

Perimeter, Area, and Volume of Shapes

Shape	Formulas
Square	Square
S	Area = side × side = side ² A = s ² Perimeter = 4 × side
S	P = 4s
Triangle	Triangle
	Area = $\frac{1}{2}$ × base × height
a h c	$A = \frac{1}{2}bh$
	Perimeter = side + side + side
d	P = a + b + c
Circle	Circle
d	Diameter = d = 2r = 2 × radius
	Circumference = $\pi \times d = 2 \times \pi \times r$ Area = $\pi \cdot r^2$
Parallelogram	Parallelogram
	Perimeter = length + width + length + width
	P = 2L + 2W
	Area = L × h
Trapezoid	Trapezoid
b ₂ h b ₁	Perimeter = side + side + side + side Area = $\frac{1}{2}$ (base ₁ + base ₂) × beight
	$A = \frac{1}{2} (b_1 + b_2) \cdot h$
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Units of perimeter and circumference are always linear units such as inches, feet, meters, and so on. The units of area are always square units, such as square inches (in²), square feet (ft²), square kilometers (km²), etc.. Similarly, units of volume are cubic units, such as cubic inches (in³), cubic yards (yd³), cubic centimeters, (cm³), etc.



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Perimeter, Area, and Volume of Shapes

Shape	Formulas
Rectangle	Rectangle
W L	Area = length × width A = L × W
	Perimeter = 2 (length + width) P = 2L + 2W
Rectangular Solid	Rectangular Solid
h	Volume = Length × width × height
	V = L·w·h
L	Surface Area = 2Lw + 2hL + 2hw
Sphere	Sphere
r	Volume = $\frac{4}{3} \times \pi \times radius^3$
	$\mathbf{V} = \frac{4}{3} \mathbf{\pi} \mathbf{r}^3$
	Surface Area = $4 \times \pi \times radius^2$
	$SA = 4 \cdot \pi \cdot r^2$
Right Circular Cylinder	Right Circular Cylinder
h	Volume = π × radius ² × height V = π·r ² h
	Surface Area = $2 \times \pi \times \text{radius} \times \text{height} + 2 \times \pi \times \text{radius}^2$
	$SA = 2 \cdot \pi \cdot r \cdot h + 2 \cdot \pi \cdot r^2$
Right Circular Cone	Right Circular Cone
h	Volume = $\frac{1}{3}\pi \times \text{radius}^2 \times \text{height}$
	$\mathbf{V} = \frac{1}{3} \mathbf{\pi} \cdot \mathbf{r}^2 \mathbf{h}$
	Surface Area = $\pi \cdot r$ (r + $\sqrt{h^2 + r^2}$)

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