

Volume and Surface Area of Prisms and Cylinders

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **28**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator. Diagrams are not drawn accurately.

- 1** A cylinder has diameter 6 cm and height 10 cm.
Circle the area, in cm^2 , of its curved surface.

[1 mark]

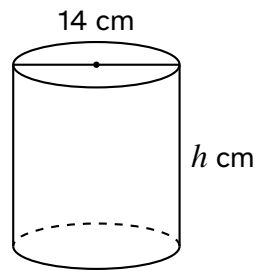
30π

60π

90π

120π

- 2 A solid cylinder has diameter 14 cm.
The volume of the cylinder is $1470\pi \text{ cm}^3$.



Not drawn accurately

- (a) Work out the height of the cylinder.

[2 marks]

Answer _____ cm

- (b) Work out the total surface area of the cylinder.
Give your answer to 3 significant figures.

[3 marks]

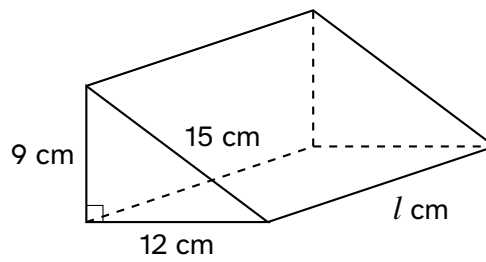
Answer _____ cm^2

- 3 A cylinder has volume $72\pi \text{ cm}^3$ and height 8 cm.
Work out its radius.

[2 marks]

Answer _____ cm

- 4 The cross section of a prism is a right-angled triangle with sides 9 cm, 12 cm and 15 cm.



Not drawn accurately

The total surface area of the prism is 828 cm^2 .
Work out the length of the prism.

[3 marks]

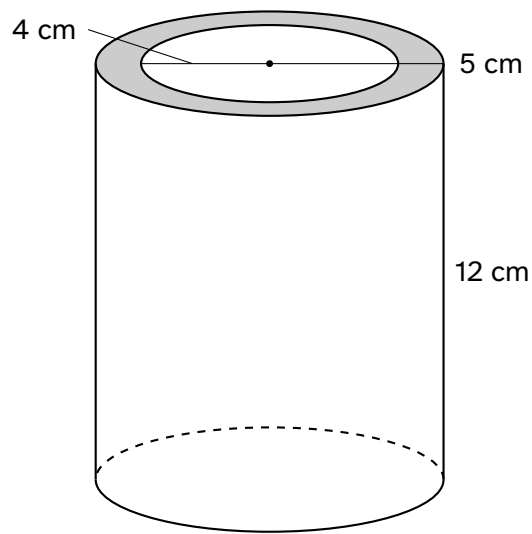
Answer _____ cm

- 5 A cuboid tank measures 40 cm by 30 cm by 20 cm.
The tank is full of water.
All the water is poured into an empty cylinder of radius 15 cm.
Work out the depth of water in the cylinder.

[4 marks]

Answer _____ cm

- 6 A metal pipe is a hollow cylinder.
The outer radius is 5 cm.
The inner radius is 4 cm.
The pipe is 12 cm long.



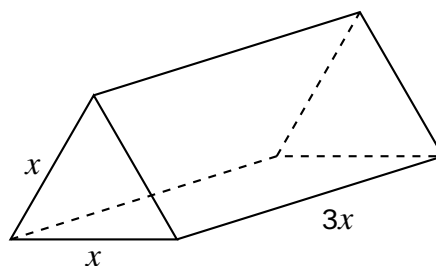
Not drawn accurately

Work out the volume of metal in the pipe.
Give your answer to 3 significant figures.

[4 marks]

Answer _____ cm^3

- 7 A candle is a prism.
All lengths are in centimetres.
The cross section is an equilateral triangle with side x
The length of the candle is $3x$



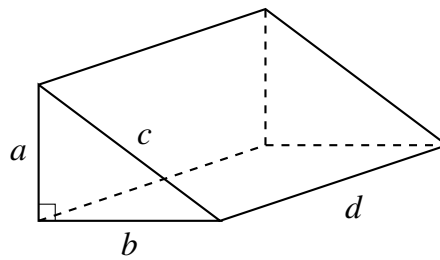
Not drawn accurately

The volume of the candle must be at least 500 cm^3
Work out the smallest possible integer value of x .
You must show your working.

[4 marks]

Answer _____

- 8 Here is a right-angled triangular prism.
The ratio of the edges is $a:b:c:d = 5:12:13:10$



Not drawn accurately

The volume of the prism is 2400 cm^3
Work out the total length of all of the edges of the prism.

[5 marks]

Answer _____ cm