



FREE STUDY RESOURCES

SAT Formula & Strategy Guide

Math, Reading & Writing

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Supplemental practice. Not an official College Board test.

SAT Formula and Strategy Guide

Six practice areas for selected Digital SAT skills: reading comprehension and evidence, standard English conventions, Algebra and linear models, Advanced Math and functions, Problem-Solving and Data Analysis, and Geometry and trigonometry — with the fastest valid method for each question type.

SECTIONS	6	WORKED EXAMPLES	1	FORMAT	Print friendly
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How to use this guide

A formula you cannot place is not knowledge yet. Work the recall drill below before the questions.

- Classify the question's domain before solving — Reading, Writing, Algebra, Advanced Math, Data Analysis, and Geometry each reward a different first move.
- For Reading and Writing, read the question before the short passage — it tells you exactly what to look for.
- For Math, estimate before calculating, and use the built-in Desmos calculator to check, not to guess.

1. Reading comprehension and evidence

NAME	FORMULA	WHEN TO USE
Central idea	the point the entire passage supports	Asked for the passage's overall point, not a detail.
Command of evidence (text)	the specific line that best supports a stated claim	A claim is given and needs textual support.
Command of evidence (data)	the data point or trend that best supports a claim	A claim is given alongside a table or graph.
Words in context	the surrounding sentence defines the intended meaning	A word has multiple possible meanings.
Cross-text connection	compare the point of view or claim of two short passages	Two passages on a related topic are given together.

2. Standard English conventions

NAME	FORMULA	WHEN TO USE
Subject-verb agreement	the verb matches the TRUE subject, not the nearest noun	A phrase separates the subject from the verb.
Punctuation with clauses	comma joins a dependent and independent clause; semicolon joins two independent clauses	Two ideas need to be connected correctly.

NAME	FORMULA	WHEN TO USE
Transitions	choose based on the logical relationship between ideas	Connecting two sentences or clauses.
Conciseness and rhetorical synthesis	the most concise, meaning-preserving option that meets the stated goal	Notes must be combined to meet a specific purpose.

3. Algebra and linear models

NAME	FORMULA	WHEN TO USE
Slope-intercept form	$y = mx + b$	Reading rate and starting value from a linear equation.
Systems of equations	substitution or elimination	Two linear equations, one solution point.
Linear inequality	same steps as an equation; flip the sign when multiplying/dividing by a negative	A range of solutions rather than one value.

4. Advanced Math and functions

NAME	FORMULA	WHEN TO USE
Factoring a quadratic	find two numbers with the right product and sum	Solving or simplifying a quadratic expression.
Quadratic formula	$x = (-b \pm \sqrt{b^2 - 4ac}) / (2a)$	Factoring doesn't work cleanly.
Exponential growth/decay	$y = a(1 \pm r)^x$	A quantity changes by a fixed percent per period.
Function notation and transformations	$f(x)$ is the output for input x ; $f(x)+k$ shifts vertically, $f(x+h)$ shifts horizontally	Evaluating, composing, or transforming a function.

5. Problem-Solving and Data Analysis

NAME	FORMULA	WHEN TO USE
Percent change	$(\text{new} - \text{old}) / \text{old} \times 100\%$	Describing an increase or decrease as a percent.
Ratios and unit rates	cross-multiply to solve $a/b = c/d$	Scaling a quantity at a fixed rate.
Mean, median, standard deviation	sum/count; middle value; spread around the mean	Summarizing or comparing data sets.
Line of best fit	shows the overall trend; interpret slope and intercept in context	Estimating a value or describing a relationship from a scatterplot.

6. Geometry and trigonometry

NAME	FORMULA	WHEN TO USE
Pythagorean theorem	$a^2 + b^2 = c^2$	A right triangle's missing side.
Circle formulas	circumference = $2\pi r$, area = πr^2	Working with circles, arcs, or sectors.
Right-triangle trig	sin = opposite/hyp, cos = adjacent/hyp, tan = opposite/adjacent	An angle and two sides of a right triangle.
Similar triangles	corresponding sides are in proportion	Two triangles share equal angles at different scales.

WORKED EXAMPLE

A 20-foot ladder leans against a wall, reaching 16 feet up. Find the horizontal distance from the wall to the base.

- $a^2 + b^2 = c^2$
- $b^2 + 16^2 = 20^2$
- $b^2 = 400 - 256 = 144$
- $b = \sqrt{144} = 12$ feet

Check: 12-16-20 is a scaled 3-4-5 right triangle.

Notes and tutor hand-off

Bring this page to your next session so the tutor can start from what actually blocked you.

Which domain (Reading, Writing, Algebra, Advanced Math, Data Analysis, Geometry) needs more practice?

One question type where rereading the exact line, not the whole passage, would have saved time:

Worksheet question numbers to review with a tutor:
