

Spheres, Cones and Pyramids

For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Name _____

Total marks: **25**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

- 1** A sphere has radius 4.5 cm.

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

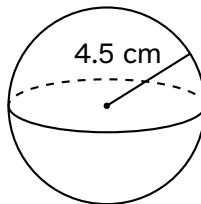


Diagram **NOT** accurately drawn

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

..... cm³
(2)

(Total for Question 1 is 2 marks)

- 2 A solid hemisphere has diameter 10 cm.
Work out the volume of the hemisphere.
Give your answer correct to 3 significant figures.
Volume of a sphere = $\frac{4}{3}\pi r^3$

..... cm³
(2)

(Total for Question 2 is 2 marks)

- 3 A cone has radius 9 cm and perpendicular height 12 cm.

Volume of a cone = $\frac{1}{3}\pi r^2 h$ Curved surface area of a cone = $\pi r l$

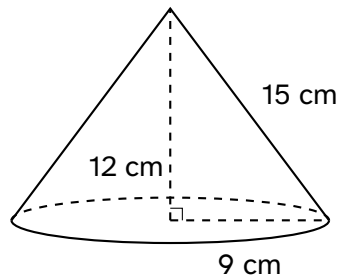


Diagram **NOT** accurately drawn

- (a) Work out the volume of the cone.
Give your answer correct to 1 decimal place.

..... cm³
(2)

- (b) The slant height of the cone is 15 cm.
Work out the curved surface area of the cone.
Give your answer correct to 1 decimal place.

..... cm²
(2)

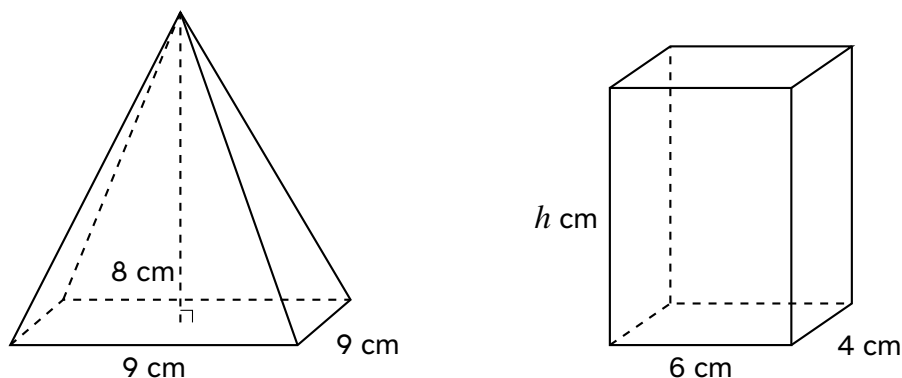
(Total for Question 3 is 4 marks)

- 4 A pyramid has a rectangular base 8 cm by 9 cm.
The volume of the pyramid is 240 cm^3
Work out the perpendicular height of the pyramid.
Volume of a pyramid = $\frac{1}{3} \times \text{area of base} \times \text{height}$

..... cm
(3)

(Total for Question 4 is 3 marks)

- 5 The diagram shows a solid square-based pyramid and a solid cuboid.
The pyramid has base side 9 cm and perpendicular height 8 cm.
The cuboid has a base 6 cm by 4 cm and height h cm.



*Diagram **NOT** accurately drawn*

The pyramid and the cuboid have the same volume.
Work out the height, h cm, of the cuboid.
Volume of a pyramid = $\frac{1}{3} \times \text{area of base} \times \text{height}$

$h =$
(3)

(Total for Question 5 is 3 marks)

- 6** A solid hemisphere has radius 7 cm.
Work out the total surface area of the hemisphere.
Give your answer correct to 1 decimal place.

$$\text{Surface area of a sphere} = 4\pi r^2$$

..... cm²
(3)

(Total for Question 6 is 3 marks)

- 7** A solid metal sphere has radius 3 cm.
The sphere is melted down and made into a solid cylinder of radius 2 cm.
No metal is wasted.

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

Work out the height of the cylinder.

..... cm
(4)

(Total for Question 7 is 4 marks)

- 8 The diagram shows a solid model rocket made from a cylinder and a cone. The cylinder and the cone both have radius 2 cm. The height of the cylinder is 9 cm. The height of the cone is 6 cm.
- Volume of a cone = $\frac{1}{3}\pi r^2 h$

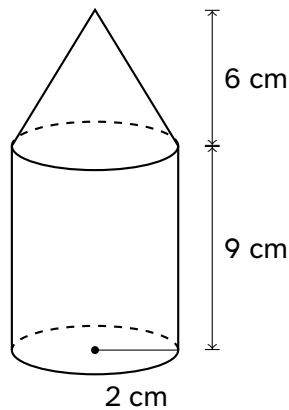


Diagram **NOT** accurately drawn

Work out the total volume of the model rocket.
Give your answer in terms of π .
You must show all your working.

..... cm^3
(4)

(Total for Question 8 is 4 marks)