# Geometry Formulas

| Triangle | Formula |
|---|---|
| **Pythagorean Theorem** | $a^2 + b^2 = c^2$ |
| **45º-45º-90º Phenomenon** | h=$x\sqrt{2}$<br>$x : x : x\sqrt{2}$ |
| **30º-60º-90º Phenomenon** | $b = x\sqrt{3}$<br>$x : x\sqrt{3} : 2x$ |
| **Perimeter** | $S_1+S_2+S_3$ |
| **Area of any Triangle** | $\frac{1}{2}(BH)$ |
| **Area of Isosceles Triangle** | $\frac{1}{2}(leg)^2$ |
| **Area of Right Triangle** | $\frac{1}{2}(L_1 \cdot L_2)$ |
| **Area of Equilateral Triangle** | $\frac{s^2\sqrt{3}}{4}$ |

| Square | Formula |
|---|---|
| **Perimeter** | 4S |
| **Area #1** | $S^2$ |
| **Area #2** | $1/_2\, Diagonal^2$ |
| **Relationship between Side & Diagonal** | D = $S^2$<br>$S = \frac{D}{\sqrt{2}}$ |

| Rectangle | Formula |
|---|---|
| **Perimeter** | $2(L + W)$ |
| **Area #1** | $L \cdot W$ |
| **Relationship between Side & Diagonal** | $Length^2 + Width^2 = Diagonal^2$ |

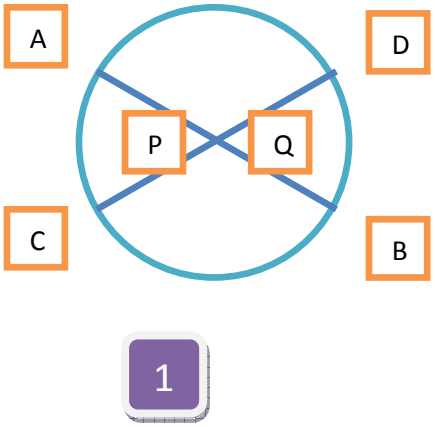
| Parallelogram | Formula |
|---|---|
| **Perimeter** | $2(L + W)$ |
| **Area** | $B \cdot H$ |

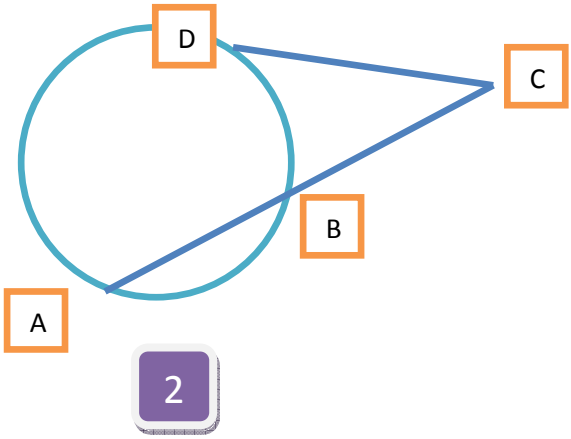
| Rhombus | Formula |
|---|---|
| **Perimeter** | $4S$ |
| **Area #1** | $B \cdot H$ |
| **Area #2** | $\frac{1}{2}(d_1 \cdot d_2)$ |

| Trapezoid | Formula |
|---|---|
| **Perimeter** | $B_1 + B_2 + S_1 + S_2$ |
| **Area** | $\frac{1}{2}(Base_1 + Base_2) \cdot Height$ |

| Circumference | Formula |
|---|---|
| **Circumference #1** | $\pi d$ |
| **Circumference #2** | $2\pi r$ |
| **Diameter** | $\frac{C}{\pi}$ |
| **Radius** | $\frac{C}{2\pi}$ |

| Arc of Circle | Formula |
|---|---|
| **Arc Length (Central)** | $\frac{Degrees\ of\ Central\ Angle}{360º} \cdot C$ |
| **Arc Length (Inscribed)** | $\frac{2 \cdot Degrees\ of\ Inscribed\ Angle}{360º} \cdot C$ |
| | |




| Arc of Circle | Formula |
|---|---|
| **Arc Measure (Intersecting Chords)** *[1]* | $< P = < Q = \frac{\widehat{AC} + \widehat{BD}}{2}$ |
| **Arc Measure (Intersecting Secants/Tangents)** *[2]* | $< C = \frac{\widehat{AD} + \widehat{BD}}{2}$ |
| **Perimeter of Sector of Circle** | Arc Measure + 2r |

| Circle | Formula |
|---|---|
| **Area of Circle #1** | $\pi r^2$ |
| **Area of Circle #2** | $\pi \frac{d^2}{4}$ |

| Sector of Circle | Formula |
|---|---|
| **Area of Sector** | $\frac{Degrees\ of\ Central\ Angle}{360º} \cdot Area\ Circle$ |

| Rectangular Solids | Formula |
|---|---|
| **Area of Front & Back Faces** | $2(Length \cdot Height)$ |
| **Area of Top & Bottom Faces** | $2(Length \cdot Width)$ |
| **Area of Front & Back Faces** | $2(Width \cdot Height)$ |
| **Total Surface** | $2(LH + LW + WH)$ |
| **Diagonal** | $D = \sqrt{L^2 + W^2 + H^2}$ |

| Cube | Formula |
|---|---|
| **Area of Cube** | $6S^2$ |
| **Volume** | $S^3$ |
| **Diagonal** | $D = S\sqrt{3}$<br>$S = \frac{D}{\sqrt{3}}$ |

| Cylinder | Formula |
|---|---|
| **Area of Top & Bottom Circular Bases** | $\pi r^2 + \pi r^2 = 2\pi r^2$ |
| **Lateral Surface Area** | $2\pi rh$ |
| **Total Surface Area** | $2\pi r^2 + 2\pi rh$ |
| **Volume** | $\pi r^2 h$ |

| Cone | Formula |
|---|---|
| **Surface Area** | $\pi rl + \pi r^2$ |
| **Volume of Cone** | 1/3 (area of Cylinder)<br>$\frac{1}{3}\pi r^2 h$ |

| Sphere | Formula |
|---|---|
| **Surface Area** | $4\pi r^2$ |
| **Volume** | $\frac{4}{3}\pi r^3$ |

| Coordinate geometry | Formula |
|---|---|
| **Distance** | $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$ |
| **Mid-point** | $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$ |
| **General Form** | $y = mx + b$ |
| **Slope** | $\frac{y_1 - y_2}{x_1 - x_2}$ |