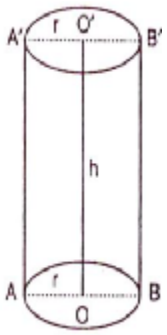
Right Circular Cylinder

Understanding of Right Circular Cylinder



- A right circular cylinder is a solid shape with two parallel circular bases and a curved surface connecting them.
- The axis joining the centers of the two circular bases is perpendicular to the bases.
- It looks like a tube or pipe in real life.
- Important measurements for a cylinder are radius (r) of the base and height (h) between the bases.

Important Points

- Curved Surface Area (CSA) of a cylinder = 2πrh
- Total Surface Area (TSA) of a cylinder = 2πr(h + r)
- Volume of a cylinder = $\pi r^2 h$
- Use $\pi = \frac{22}{7}$ or 3.14 as per the question
- Surface area is measured in square units and volume in cubic units

Examples with Solutions

Example: Find Curved Surface Area

➢ **Find the curved surface area of a cylinder of radius 5 cm and height 10 cm.**

Solution: CSA = 2πrh = $2 \times \frac{22}{7} \times 5 \times 10$

$= 2 \times \frac{22}{7} \times 50$

$= \frac{2200}{7} \approx 314.29\ cm^2$

Example: Find Total Surface Area

➢ **Find the total surface area of a cylinder with radius 7 cm and height 14 cm.**

Solution: TSA = 2πr(h + r) = $2 \times \frac{22}{7} \times 7 \times (14 + 7)$

$= 2 \times \frac{22}{7} \times 7 \times 21$

$= 2 \times 22 \times 3 \times 21 = 2772\ cm^2$

Example: Find Volume

- **Find the volume of a cylinder of radius 3.5 cm and height 20 cm.**

Solution: Volume = $\pi r^2 h = \frac{22}{7} \times 3.5 \times 3.5 \times 20$

$= \frac{22}{7} \times 12.25 \times 20$

$= 22 \times 35 = 770\ cm^3$

Example: Find Height When Volume is Given

- **A cylinder has volume 4620 cm^3 and radius 7 cm. Find the height.**

Solution: Volume = $\pi r^2 h$

$4620 = \frac{22}{7} \times 7 \times 7 \times h$

$4620 = 154h$

$h = 4620 \div 154 = 30\ cm$

Example: Find Radius When Curved Surface Area is Given

- **The curved surface area of a cylinder is 352 cm^2 and height is 8 cm. Find the radius.**

Solution: CSA = $2\pi rh$

$352 = 2 \times \frac{22}{7} \times r \times 8$

$352 = \frac{352}{7} \times r$

$r = 7\ cm$

Summary Points

- Curved Surface Area = $2\pi rh$.
- Total Surface Area = $2\pi r(h + r)$.
- Volume = $\pi r^2 h$.
- Always use same unit for radius and height.
- Surface areas are in square units and volume is in cubic units.