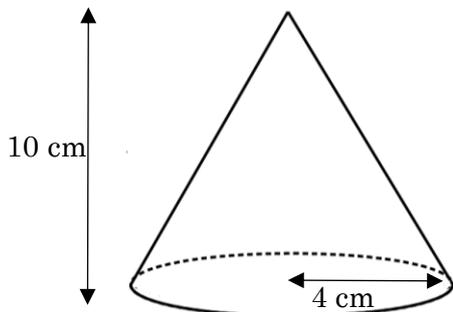




## Spheres and Cones Exam Practice

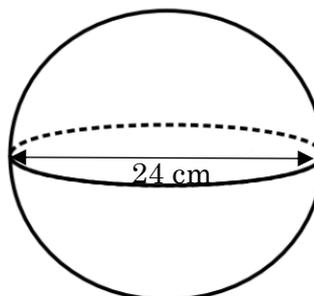
Q1. The height of a cone is 10 cm and the radius of the base is 4 cm. Work out the volume of the cone to 1 d.p.

(2 marks)



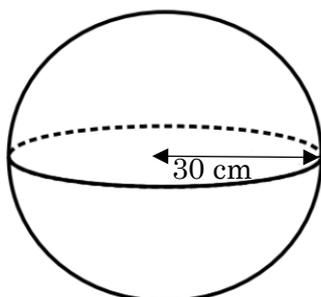
Q2. A sphere has diameter 24 cm. Work out the volume of the sphere to 2 d.p.

(2 marks)



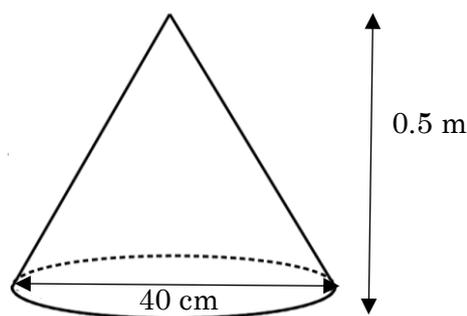
Q3. Work out the surface area of the sphere with radius shown. Leave your answer in terms of  $\pi$ .

(2 marks)



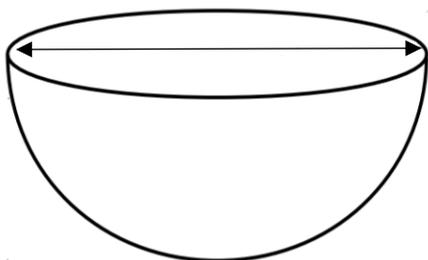
Q4. Work out the surface area of the cone shown. Leave your answer in terms of  $\pi$ .

(3 marks)

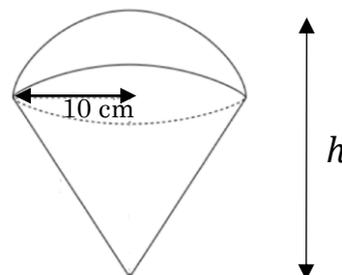


Q5. The volume of the semi-sphere below is  $\frac{2197\pi}{6} \text{ cm}^3$ . Find the diameter of the shape, shown.

(3 marks)



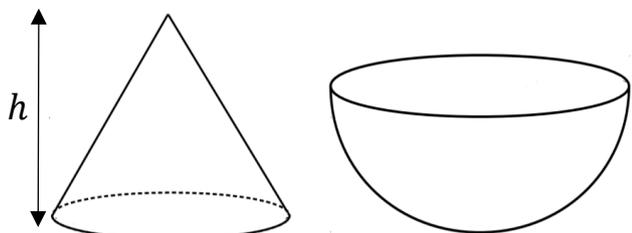
Q6. The shape below is a cone with a semi-circle on top. If the volume of the shape is  $2000\pi \text{ cm}^3$ , find the height of the shape  $h$  in terms of  $\pi$ .



(5 marks)

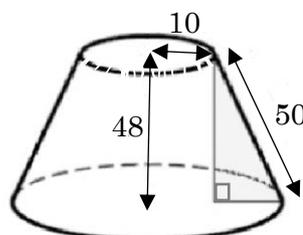


Q7. The two shapes below have the same volume. The ratio of the radius of the cone to the diameter of the hemi-sphere is  $2 : 5$ . Find an exact expression for the value of  $h$ .



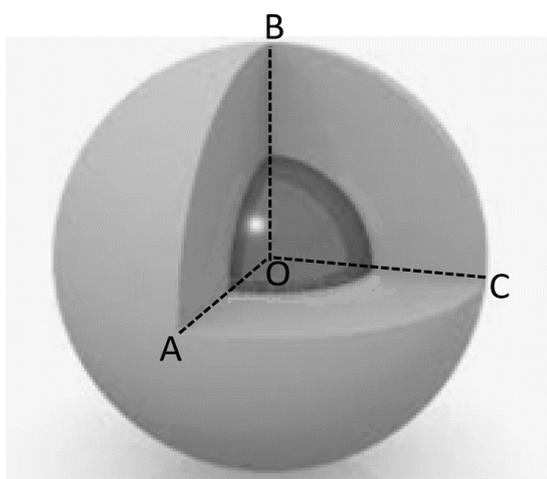
(6 marks)

Q8. The top of the frustum below has a radius of 10 cm, and the perpendicular height of the shape is 48 cm. Find the volume to 1 d.p.



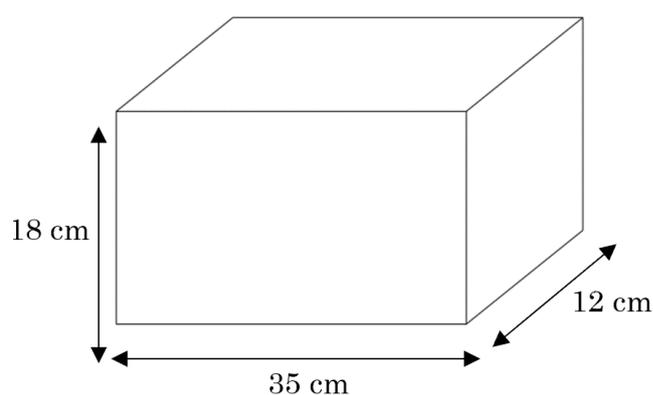
(6 marks)

Q9. A model of the planet Mercury is made in the shape below, consisting of a smaller sphere, representing the planets core, inside a larger sphere. The centre of the model is O, with angles AOB and BOC are  $90^\circ$ . If the radius of the larger sphere is 15 cm and the radius of the smaller sphere is 9 cm, find the surface area of the model.



(7 marks)

Q10. Below is a tank in the shape of a cuboid. As part of an experiment, it is filled to two-thirds of its capacity with water. A number metal spheres, each of radius 8 mm, are dropped into the water and sink to the bottom. Work out the number of spheres required to raise the water level in the tank by at least 5%.



(6 marks)