Math Formula Sheet

41 formulas for GED math, each with a worked example. Geometry is on this page; lines, quadratics, money and data are on the next.

BooknBoost

ON GED SHEET 33 formulas the official GED formula sheet gives you LEARN IT 8 it leaves out: learn these π ≈ 3.14 in every example

Area

Square $A = s^2$ — ON GED SHEET

e.g. s = 6 in: A = 6^2 = 36 sq in

Rectangle $A = lw$ — ON GED SHEET

e.g. 12 ft by 9 ft: A = 12 × 9 = 108 sq ft

Parallelogram $A = bh$ — ON GED SHEET

e.g. b = 10 cm, h = 4 cm: A = 10 × 4 = 40 sq cm

Triangle $A = \frac{1}{2}bh$ — ON GED SHEET

e.g. b = 8 m, h = 5 m: A = ½ × 8 × 5 = 20 sq m

Trapezoid $A = \frac{1}{2}h(b_1 + b_2)$ — ON GED SHEET

e.g. b_1 = 6 ft, b_2 = 10 ft, h = 4 ft: A = ½ × 4 × (6 + 10) = 2 × 16 = 32 sq ft

Circle $A = \pi r^2$ — ON GED SHEET

e.g. r = 3 in: A ≈ 3.14 × 3^2 = 3.14 × 9 = 28.26 sq in

Perimeter and circumference

Square $P = 4s$ — ON GED SHEET

e.g. s = 9 ft: P = 4 × 9 = 36 ft

Rectangle $P = 2l + 2w$ — ON GED SHEET

e.g. 15 yd by 8 yd: P = 2(15) + 2(8) = 30 + 16 = 46 yd

Triangle $P = s_1 + s_2 + s_3$ — ON GED SHEET

e.g. sides 5, 7 and 9 cm: P = 5 + 7 + 9 = 21 cm

Circle (circumference) $C = 2\pi r$ or $C = \pi d$ — ON GED SHEET

e.g. d = 20 in: C ≈ 3.14 × 20 = 62.8 in

Right triangles

Pythagorean theorem $a^2 + b^2 = c^2$ — ON GED SHEET

e.g. legs 5 and 12: c^2 = 25 + 144 = 169, so c = √169 = 13

BEFORE YOU PLUG IN

r is the radius, half the diameter. Given d = 10, use r = 5.

h is the straight-up height, never a slanted side.

B is the area of the base, **p** the perimeter of the base, and **s** the slant height.

Volume

Rectangular prism (box) $V = lwh$ — ON GED SHEET

e.g. l = 10, w = 4, h = 3 in: V = 10 × 4 × 3 = 120 cu in

Right prism $V = Bh$ — ON GED SHEET

e.g. B = 15 sq cm, h = 6 cm: V = 15 × 6 = 90 cu cm

Cylinder $V = \pi r^2 h$ — ON GED SHEET

e.g. r = 2 ft, h = 5 ft: V ≈ 3.14 × 2^2 × 5 = 62.8 cu ft

Pyramid $V = \frac{1}{3}Bh$ — ON GED SHEET

e.g. B = 36 sq m, h = 5 m: V = (36 × 5) ÷ 3 = 60 cu m

Cone $V = \frac{1}{3}\pi r^2 h$ — ON GED SHEET

e.g. r = 3 cm, h = 4 cm: V ≈ (3.14 × 3^2 × 4) ÷ 3 = 113.04 ÷ 3 = 37.68 cu cm

Sphere $V = \frac{4}{3}\pi r^3$ — ON GED SHEET

e.g. r = 3 in: V ≈ (4 × 3.14 × 3^3) ÷ 3 = 339.12 ÷ 3 = 113.04 cu in

Surface area

Rectangular prism (box) $SA = 2lw + 2lh + 2wh$ — ON GED SHEET

e.g. a 5 × 4 × 2 box: SA = 2(20) + 2(10) + 2(8) = 76 sq units

Right prism $SA = ph + 2B$ — ON GED SHEET

e.g. p = 12, h = 10, B = 6: SA = 12 × 10 + 2 × 6 = 132 sq units

Cylinder $SA = 2\pi rh + 2\pi r^2$ — ON GED SHEET

e.g. r = 2, h = 5: SA ≈ 62.8 + 25.12 = 87.92 sq units

Pyramid $SA = \frac{1}{2}ps + B$ — ON GED SHEET

e.g. 6 by 6 base, s = 5: SA = ½ × 24 × 5 + 36 = 96 sq units

Cone $SA = \pi rs + \pi r^2$ — ON GED SHEET

e.g. r = 3, s = 5: SA ≈ 47.1 + 28.26 = 75.36 sq units

Sphere $SA = 4\pi r^2$ — ON GED SHEET

e.g. r = 2: SA ≈ 4 × 3.14 × 2^2 = 50.24 sq units

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Math Formula Sheet continued

