam and get the same scores. Keep a positive attitude throughout the SAT, and in many cases, your scores will pleasantly surprise you.

Myth: You can't prepare for the SAT.

Fact: We've already proven this myth wrong! Look at us, preparing for the SAT! While the SAT is designed to fairly test students regardless of preparation, you can gain a huge advantage by familiarizing yourself with the structure and content on the exam. By working through various questions and practice tests available to you, you'll ensure that nothing on the SAT catches you by surprise and that you do everything you can to maximize your score.

**In a nutshell,
the SAT Math test is...**

SAT \$46
SAT with Essay \$60
Late Fee \$29

www.sat.collegeboard.org

It's About the Real World

Instead of testing you on every math topic there is, the new SAT asks you to use the math that you'll rely on most in all sorts of situations. Questions on the Math Test are designed to mirror the problem solving and modeling you'll do in:

- College math, science, and social science courses
- The jobs that you hold
- Your personal life

For instance, to answer some questions you'll need to use several steps—because in the real world a single calculation is rarely enough to get the job done.

Quick Facts

- Most math questions will be **multiple choice**, but some—called **grid-ins**—ask you to come up with the answer rather than select the answer.
- The Math Test is divided into two portions: **Math Test-Calculator** and **Math Test-No Calculator**.
- Some parts of the test include several questions about a single scenario.

Focus

The Math Test will focus in depth on the three areas of math that play the biggest role in a wide range of college majors and careers:

- **Heart of Algebra**, which focuses on the mastery of linear equations and systems.
- **Problem Solving and Data Analysis**, which is about being quantitatively literate.
- **Passport to Advanced Math**, which features questions that require the manipulation of complex equations.

The Math Test also draws on Additional Topics in Math, including the geometry and trigonometry most relevant to college and career readiness.

Heart of Algebra

The SAT Suite of Assessments focuses strongly on algebra and the key concepts that are most essential for success in college and career. Heart of Algebra will assess students' ability to analyze, fluently solve, and create linear equations and inequalities. Students will also be expected to analyze and fluently solve equations and systems of equations using multiple techniques.

To assess full command of the material, these problems will vary significantly in form and appearance. Problems may be **straightforward** fluency exercises or may **pose challenges** of strategy or understanding, such as interpreting the interplay between **graphical and algebraic representations** or solving as a **process of reasoning**. Students will be required to demonstrate both procedural skill and a **deeper understanding of the concepts** that undergird linear equations and functions to successfully exhibit a command of the Heart of Algebra.

Heart of Algebra is one of the three SAT Suite Math sub scores, reported on a scale of 1 to 15.

This domain will feature multiple-choice and student-produced response question types. **Calculator use is sometimes permitted, but not always needed or recommended.**

Heart of Algebra questions ask students to:

1. **Create, solve, or interpret a linear expression or equation in one variable** that represents a context. The expression or equation will have rational coefficients, and multiple steps may be required to simplify the expression, simplify the equation, or solve for the variable in the equation.
2. **Create, solve, or interpret linear inequalities in one variable** that represent a context. The inequality will have rational coefficients, and multiple steps may be required to simplify or solve for the variable.
3. **Build a linear function that models a linear relationship between two quantities.** The student will describe a linear relationship that models a context using either an equation in two variables or function notation. The equation or function will have rational coefficients, and multiple steps may be required to build and simplify the equation or function.
4. **Create, solve, and interpret systems of linear inequalities in two variables.** The student will analyze one or more constraints that exist between two variables by creating, solving, or interpreting an inequality in two variables or a system of inequalities in two variables to represent a context. Multiple steps may be required to create the inequality or system of inequalities or to determine whether a given point is in the solution set.
5. **Create, solve, and interpret systems of two linear equations in two variables.** The student will analyze one or more constraints that exist between two variables by creating, solving, or analyzing a system of linear equations to represent a context. The equations will have rational coefficients, and multiple steps may be required to simplify or solve the system.
6. **Algebraically solve linear equations (or inequalities) in one variable.** The equation (or inequality) will have rational coefficients and may require multiple steps to solve for the variable; the equation may yield no solution, one solution, or infinitely many solutions. The student may also be asked to determine the value of a constant or coefficient for an equation with no solution or infinitely many solutions.
7. **Algebraically solve systems of two linear equations in two variables.** The equations will have rational coefficients, and the system may yield no solution, one solution, or infinitely many solutions. The student may also be asked to determine the value of a constant or coefficient of an equation in which the system has no solution, one solution, or infinitely many solutions.
8. **Interpret the variables and constants in expressions for linear functions within the context presented.** The student will make connections between a context and the linear equation that models the context and will identify or describe the real-life meaning of a constant term, a variable, or a feature of the given equation.
9. **Understand connections between algebraic and graphical representations.** The student will select a graph described by a given linear equation, select a linear equation that describes a given graph, determine the equation of a line given a verbal description of its graph, determine key features of the graph of a linear function from its equation, or determine how a graph may be affected by a change in its equation.



