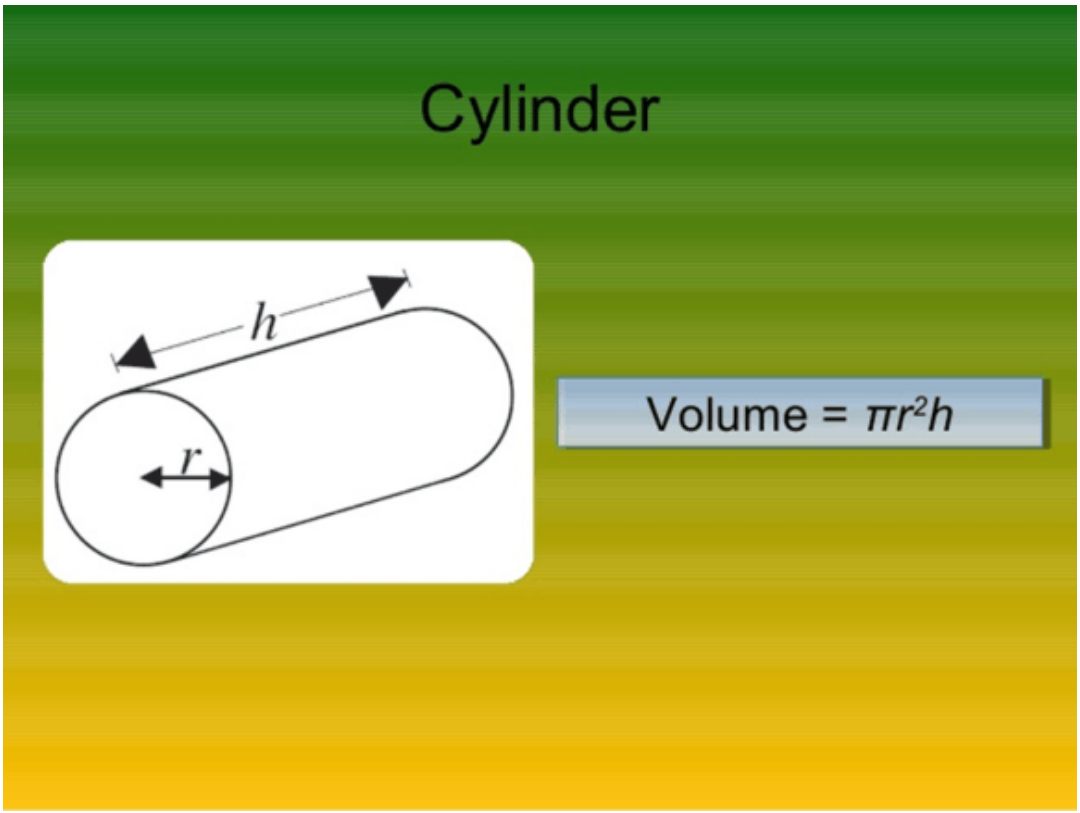
NCERT Class 9 Solutions: Surface Areas and Volumes (Chapter 13) Exercise 13.6 – Part 2



Q-3 A soft drink is available in two packs

1. A tin can with a rectangular base of length $5cm$ and width $4cm$, having a height of $15\,cm$ and
2. A plastic cylinder with circular base of diameter $7cm$ and height $10\,cm$

Which container has greater capacity and by how much?

Solution (i)

Capacity of tin can

- $l = 5\ cm$
- $b = 4\ cm$
- $h = 15\ cm$

Capacity $= l \times b \times h$

- $= 5 \times 4 \times 15 cm^3$
- $= 300 cm^3$

Solution (ii)

Capacity or volume of plastic cylinder is given as $\pi r^2 h$

Diameter $= 7\ cm$, therefore radius (r) $= \frac{7}{2} cm$

Height (h) $= 10\ cm$

Therefore, capacity $= \pi r^2 h = \frac{22}{7} \times \left(\frac{7}{2}\right)^2 \times 10 = 385 cm^3$

Clearly the second container, the plastic cylinder has greater capacity than the first container, a tin can. The cylinder has $385 - 380 = 5 cm^3$ more volume.

Q-4 If the lateral surface of a cylinder is $94.2 cm^2$ and its height is $5\ cm$, and then find

1. Radius of its base
2. Its volume . ($use\ \pi = 3.14$)

Solution:

1. Consider the radius of the cylinder be $r\ cm.$

Height $= 5\ cm$

- Later surface area $= 94.2 cm^2 = 2\pi rh$
- $2 \times 3.14 \times r \times 5 = 94.2$
- $r = \frac{94.2}{2 \times 3.14 \times 5}$
- $r = \frac{94.2}{31.4}$
- $r = 3cm$

So, the radius of the base is $3\ cm.$

1. Now, volume of cylinder $= \pi r^2 h$
2. $= 3.14 \times 3 \times 3 \times 5 cm^3$
3. $= 141.3 cm^3$

Q-5 It costs $₹2200$ to paint the inner curved surface of a cylindrical vessel $10m$ deep. If the cost of painting is at the rate of $₹20\ per m^2$, find

1. Inner curved surface area of the vessel
2. Radius of the base
3. Capacity of the vessel

Solution:

1. Inner curved surface area of the vessel
2. $\frac{\text{Total cost of painting}}{\text{Rate of painting}}$
3. $= \frac{2200}{20} m^2$
4. $= 110 m^2$
5. Radius of the base
6. Consider the radius of the base
7. The height of the cylindrical vessel $h = 10m$

We know that inner curved surface area $= 110 m^2$

- Therefore, $2\pi rh = 110 m^2$
- $2 \times \frac{22}{7} r \times 10 = 110$
- $r = \frac{110 \times 7}{2 \times 22 \times 10}$
- $r = \frac{770}{440}$
- $r = 1.75m$

So, the radius of the base is $1.75m$

1. Capacity of the vessel $= \pi r^2 h$
2. $= \frac{22}{7} \times 1.75 \times 1.75 \times 10 m^3$
3. $= \frac{673.75}{7}$
4. $= 96.25 m^3$