Geometry Shapes Formulas for Class 8,9,10,11, 12

Geometry Shapes Formulas for Class 8

Name of the Solid	Lateral / Curved Surface Area	Total Surface Area	Volume
Cuboid	2h(l+b)	2(lb+bh+hl)	lbh
Cube	$4a^2$	$6a^2$	a^3
Right Prism	Perimeter of base × height	Lateral Surface Area + 2(Area of One End)	Area of Base × Height
Right Circular Cylinder	$2\pi rh$	$2\pi r(r+h)$	πr^2h
Right Pyramid	½ × Perimeter of Base × Slant Height	Lateral Surface Area + Area of the Base	⅓ × (Area of the Base) × height
Right Circular Cone	πrl	$\pi r(l+r)$	⅓ × πr^2h
Sphere	$4\pi r^2$	$4\pi r^2$	4/3 × πr^3
Hemisphere	$2\pi r^2$	$3\pi r^2$	2/3 × πr^3

Geometry Shapes Formulas for Class 9

Geometric Figure	Area	Perimeter
Rectangle	A= l × w	P = 2 (l+w)
Triangle	A = 1/2× bh	P = a + b + c
Trapezoid	A = 1/2×h(b_1+b_2)	P = a + b + c + d
Parallelogram	A = bh	P = 2 (a+b)
Circle	A= πr^2	C = $2\pi r$

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Geometry Shapes Formulas for Class 10

Name	Formula
Area of Triangle	Area= ½ × base × height
Pythagorean Theorem	$a^2 + b^2 = c^2$
Area of a Circle	Area = πr^2
Circumference of a Circle	C = 2πr or πd
Area of a Parallelogram	Area = base × height
Area of a Trapezoid	Area = ½ × ($base_1$ + $base_2$) × height
Area of a Kite or a Rhombus	Area = ½ × (diagonal1 × diagonal2)
Area of a Square	Area = $side^2$
Area of a Regular Polygon	Area = ½ × perimeter × apothem
Number of Diagonal in n-sided Polygon	Diagonals = ½ × n(n-3)
Slope	m = $(y_2-y_1)/(x_2-x_1)$ = rise/run
Midpoint Formula	(x_{mp}, y_{mp}) = $[(x_2+x_1)/2][(y_2+y_1)/2]$
Distance Formula	d = $\sqrt{[(x_2-x_1)^2+(y_2-y_1)^2]}$
Equation of a Circle	$(x-h)^2+(y-k)^2 = r^2$

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Geometry Shapes Formulas for Class 11

Pythagoras Theorem Formula	$c = a^2 + b^2$
Area of a Triangle	$\frac{1}{2} \times b \times h$
Perimeter of Triangle	$a + b + c$
Area of a Square	a^2
Perimeter of a Square	$4a$
Area of a Rectangle	$l \times b$
Perimeter of a Rectangle	$2 (l + b)$
Area of a Circle	$\pi \times r^2$
Circumference of a Circle	$2\pi r$
Surface Area of a Cube	$6a^2$
Volume of a Cube	a^3
Volume of a Cylinder	$\pi r^2 h$
Volume of a Cone	$\frac{1}{3} \pi r^2 h$
Surface Area of a Sphere	$4\pi r^2$
Volume of a Sphere	$4/3\ \pi r^3$
Distance Between Two Points in 3D	$\sqrt{[(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2]}$
Distance of a Point From Origin	$\sqrt{(x^2 + y^2 + z^2)}$
Midpoint of a Line Segment	$[\frac{1}{2} (x_1 + x_2), \frac{1}{2}(y_1 + y_2), \frac{1}{2}(z_1 + z_2)]$
Coordinates of the Centroid of a Triangle	$[\frac{1}{3} (x_1 + x_2 + x_3), \frac{1}{3} (y_1 + y_2 + y_3), \frac{1}{3} (z_1 + z_2 + z_3)]$

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Geometry Shapes Formulas for Class 12

Concept	Formula
Position Vector	$O\vec{P}=\vec{r}=\surd(x^2+y^2+z^2)$
Direction Ratios	$l=ar$, $m=br$, $n=cr$
Vector Addition	$P\vec{Q}+Q\vec{R}=P\vec{R}$
Properties of Vector Addition	Commutative Property: $\vec{a}+\vec{b}=\vec{b}+$Associative Property: $\vec{a}+(\vec{b}+\vec{c})=(\vec{a}+\vec{b})+\vec{c}$
Vector Joining Two Points	$P_1P\vec{2}=OP\vec{2}-OP\vec{1}$
Equation of a Line	$(x-x_1)/a=(y-y_1)/b=(z-z_1)/c$