Problem Solving and Data Analysis

The Math Tests in the SAT Suite of Assessments reflect research that has identified what is essential for college readiness and success. The tests require problem solving and data analysis: the **ability to create a representation of a problem, consider the units involved, attend to the meaning of quantities, and know and use different properties of operations** and objects. Problems in this category will require significant quantitative reasoning about ratios, rates, and proportional relationships and will place a premium on understanding and applying unit rate.

Students will be expected to **identify** quantitative measures of center, overall patterns, and any striking deviations from the overall pattern and spread in one or two different data sets. This includes recognizing the effects of outliers on the measures of center of a data set.

All Problem Solving and Data Analysis questions test the ability of students to use their math understanding and skills to solve problems they could encounter in the **real world**. Many of these problems are set in **academic and career contexts** and are likely to draw from **science and social science**.

Problem Solving and Data Analysis is one of the three SAT Suite Math subscores, reported on a scale of 1 to 15.

This domain will feature multiple-choice and student-produced response question types. Calculator use is always permitted, but not always needed or recommended.

Problem Solving and Data Analysis questions ask students to:

1. **Use ratios, rates, proportional relationships, and scale drawings to solve single- and multistep problems.** The student will use a proportional relationship between two variables to solve a multistep problem to determine a ratio or rate; calculate a ratio or rate and then solve a multistep problem; or take a given ratio or rate and solve a multistep problem.
2. **Solve single- and multistep problems involving percentages.** The student will solve a multistep problem to determine a percentage; calculate a percentage and then solve a multistep problem; or take a given percentage and solve a multistep problem.
3. **Solve single- and multistep problems involving measurement quantities, units, and unit conversion.** The student will solve a multistep problem to determine a unit rate; calculate a unit rate and then solve a multistep problem; solve a multistep problem to complete a unit conversion; solve a multistep problem to calculate density; or use the concept of density to solve a multistep problem.
4. **Given a scatterplot, use linear, quadratic, or exponential models to describe how the variables are related.** The student will, given a scatterplot, select the equation of a line or curve of best fit; interpret the line in the context of the situation; or use the line or curve of best fit to make a prediction.
5. **Use the relationship between two variables to investigate key features of the graph.** The student will make connections between the graphical representation of a relationship and properties of the graph by selecting the graph that represents the properties described, or using the graph to identify a value or set of values.
6. **Compare linear growth with exponential growth.** The student will infer the connection between two variables given a context in order to determine what type of model fits best.
7. **Use two-way tables to summarize categorical data and relative frequencies, and calculate conditional probability.** The student will summarize categorical data or use categorical data to calculate conditional frequencies, conditional probabilities, association of variables, or independence of events.
8. **Make inferences about population parameters based on sample data.** The student will estimate a population parameter given the results from a random sample of the population. The sample statistics may mention confidence intervals and measurement error that the student should understand and make use of, but need not calculate.
9. **Use statistics to investigate measures of center of data and analyze shape, center, and spread.** The student will calculate measures of center and/or spread for a given set of data or use given statistics to compare two separate sets of data. The measures of center that may be calculated include mean, median, and mode, and the measures of spread that may be calculated include range. When comparing two data sets, the student may investigate mean, median, mode, range, and/or standard deviation.
10. **Evaluate reports to make inferences, justify conclusions, and determine appropriateness of data collection methods.** The reports may consist of tables, graphs, or text summaries

Passport to Advanced Math

Passport to Advanced Math questions include topics that are especially important for students to master before studying advanced math. Chief among these topics is the understanding of the structure of expressions and the ability to analyze, manipulate, and rewrite these expressions. This domain also includes reasoning with more complex equations, and interpreting and building functions.

