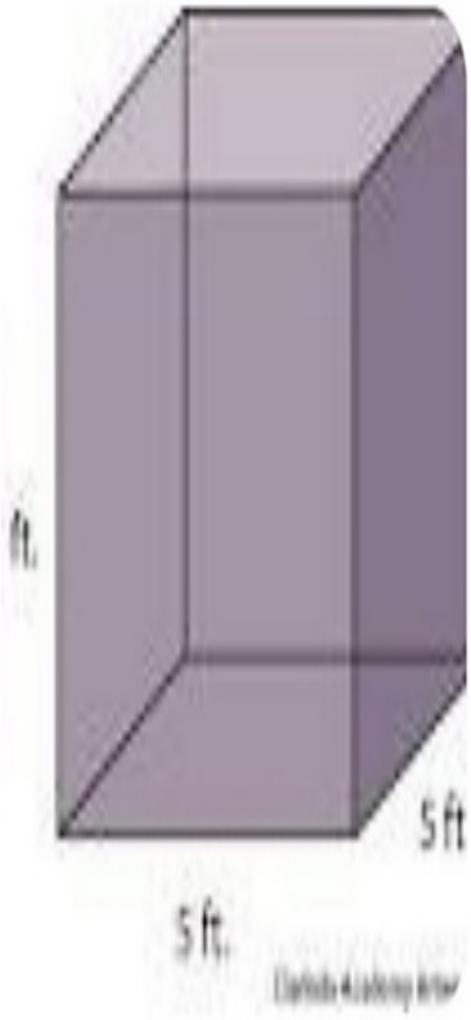
Cube:

The **definition** of a **cube** is a three-dimensional square with six equal sides. An **example** of a **cube** is a piece of cheese with six square sides. An **example** of a **cube** is a piece of ice.



Cuboid:

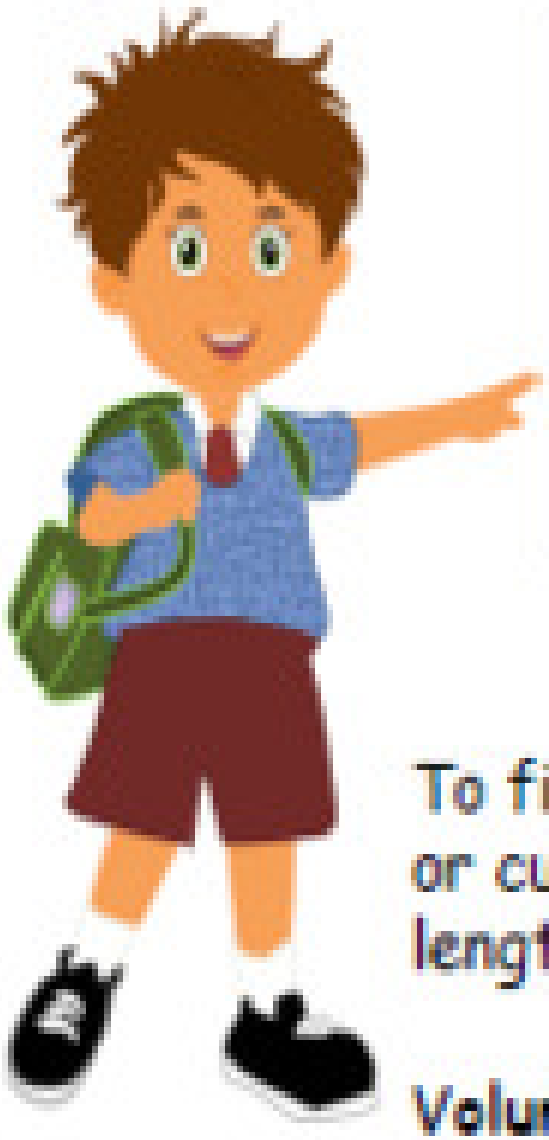
In a **cuboid**, each face is a rectangle and the corners or the vertices are 90-degree angles. Also, the opposite faces are always equal. For **example**, a book is a **cuboid**. It has 6 surfaces of which each opposite pair is of the same dimensions.

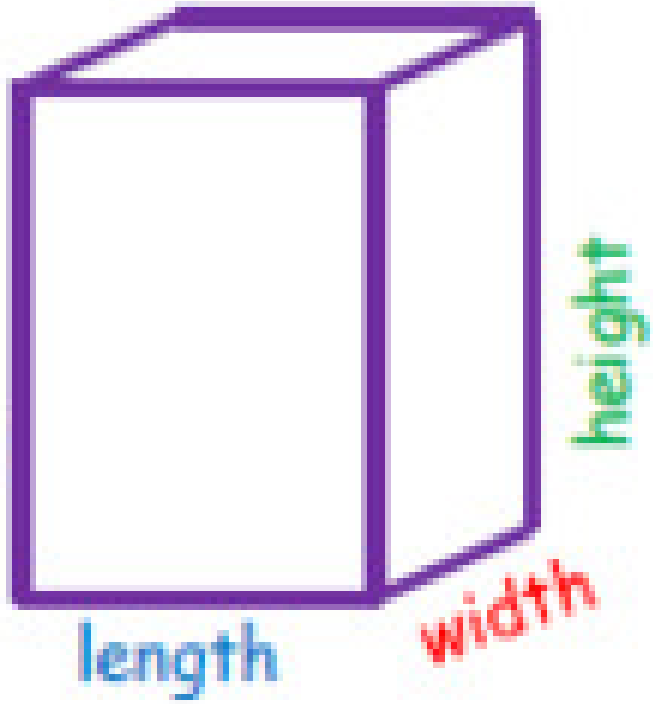
Cube and **cuboid** are three-dimensional shapes which consist of six faces, eight vertices and twelve edges. The primary difference between them is a **cube** has all its sides equal whereas the length, width and height of a **cuboid** are different. ... The area and volume of **cube**, **cuboid** and also **cylinder** differ with each other.

