Geometry Formula Sheet

Rectangle perimeter and area

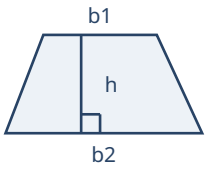
Distance around	$P = 2(L + w)$
Space inside	$A = L \times w$
Example: 7 by 4	$P = 22$ units; $A = 28$ units^2

L is the length and w is the width.
Perimeter uses length units. Area uses square units.

Area of plane figures

Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$

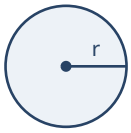
Measure h perpendicular to the base.
The trapezoid bases are parallel.
Use square units.



Circles

Circumference	$C = 2\pi r = \pi d$
Area	$A = \pi r^2$

The radius r runs from center to edge.
Diameter d = 2r.
Circumference uses length units; area uses square units.



Angle sums and triangle sides

Right angle	$90°$
Angles on a straight line	$180°$
Triangle interior angles	$A + B + C = 180°$
Triangle sides	shortest + middle > longest

A, B and C are angle measures. With positive side lengths, checking the two shortest is enough.

Surface area

Right prism, lateral	$S = Ph$
Right prism, total	$S = Ph + 2B$
Right cylinder, lateral	$S = 2\pi rh$
Right cylinder, total	$S = 2\pi rh + 2\pi r^2$

P is base perimeter; B is base area.
Total adds both bases. Use square units.



Volume

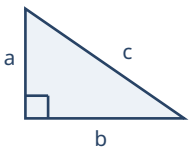
Prism or cylinder	$V = Bh$
Pyramid or cone	$V = Bh / 3$
Sphere	$V = (4/3)\pi r^3$

B is the area of one base. h is perpendicular height.
Use cubic units.

Right triangles

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

Legs a and b meet at a right angle.
Hypotenuse c is opposite that angle.



Coordinate geometry

Slope	$m = (y_2 - y_1) / (x_2 - x_1)$
Midpoint	$((x_1 + x_2)/2, (y_1 + y_2)/2)$
Squared distance	$d^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$

Take the nonnegative square root to get d. A vertical line has no defined slope.