Passport to Advanced Math is one of the three SAT Suite of Assessment Math subscores, reported on a scale of 1 to 15. The Passport to Advanced Math subscore is reported for all SAT Suite Math Tests except for PSAT 8/9.

This domain will feature multiple-choice and student-produced response question types. Calculator use is sometimes permitted, but not always needed or recommended.

Passport to Advanced Math questions ask students to:

1. **Create a quadratic or exponential function** or equation that models a context. The equation will have rational coefficients and may require multiple steps to simplify or solve the equation.
2. **Determine the most suitable form of an expression** or equation to reveal a particular trait, given a context.
3. **Create equivalent expressions involving rational exponents** and radicals, including simplifying or rewriting in other forms.
4. **Create an equivalent form of an algebraic expression** by using structure and fluency with operations.
5. **Solve a quadratic equation** having rational coefficients. The equation can be presented in a wide range of forms to reward attending to algebraic structure and can require manipulation in order to solve.
6. **Add, subtract, and multiply polynomial expressions** and simplify the result. The expressions will have rational coefficients.
7. **Solve an equation in one variable that contains radicals or contains the variable in the denominator of a fraction.** The equation will have rational coefficients, and the student may be required to identify when a resulting solution is extraneous.
8. **Solve a system of one linear equation and one quadratic equation.** The equations will have rational coefficients.
9. **Rewrite simple rational expressions.** Students will add, subtract, multiply, or divide two rational expressions or divide two polynomial expressions and simplify the result. The expressions will have rational coefficients.
10. **Interpret parts of nonlinear expressions in terms of their context.** Students will make connections between a context and the nonlinear equation that models the context to identify or describe the real-life meaning of a constant term, a variable, or a feature of the given equation.
11. **Understand the relationship between zeros and factors of polynomials,** and use that knowledge to sketch graphs. Students will use properties of factorable polynomials to solve conceptual problems relating to zeros, such as determining whether an expression is a factor of a polynomial based on other information provided.
12. **Understand a nonlinear relationship between two variables** by making connections between their algebraic and graphical representations. The student will select a graph corresponding to a given nonlinear equation; interpret graphs in the context of solving systems of equations; select a nonlinear equation corresponding to a given graph; determine the equation of a curve given a verbal description of a graph; determine key features of the graph of a linear function from its equation; or determine the impact on a graph of a change in the defining equation.
13. **Use function notation, and interpret statements using function notation.** The student will use function notation to solve conceptual problems related to transformations and compositions of functions.
14. **Use structure to isolate or identify a quantity of interest** in an expression or isolate a quantity of interest in an equation. The student will rearrange an equation or formula to isolate a single variable or a quantity of interest.

What the Math Test Measures

Fluency

The Math Test is a chance to show that you:

- Carry out procedures flexibly, accurately, efficiently, and strategically.
- Solve problems quickly by identifying and using the most efficient solution approaches. This might involve solving a problem by inspection, finding a shortcut, or reorganizing the information you've been given.

Conceptual Understanding

You'll demonstrate your grasp of math concepts, operations, and relations. For instance, you might be asked to make connections between properties of linear equations, their graphs, and the contexts they represent.

Applications

These real-world problems ask you to analyze a situation, determine the essential elements required to solve the problem, represent the problem mathematically, and carry out a solution.

Calculator Use

Calculators are important tools, and to succeed after high school, you'll need to know how—and when—to use them. In the Math Test–Calculator portion of the test, you'll be able to focus on complex modeling and reasoning because your calculator can save you time.

However, the calculator is, like any tool, only as smart as the person using it. The Math Test includes some questions where it's better not to use a calculator, even though you're allowed to. In these cases, students who make use of structure or their ability to reason will probably finish before students who use a calculator.

