

Surface Area of Combined Solids

Chapter 12: Surface Areas and Volumes · Topic 1

Key Concept

For example, a solid formed by placing a hemisphere on top of a cylinder requires adding the cylinder's curved surface area, the cylinder's one flat circular base (bottom), and the hemisphere's curved surface area — but NOT the cylinder's top flat circle or the hemisphere's flat circular base, since these two surfaces are joined together internally and are no longer part of the combined solid's exposed exterior surface.

Quick Revision Notes

- Combined solid surface area = sum of curved (exposed) surface areas of each part.
- Joined/internal surfaces (where two solids meet) are excluded from the total.
- Example: hemisphere on cylinder includes cylinder's curved area + bottom base + hemisphere's curved area.
- The cylinder's top and hemisphere's flat base are excluded, since they are joined internally.

Practice Questions

- 1 Find the surface area of a solid formed by a hemisphere on top of a cylinder (radius 7cm, cylinder height 10cm).
- 2 Explain why the joined circular surface is excluded when calculating a combined solid's surface area.
- 3 Describe the surfaces included in calculating the surface area of a cone attached to a cylinder (an ice-cream cone shape).