

SAT MATH

The SAT Math section (58 questions given in 80 minutes) is divided into two parts. The “Calculator” section (55 minutes) consists of 30 multiple-choice questions plus 8, multi-step “grid-in” questions. The “No Calculator” section (25 minutes) consists of 15 multiple-choice questions plus 5 free-response or “grid-in” questions.

The content breakdown for SAT math is “Heart of Algebra” (linear equations, inequalities, functions, and graphs), “Passport to Advanced Math” (nonlinear expressions such as quadratic equations, exponential expressions, and word problems), and “Problem-solving and Data Analysis” (rates, ratios, percentages, and data from graphs and tables). 90% of all questions will come from these categories with 10% coming from geometry, basic trigonometry, and complex numbers.

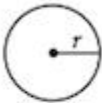
[<http://blog.prepscholar.com/whats-actually-tested-on-sat-math-topics>]


What do you need to study?

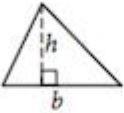
1. Algebra I and II (50%)
2. Arithmetic/Probability/Data Analysis
3. Plane Geometry/Coordinate Geometry/Trigonometry (only about 6 questions)

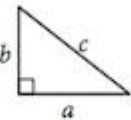
These formulas will be provided on the test.

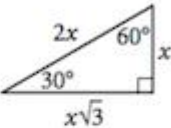
REFERENCE

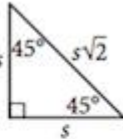

 $A = \pi r^2$
 $C = 2\pi r$


 $A = \ell w$

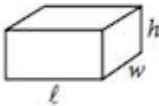

 $A = \frac{1}{2}bh$

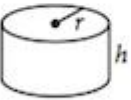

 $c^2 = a^2 + b^2$




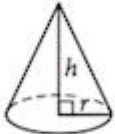


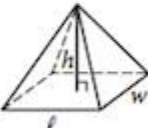
Special Right Triangles


 $V = \ell wh$


 $V = \pi r^2 h$


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


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


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

The number of degrees of arc in a circle is 360.
 The number of radians of arc in a circle is 2π .
 The sum of the measures in degrees of the angles of a triangle is 180.

Note: Questions in both sections tend to move from easier to hardest, and the emphasis on the SAT redesign is on “real-life” application so expect more word problems. In addition, not only do you have to focus, you have to maintain that focus for a full 55 minutes.

Breakdown of Concepts Covered

1. Basic Algebra

- Linear functions
- Single variable equations
- Systems of linear equations
- Absolute value

2. Advanced Algebra

- Manipulating polynomials
- Quadratic equations
- Dividing polynomials
- Exponential functions
- Function notation
- Solving exponential equations
- Systems of equations with nonlinear equations

3. Problem Solving and Data Analysis

- Ratios and proportions
- Scatterplots and graphs
- Categorical data and probabilities
- Experimental interpretation
- Median, median, mode, standard deviation

4. Additional Topics

- Coordinate geometry - lines and slopes
- Coordinate geometry - nonlinear functions
- Geometry - circles
- Geometry - lines and angles
- Geometry - solid geometry
- Geometry - triangles and polygons
- Trigonometry
- Complex numbers

Calculator Policy

Quick Facts

- Only the calculators listed on the CB website are acceptable for the Math Test — Calculator portion of the test. [<https://collegereadiness.collegeboard.org/sat/taking-the-test/calculator-policy>]
- You may not use a calculator while working on the Reading, Writing and Language, or Math Test — No Calculator portions, and must put the calculator away during these sections of the test.
- You will be dismissed and your scores canceled if you use your calculator to share information during the test, or to remove test questions or answers from the test room.

Calculator Smarts

- Bring your own calculator. You can't share one.

- *Don't bring a brand-new calculator. Bring one you know. Practice for the test using the same calculator you'll use on test day.*
 - *The Math Test includes some questions where it's better not to use a calculator, even though you're allowed to.*
 - *It may help to do scratch work in the test book. Get your thoughts down before using your calculator.*
 - *Make sure your calculator is in good working order and that batteries are fresh. The test center will not have batteries or extra calculators. If your calculator fails during testing and you have no backup, you'll have to complete the test without it.*
-

Strategy #1: Understand Your High Level Weakness: Content or Time Management

- **Take only the math section of a practice test.** For that section, use a timer and Treat it like a real test.
- If time runs out and you're not done yet, keep working for as long as you need. But starting now, for every new answer or answer that you change, **mark it with a special note as "Extra Time."**
- Grade your test using the answer key and score chart, but we want two scores: 1) **The Realistic score** you got under normal timing conditions, 2) **The Extra Time score.** This is why you marked the questions you answered or changed during Extra Time.

