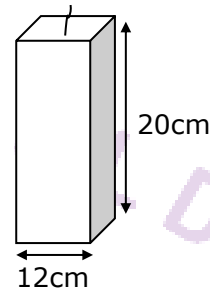


**Calculators are permitted but working must be shown.**

**Essential knowledge:**

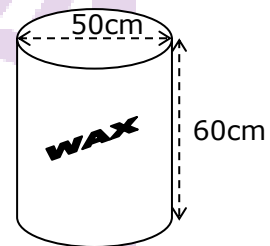
1. The diagram shows a candle in the shape of a cuboid with a **square** base.

Calculate the volume of the candle.



2. Wax used in candle making comes in large cylindrical blocks with **diameter** 50cm and height 60cm as shown in the diagram.

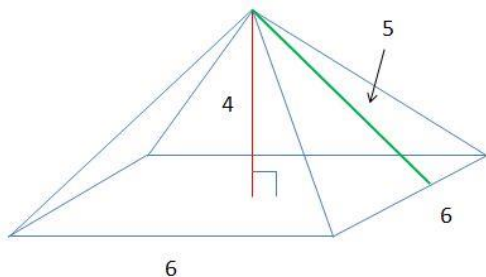
- (a) Calculate the volume of this wax block in cubic centimetres.
- (b) If the cylinder of wax is melted down and used to make smaller  $1\frac{1}{4}$  litre candles, how many **complete** smaller candles can be made from this amount of wax? ( $1000\text{cm}^3 = 1 \text{ litre}$ )



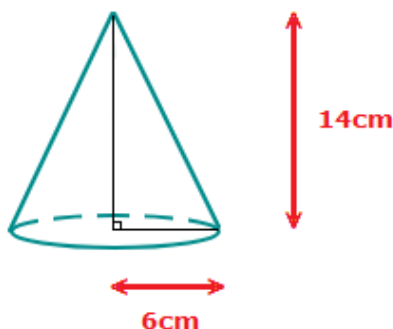
**Unit level:**

Calculate the **volume** of each solid in Q3 to 5:

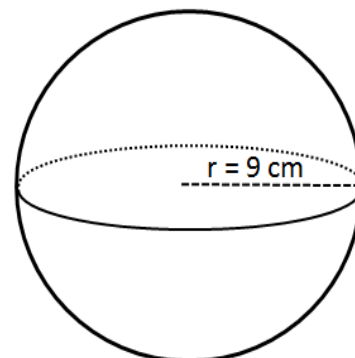
3.



4.



5.



**Volume**

Cylinder:

$$V = \pi r^2 h$$

Cone:

$$V = \frac{1}{3} \pi r^2 h$$

Sphere:

$$V = \frac{4}{3} \pi r^3$$

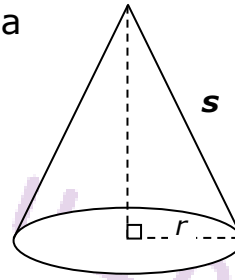
Pyramid:

$$V = \frac{1}{3} Ah$$

Prism:

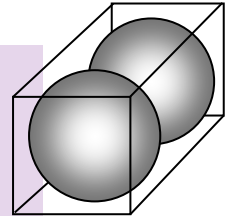
$$V = Ah$$

6. A cone has a base diameter of 10cm and a **slant height** of 13cm.  
Calculate the volume of the cone.

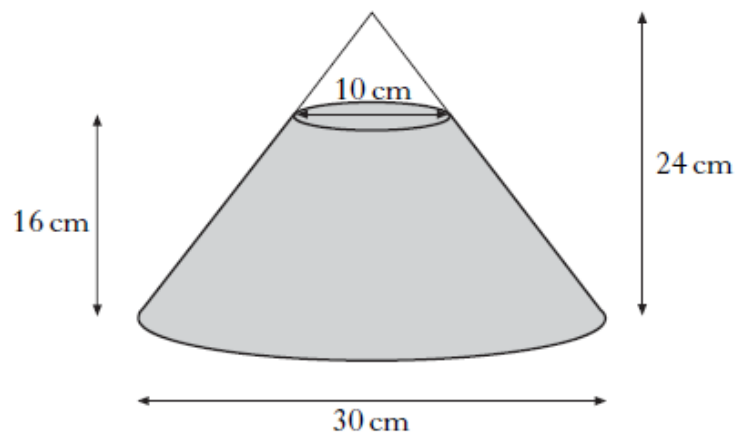


**Assessment level:**

7. Two **identical** solid spheres are packed in the smallest box possible which is a cuboid in shape. Calculate the amount of unoccupied space left in the box given that the **radius** of each sphere is 20cm.

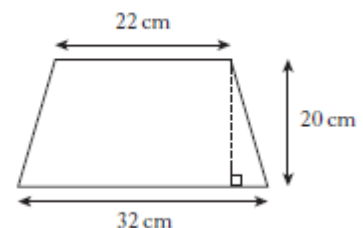


8. A glass ornament in the shape of a cone is partly filled with coloured water.

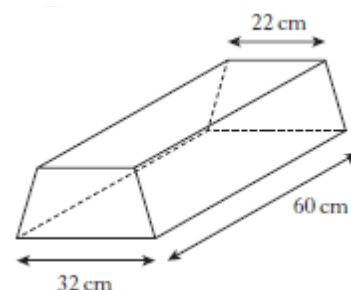


What is the volume of the water to 2 significant figures?

9. A concrete block is in the shape of a prism.  
The cross section of the prism is a trapezium with dimensions as shown.



- (a) Calculate the area of the cross section.



(b) Calculate the volume of the concrete block.

