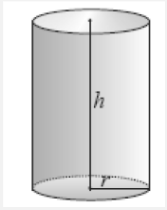
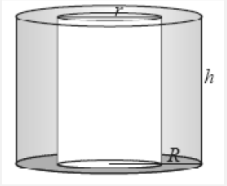
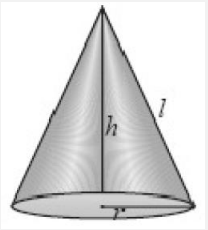
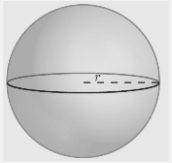
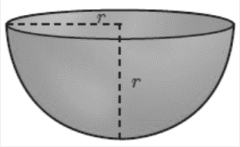
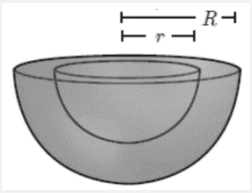
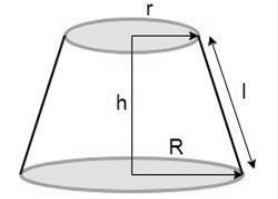
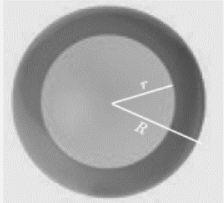
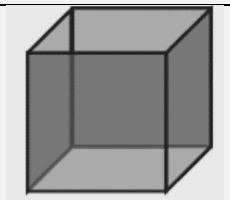
7. Mensuration

Concept corner for Exercise 7.1 and 7.2

Sl.No	Name	Figure	CSA (sq.units)	TSA (sq.units)	Volume (cu.units)
1	Right circular cylinder		$2\pi rh$	$2\pi r(h+r)$	$\pi r^2 h$
2.	Hollow cylinder		$2\pi h(R+r)$	$2\pi\,(R+r)$ $(R-r+h)$	$\pi(R^2-r^2)$ (Or) $\pi(R+r)(R-r)$
3	Right circular cone		πrl $\left(l=\sqrt{h^2+r^2}\right)$	$\pi r(l+r)$	$\frac{1}{3}\pi r^2 h$
4	Sphere		$4\pi r^2$	$4\pi r^2$	$\frac{4}{3}\pi r^3$
5	Hemisphere		$2\pi r^2$	$3\pi r^2$	$\frac{2}{3}\pi r^3$
6	Hollow hemisphere		$2\pi(R^2+r^2)$	$\pi(3R^2+r^2)$	$\frac{2}{3}\pi(R^3-r^3)$
7	Frustum		$\pi(R+r)l$ $\left(l=\sqrt{h^2+(R-r)^2}\right)$	$\pi l(R+r)+\pi R^2+\pi r^2$	$\frac{1}{3}\pi h(R^2+r^2+Rr)$

Sl.No	Name	Figure	CSA (sq.units)	TSA (sq.units)	Volume (cu.units)
8	Hollow Sphere		$4\pi R^2$ = Outer Surface area	$4\pi(R^2 + r^2)$	$\frac{4}{3}\pi(R^3 - r^3)$
9	Cuboid		$2h(l + b)$	$2(lb + bh + lh)$	$l \times b \times h$
10	Cube		$4a^2$	$6a^2$	a^3

Introduction for Exercise 7.3

Concept corner

- A combined solid is said to be a solid formed by combining two or more solids.
- To calculate the surface area of the combined solid
  For example, if a cone is surmounted by a hemisphere, we need to just find out the C.S.A. of the hemisphere and C.S.A. of the cone separately and add them together.
- The volume of the solid formed by joining two basic solids will be the sum of the volumes of the individual solids.

Introduction for Exercise 7.4

Concept corner

- When one solid is Melted, Re-casted, and Reshaped into another solid, Volume will not be changed.
- Finding the missing parameter by equalizing the volume
- If the question is asked like "How many" & "Numbers required" ,

  $$\text{Required Number} = \frac{\text{Volume of Bigger Shape}}{\text{Volume of Smaller Shape}}$$

- **Unit Conversion**
  10 cm = 1 dm, 100 cm = 1 m
  1 cm^3=1 ml
  1000 cm^3= 1 litre , 1000000 cm^3 =1m^3 = 1000 litres