The Math Test–No Calculator portion of the test makes it easier to assess your fluency in math and your understanding of some math concepts. It also tests well-learned technique and number sense.

Grid-In Questions

Although most of the questions on the Math Test are multiple choice, 22 percent are student-produced response questions, also known as grid-ins. Instead of choosing a correct answer from a list of options, you'll need to solve problems and enter your answers in the grids provided on the answer sheet.

Gridding-In Answers

- Mark no more than one circle in any column.
- Only answers indicated by filling in the circle will be scored (you won't receive credit for anything written in the boxes located above the circles).
- It doesn't matter in which column you begin entering their answers; as long as the responses are recorded within the grid area, you'll receive credit.
- The grid can hold only four decimal places and can only accommodate **positive numbers and zero**.
- Unless a problem indicates otherwise, answers can be entered on the grid as a **decimal or a fraction**.
- Fractions like $\frac{3}{24}$ **do not need to be reduced to their lowest terms.**
- **All mixed numbers need to be converted to improper fractions** before being recorded in the grid.
- If the answer is a repeating decimal, students must grid the most accurate value the grid will accommodate.

Here is a sample of the instructions and grids you'll see on the test.

Write answer in boxes.

Grid in result.

Answer $\frac{7}{12}$

Fraction line

Answer 2.5

Decimal point

Answer 201

Enter the non-zero digit

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

About the SAT Math Test

Focus on Math That Matters Most

Instead of testing you on every math topic there is, the SAT Math Test focuses on the topics you're most likely to encounter in college and career. The **three areas of focus** for math in the SAT are

- **Heart of Algebra**
- **Problem Solving and Data Analysis**
- **Passport to Advanced Math**

Heart of Algebra focuses on linear equations, systems of linear equations, and functions that are found in many fields of study. These questions ask you to create equations that represent a situation and solve equations and systems of equations as well as to make connections between different representations of linear relationships.

Problem Solving and Data Analysis includes using ratios, percentages, and proportional reasoning to solve problems in real-world situations, including science, social science, and other contexts. It also includes describing relationships shown graphically and analyzing statistical data. This group of skills is really about being quantitatively literate and demonstrating a command of the math that resonates throughout college courses, career training programs, and everyday life.

These two areas of math provide a powerful foundation for the math you will do in the future.

Passport to Advanced Math is the third area of focus in the SAT Math Test. The problems in this area focus on the math you will need to pursue further study in a discipline such as science or economics and for career opportunities in the STEM fields of science, technology, engineering, and math. The Passport to Advanced Math area requires familiarity with more-complex equations or functions, which will prepare you for calculus and advanced courses in statistics.



REMEMBER

Questions on the SAT Math Test are distributed among these three topics with 19 Heart of Algebra questions, 17 Problem Solving and Data Analysis questions, and 16 Passport to Advanced Math questions. The remaining six questions test your understanding of additional topics in math such as area, volume, circles, triangles, and trigonometry.



REMEMBER

The SAT Math Test requires a stronger and deeper understanding of a relatively small number of math topics that are especially relevant in college and in many careers.

The SAT Math Test also contains questions in **Additional Topics in Math**. Some of these problems focus on key concepts from geometry, including applications of volume, area, surface area, and coordinate geometry; similarity, which is another instance of proportional reasoning; and properties of lines, angles, triangles and other polygons, and circles. There are also problems that focus on the fundamental ideas of trigonometry and radian measure, which are essential for study in STEM fields. Finally, there are problems involving the arithmetic of complex numbers, another concept needed for more-advanced study in math and the STEM fields.

What the Math Test Assesses

The SAT Math Test assesses your understanding of mathematical concepts, your procedural skill and fluency in math, and your ability to apply those concepts and skills to real-world problems.

Conceptual understanding and procedural skill and fluency are complementary. Together, they lead to a thorough understanding of mathematical ideas and methods for solving problems. Questions on the SAT Math Test assess these skills in various ways because the ability to use mathematical ideas and methods flexibly shows an understanding of math that can be applied to a wide variety of settings.

