Mensuration Formulas: Important Terms

Term	Meaning	SI Units
Area (A)	It is the surface enclosed by a given shape.	m^2 or cm^2
Perimeter (P)	It is simply the boundary length of an area.	m or cm
Volume (V)	The space occupied by a solid or a 3-Dimensional object is called volume.	cm^3 or m^3
Curved Surface Area (CSA)	It is the area enclosed by the curved portion of a geometrical object.	m^2 or cm^2
Total Surface Area (TSA)	The sum total of areas of all the surfaces of an object is called TSA.	m^2/cm^2
Lateral Surface Area (LSA)	Sum total of areas of all surfaces except the top and the base of an object is called LSA.	m^2/cm^2
Diagonal (d)	A line that joins two vertices of a geometrical figure is called a diagonal.	

Mensuration Formulas for 2D Shapes

Shapes	Area(A)	Perimeter(P)	Diagonal(d)	Nomenclature
Square	a^2	$4a$	$\sqrt{2}a$	Side = a
Rectangle	l x b	$2(l+b)$	$\sqrt{2}\,(l^2+b^2)$	Length = lBreadth = b
Rhombus	½ × d1 × d2	$4a$	$2A/d_2$	Diagonals = d1 and d2
Parallelogram	p x h	$2(p+q)$	$\sqrt{(p^2+q^2-2pq\cos\beta)}$	Base = pSide = qAngle = β
Circle	πr^2 $(\pi r_2)/2$ (for semi-circle)	$2\pi r$ $R(\pi+2)$ (for semi-circle)	–	Radius = r

that compiles all the relevant mensuration formulas for competitive exams.

Mensuration Formulas: Important Terms

Before we get down to the nitty-gritty of the mensuration formulas, let us recall some important terms:

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Area (A)	It is the surface enclosed by a given shape.	m^2 or cm^2
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Diagonal (d)	A line that joins two vertices of a geometrical figure is called a diagonal.

Mensuration Formulas for 2D Shapes

The major 2D figures are square, triangle, rectangle, circle, rhombus and parallelograms. Let us now have a look at the mensuration formulas of all the important 2D geometrical figures:

Shapes	Area(A)	Perimeter(P)	Diagonal(d)	Nomenclature
Square	a^2	$4a$	$\sqrt{2}a$	Side = a
Rectangle	l x b	2(l+b)	$\sqrt{2}\,(l^2+b^2)$	Length = lBreadth = b
Rhombus	½ × d1 × d2	4a	2A/d2	Diagonals = d1 and d2

Shape	Area	Perimeter	Diagonal	Nomenclature
Parallelogram	$p \times h$	$2(p+q)$	$\sqrt{p^2+q^2-2pq\cos\beta}$	Base = p Side = q Angle = β
Circle	πr^2 $(\pi r^2)/2$ (for semi-circle)	$2\pi r$ $R(\pi+2)$ (for semi-circle)	–	Radius = r

3D Figures Mensuration Formulas

Shapes	Volume	Curved Surface Area/Lateral Surface Area	Total Surface Area	Nomenclature
Sphere	$\frac{4}{3}\pi r^3$	$4\pi r^2$	$4\pi r^2$	Radius = r
Cube	a^3	$4 \times a^2$	$6a^2$	Side = a

Cuboid	$l \times b \times h$	$2h(l+b)$	$2(lb+bh+hl)$	Length = l Breadth = b height = h
Cylinder	$\pi r^2 \times h$	$2\pi rh$	$2\pi r(r+h)$	Radius of base = r
Cone	$\frac{1}{3}\pi r^2 h$	πrl	$\pi r(s+l)$	Slant height = s