

## Cylinders

- 1) Find the volume of the following cylinders:  
(a) radius 12cm, height 30cm      (b) radius 25cm, height 1.8m
- 2) Find the curved surface area of each of the cylinders in question 1.
- 3) Find the total surface area (including base and top) of each of the cylinders in Q1.
- 4) (a) A cylinder has a radius of 8cm. If the curved surface area is  $600\text{cm}^2$ , what is  
(i) its height?      (ii) its volume?  
(b) A cylinder has a diameter of 40cm. If the curved surface area is  $900\text{cm}^2$ , what is  
(i) its height?      (ii) its volume?  
(c) A cylinder has a height of 12cm. If the curved surface area is  $800\text{cm}^2$ , what is  
(i) its radius?      (ii) its volume?
- 5) (a) A cylinder has a volume of  $600\text{cm}^3$ . If the radius is 5cm, what is  
(i) the height      (ii) the curved surface area?  
(b) A cylinder has a volume of  $1000\text{cm}^3$ . If the height is 8cm, what is  
(i) the area of the cross-section      (ii) the radius      (iii) the curved surface area?
- 6) A barrel for collecting rainwater is in the shape of a cylinder with a radius 40cm and height 1.2m.  
(a) How many litres of water will the barrel hold when full? (1 litre =  $1000\text{cm}^3$ )  
(b) What is the height of the water in the barrel when it contains 170 litres of water?  
(c) I wish to paint the inside of the barrel (the curved surface and the circular base). What is this area (i) in  $\text{cm}^2$ , and (ii) in  $\text{m}^2$ ?  
(d) It states on the paint can that one litre of paint will cover  $1.5\text{m}^2$ . How many litre cans of paint must I buy to paint the inside of the barrel?
- 7) A water pipe has the shape of a cylinder with a radius of 3cm.  
(a) How much water is contained in a 12cm length of this pipe?  
(b) If water travels along the pipe at 12cm per second, how many litres of water will pour out of the tap at the end of the pipe in 10 seconds?  
(c) How long would it take to fill a bath with 60 litres of water using this tap?
- 8) A metal wire has a diameter of 3mm, and is 400m long. Find the volume of metal it contains. (Hint: convert all units to cm first.)
- 9) A hollow metal tube has the shape of cylinder with a diameter of 14cm, and the hole through the centre is a cylinder with a radius of 6cm. The length of the tube is 60cm. Find:  
(a) the total volume of the tube (including the hole).  
(b) the volume of the hole.  
(c) the volume of metal in the tube

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(b) What is the height of the water in the barrel when it contains 170 litres of water?  
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