A key to the relationship between fluency and conceptual understanding is recognizing and making use of structure. Recognizing structure allows you to understand mathematical relationships in a coherent manner and making use of it allows you both to apply these relationships more widely and to extend these relationships in useful ways. Many of the examples and sample questions in the following chapters are more simply and deeply understood (and more quickly solved!) if you observe structure in the mathematics of the problem.



PRACTICE AT

satpractice.org

As is mentioned throughout this guide, the best preparation for the SAT is to work hard in your high school classes. Applying your math skills in your science and social studies classes will prepare you for many of the questions you'll come across on the SAT Math Test.

Problems Grounded in Real-World Contexts

The SAT Math Test features multistep problems with applications in science, social science, career scenarios, and other real-life contexts. In some cases, you will be presented with a scenario and then asked several questions related to the same context. You learn specific math skills in your math classes, and these skills are applied in your science and social studies classes. When you use your mathematical skills outside of the math classroom, you are preparing for the SAT.

The Makeup of the SAT Math Test

Calculator and No-Calculator Portions

There are calculator and no-calculator portions on the SAT Math Test. A calculator is a tool, and the ability to determine when to use it is a skill that you're expected to have. In the calculator portion, many questions don't require a calculator and many questions can be completed faster without using a calculator. In general, the questions in the calculator portion are more complex than those in the no-calculator portion. Questions in the no-calculator portion emphasize your ability to do problems efficiently and accurately.

You should bring a calculator to use on the calculator portion of the SAT Math Test. A scientific or graphing calculator is recommended, and familiarity with your calculator may provide an advantage on some questions. Every question on the SAT can be solved without a calculator; however, strategically deciding when to use a calculator will reduce the time required to complete the test. Using a calculator can also help you avoid missing a question because of computation errors.

Multiple-Choice and Gridded-Response Questions

About 80% of the questions on the Math Test are multiple-choice. Each multiple-choice question consists of a question followed by four options. There is only one correct answer and there is no penalty for selecting an incorrect answer. Therefore, you should provide an answer to every question on the test.

The other questions on the Math Test are gridded-response questions (also called student-produced response questions), and these questions make up about 20% of the test. The answer to each gridded-response question is a number (fraction, decimal, or positive integer) that you'll enter on the answer sheet into a grid like the one shown on the next page. Like all questions on the SAT, there is no penalty for answering a gridded-response question incorrectly.

Examples of filled-in answer grids are shown on the next page. Note that in addition to whole numbers, you may also enter a fraction line or a decimal point. Further details on how to grid your answers are provided in Chapter 21.



REMEMBER

You're permitted to use a calculator on one portion of the SAT Math Test, so be sure to bring a calculator with you to the test. However, many questions don't require a calculator and can actually be solved more quickly without one, so use careful judgment in deciding when to use it.



PRACTICE AT satpractice.org

Make sure that you're very familiar with and comfortable using the calculator you bring with you on test day. Practice using the calculator you'll use on the test throughout your test preparation.



PRACTICE AT satpractice.org

There is no penalty for selecting an incorrect answer on the SAT, so never leave a question blank! On questions that you're not sure how to solve, eliminate as many answer choices as you can, and then guess from among the remaining choices.



REMEMBER

On gridded-response questions, you must fill in the circles that correspond to your answer. You won't receive credit if you write your answer only in the boxes at the top of the grid.

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

Write answer in boxes.

Grid in result.

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

← Fraction line

Answer: 2.5

	2	.	5
	○	○	○
○	○	○	○
	0	0	0
○	1	○	○
○	2	○	○
○	3	○	○
○	4	○	○
○	5	○	○
○	6	○	○
○	7	○	○
○	8	○	○
○	9	○	○

← Decimal point



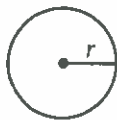
PRACTICE AT satpractice.org

Make sure to get lots of practice using the facts and formulas provided in the Reference section in the Math Test directions. Practicing with these facts and formulas will ensure you can use them accurately and efficiently.

Mathematics Reference Information

The Math Test includes the reference information shown below. You may find these facts and formulas helpful as you answer some of the test questions, but make sure you have plenty of practice with this information beforehand. To do well, you'll need to be comfortable working with these facts and formulas.

