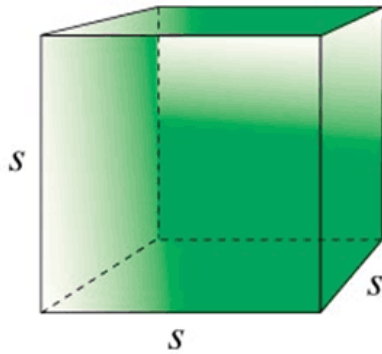


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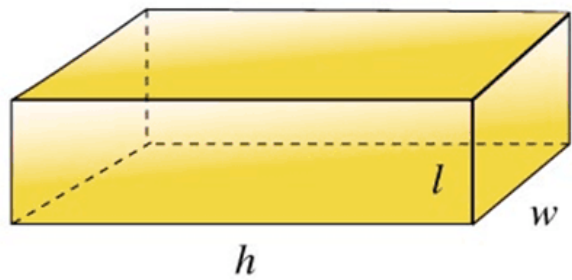
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## NCERT Class 9 Solutions: Surface Areas and Volumes (Chapter 13) Exercise 13.5 – Part 1

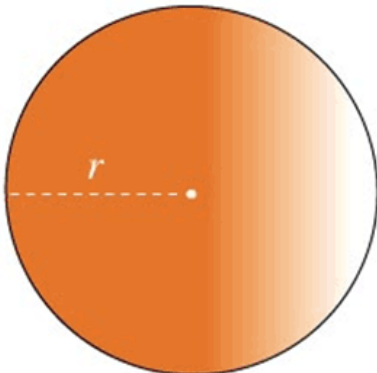
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**CUBE**

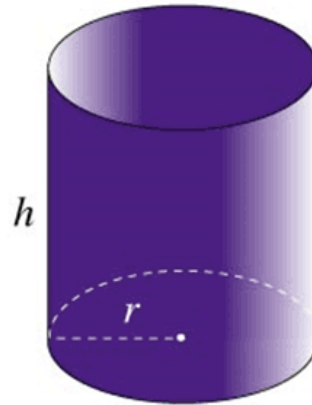
$$V = s^3$$

**RECTANGULAR PRISM**

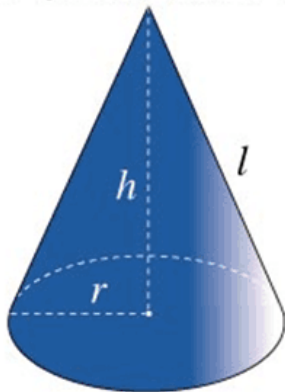
$$V = lwh \text{ or } V = Bh$$

**SPHERE**

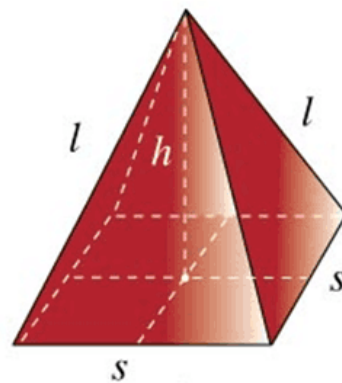
$$V = \frac{4}{3} \pi r^3$$

**RIGHT CIRCULAR CYLINDER**

$$V = \pi^2 h$$

**RIGHT CIRCULAR CONE**

$$V = \frac{1}{3} \pi r^2 h$$

**RIGHT SQUARE PYRAMID**

$$V = \frac{1}{3} s^2 h$$

Q-1 A matchbox measures  $4\text{ cm} \times 2.5\text{ cm} \times 1.5\text{ cm}$ . What will be the volume of a packet containing 12 such boxes?

Solution:

- Each matchbox measures  $= 4\text{ cm} \times 2.5\text{ cm} \times 1.5\text{ cm}$
- Therefore,  $l = 4\text{ cm}$ ,  $b = 2.5\text{ cm}$  and  $h = 1.5\text{ cm}$

Volume of one matchbox

- $(l \times b \times h)$

- $(4 \times 2.5 \times 1.5) \text{ cm}^3$
- $15 \text{ cm}^3$

Volume of a packet containing  $_{12}$  such boxes

- $(12 \times 15) \text{ cm}^3$
- $180 \text{ cm}^3$

Q-2 A cuboidal water tank is  $_{6m}$  long,  $_{5m}$  wide and  $_{4.5m}$  deep. How many litres of water can it hold? (  $1 \text{ m}^3 = 1000 \text{ l}$  )

Solution:

- Dimensions of water tank  $= 6m \times 5m \times 4.5m$
- $l = 6m, b = 5m$  and  $h = 4.5m$

Therefore Volume of the tank

- $lbh \text{ m}^3$
- $(6 \times 5 \times 4.5) \text{ m}^3$
- $135 \text{ m}^3$

Therefore, the tank can hold

- $135 \times 1000 \text{ litres}$  [Note that,  $1 \text{ m}^3 = 1000 \text{ litres}$  ]
- $135000 \text{ Litres of water.}$

Q-3 A cuboidal vessel is  $_{10m}$  long and  $_{8m}$  wide. How high must it be made to hold  $_{380}$  cubic metres of a liquid? Solution:

We know that,

- Length  $= 10m$  ,
- Breadth  $= 8m$
- Volume  $= 380 \text{ m}^3$

Volume of cuboid  $= \text{Length} \times \text{Breadth} \times \text{Height}$

$$\text{Therefore, Height} = \frac{\text{Volume of cuboid}}{\text{Length} \times \text{Breadth}} = \frac{380}{10 \times 8} = 4.75m$$

Q-4 Find the cost of digging a cuboidal pit  $_{8m}$  long,  $_{6m}$  broad and  $_{3m}$  deep at the rate of  $\text{₹}30 \text{ perm}^3$ .

Solution:

We know,

- $l = 8m$ ,
- $b = 6m$
- $h = 3m$

Volume of the pit

- $lbh \text{ m}^3$
- $(8 \times 6 \times 3) \text{ m}^3$
- $144 \text{ m}^3$

Rate of digging is  $\text{₹}30 \text{ perm}^3$  ∴ Therefore, total cost of digging the pit  $= \text{₹}.(144 \times 30) = \text{₹} .4320$