

CLASS 9 MATHS – CHAPTER 11

SURFACE AREA & VOLUMES – ALL FORMULAE

Basic Terms

- **Surface Area:** Area occupied by the outer surface of a solid
- **Lateral / Curved Surface Area (LSA / CSA):** Area excluding top and bottom
- **Total Surface Area (TSA):** Sum of all surfaces
- **Volume:** Space occupied by any solid

Cuboid

- **Lateral Surface Area (LSA)**

$$2h(l + b)$$

- **Total Surface Area (TSA)**

$$2(lb + bh + hl)$$

- **Volume**

$$l \times b \times h$$

Cube

Let side = a

Formulae

- **Lateral Surface Area (LSA)**

$$4a^2$$

- **Total Surface Area (TSA)**

$$6a^2$$

- **Volume**

$$a^3$$

Right Circular Cylinder

Formulae

- **Curved Surface Area (CSA)**

$$2\pi rh$$

- **Total Surface Area (TSA)**

$$2\pi r(h + r)$$

- **Volume**

$$\pi r^2 h$$

Right Circular Cone

Slant Height Formula

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

- **Curved Surface Area (CSA)**

$$\pi r l$$

- **Total Surface Area (TSA)**

$$\pi r(l + r)$$

- **Volume**

$$\frac{1}{3} \pi r^2 h$$

Sphere

Let radius = r

- **Surface Area**

$$4\pi r^2$$

- **Volume**

$$\frac{4}{3} \pi r^3$$

Hemisphere

Let radius = r

- **Curved Surface Area (CSA)**

$$2\pi r^2$$

- **Total Surface Area (TSA)**

$$3\pi r^2$$

- **Volume**

$$\frac{2}{3} \pi r^3$$