The key **difference between cube and cuboid is**: a **cube** has six square-shaped faces of the same size but a **cuboid** has rectangular faces.

Volume

Volume is the measure of the amount of space inside of a solid figure. It's units are always "cubic", that is, the number of little element cubes that fit inside the figure.



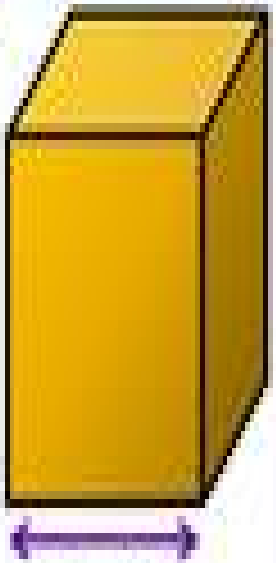


To find the volume of a cube or cuboid we multiply the length, weight and height.

Volume = L x W x H

Volume of a Cube

In a cube, all of the sides are the same length.



We can use this formula to work out the volume of a cube.

Volume = length x length x length

Example 6

Find the volume of a cube with sides of length 10 mm.

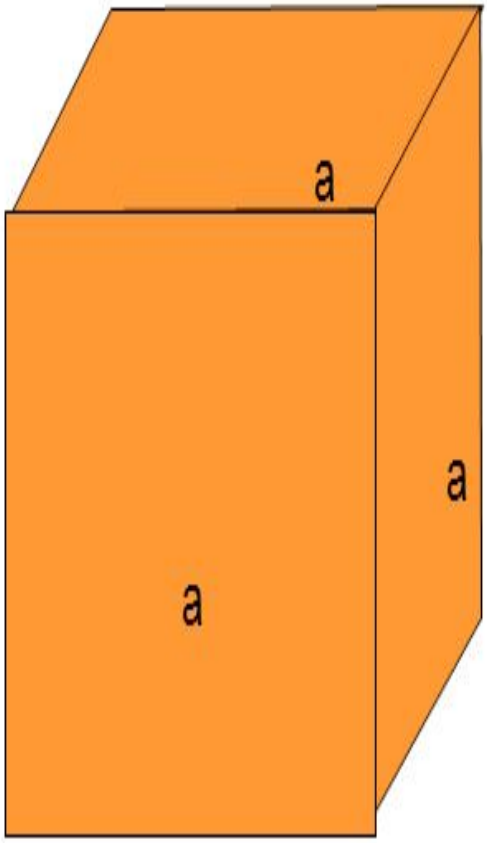
Volume = length x length x length

= 10 x 10 x 10

Volume = 1 000 mm^3

Surface area

Cube

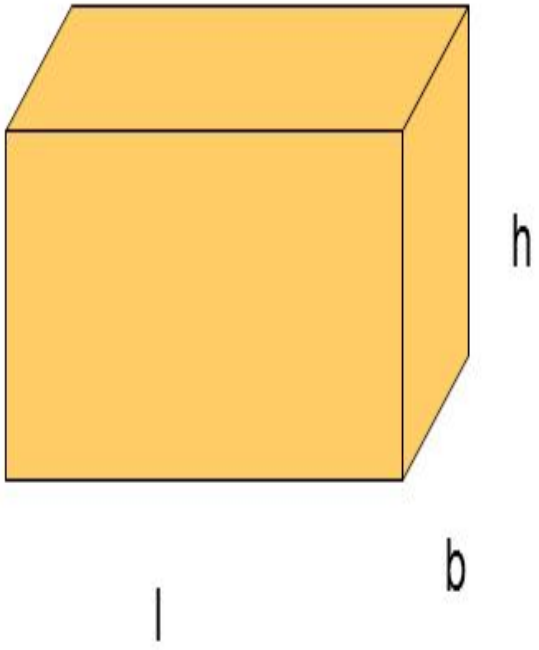


(Here all the faces are square)

