

SPHERES, CONES AND CYLINDERS

[ESTIMATED TIME: 50 minutes]

GCSE

(+ IGCSE) EXAM QUESTION PRACTICE

1.

[3 marks]

A cylinder has diameter 12 cm and length 30 cm.

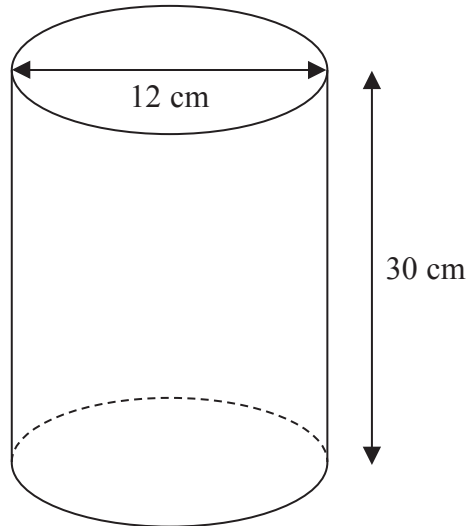


Diagram **NOT** accurately drawn

Work out the curved surface area of the cylinder.
Give your answer correct to 3 significant figures.

..... cm²

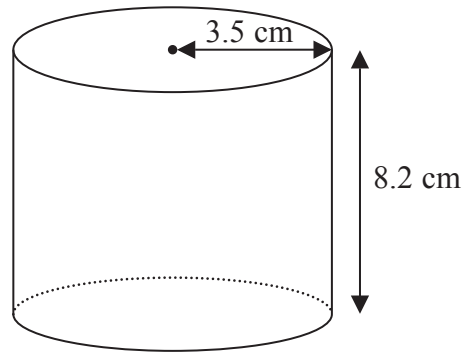


Diagram **NOT**
accurately drawn

A solid cylinder has radius 3.5 cm and height 8.2 cm.

Work out the **total** surface area of the cylinder.

Give your answer correct to 3 significant figures.

3.

[3 marks]

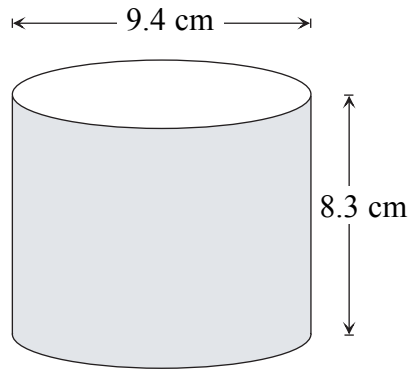


Diagram **NOT** accurately drawn

A solid cylinder has a diameter of 9.4 cm and a height of 8.3 cm.

Work out the volume of the cylinder.

Give your answer correct to 3 significant figures.

..... cm³

4.

[3 marks]

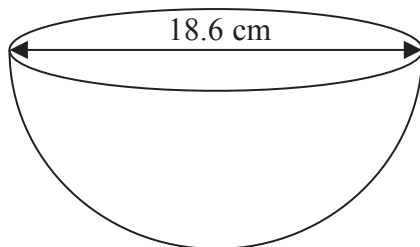


Diagram **NOT** accurately drawn

The diagram shows a hemisphere with a diameter of 18.6 cm.

Work out the volume of the hemisphere.

Give your answer correct to 3 significant figures.

.....cm³

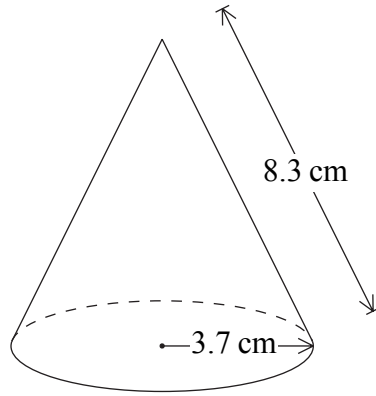


Diagram **NOT**
accurately drawn

The diagram shows a solid cone.
The radius of its base is 3.7 cm and the slant height is 8.3 cm.

- (a) Calculate the total surface area of the cone.
Give your answer correct to 3 significant figures.

..... cm^2
(2)

- (b) Calculate the volume of the cone.
Give your answer correct to 3 significant figures.

..... cm^3
(4)

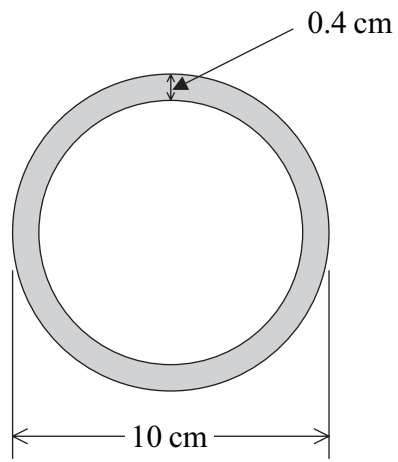


Diagram **NOT**
accurately drawn

The outer diameter of a hollow spherical ball is 10 cm.
The ball is made from rubber which is 0.4 cm thick.

