

Digital SAT Math Formula Chart

Separate what Bluebook provides from what is worth knowing cold, then connect each formula to the question type that uses it.

A memorized formula only helps when you recognize the structure. Label the quantities and units before substituting.

Reference information provided in the Math section

Topic	Formula	Use
Circle	$A = \pi r^2$; $C = 2 \pi r$	Area or circumference from radius or diameter.
Rectangle	$A = lw$	Area from length and width.
Triangle	$A = (1/2)bh$	Area from a perpendicular base and height.
Right triangle	$a^2 + b^2 = c^2$	Missing side when c is the hypotenuse.
Special triangles	30-60-90: $x, x\sqrt{3}, 2x$; 45-45-90: $x, x, x\sqrt{2}$	Exact side ratios.
Rectangular solid	$V = lwh$	Volume.
Cylinder	$V = \pi r^2 h$	Volume from base area and height.
Cone	$V = (1/3) \pi r^2 h$	Volume.
Sphere	$V = (4/3) \pi r^3$	Volume.
Angle measure	$360 \text{ degrees} = 2 \pi \text{ radians}$	Convert degrees and radians.

Algebra and Advanced Math worth knowing

Pattern	Formula or form	Recognition cue
Slope	$m = (y_2 - y_1)/(x_2 - x_1)$	Rate of change between two points.
Line	$y = mx + b$	m is slope; b is the y-intercept.
Point-slope	$y - y_1 = m(x - x_1)$	A slope and one point are given.
Quadratic formula	$x = (-b \pm \sqrt{b^2 - 4ac})/(2a)$	The quadratic does not factor cleanly.
Discriminant	$b^2 - 4ac$	Positive: 2 real roots; zero: 1; negative: none.
Vertex x-value	$x = -b/(2a)$	Axis of symmetry or maximum/minimum input.
Exponential	$y = a(b)^x$	a is initial value; b is the growth factor.
Percent change	$(\text{new} - \text{old})/\text{old} \times 100\%$	Increase or decrease relative to the original.
Direct variation	$y = kx$	Constant ratio y/x .
Inverse variation	$y = k/x$	Constant product xy .

Geometry and Trigonometry worth knowing

Pattern	Formula	Recognition cue
Distance	$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	Length between coordinate points.
Midpoint	$((x_1 + x_2)/2, (y_1 + y_2)/2)$	Point halfway between endpoints.
Arc length	$\theta/360 \times 2\pi r$	Central angle is in degrees.
Sector area	$\theta/360 \times \pi r^2$	Fraction of a circle's area.
Circle equation	$(x-h)^2 + (y-k)^2 = r^2$	Center (h,k), radius r.
Trig ratios	$\sin = \text{opposite/hypotenuse}; \cos = \text{adjacent/hypotenuse}; \tan = \text{opposite/adjacent}$	Right triangle angle and side relationship.
Similar figures	corresponding sides share one scale factor	Angles match; lengths scale by k; areas by k^2 .

Problem-Solving and Data Analysis

Pattern	Rule	Common mistake
Mean	sum of values / number of values	Forgetting frequency when values repeat.
Weighted mean	$\text{sum}(\text{value} \times \text{weight}) / \text{sum}(\text{weights})$	Averaging group means without group sizes.
Probability	favorable outcomes / total outcomes	Using an unconditional denominator for a conditional event.
Density	mass / volume	Mixing units before dividing.
Unit rate	quantity / 1 unit	Reporting the reciprocal rate.
Margin of error	larger random sample usually means smaller margin of error	Assuming a larger sample removes bias.

Fast decision checklist

- What does the answer represent, and what unit should it use?
- Is the formula already provided, or do I need to recognize a standard form?
- Would Desmos graphing, a table, or regression remove algebra steps?
- Does the result fit the scale and constraints in the prompt?

Practice formula-heavy questions at <https://1600.now/sat-math-formula-chart>

Source

College Board SAT Math reference information: <https://satsuite.collegeboard.org/sat/whats-on-the-test/math/reference-information>

Reviewed July 2026. This chart supplements the reference information shown in Bluebook; it is not an official College Board document.