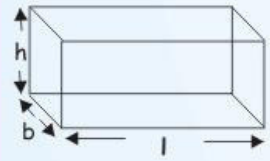
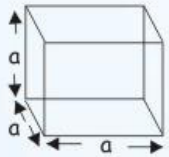
# SURFACE AREA & VOLUME

Chart

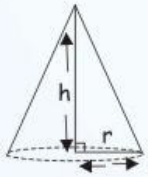
Cuboid | Cube | Cone | Cylinder | Sphere | Hemisphere | Frustum of a Cone



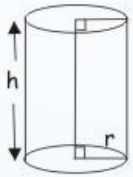

1. T.S.A → 2[lb +bh + hl]
2. C.S.A → 2[bh +hl]
3. Volume → l × b × h
4. Diagonal → $\sqrt{l^2+b^2+h^2}$



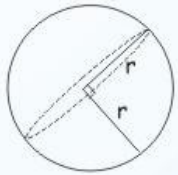

1. T.S.A → $6a^2$
2. C.S.A → $4a^2$
3. Volume → $a^3$
4. Diagonal → $\sqrt{3}a$




1. T.S.A → $\pi r(\ell + r)$
2. C.S.A → $\pi r\ell$
3. Volume → $\frac{1}{3}\pi r^2 h$

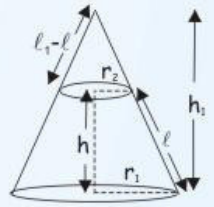



1. T.S.A → $2\pi r(r+h)$
2. C.S.A → $2\pi rh$
3. Volume → $\pi r^2 h$




1. C.S.A = T.S.A. = $4\pi r^2$
2. Volume = $\frac{4}{3}\pi r^3$

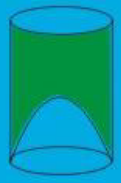

1. C.S.A = $2\pi r^2$
2. T.S.A. = $3\pi r^2$
3. Volume = $\frac{2}{3}\pi r^3$



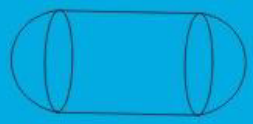

1. C.S.A = $\pi r_1\ell_1 - \pi r_2(\ell_1-\ell)$
2. T.S.A. = $\pi\ell(r_1+r_2) + \pi(r_1^2 + r_2^2)$
3. Volume = $\frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1r_2)$
4. Slant height = $\sqrt{h^2+(r_1-r_2)^2}$

**NOTE :**

1. C.S.A.→ Curved surface area
2. T.S.A.→ Total surface area
3. l → Length
4. b → Breadth
5. h → Height
6. $\ell$ → Slant height
7. r → Radius
8. a → Side of cube



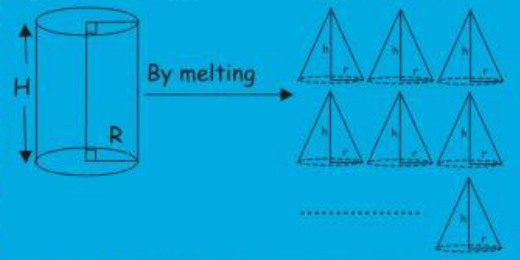
Volume = Volume of cylinder – Volume of hemisphere



Total surface area = C.S.A. of 2 hemispheres + C.S.A of cylinder

**Conversion of Solids**

Cylindrical Vessel → By melting → n Conical Vessel




Volume of cylindrical vessel = n volume of 1 conical vessel

$\pi R^2H = n \times \frac{1}{3}\pi r^2 h$