Surface area = Area of all six faces

$= 6a^2$

cuboid



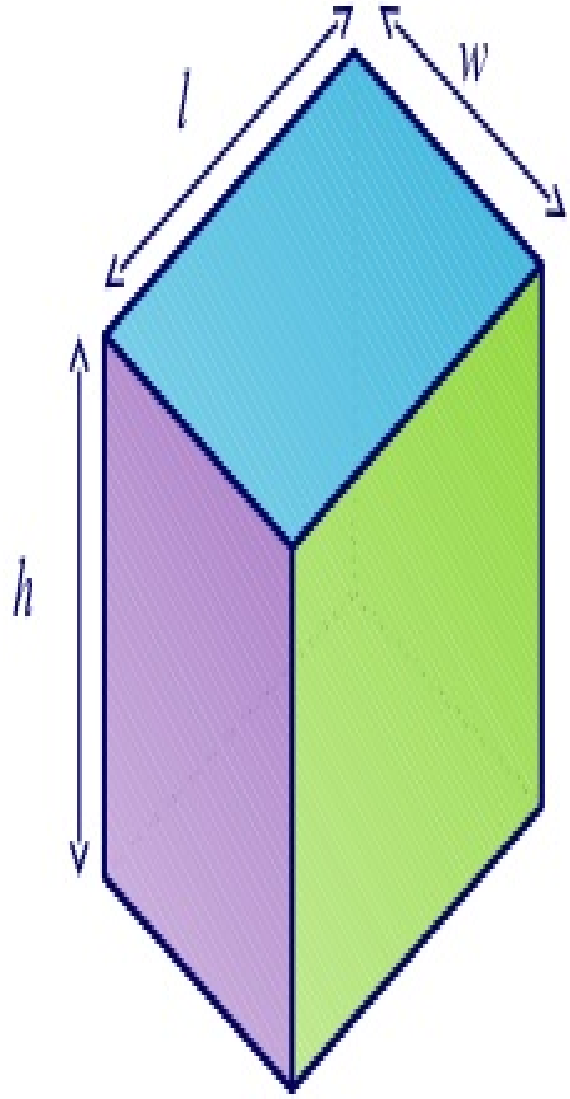
(Here all the faces are rectangular)

Surface area = Area of all six faces

$= 2(lxb + bxh + hxl)$

Formula for the surface area of a cuboid

We can find the formula for the surface area of a cuboid as follows.

