

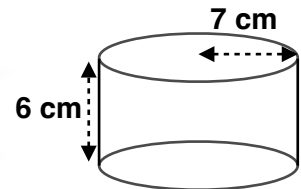
Area and Volume Problems, including surface area of a cylinder

Starter

1. **(Review of last lesson)** The volume of a cylinder is 260 cm^3 . Given that its height is 11 cm , calculate its diameter to 3 s.f..
2. **(Review of last lesson)** A solid cylinder of radius 10 cm and length 14 cm is melted down and recast into a solid cube. Find the length of the side of the cube.
3. Using the diagram below, find a formula for the surface area of a cylinder.



4. Calculate the surface area of the cylinder. Give your answer to 3 s.f..

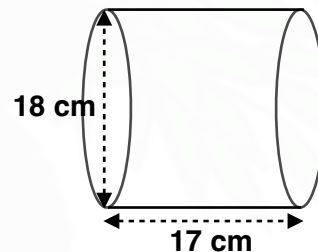


Notes

Surface area of a cylinder

Surface area of cylinder, $SA = 2\pi r^2 + 2\pi r h$

- E.g. 1** Calculate the surface area of the cylinder. Give your answer in terms of π .



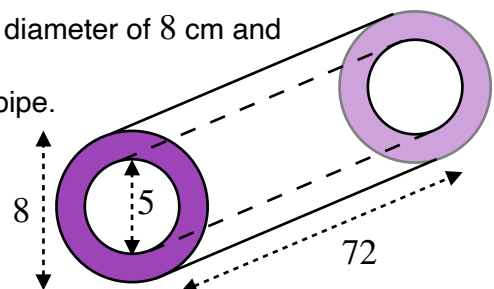
- E.g. 2** Calculate the height of a cylinder whose surface area is 124π given that the radius of the cross-section is 6 cm .

You will already have met the formula $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$ in science.

- E.g. 3** A cylindrical metal pipe, of length 72 cm , has external diameter of 8 cm and internal diameter of 5 cm .

- Calculate the volume of metal in the length of pipe.
- Given that the density of the metal is 6 g/cm^3 , find the mass of the pipe.

Give your answers exactly and include units.



- E.g. 4** Water flows through a circular pipe of internal diameter 3 cm at a speed of 16 cm/s . If the pipe is full, how many litres of water issue from the pipe in one minute?

Exercise

9-1 class textbook:	p445 M13.8 Qu 1a, 2c, 3, 6 p439 M13.6 Qu 1, 2, 4-8 (3 needs trigonometry)
A*-G class textbook:	p400 M13.8 Qu 1a, 2c, 3, 7 p392 M13.2 Qu 13-22
9-1 homework book:	p153 M13.8 Qu 1c p149 M13.5/13.6 Qu 7-12
A*-G homework book:	p112 E13.5 Qu 1c p110 M13.2 Qu 6-10

Summary

Surface area of cylinder, $SA = 2\pi r^2 + 2\pi rh$

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$