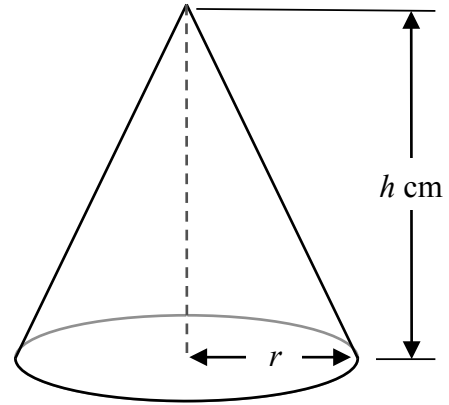
Calculate the volume of rubber needed to make the ball.
Give your answer correct to 3 significant figures.

..... cm³

7.

[3 marks]

A cone has a base radius r cm and vertical height h cm.



The volume of the cone is 12π cm³.

Find an expression for r in terms of h .

$r = \dots\dots\dots$

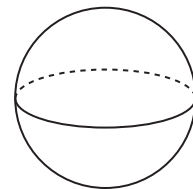
8.

[4 marks]

A sphere has a surface area of 81π cm².

Work out the volume of the sphere.

Give your answer correct to 3 significant figures.



$\dots\dots\dots$ cm³

A cone has slant height 4 cm and base radius r cm.

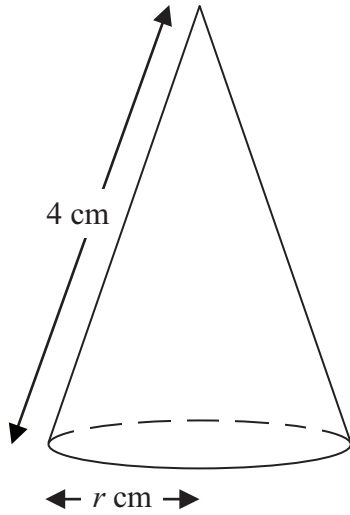


Diagram **NOT**
accurately drawn

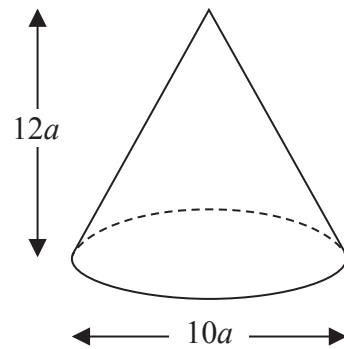
The **total** surface area of the cone is $\frac{33}{4}\pi$ cm².

Calculate the value of r .

$r = \dots\dots\dots$

The diagram shows a solid cone.

Diagram **NOT**
accurately drawn



The diameter of the base of the cone is $10a$ cm.

The height of the cone is $12a$ cm.

The total surface area of the cone is 360π cm²

The volume of the cone is $k\pi$ cm³, where k is an integer.

Find the value of k .

$$k = \dots\dots\dots$$

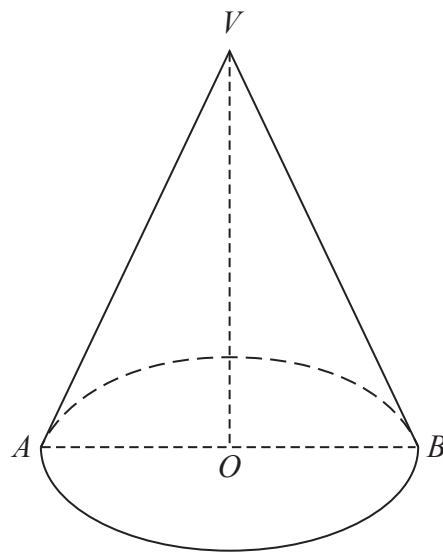


Diagram **NOT**
accurately drawn

The diagram shows a solid cone.

The base of the cone is a horizontal circle, centre O , with radius 4.5 cm.

AB is a diameter of the base and OV is the vertical height of the cone.

The curved surface area of the cone is 130 cm^2

Calculate the size of the angle AVB .

Give your answer correct to 1 decimal place.

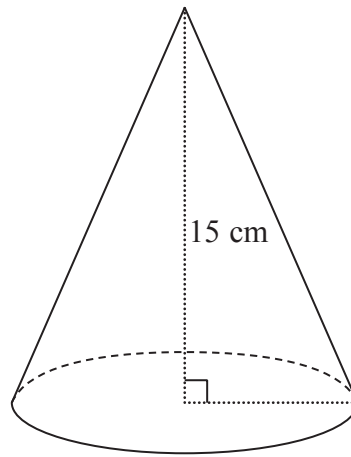


Diagram **NOT**
accurately drawn

A solid cone has a height of 15 cm.
The volume of the cone is $320\pi \text{ cm}^3$

Work out the curved surface area of the cone.
Give your answer correct to 3 significant figures.

..... cm^2

The diagram shows a solid cylinder.

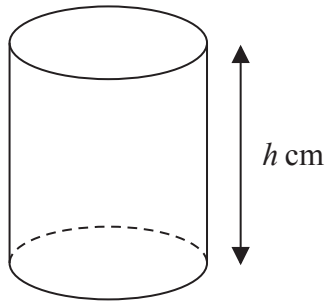


Diagram **NOT**
accurately drawn

The cylinder has radius $4\sqrt{3}$ cm and height h cm.
The total surface area of the cylinder is $56\pi\sqrt{6}$ cm²

Find the exact value of h .

Give your answer in the form $a\sqrt{2} + b\sqrt{3}$, where a and b are integers.

Show your working clearly.

$h = \dots\dots\dots$