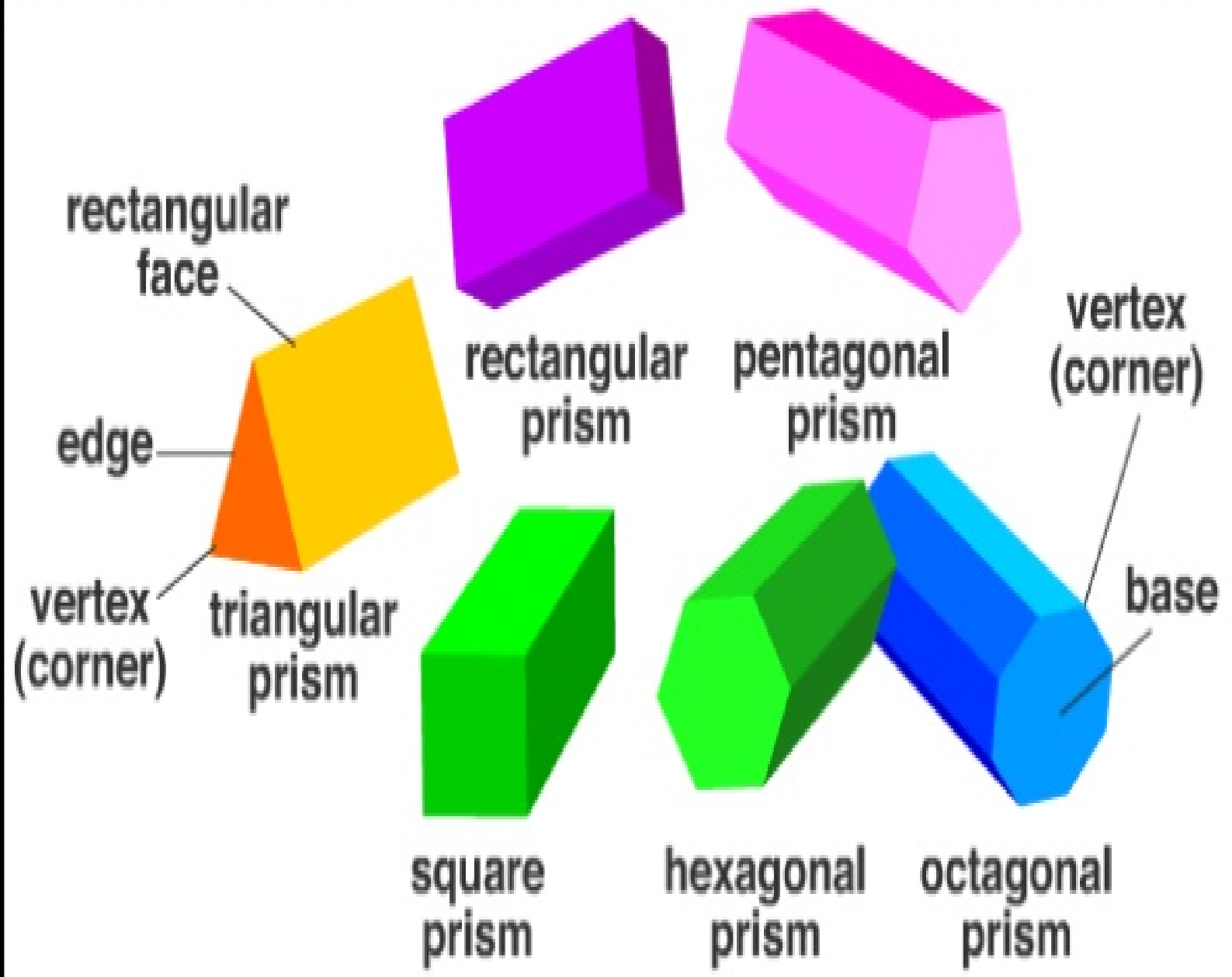


Surface area of a cuboid =

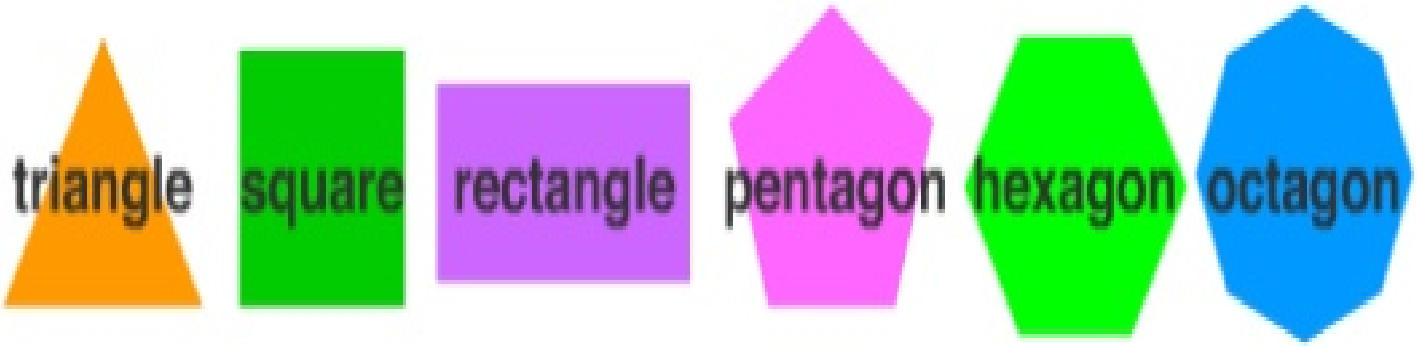
$2 \times lw$	Top and bottom
$+ 2 \times hw$	Front and back
$+ 2 \times lh$	Left and right side

