

Cylinder, Cone and Sphere

Chapter 20: Cylinder, Cone and Sphere · Topic 1

Key Concept

A cylinder's total surface area is $2\pi r(r+h)$, and its volume is $\pi r^2 h$, where r is radius and h is height.

A cone's curved surface area is $\pi r l$ (where l is slant height), and its volume is $(1/3)\pi r^2 h$.

A sphere's surface area is $4\pi r^2$, and its volume is $(4/3)\pi r^3$, both depending only on the radius.

These formulas are used for practical problems like calculating material needed for containers, or capacity of tanks and vessels.

Quick Revision Notes

- Cylinder total surface area = $2\pi r(r+h)$.
- Cylinder volume = $\pi r^2 h$.
- Cone curved surface area = $\pi r l$.
- Cone volume = $(1/3)\pi r^2 h$.
- Sphere surface area = $4\pi r^2$.
- Sphere volume = $(4/3)\pi r^3$.
- These depend on radius (and height/slant height).
- Formulas solve practical container/capacity problems.

Practice Questions

- 1 Calculate the volume of a cylinder with radius 4cm and height 10cm.
- 2 Calculate the curved surface area of a cone with radius 3cm and slant height 5cm.
- 3 Calculate the volume of a sphere with radius 6cm.
- 4 Discuss a real-life use of these formulas.
- 5 Solve two combined solid geometry problems.
- 6 Compare the volume formulas for cylinder, cone and sphere.