Lines and graphs, quadratics, money and percents, data and probability, and the exponent rules.

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Lines and graphs

Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$ — ON GED SHEET

e.g. (1, 2) and (4, 11): m = (11 − 2) ÷ (4 − 1) = 9 ÷ 3 = 3

Slope-intercept form $y = mx + b$ — ON GED SHEET

e.g. $45 a month plus $6 a gig: y = 6x + 45; 3 gigs: y = 6(3) + 45 = $63

Point-slope form $y - y_1 = m(x - x_1)$ — ON GED SHEET

e.g. slope 2 through (3, 5): y − 5 = 2(x − 3), so y = 2x − 1

Distance between two points $d = \sqrt{((x_2 - x_1)^2 + (y_2 - y_1)^2)}$ — LEARN IT

e.g. (1, 2) and (4, 6): d = √(3² + 4²) = √25 = 5

Midpoint $M = (\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$ — LEARN IT

e.g. (2, 3) and (8, 7): M = (10 ÷ 2, 10 ÷ 2) = (5, 5)

Quadratics

Standard form $y = ax^2 + bx + c$ — ON GED SHEET

e.g. $y = 2x^2 - 3x + 1$: a = 2, b = −3, c = 1

Quadratic formula $x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$ — ON GED SHEET

e.g. $x^2 + 2x - 8 = 0$: x = (−2 ± √36) ÷ 2 = (−2 ± 6) ÷ 2, so x = 2 or x = −4

Exponent rules

Multiplying: add the exponents $a^m \times a^n = a^{m+n}$ — LEARN IT

e.g. $2^3 \times 2^4 = 2^7 = 128$

Dividing: subtract the exponents $a^m \div a^n = a^{m-n}$ — LEARN IT

e.g. $5^6 \div 5^4 = 5^2 = 25$

Power of a power: multiply them $(a^m)^n = a^{mn}$ — LEARN IT

e.g. $(3^2)^3 = 3^6 = 729$

Money, percents and rates

Simple interest $I = Prt$ — ON GED SHEET

e.g. $500 at 4% for 3 years: I = 500 × 0.04 × 3 = $60

Compound interest $A = P(1 + \frac{r}{n})^{nt}$ — LEARN IT

e.g. $1,000 at 5% a year, compounded yearly, for 2 years: A = 1,000 × 1.05^2 = $1,102.50

Percent change $\frac{new - old}{old} \times 100$ — LEARN IT

e.g. a $40 shirt marked down to $30: (30 − 40) ÷ 40 × 100 = −25%, a 25% decrease

Total cost total cost = (number of units) × (price per unit) — ON GED SHEET

e.g. 6 notebooks at $2.50: 6 × 2.50 = $15

Distance $d = rt$ — ON GED SHEET

e.g. 60 mph for 2.5 hours: d = 60 × 2.5 = 150 miles

Data and probability

Mean (average) $mean = \frac{\text{sum of the values}}{\text{number of values}}$ — ON GED SHEET

e.g. tips of $40, $55, $35, $50, $45: 225 ÷ 5 = $45

Median median = the middle value, in order — ON GED SHEET

e.g. 3, 9, 4, 7, 5 in order: 3, 4, 5, 7, 9, so the median is 5

Probability $P = \frac{\text{ways it can happen}}{\text{total number of outcomes}}$ — LEARN IT

e.g. 3 red socks in a drawer of 12: P = 3/12 = 1/4 = 0.25

CHECK THE UNITS

Perimeter and circumference are plain units (ft). Area is square units (sq ft). Volume is cubic units (cu ft).

ON TEST DAY

You get the official formula sheet for the whole GED math test, even the questions without a calculator. The formulas marked **Learn it** aren't on it.

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