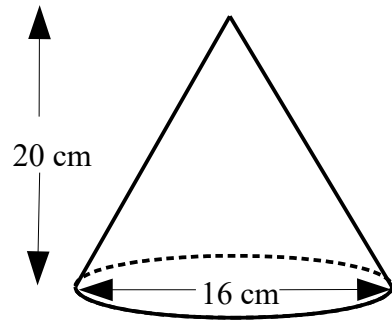
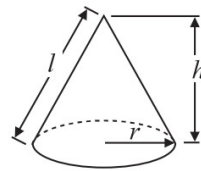


- 1 The diagram shows a cone.



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

$$\text{Curved surface area of cone} = \pi r l$$

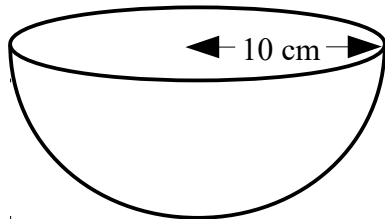


The height of the cone is 20 cm.  
The base of the cone has a diameter of 16 cm.

Work out the volume of the cone.  
Give your answer correct to 3 significant figures.

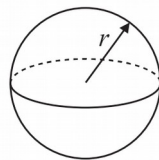
(2 marks)

- 2 The diagram shows a solid hemisphere with a radius of 10 cm.



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

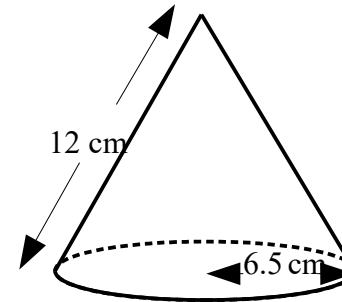
$$\text{Surface area of sphere} = 4\pi r^2$$



Work out the total surface area of the hemisphere.  
Give your answer in terms of  $\pi$ .

(3 marks)

- 3 The diagram shows a solid cone.



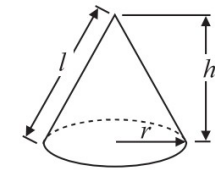
The slanted height of the cone is 12 cm.  
The base of the cone has a radius of 6.5 cm.

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

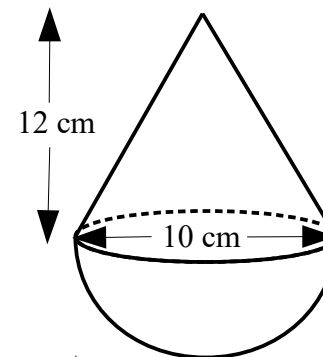
(3 marks)

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

$$\text{Curved surface area of cone} = \pi r l$$



- 4 The diagram shows a solid shape.  
The shape is a cone on top of a hemisphere.

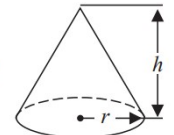


The height of the cone is 12 cm.  
The base of the cone has a diameter of 10 cm.  
The diameter of the hemisphere is 10 cm.

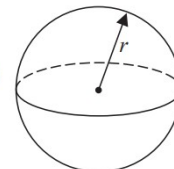
Work out the total volume of the solid shape.  
Give your answer in terms of  $\pi$ .

(4 marks)

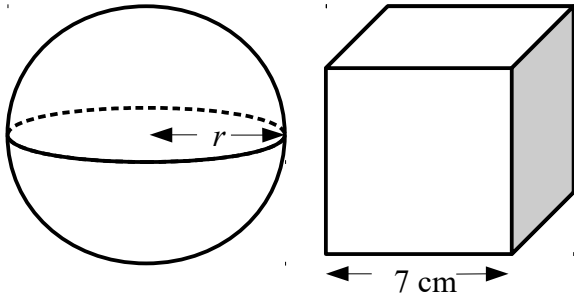
$$\text{Volume of a cone} = \frac{1}{3}\pi r^2 h$$



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

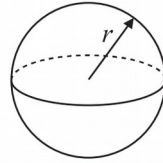


5 The diagram shows a sphere and a cube.



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

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



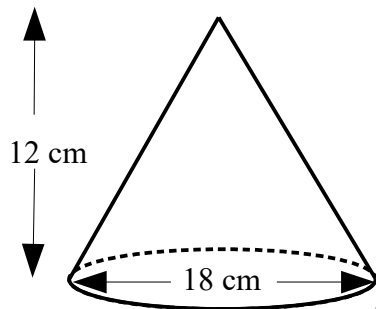
The cube has length 7 cm.

The sphere and the cube have the same volume.  
Work out the radius of the sphere.

Give your answer correct to 3 significant figures.

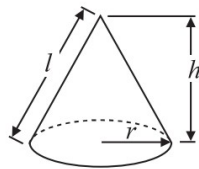
(4 marks)

6 The diagram shows a solid cone.



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

$$\text{Curved surface area of cone} = \pi r l$$



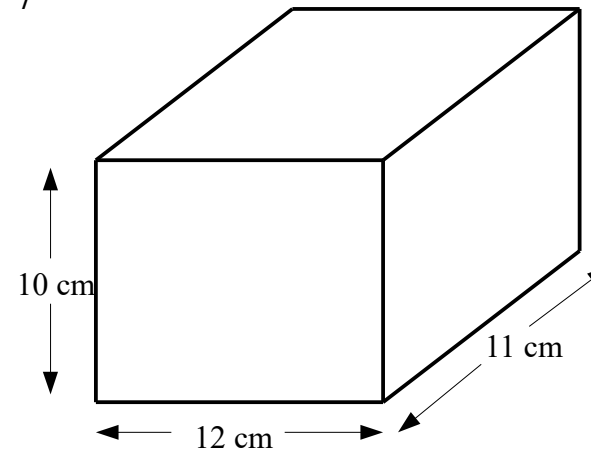
The height of the cone is 12 cm.

The base of the cone has a diameter of 18 cm.

Work out the total surface area of the cone.  
Give your answer in terms of  $\pi$ .

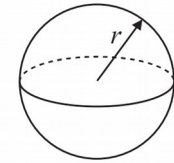
(4 marks)

7



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

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



A rectangular container is 12 cm long, 11 cm wide and 10 cm high.  
The container is filled with water to a depth of 8 cm.

A metal sphere of radius 3.5 cm is placed in the water.  
It sinks to the bottom.

Calculate the rise in the water level.  
Give your answer correct to 3 significant figures

(4 marks)