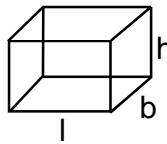


## Surface Area and Volume

$$\text{Length of diagonal} = \sqrt{l^2 + b^2 + h^2}$$



$$\begin{aligned}\text{T.S.A} &= 2(lb + bh + hl) \\ \text{C.S.A} &= 2h(l + b) \\ \text{Volume} &= l \times b \times h\end{aligned}$$

Cuboid

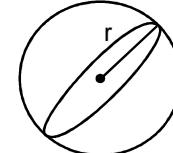
$$\text{C.S.A} = 2\pi rh$$

$$\text{T.S.A} = 2\pi rh + 2\pi r^2$$

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

$$\text{Volume} = \pi r^2 h$$

Cylinder



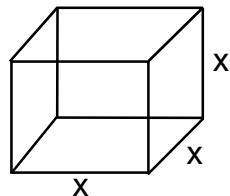
$$\text{T.S.A} = \text{C.S.A} = 4\pi r^2$$

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

Sphere

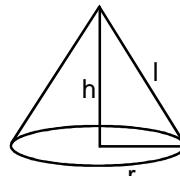
**SURFACE AREA  
AND VOLUME**

Cube



$$\begin{aligned}\text{T.S.A} &= 2(x^2 + x^2 + x^2) = 6x^2 \\ \text{C.S.A} &= 4x^2 \\ \text{Volume} &= x^3 \\ \text{Length of diagonal} &= x\sqrt{3}\end{aligned}$$

Cone



$$\text{C.S.A} = \pi rl$$

$$\text{T.S.A} = \pi rl + \pi r^2 = \pi r(l + r)$$

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

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

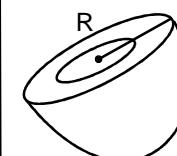


$$\text{C.S.A} = 2\pi r^2$$

$$\text{T.S.A} = 2\pi r^2 + \pi r^2 = 3\pi r^2$$

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

Hollow hemi-sphere



$$\begin{aligned}\text{C.S.A} &= 2\pi(R^2 + r^2) \\ \text{T.S.A} &= 2\pi(R^2 + r^2) + \pi(R^2 - r^2)\end{aligned}$$

$$\text{Volume } \frac{2}{3} \pi (R^3 - r^3)$$

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