REFERENCE

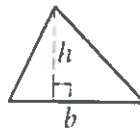


$$A = \pi r^2$$

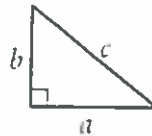
$$C = 2\pi r$$



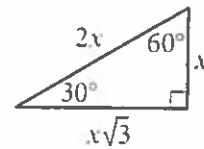
$$A = lw$$



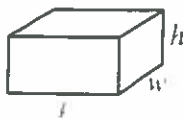
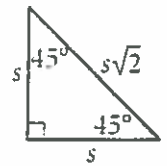
$$A = \frac{1}{2}bh$$



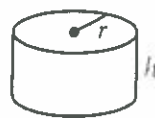
$$c^2 = a^2 + b^2$$



Special Right Triangles



$$V = lwh$$



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



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



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



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

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

The number of radians of arc in a circle is 2π .

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

Test Summary

The following table summarizes the key content dimensions of the SAT Math Test.

SAT Math Test Content Specifications

Time Allotted	80 minutes
Calculator Portion (38 questions)	55 minutes
No-Calculator Portion (20 questions)	25 minutes

	Number	Percentage of Test
Total Questions	58 questions	100%
Multiple-Choice (MC, 4 options)	45 questions	78%
Student-Produced Response (SPR—grid-in)	13 questions	22%

Contribution of Questions to Subscores

Heart of Algebra	19 questions	33%
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Analyzing and fluently solving linear equations and systems of linear equations

Creating linear equations and inequalities to represent relationships between quantities and to solve problems

Understanding and using the relationship between linear equations and inequalities and their graphs to solve problems

Problem Solving and Data Analysis	17 questions	29%
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Creating and analyzing relationships using ratios, proportional relationships, percentages, and units

Representing and analyzing quantitative data

Finding and applying probabilities in context

Passport to Advanced Math	16 questions	28%
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Identifying and creating equivalent algebraic expressions

Creating, analyzing, and fluently solving quadratic and other nonlinear equations

Creating, using, and graphing exponential, quadratic, and other nonlinear functions



PRACTICE AT satpractice.org

Take plenty of time to familiarize yourself with this table. Knowing exactly what the Math Test consists of, including the number of questions and time allotted as well as the distribution of question categories, will help you to feel confident and prepared on test day.



PRACTICE AT
satpractice.org

As you progress through your test practice, assess which math skills you're strongest in and which you have the greatest room for improvement in. Allocate your study time appropriately, and make use of the many resources available to you on the Khan Academy website (satpractice.org).

Additional Topics in Math*	6 questions	10%
Solving problems related to area and volume		
Applying definitions and theorems related to lines, angles, triangles, and circles		
Working with right triangles, the unit circle, and trigonometric functions		

Contribution of Questions to Cross-Test Scores

Analysis in Science	8 questions	14%
Analysis in History/Social Studies	8 questions	14%

*Questions under Additional Topics in Math contribute to the total Math Test score but do not contribute to a subscore within the Math Test.

As indicated in the content specifications previously, the Math Test has two portions. One is a 55-minute portion — 38 questions for which you are permitted to use a calculator. The other is a 25-minute portion — 20 questions for which you are not permitted to use a calculator. The blueprint for each portion is shown below.

Calculator Portion

	Number of Questions	% of Test
Total Questions	38	100%
Multiple Choice (MC)	30	79%
Student-Produced Response (SPR—grid-in)	8	21%
Content Categories	38	100%
Heart of Algebra	11	29%
Problem Solving and Data Analysis	17	45%
Passport to Advanced Math	7	18%
Additional Topics in Math	3	8%
Time Allocated	55 minutes	

No-Calculator Portion



REMEMBER

Don't be intimidated by the fact that you can't use a calculator on one of the SAT Math portions. Questions in the no-calculator portion are more conceptual in nature and don't require a calculator to be solved.

	Number of Questions	% of Test
Total Questions	20	100%
Multiple-Choice (MC)	15	75%
Student-Produced Response (SPR—grid-in)	5	25%
Content Categories	20	100%
Heart of Algebra	8	40%
Passport to Advanced Math	9	45%
Additional Topics in Math	3	15%
Time Allocated	25 minutes	