

Surface Areas And Volumes**Formulae****Cuboid:**

* If l , b , h are respectively the length, breadth and height of a cuboid then,

1. LSA (or) Area of four walls = $2h(l + b)$
2. TSA = $2(lb + bh + lh)$
3. $V = lbh$
4. Sum of all the edges = $4(l + b + h)$
5. diagonal (D) = $\sqrt{l^2 + b^2 + h^2}$

Cube:

* If ' a ' is the edge of a cube then,

1. LSA (or) Area of four walls = $4a^2$
2. TSA = $6a^2$
3. Volume (v) = a^3
4. sum of all the edges = $12a$
5. Diagonal (d) = $\sqrt{3}a$ (or) $a\sqrt{3}$

Cylinder:

* If h , r are respectively the height (vertical) and radius of a cylinder then,

1. CSA = $2\pi rh$
2. TSA = $2\pi r(h + r)$
3. Volume (V) = $\pi r^2 h$
4. Area of each base = πr^2 (circle area)

Hollow Cylinder :

* If R , r are respectively the outer and inner radii, ' w ' the width ' h ' the height

of a hollow cylinder then,

1. CSA = $2\pi h(R + r)$
2. TSA = $2\pi(R + r)(h + R - r)$
3. Volume (V) = $\pi h(R^2 - r^2)$
4. Area of each base = $\pi(R^2 - r^2)$
5. Width (w) = $R - r$

Cone

* If r, h, l are respectively the radius, height (vertical) and slant height of a cone then,

1. $CSA = \pi r l$

2. $TSA = \pi r (l + r)$

3. $Volume (V) = \frac{1}{3} \pi r^2 h$

* **Volume of cone = $\frac{1}{3}$ volume of cylinder**

$$\frac{\text{Volume of Cone}}{\text{Volume of Cylinder}} = \frac{1}{3}$$

4. Area of the base = πr^2

5. Slant height (l) = $\sqrt{h^2 + r^2}$

$$r = \sqrt{l^2 - h^2}$$

$$h = \sqrt{l^2 - r^2}$$

Sphere

* If ' r ' being the radius of a sphere, then,

1. CSA (or) Surface area (or) TSA (or) area = $4 \pi r^2$

2. $Volume = \frac{4}{3} \pi r^3$

Hemi - Sphere

* If ' r ' being the radius of a hemisphere, then

1. $CSA = 2 \pi r^2$

2. $TSA = 3 \pi r^2$

3. $Volume (V) = \frac{2}{3} \pi r^3$

4. Area of the base = πr^2

Hollow Sphere

* If R, r are respectively the outer and inner radii of a hollow sphere then

1. $Volume (V) = \frac{4}{3} \pi (R^3 - r^3)$

2. Outer area = $4 \pi R^2$

3. Inner area = $4 \pi r^2$