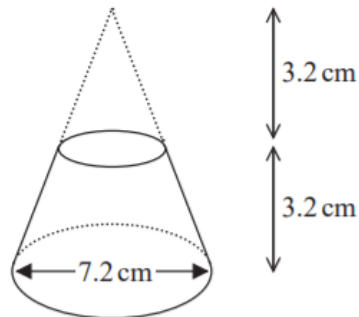


Volume and Area of 3D shapes Past Paper Questions GCSE Edexcel - Calculator

1.

Here is a frustum of a cone.

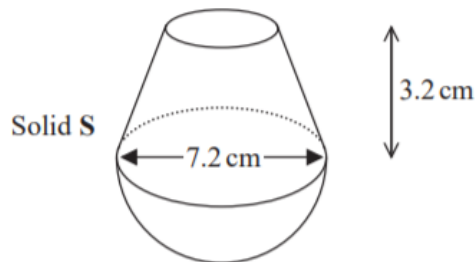


Volume of sphere = $\frac{4}{3}\pi r^3$

Volume of cone = $\frac{1}{3}\pi r^2 h$

The diagram shows that the frustum is made by removing a cone with height 3.2 cm from a solid cone with height 6.4 cm and base diameter 7.2 cm.

The frustum is joined to a solid hemisphere of diameter 7.2 cm to form the solid S shown below.

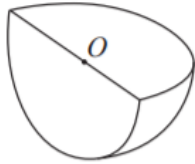


The density of the frustum is 2.4 g/cm^3
 The density of the hemisphere is 4.8 g/cm^3

Calculate the average density of solid S.

2.

Shape S is one quarter of a solid sphere, centre O .



Shape S

The volume of S is $576\pi \text{ cm}^3$

Find the surface area of S.

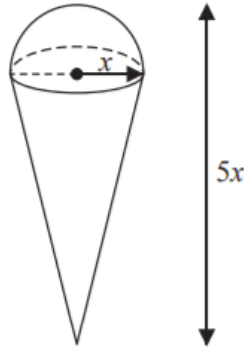
Give your answer correct to 3 significant figures.

You must show your working.

<p>Volume of sphere = $\frac{4}{3}\pi r^3$</p> <p>Surface area of sphere = $4\pi r^2$</p>	
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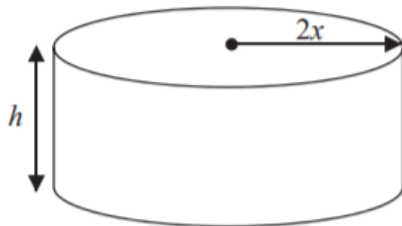
3.

A solid is made by putting a hemisphere on top of a cone.



<p>Volume of cone = $\frac{1}{3}\pi r^2 h$</p>	
<p>Volume of sphere = $\frac{4}{3}\pi r^3$</p>	

The total height of the solid is $5x$
 The radius of the base of the cone is x
 The radius of the hemisphere is x

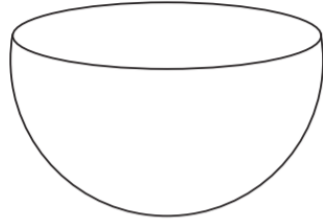


A cylinder has the same volume as the solid.
 The cylinder has radius $2x$ and height h
 All measurements are in centimetres.

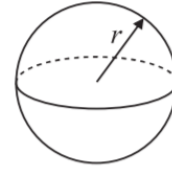
Find a formula for h in terms of x
 Give your answer in its simplest form.

4.

The diagram shows a solid hemisphere.



Volume of sphere = $\frac{4}{3}\pi r^3$
 Surface area of sphere = $4\pi r^2$

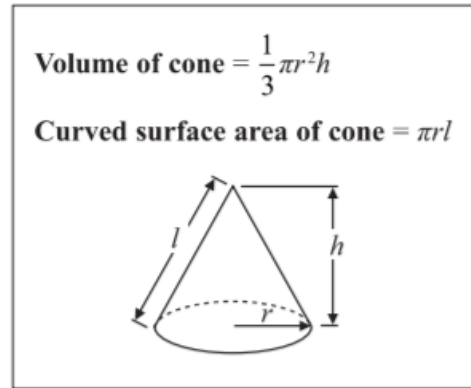
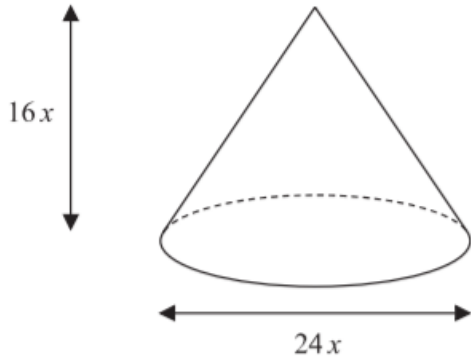


The volume of the hemisphere is $\frac{250}{3}\pi$

Work out the exact total surface area of the solid hemisphere.
 Give your answer as a multiple of π .

5.

7 The diagram shows a solid cone.



The diameter of the base of the cone is $24x$ cm.

The height of the cone is $16x$ cm.