$= 2lw + 2hw + 2lh$

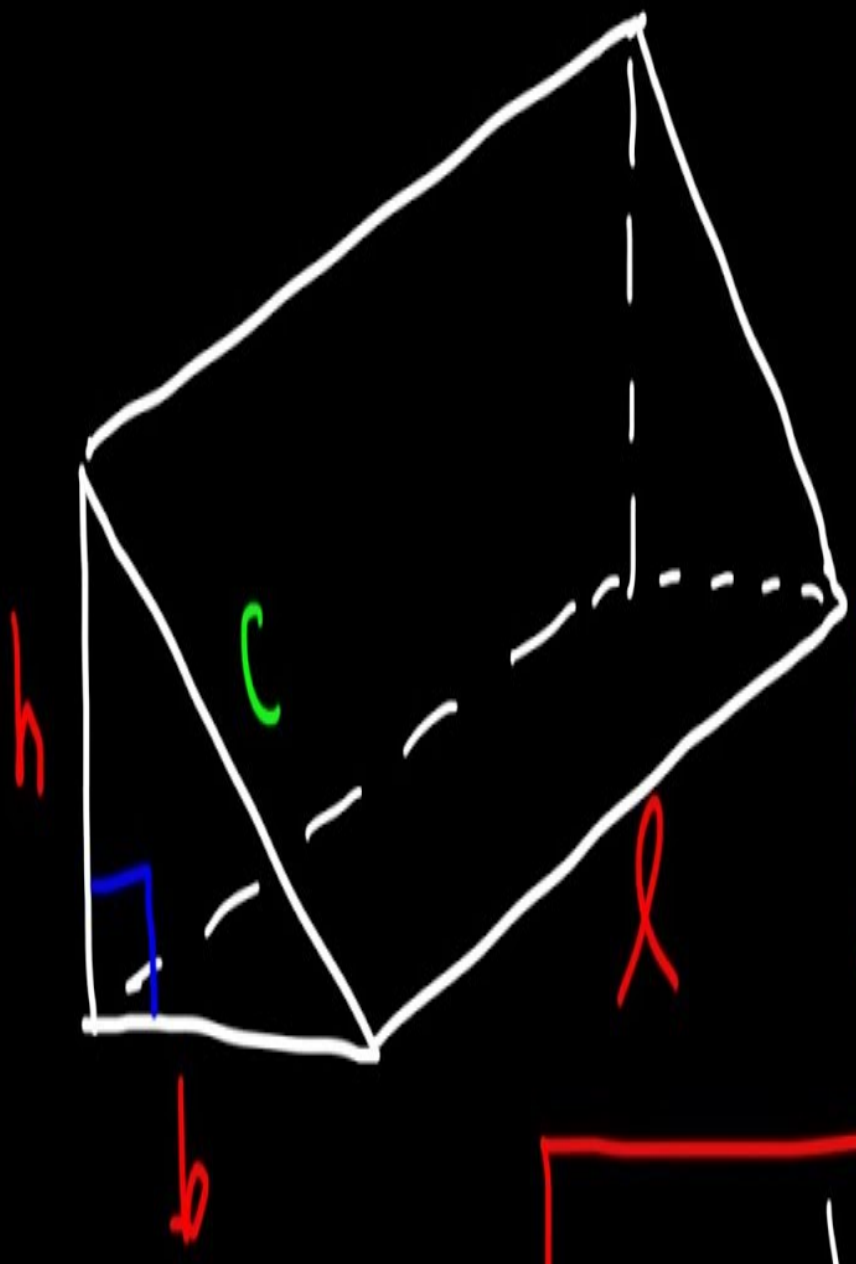
prisms



A prism takes its name from the shape of its base, e.g. square prism, triangular prism, hexagonal prism.



Triangular Prism



$$V = \frac{1}{2}bhl$$

$$SA = bh + pl$$

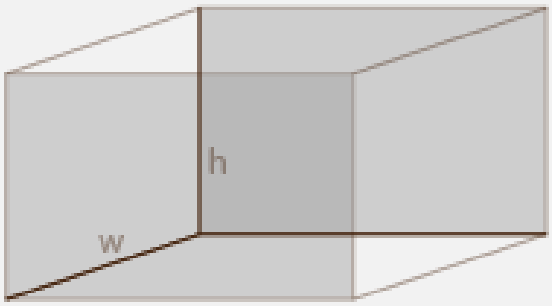
$$p = b + h + c$$

Rectangular Prism :

$$\text{Volume } V = lwh$$

$$\text{Surface area } A = 2(lw + lh + wh)$$

- l ⟶ length
- w ⟶ width
- h ⟶ height



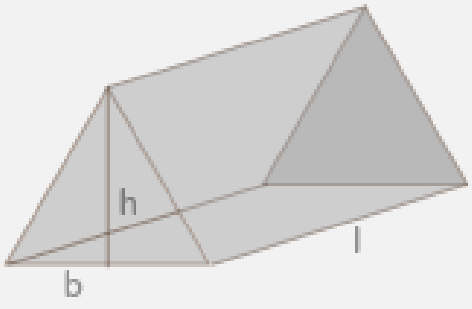
Rectangular Prism

Triangular Prism :

