

MENSURATION

SURFACE AREA OF CUBE CUBOID CYLINDER

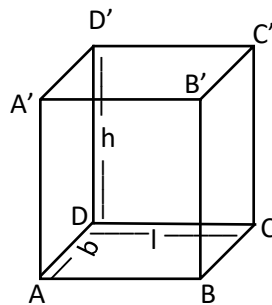
SOME USEFUL FORMULAE

CUBOID: Let l , b and h denote respectively the length, breadth & height of a cuboid. Then,

(i) Total surface area of the cuboid $= 2 (lb + bh + lh)$ square units

(ii) Volume of the cuboid $= \text{Area of the base} \times \text{Height}$
 $= \text{Length} \times \text{Breadth} \times \text{Height}$
 $= lbh$ cubic units

(iii) Diagonal of cuboid $= \sqrt{l^2 + b^2 + h^2}$ unit



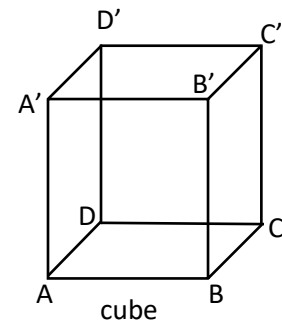
(iv) Area of four walls of a room $= lh + lh + bh + bh = 2 (l + b) h$ square units.

CUBE : If the length of each edge of a cube is ' a ' units, then

(i) Total surface area of the cube $= 6a^2$ square units

(ii) Volume of the cube $= a^3$ cubic units

(iii) Diagonal of the cube $= \sqrt{3}a$ units



RIGHT CIRCULAR CYLINDER:

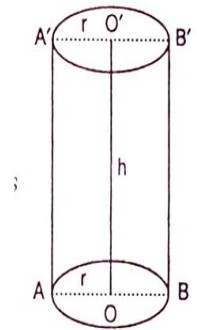
For a right circular cylinder of base radius r and height (or length) h , we have

(i) Area of each end = Area of base = πr^2

(ii) Curved surface area = $2\pi r h$
 $= 2\pi r \times h$
 $= \text{Perimeter of the base} \times \text{Height}$

(iii) Total surface area = Curved surface area + Area of circular ends
 $= 2\pi r h + 2\pi r^2$
 $= 2\pi r (h + r)$

(iv) Volume = $\pi r^2 h$
 $= \text{Area of the base} \times \text{height}$

**RIGHT CIRCULAR HOLLOW CYLINDER:**

Let R and r be the external and internal radii of a hollow cylinder of height h . Then,

(i) Area of each end = $\pi(R^2 - r^2)$

(ii) Curved surface area of hollow cylinder
 $= \text{External surface area} + \text{Internal surface area}$
 $= 2\pi R h + 2\pi r h$
 $= 2\pi h (R + r)$

(iii) Total surface area
 $= 2\pi R h + 2\pi r h + 2(\pi R^2 - \pi r^2)$
 $= 2\pi (R + r) (R + h - r)$

(iv) Volume of material = External volume - Internal volume
 $= \pi R^2 h - \pi r^2 h$
 $= \pi h (R^2 - r^2)$