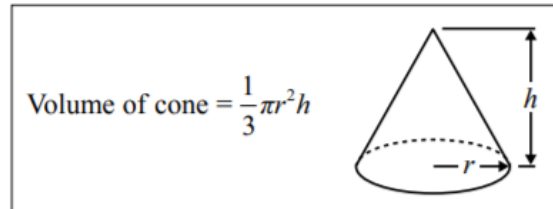
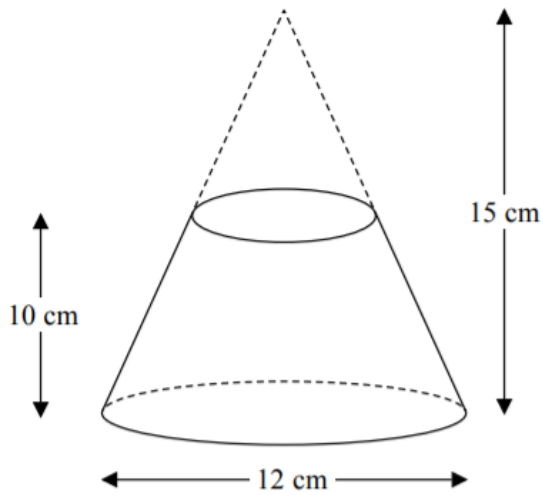
The curved surface area of the cone is 2160π cm².

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

Find the value of V .

6.

A frustum is made by removing a small cone from a large cone as shown in the diagram.



The frustum is made from glass.
The glass has a density of 2.5 g/cm^3

Work out the mass of the frustum.
Give your answer to an appropriate degree of accuracy.

7.

The diagram shows a solid shape.

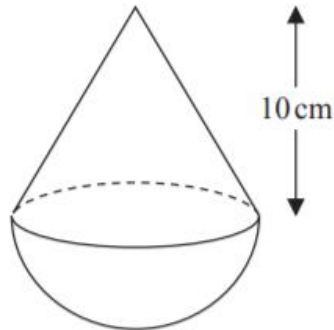


Diagram **NOT**
accurately drawn

The solid shape is made from a hemisphere and a cone.
The radius of the hemisphere is equal to the radius of the base of the cone.

The cone has a height of 10 cm.
The volume of the cone is $270\pi \text{ cm}^3$.

Work out the total volume of the solid shape.
Give your answer in terms of π .

8.

The diagram shows a solid hemisphere of radius 5 cm.

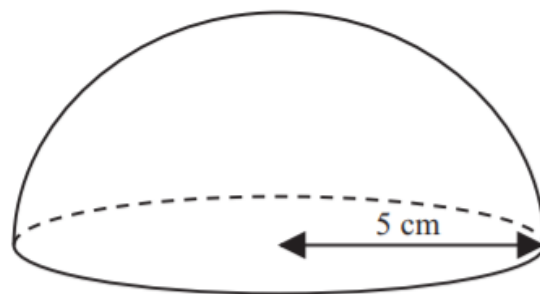


Diagram **NOT**
accurately drawn

Find the **total** surface area of the solid hemisphere.
Give your answer in terms of π .

9.

2

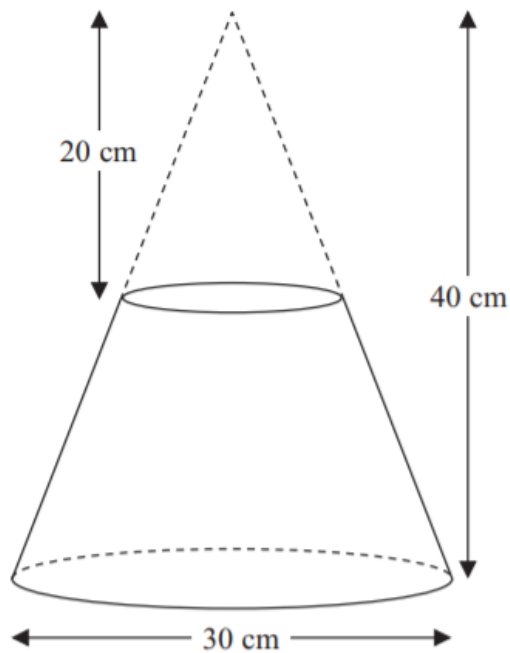


Diagram **NOT**
accurately drawn

A frustum is made by removing a small cone from a similar large cone.

The height of the small cone is 20 cm.

The height of the large cone is 40 cm.

The diameter of the base of the large cone is 30 cm.

Work out the volume of the frustum.

Give your answer correct to 3 significant figures.

10.

The diagram shows a solid metal cylinder.

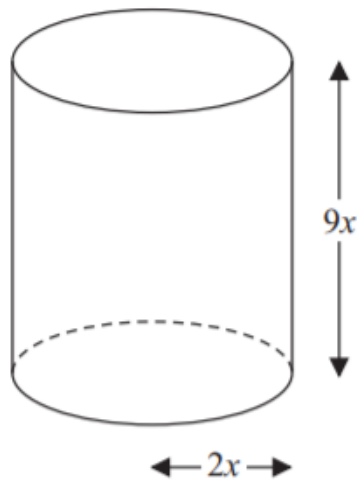


Diagram **NOT**
accurately drawn

The cylinder has base radius $2x$ and height $9x$.

The cylinder is melted down and made into a sphere of radius r .

Find an expression for r in terms of x .