

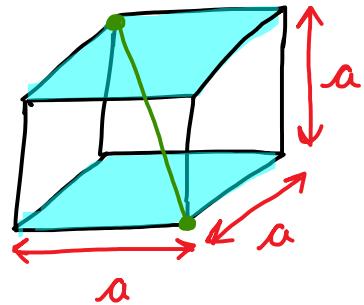
13 Surface areas and Volumes

$$C.S.A / L.S.A = 4a^2$$

$$T.S.A. = 6a^2$$

$$\text{Volume} = a^3$$

$$\text{Diagonal} = \sqrt{3} a$$



6 Faces
12 edges
8 corners

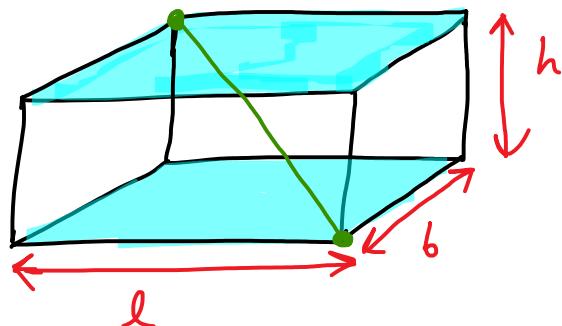
Cube

$$C.S.A / L.S.A = 2(l+b) \times h$$

$$T.S.A = 2(lb + bh + hl)$$

$$\text{Volume} = l b h$$

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



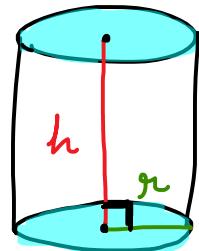
Cuboid

$$\left. \begin{array}{l} \text{Top/Bottom} = lb \\ \text{Side} = bh \\ \text{Front/Back} = hl \end{array} \right\}$$

$$C.S.A / L.S.A = 2\pi rh$$

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

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



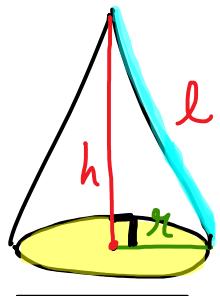
Cylinder

$$C.S.A / L.S.A = \pi rl$$

$$T.S.A = \pi rl + \pi r^2$$

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

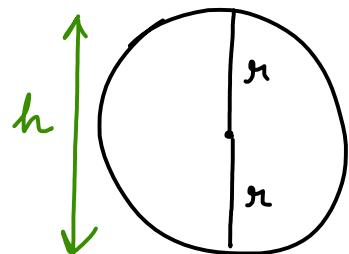
$$l = \sqrt{r^2 + h^2}$$



Cone

$$T.S.A = 4\pi r^2$$

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

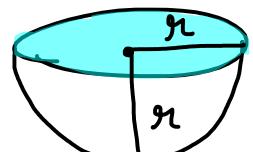


Sphere

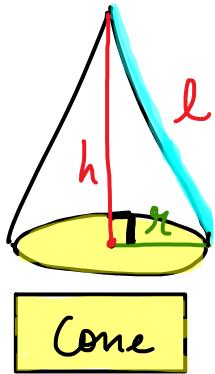
$$C.S.A / L.S.A = 2\pi r^2$$

$$T.S.A = 3\pi r^2$$

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



Hemisphere

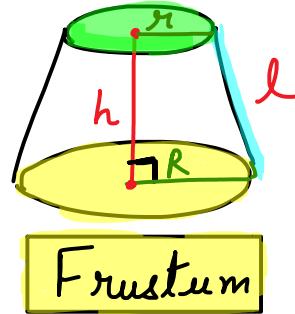


$$C.S.A / L.S.A = \pi r l$$

$$T.S.A = \pi r l + \pi r^2$$

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

$$l = \sqrt{r^2 + h^2}$$



$$C.S.A / L.S.A = \pi(r+R) l$$

$$T.S.A = \pi(r+R) l + \pi r^2 + \pi R^2$$

$$Volume = \frac{\pi(r^2 + R^2 + rR) h}{3}$$

$$l = \sqrt{(R-r)^2 + h^2}$$

Circle

$$Circumference = 2\pi r$$

$$Area = \pi r^2$$

