

Surface Area and Volume

Chapter 9: Surface Area and Volume · 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 $\pi r l$ (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 in practical applications like calculating material needed for containers or capacity of tanks.

Quick Revision Notes

- Cylinder 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 (height/slant height too).
- Used for containers, capacity calculations.

Practice Questions

- 1 Calculate the volume of a cylinder with radius 3cm and height 8cm.
- 2 Calculate the curved surface area of a cone with radius 4cm, slant height 6cm.
- 3 Calculate the volume of a sphere with radius 5cm.
- 4 Discuss a real-life use of these formulas.
- 5 Compare the volumes of a cylinder and cone with the same base.
- 6 Explain these formulas in your own words.