

Key Notes

Chapter 13

Surface Areas and Volumes

1. Surface Area of a Cuboid and a Cube
2. Surface Area of a Right Circular Cylinder
3. Surface Area of a Right Circular Cone
4. Surface Area of a Sphere
5. Volume of a Cuboid
6. Volume of a Cylinder
7. Volume of a Right Circular Cone
8. Volume of a Sphere

- **Polyhedrons Shapes:**

- (i) **Cube:**

Cube whose edge = a

Diagonal of Cube = $\sqrt{3}a$

Lateral Surface Area of Cube = $4a^2$

Total Surface Area of Cube = $6a^2$

Volume of Cube = a^3

- (ii) **Cuboid:**

Cuboid whose length = l , breadth = b and height = h

Diagonal of Cuboid = $\sqrt{l^2 + b^2 + h^2}$

Lateral Surface Area of Cuboid = $2(l + b)h$

Total Surface Area of Cuboid = $2(lb + bh + hl)$

Volume of Cuboid = lbh

- **Non-polyhedrons:**

- (i) **Cylinder:**

Cylinder whose radius = r , height = h

Curved Surface Area of Cylinder = $2\pi rh$

Total Surface Area of Cylinder = $2\pi rh(r + h)$

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Volume of Cylinder = $\pi r^2 h$

(ii) **Cone:**

Cone having height = h, radius = r and slant height = l

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

Curved Surface Area of Cone = $\pi r l$

Total Surface Area of Cone = $\pi r(r + l)$

Volume of Cone = $\frac{1}{3} \pi r^2 h$

(iii) **Sphere:**

Sphere whose radius = r

Surface Area of a Sphere = $4\pi r^2$

Volume of Sphere = $\frac{4}{3} \pi r^3$

(iv) **Hemisphere:**

Hemisphere whose radius = r

Curved Surface Area of Hemisphere = $2\pi r^2$

Total Surface Area of Hemisphere = $3\pi r^2$

Volume of Hemisphere = $\frac{2}{3} \pi r^3$