

Spheres, Cones and Pyramids

For AQA GCSE Mathematics (8300) • Foundation tier

Name _____

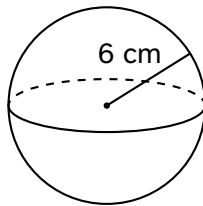
Total marks: **26**

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.

Volume of sphere = $\frac{4}{3}\pi r^3$ Volume of cone = $\frac{1}{3}\pi r^2 h$ Volume of pyramid = $\frac{1}{3} \times \text{area of base} \times h$

Surface area of sphere = $4\pi r^2$ Curved surface area of cone = $\pi r l$

- 1** A sphere has radius 6 cm.



Not drawn accurately

Work out the volume of the sphere.
Give your answer to 1 decimal place.

[2 marks]

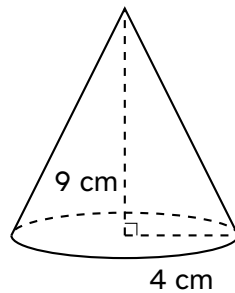
Answer _____ cm³

- 2** A hemisphere has radius 5 cm.
Work out the volume of the hemisphere.
Give your answer to 1 decimal place.

[2 marks]

Answer _____ cm³

- 3 A cone has radius 4 cm and perpendicular height 9 cm.



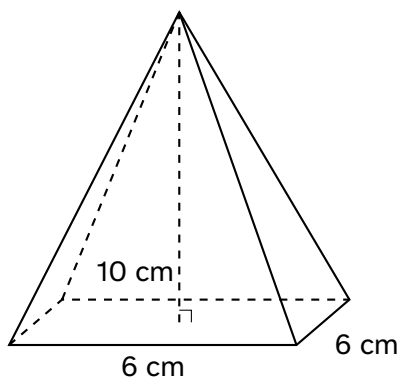
Not drawn accurately

Work out the volume of the cone.
Give your answer in terms of π .

[2 marks]

Answer _____ cm^3

- 4 A pyramid has a square base of side 6 cm.
Its perpendicular height is 10 cm.



Not drawn accurately

Work out the volume of the pyramid.

[2 marks]

Answer _____ cm^3

- 5** A ball is a sphere with radius 2.5 cm.
Work out the surface area of the ball.
Give your answer to 1 decimal place.

[2 marks]

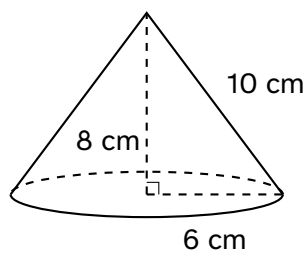
Answer _____ cm^2

- 6** A cone has radius 3 cm and slant height 7 cm.
Work out the curved surface area of the cone.
Give your answer to 1 decimal place.

[2 marks]

Answer _____ cm^2

- 7 Here is a cone.
The radius is 6 cm, the perpendicular height is 8 cm and the slant height is 10 cm.



Not drawn accurately

- (a) Beth tries to work out the curved surface area of the cone in terms of π
Curved surface area of the cone = $\pi \times 6 \times 8 = 48\pi \text{ cm}^2$
What mistake has she made?

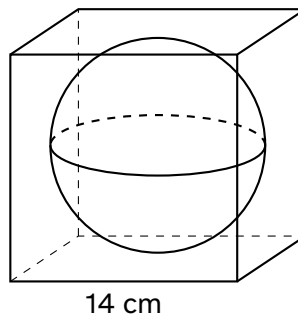
[1 mark]

- (b) Work out the correct curved surface area of the cone.
Give your answer in terms of π

[1 mark]

Answer _____ cm^2

- 8 A glass ball is a sphere with radius 7 cm.
It is packed in a box in the shape of a cube with edges of length 14 cm.
The ball touches every face of the box.
The rest of the space inside the box is filled with foam.



Not drawn accurately

Work out the percentage of the space inside the box that is filled with foam.
Give your answer to 1 decimal place.

[4 marks]

Answer _____ %

- 9 A shop sells two chocolates.
Chocolate A is a square-based pyramid. Its base has side 3 cm and its perpendicular height is 4 cm.
Chocolate B is a cone. Its radius is 1.8 cm and its perpendicular height is 3.6 cm.

Which chocolate has the greater volume?
You must show your working.

[4 marks]

Answer _____

- 10** A water cooler holds 18 litres of water.
Each paper cup is a cone with radius 3 cm and perpendicular height 9 cm.
1 litre = 1000 cm³

How many cups can be filled completely from the full water cooler?
You must show your working.

[4 marks]

Answer _____