NCERT Class 9 Solutions: Surface Areas and Volumes (Chapter 13) Exercise 13.6 – Part 1

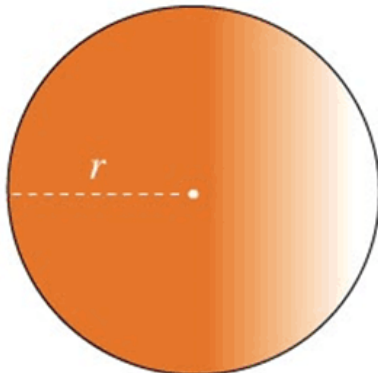Get unlimited access to the best preparation resource for CBSE/Class-9 : get questions, notes, tests, video lectures and more [https://www.doorsteptutor.com/Exams/CBSE/Class-9/]- for all subjects of CBSE/Class-9.

CUBE

s

s

s
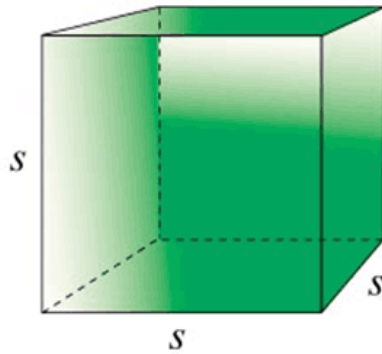
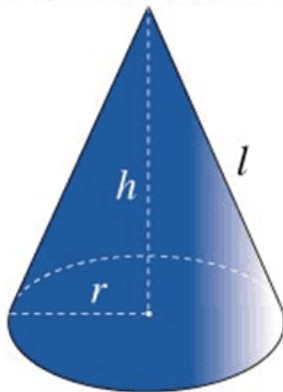$$V = s^3$$

RECTANGULAR PRISM

l

w

h

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

SPHERE

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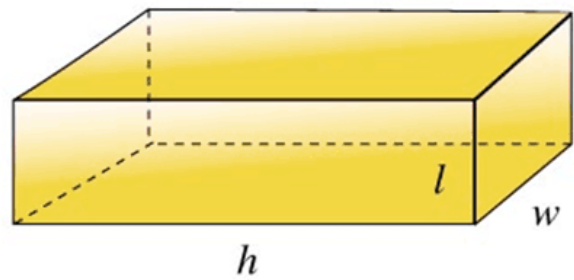
$$V = \frac{4}{3}\,\pi r^3$$

RIGHT CIRCULAR CYLINDER

h

r
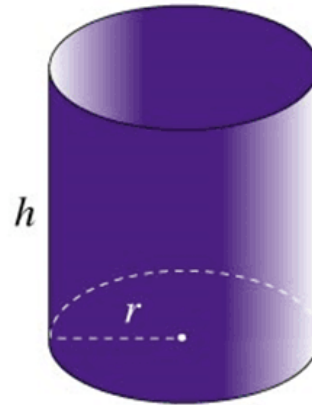
$$V = \pi^2 h$$

RIGHT CIRCULAR CONE

h l

r

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

RIGHT SQUARE PYRAMID

l h l

s

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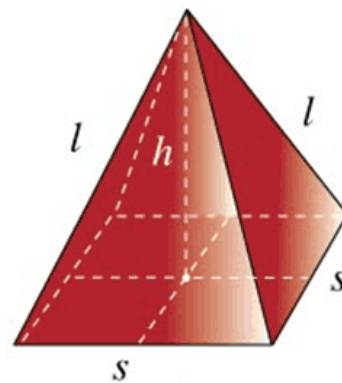
$$V = \frac{1}{3}\,s^2 h$$

Q-1 The circumference of the base of a cylindrical vessel is $132 cm$ and its height is $25 cm$. How many liters of water can it hold? ($1000 cm^3 = 1 l$)

Solution:

- Let, the radius of the cylindrical vessel be

- Height (h) of vessel $= 25 cm$

- Circumference of vessel $= 132\ cm$

We know that, circumference of the base of the cylindrical vessel

- $2\pi r\ cm = 132\ cm$

- $2 \times \dfrac{22}{7} \times r = 132$

- $r = \dfrac{132 \times 7}{2 \times 22}$

- $r = 21\ cm$

Therefore, capacity of the cylindrical vessel

- $\pi r^2 h$

- $\dfrac{22}{7} \times 21 \times 21 \times 25 cm^3$

- $34650 cm^3$

- $\left(\dfrac{34650}{1000} l\right)$ (Since, $1000 cm^3 = 1l$)

- $34.65 l$

Therefore, vessel can hold 34.65 liters of water.

Q-2 The inner diameter of a cylindrical wooden pipe is $24 cm$ and its outer diameter is $28\ cm$. The length of pipe is $35 cm$. Find the mass of the pipe, if $1 cm^3$ of wood has a mass of $0.6 g$.

Solution:

- Inner diameter $= 24\ cm$

- Therefore, inner radius (r) = $\dfrac{24}{2} cm \left(\because \text{radius} = \dfrac{\text{diameter}}{2}\right) = 12 cm$

- Outer diameter $= 28\ cm$

- Therefore, outer radius (R) $= \dfrac{28}{2} cm \left(\because \text{radius} = \dfrac{\text{diameter}}{2}\right) = 14 cm$

- Outer volume $= \pi R^2 h = \left(\dfrac{22}{7} \times 14 \times 14 \times 35\right) = 21560 cm^3$

- Inner volume $= \pi r^2 h = \left(\dfrac{22}{7} \times 12 \times 12 \times 35\right) = 15840 cm^3$

Since the inner volume is empty, volume of the wood used = outer volume - inner volume

- $= 21560 cm^3 - 15840 cm^3$

- $= 5720 cm^3$

Since, $1 cm^3$ of wood has a mass of $0.6 g$, therefore mass of the pipe = $5720 \times 0.6 g = 3.432\ kg$