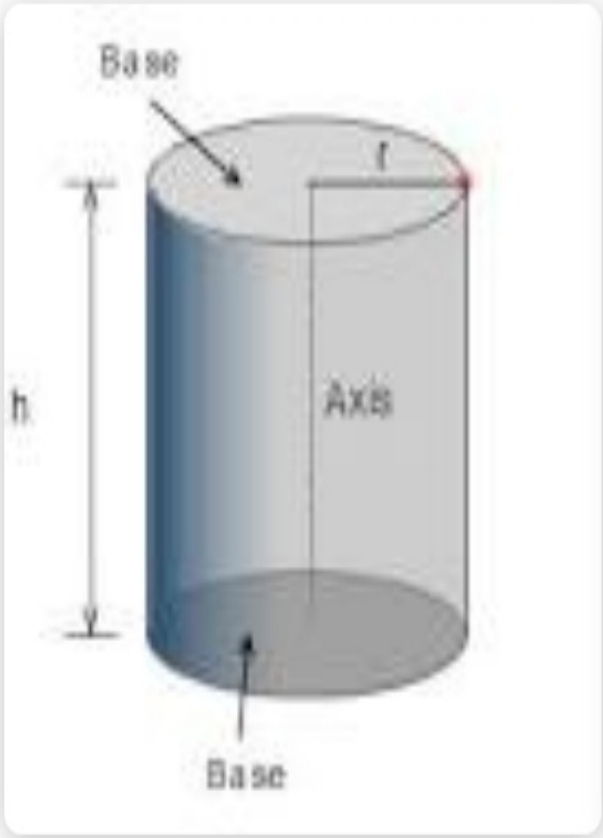
$$\text{Volume } V = \frac{bhl}{2}$$

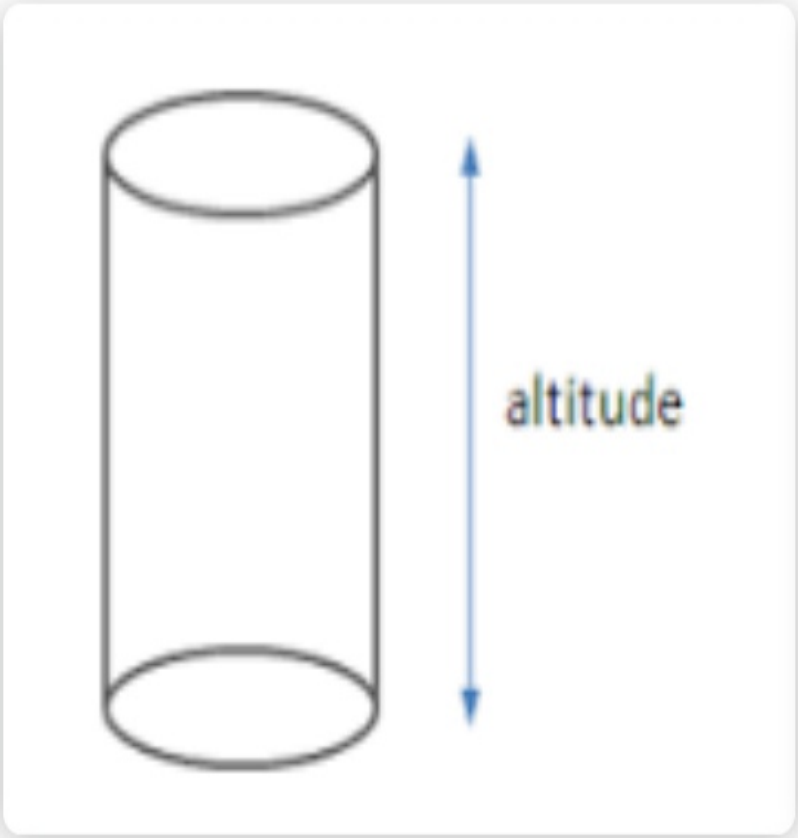
$$\text{Surface area } A = 2B + Ph$$

- b ⟶ base
- h ⟶ height
- l ⟶ length
- P ⟶ Perimeter of base
- B ⟶ Area of base



Triangular Prism





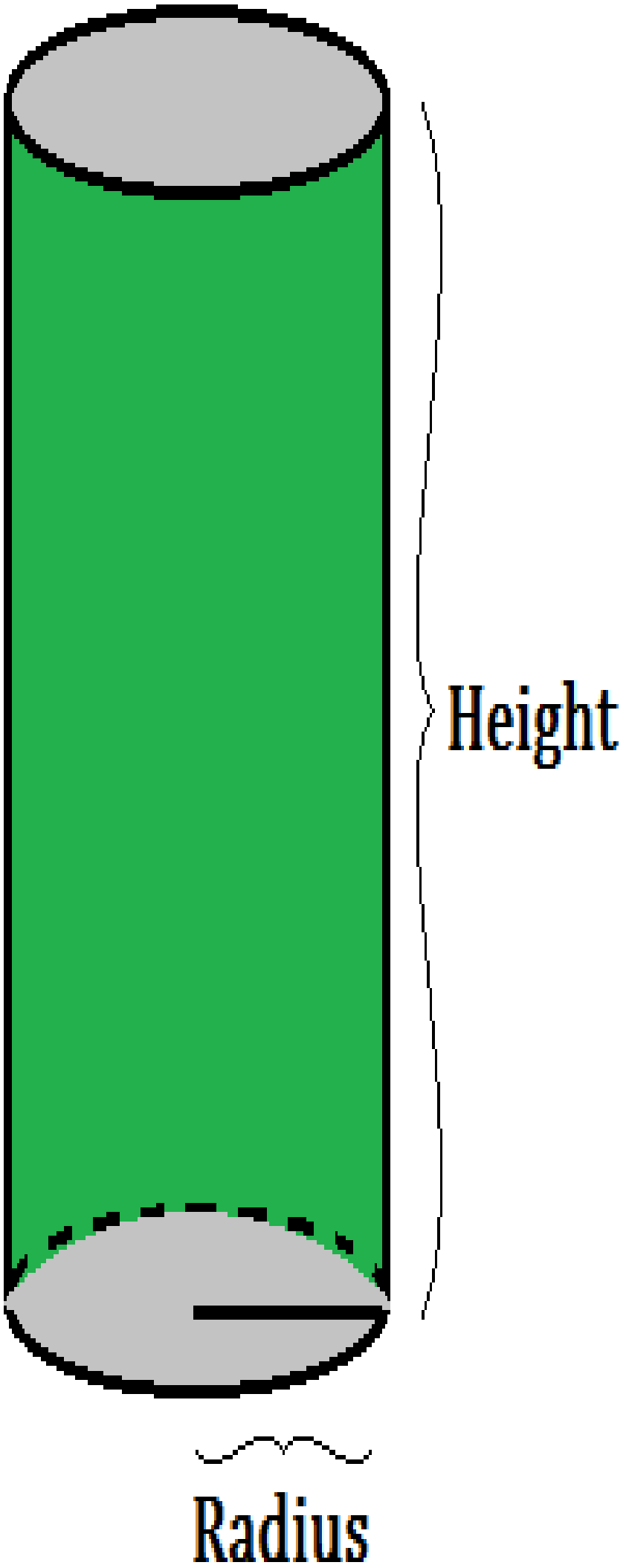
Definition of Cylinder

A **cylinder** is a three-dimensional solid that holds two parallel bases joined by a curved surface, at a fixed distance. These bases are normally circular in shape and the center of the two bases are joined by a line segment, which is called as the axis.

