

Equations for 3D shapes

Shape	Volume	Surface area
Cube	s^3	$6s^2$
Rectangular prism (cuboid)	lwh	$2lw + 2wh + 2lh$
Cylinder	$\pi r^2 h$	$2\pi r^2 + 2\pi r h$
Cone	$\frac{1}{3}\pi r^2 h$	$\pi r^2 + \pi r \ell$
Sphere	$\frac{4}{3}\pi r^3$	$4\pi r^2$
Square pyramid	$\frac{1}{3}s^2 h$	$s^2 + 2s\ell$

ℓ is the slant height.

Equation of a line

✓ $y = mx + b$, with slope m and y -intercept b

✓ $m = \frac{y_2 - y_1}{x_2 - x_1}$

Distance and midpoint

✓ Distance: $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

✓ Midpoint: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Pick's theorem

✓ For a polygon whose vertices are lattice points: $\text{Area} = I + \frac{B}{2} - 1$

- I = lattice points strictly inside
- B = lattice points on the boundary