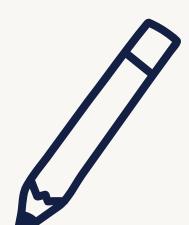


FREE SAT MATH FORMULA SHEET

All the Essential Formulas You Need for Test Day

Master your SAT Math section with this handy formula sheet. Keep it by your side as you practice — boost confidence, save time, and score higher.



Algebra

- Slope Formula: $m = (y_2 - y_1) / (x_2 - x_1)$
- Slope-Intercept Form: $y = mx + b$
- Quadratic Formula: $x = [-b \pm \sqrt{(b^2 - 4ac)}] / 2a$
- Difference of Squares: $a^2 - b^2 = (a - b)(a + b)$
- Exponential Growth/Decay: $A = A_0(1 \pm r)t$
- Product and Sum of Roots of a Quadratic Equation:
 - Sum of Roots: $-b/a$
 - Product of Roots: c/a
- Parallel and Perpendicular Lines:
 - Parallel Lines: $M_1 = M_2$
 - Perpendicular Lines: $M_1 \times M_2 = -1$
- Point-Slope Form of a Line: $y - y_1 = m(x - x_1)$
- Absolute Value Equations: If $|x| = a$, then $x = \pm a$

Statistics & Probability

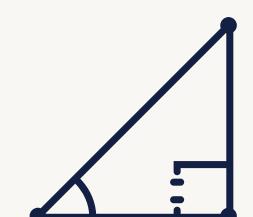
- Mean (Average): Mean = (Sum of Terms) / (Number of Terms)
- Probability: $P(A) = (\text{Desired Outcomes}) / (\text{Total Outcomes})$
- Standard Deviation: Measures how spread out numbers are from the mean.
- Median: The middle value when numbers are ordered from least to greatest.
- Mode: The number that appears most frequently.
- Permutations: $P(n, r) = n! / (n - r)!$
- Combinations: $C(n, r) = n! / [r!(n - r)!]$

Tip: The SAT gives you a basic reference sheet for geometry, but knowing extra formulas will help you work faster and avoid mistakes.



Geometry

- Area of a Triangle: $A = \frac{1}{2} \times \text{base} \times \text{height}$
- Pythagorean Theorem: $a^2 + b^2 = c^2$
- Circumference of a Circle: $C = 2\pi r$
- Area of a Circle: $A = \pi r^2$
- Volume of a Cylinder: $V = \pi r^2 h$
- Diagonal of a Rectangle: $d = \sqrt{(l^2 + w^2)}$
- Equation of a Circle: $(x - h)^2 + (y - k)^2 = r^2$
- Sum of Interior Angles in a Polygon: $(n - 2) \times 180^\circ$
- Each Interior Angle of a Regular Polygon: $[(n - 2) \times 180^\circ] / n$
- Exterior Angle Theorem: An exterior angle of a triangle equals the sum of the two opposite interior angles.



Trigonometry

- Sine, Cosine, Tangent:
- $\sin \theta = \text{opposite} / \text{hypotenuse}$
- $\cos \theta = \text{adjacent} / \text{hypotenuse}$
- $\tan \theta = \text{opposite} / \text{adjacent}$
- Special Right Triangles: \n
- $30^\circ-60^\circ-90^\circ$ Triangle: Sides are in the ratio $1:\sqrt{3}:2$
- $45^\circ-45^\circ-90^\circ$ Triangle: Sides are in the ratio $1:1:\sqrt{2}$
- Law of Sines: $a / \sin A = b / \sin B = c / \sin C$
- Law of Cosines: $c^2 = a^2 + b^2 - 2ab \cos C$



Exponents & Logarithms

- Laws of Exponents:
- $a^m \times a^n = a^{m+n}$
- $a^m / a^n = a^{m-n}$
- $(a^m)^n = a^{mn}$
- $a^{-n} = 1 / a^n$
- $a^0 = 1$
- Logarithm Rule: $\log_b(x) = y$ means $b^y = x$.

Need help mastering these formulas?

Our Ivy League SAT Tutors are here to help you reach your target score.

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