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

r = radius

h = height



Cylinder

Surface Area

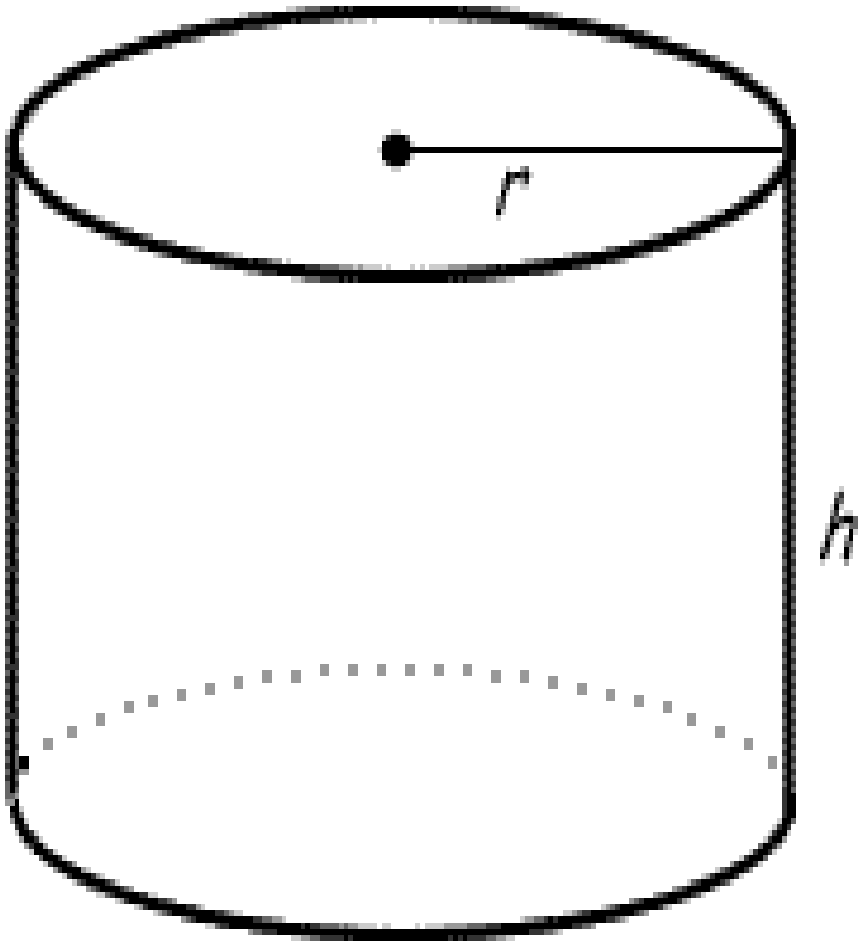
We will need to calculate the surface area of the top, base and sides.

