

VOLUME AND SURFACE AREA

Anything which occupies space and has definite shape is called a "solid".

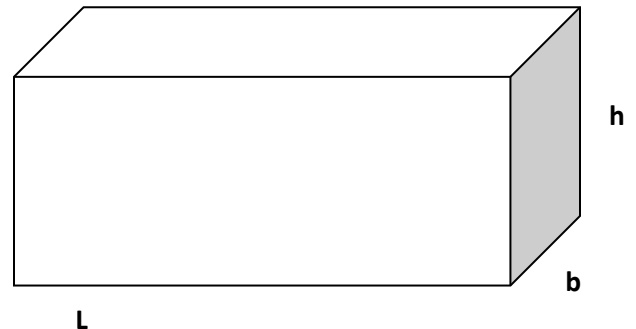
Space occupied by a solid is called its "volume".

The sum of areas of all the faces of a body is called its "surface area".

Area = A ; Volume = V ; Total Surface Area = TSA ; Lateral surface Area = LSA ;
Curved Surface Area = CSA

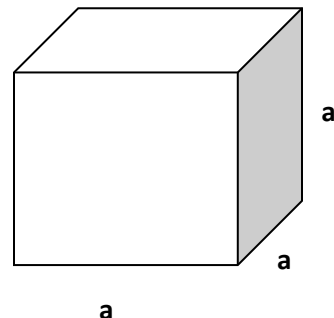
CUBOID:

- A rectangular solid having six faces, each of which is a rectangle is called cuboid.
- $V = \text{length} \times \text{breadth} \times \text{height} = l \times b \times h$
- $TSA = 2 [(l \times b) + (b \times h) + (h \times l)]$



CUBE:

- A rectangular solid having six faces, each of which is a square called cube.
- $V = (\text{edge})^3 = a^3$
- $TSA = 6a^2$



APPLICATIONS:

❖ For a room:

- > Area of each wall along length = $l \times h$
- > Area of each wall along breadth = $b \times h$
- > Area of 4 walls of room = $2lh + 2bh$
 $= 2(l + b) \times h$
- > Area of roof = $l \times b$

❖ For a box:

- > Space occupied by it = its external volume
- > Its capacity = its internal volume
- > Volume of the material in it = its external volume - its internal volume

❖ For a closed box:

- If l , b , h are the external length breadth and height respectively and x is the wall thickness then
- > Its internal length = $l - 2x$
 - > Its internal breadth = $b - 2x$
 - > Its internal height = $h - 2x$

Volume of a material in a hollow body = External volume - Internal Volume