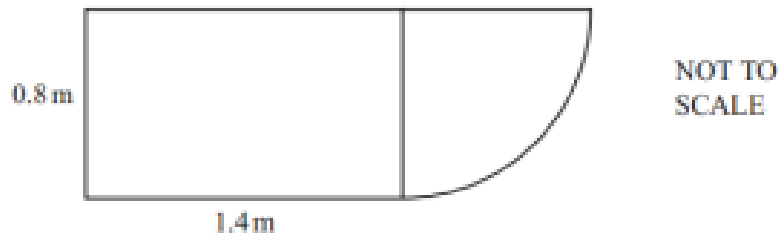


Name:

Date:

1.



The top of a desk is made from a rectangle and a quarter circle.
The rectangle measures 0.8m by 1.4m.

Calculate the surface area of the top of the desk.

Answer m² [3]

2.



The diagram represents a rectangular gate measuring 1.5m by 3.5m.
It is made from eight lengths of wood.

Calculate the total length of wood needed to make the gate.

Answer m [3]

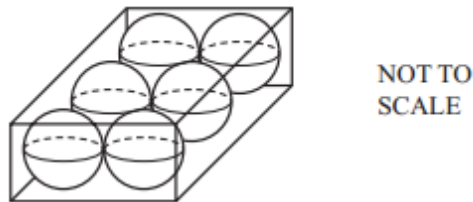
3. A spherical ball has a radius of 2.4 cm.
- (a) Show that the volume of the ball is 57.9 cm^3 , correct to 3 significant figures.

[The volume V of a sphere of radius r is $V = \frac{4}{3}\pi r^3$.]

Answer(a)

[2]

(b)



Six spherical balls of radius 2.4 cm fit exactly into a **closed** box.
The box is a cuboid.

Find

- (i) the length, width and height of the box,

Answer(b)(i) cm, cm, cm [3]

- (ii) the volume of the box,

Answer(b)(ii) cm^3 [1]

- (iii) the volume of the box **not** occupied by the balls,

Answer(b)(iii) cm^3 [1]

- (iv) the surface area of the box.

Answer(b)(iv) cm^2 [2]

(c)



NOT TO
SCALE

The six balls can also fit exactly into a **closed** cylindrical container, as shown in the diagram.

Find

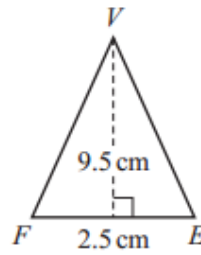
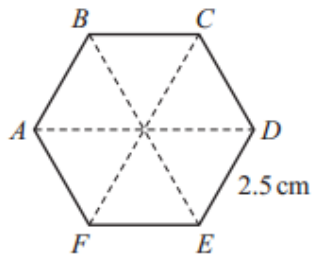
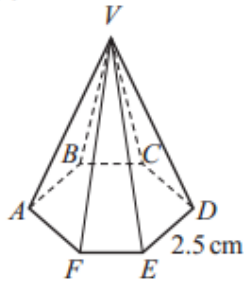
(i) the volume of the cylindrical container,

Answer(c)(i) cm^3 [3]

(ii) the volume of the cylindrical container **not** occupied by the balls,

Answer(c)(ii) cm^3 [1]

4. (a)



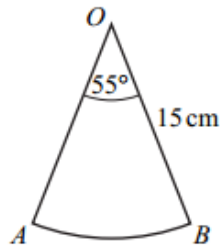
NOT TO SCALE

A solid pyramid has a **regular hexagon** of side 2.5 cm as its base.
 Each sloping face is an isosceles triangle with base 2.5 cm and height 9.5 cm.

Calculate the **total** surface area of the pyramid.

Answer(a) cm² [4]

(b)



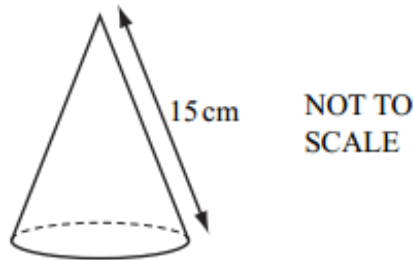
NOT TO SCALE

A sector *OAB* has an angle of 55° and a radius of 15 cm.

Calculate the area of the sector and show that it rounds to 108 cm^2 , correct to 3 significant figures.

Answer (b)

(c)



The sector radii OA and OB in **part (b)** are joined to form a cone.

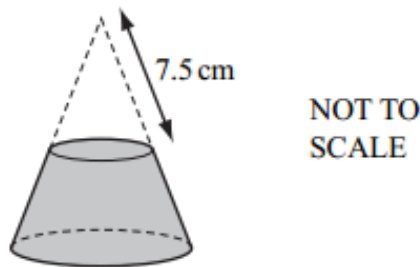
- (i) Calculate the base radius of the cone.
[The curved surface area, A , of a cone with radius r and slant height l is $A = \pi rl$.]

Answer(c)(i) cm [2]

- (ii) Calculate the perpendicular height of the cone.

Answer(c)(ii) cm [3]

(d)



A solid cone has the same dimensions as the cone in **part (c)**.
A small cone with slant height 7.5 cm is removed by cutting parallel to the base.

Calculate the volume of the remaining solid.

[The volume, V , of a cone with radius r and height h is $V = \frac{1}{3} \pi r^2 h$.]

Answer(d) cm^3 [3]