Area of the top is πr^2

Area of the bottom is πr^2

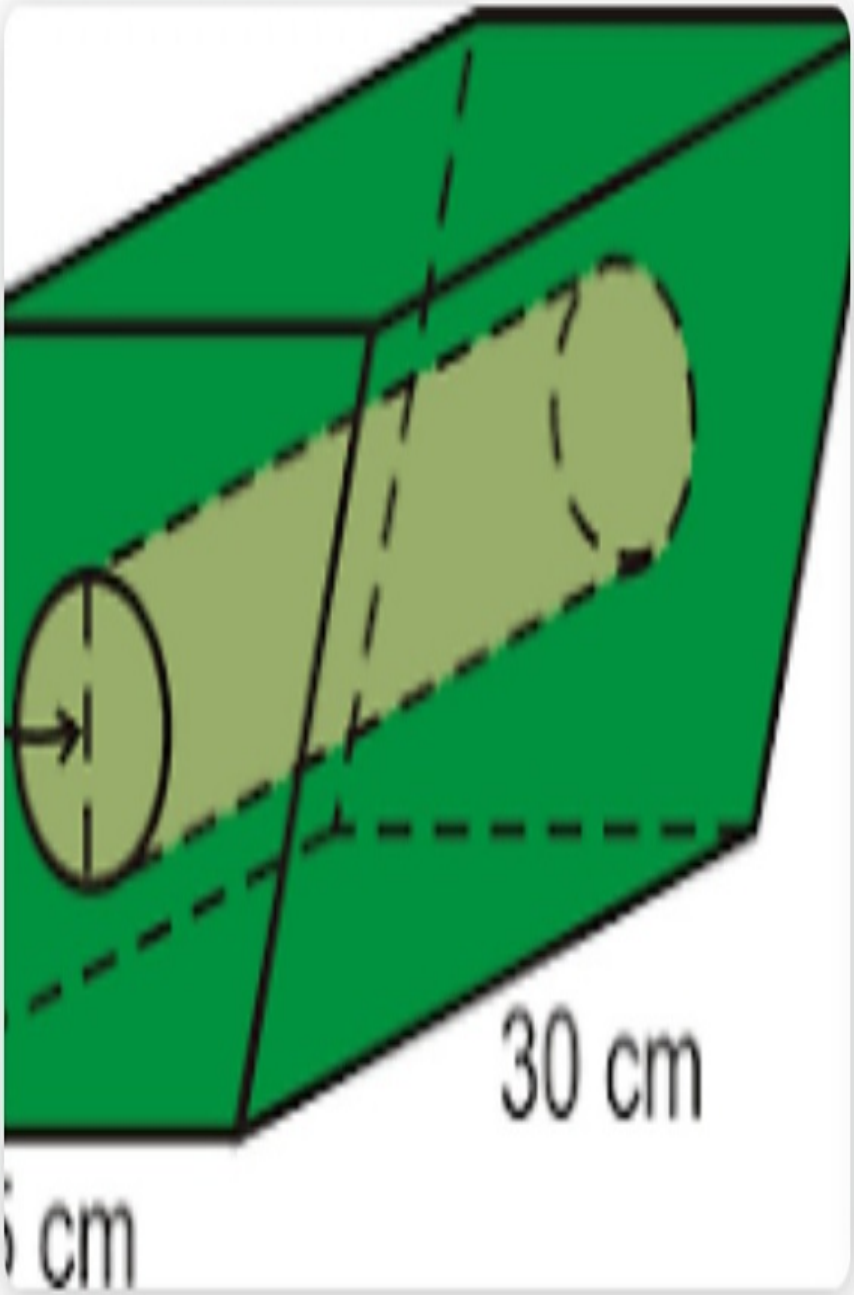
Area of the side is $2\pi rh$

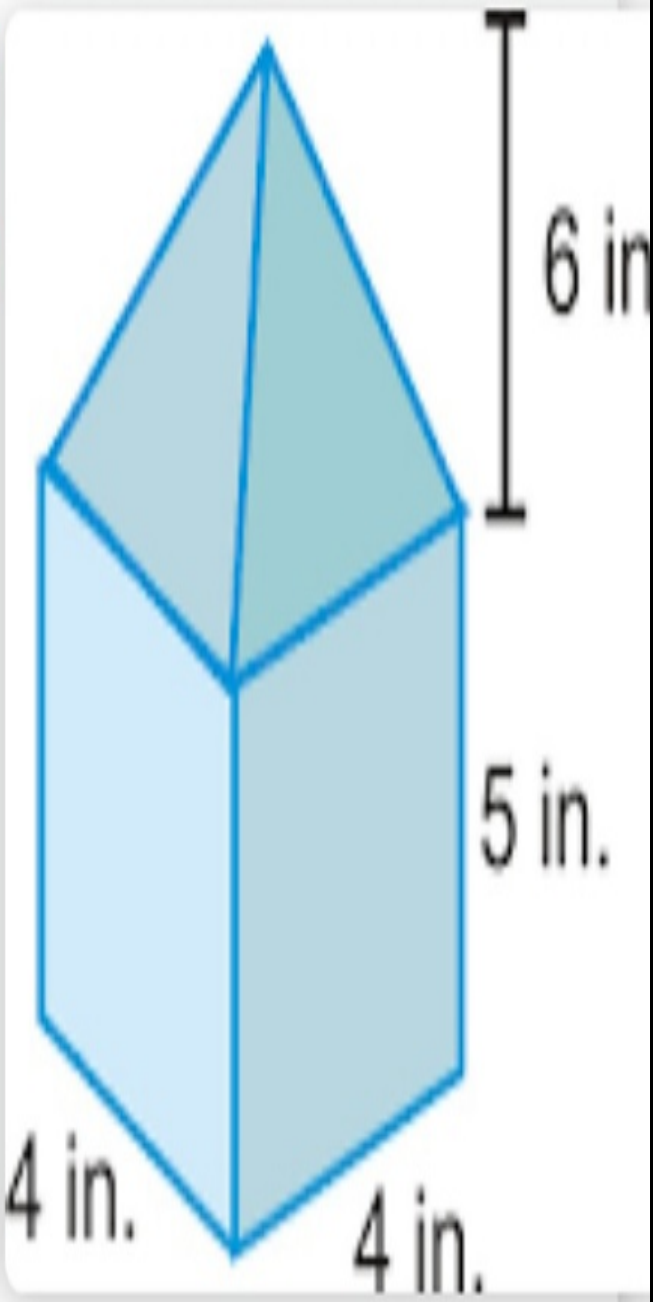
Therefore the Formula is: $A = 2\pi r^2 + 2\pi rh$



Volume $V = \pi r^2 h$

Shape	Surface Area Formula	Volume Formula
Cube	$SA = 6s^2$ where s = length of the side	$V = s^3$ where s = length of the side
Cuboid	$SA = 2(lw + lh + wh)$ where l = length, w = width, h = height	$V = lwh$ where l = length, w = width, h = height
Prism	$SA = 2B + ph$ where B = area of base, p = perimeter of base, h = height	$V = Bh$ where B = area of base, h = height
Cylinder	$SA = 2\pi r^2 + 2\pi rh$ where r = radius, h = height	$V = \pi r^2 h$ where r = radius, h = height





A **composite solid** is a **solid** that is composed, or made up of, two or more **solids**.