Strategy #2: Do a Ton of Practice, and Understand Every Single Mistake

1. **The first step is simply to do a ton of practice.**
2. **The second step - and the more important part - is to be ruthless about understanding your mistakes.**
 - On every practice test or question set that you take, mark every question that you're even 20% unsure about
 - When you grade your test or quiz, review every single question that you marked, and every incorrect question. This way even if you guessed a question correctly, you'll make sure to review it.
 - In a notebook, write down the gist of the question, why you missed it, and what you'll do to avoid that mistake in the future. Have separate sections by subject and sub-topic (number theory - fractions, algebra - solving equations, etc.)

Strategy #3: If You Have Content Gaps, Be Ruthless About Filling Them

If from the analysis of mistakes above you find that you have a content problem, you need to improve your understanding of that content.

Strategy #4: If You Miss a Question, Re-Solve It First

- This will often be hard. You couldn't solve it the first time, so why could you solve it the second time around?
- But this time, with less time pressure, you might spot a new strategy, or something else will pop up. Something will just "click" for you.
- **Struggle with each wrong answer for up to 10 minutes.** Only then if you don't get it should you read the answer explanation.

Strategy #5: Finish With Extra Time and Double Check

Your goal at the end of all this work is to get so good at SAT Math that you **solve every question. What's the best way to double-check your work?** I have a reliable method that I follow:

- Try to resolve the question another way. If I solved a question algebraically, I can recheck it by plugging in the solution.
- If I'm 100% sure I'm right on a question, I mark it as such and never look at it again. If I'm not sure, I'll come back to it on the third pass.
- At least 2 minutes before time's up, I rapidly double-check that I bubbled the answers correctly. I try to do this all at once so as not to waste time looking back and forth between the test book and the answer sheet. Go 5 at a time ("A F E K B") for more speed.
- If you notice yourself spending more than 30 seconds on a problem and aren't clear how you'll get to the answer, **skip and go to the next question.**

Quick Tip: Bubbling Answers

Here's a bubbling tip that will save you 5 minutes, automatically.

Note: If you use this strategy, you should already be finishing the section with ample extra time to spare. Otherwise, you might run out of time before you have the chance to bubble in the answer choices all at once.

Strategy #6: Eliminate Careless Mistakes

If you find that careless mistakes are a recurring problem for you, **here are some strategies to get rid of them:**

- In the question, underline what the question is specifically asking you to solve for. It's so easy for the ACT to trick you into solving the wrong thing.
- If you're solving for a particular value (like length, area, etc), write the units down in the scratch space.
- Be careful with calculator entry. A missing parentheses makes a big difference. " $4 + 9 / 2$ " is completely different from " $(4 + 9) / 2$ ".
- Avoid bubbling errors by using the Quick Tip above.

Strategy #7: Memorize All Formulas and Common Math Facts

Memorize the formulas at the front of the section and these common math facts:

- calculating slope from two points (rise over run)
- common right triangles: by angles: 45-45-90 ($1-1-\sqrt{2}$), 30-60-90 ($1-2-\sqrt{3}$); and by sides: 3-4-5, 5-12-13
- formulas for arithmetic and geometric sequences
- formula for diagonal of a rectangular prism

Strategy #8: Keep a Calm Mind During the Test, No Matter What

Overall Math Strategies

1. **Learn to let go of a question.** If the question takes you more than 30 seconds to figure out or solve, come back to it later.
2. **Eliminate answer choices and draw it out**
3. **Identify problems that will take a long time**

To find out the current GPA/Test/Essay requirements, Google *Name of school PrepScholar act*. For example, UGA would be: *University of Georgia PrepScholar act*.

Source Quoted: www.prepscholar.com

Additional Sources:

collegeboard.org <https://collegereadiness.collegeboard.org/sample-questions/math> (practice online tests with suggestions from the SAT)

PrepScholar.com <http://blog.prepscholar.com/best-sat-math-practice-tests> (practice, printed tests)

CrackSAT.com <http://www.cracksat.net/sat/math/> (practice online tests with explanations)

VarsityTutors.com http://www.varsitytutors.com/sat_math-practice-tests (online tests by specific skills...ideal if you already know your weaknesses)

ACT Math for Dummies <http://www.dummies.com/test-prep/sat-math-for-dummies-cheat-sheet/> (great practical tips + practice problems)

Karen H. Reeves
Edmund Burke Academy