

SAT Math Formula Sheet

Complete reference for all four math domains

Algebra

35% of section | 13-15 questions

LINEAR EQUATIONS

Slope-Intercept $y = mx + b$

Point-Slope $y - y_1 = m(x - x_1)$

Standard Form $Ax + By = C$

Slope Formula $m = (y_2 - y_1) / (x_2 - x_1)$

SYSTEMS & LINES

Parallel Lines Same slope = No solution

Perpendicular $m_1 \times m_2 = -1$

Horizontal: $y = k$ (slope 0) | Vertical: $x = k$

Advanced Math

35% of section | 13-15 questions

QUADRATICS

Standard Form $y = ax^2 + bx + c$

Vertex Form $y = a(x - h)^2 + k$

Quadratic Formula $x = (-b \pm \sqrt{b^2 - 4ac}) / 2a$

Discriminant $D = b^2 - 4ac$

EXPONENTIAL

Growth $y = a(1 + r)^t$

Decay $y = a(1 - r)^t$

$D > 0$: two solutions | $D = 0$: one | $D < 0$: none

Problem-Solving & Data

15% of section | 5-7 questions

RATIOS & PERCENT

Percent Change $(\text{New} - \text{Old}) / \text{Old} \times 100$

Proportion $a/b = c/d \rightarrow ad = bc$

STATISTICS

Mean $\text{Sum} / \text{Count}$

Median $\text{Middle value (sorted)}$

Range $\text{Maximum} - \text{Minimum}$

PROBABILITY

Basic Probability $P = \text{Favorable} / \text{Total}$

Margin of Error = $1 / \sqrt{n}$ for sample size n

Geometry & Trigonometry

15% of section | 5-7 questions

AREA

Rectangle / Triangle $A = lw$

Circle / Trapezoid $A = \pi r^2$

VOLUME

Box / Cylinder $V = lwh$

Sphere / Cone $V = (4/3)\pi r^3$

CIRCLES

Circumference $C = 2\pi r = \pi d$

Arc Length $s = (\theta / 360) \times 2\pi r$

Equation $(x - h)^2 + (y - k)^2 = r^2$

Triangles & Trigonometry

PYTHAGOREAN

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

Common Triples:

3-4-5 | 5-12-13 | 8-15-17

SPECIAL RIGHT TRIANGLES

45-45-90: $x : x : x\sqrt{2}$

30-60-90: $x : x\sqrt{3} : 2x$

SOH-CAH-TOA

$\sin = \text{Opp} / \text{Hyp}$

$\cos = \text{Adj} / \text{Hyp}$

$\tan = \text{Opp} / \text{Adj}$

Triangle angles sum to 180 | Exterior angle = sum of remote interior angles | $\sin(x) = \cos(90 - x)$

Exponent & Radical Rules

Product
 $x^a \times x^b = x^{(a+b)}$

Negative
 $x^{(-n)} = 1 / x^n$

Quotient
 $x^a / x^b = x^{(a-b)}$

Fractional
 $x^{(1/n)} = n\text{-root}(x)$

Power
 $(x^a)^b = x^{(ab)}$

Distribute
 $(xy)^n = x^n \times y^n$

Zero
 $x^0 = 1$

Fraction
 $(x/y)^n = x^n / y^n$