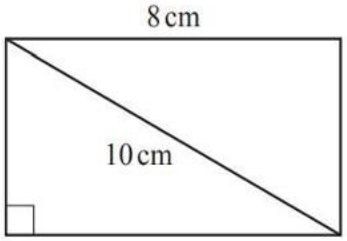
Maths **Total Marks: 50**

1. The length of the diagonal of the rectangle is 10cm. The length of the rectangle is 8 cm.



NOT TO SCALE

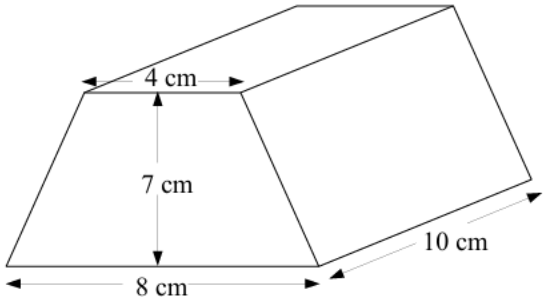
Work out the width of the rectangle.

..... cm [3]

2 The volume of a cone is 18π cm^3. The height of the cone is the same as the diameter of its base.
Find the radius of the base.

..... cm [3]

3



The diagram shows a prism.
The cross-section of the prism is a trapezium.

Work out the volume of the prism.

…….....……..…….....cm^3

(Total for question 3 is 3 marks)

4 **(a)**

NOT TO SCALE

The diagram shows a solid metal shape made from a cylinder and two hemispheres.
The radius of the cylinder and of the hemispheres is 3 cm.
The length of the cylinder is 15 cm.

(i) Show that the total volume of the shape is 537 cm^3, correct to 3 significant figures.

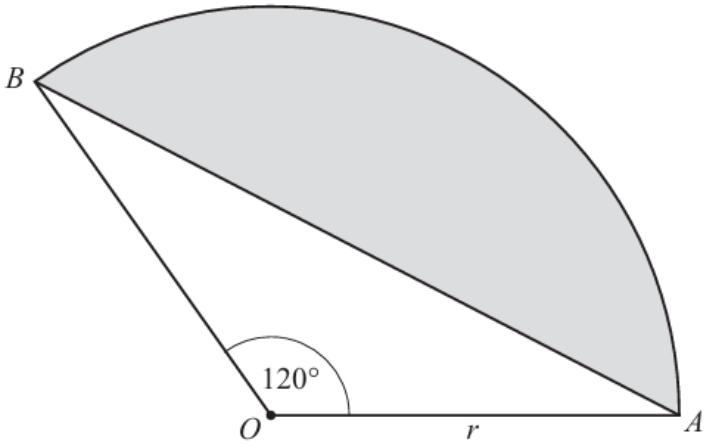
[3]

(ii) The shape is melted and all the metal is used to make 600 identical small cubes.

Calculate the side length of one of these cubes.
Give your answer in millimetres.

..... mm [3]

(b)

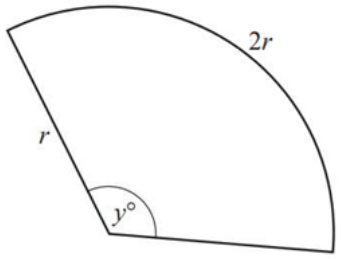


NOT TO SCALE

The diagram shows a sector OAB with radius r cm and centre O.
The sector angle is 120°.
The shaded segment has an area of $18.4\,\text{cm}^2$.

Calculate the length of the arc AB.

5 · The diagram shows a sector of a circle with radius r and angle y°. The length of the arc of the sector is 2r.

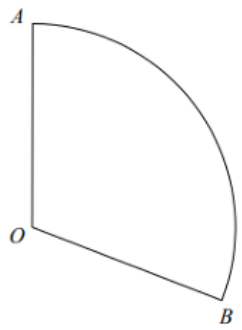


NOT TO SCALE

Calculate the value of y.

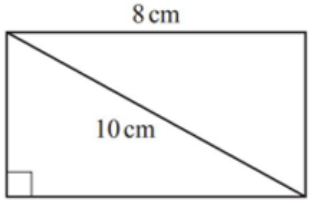
y = ... [3]

6. AOB is a sector of a circle, centre O and radius 9 cm.
The length of arc AB is 6π cm.
Find the area of the sector. Give your answer in terms of π.



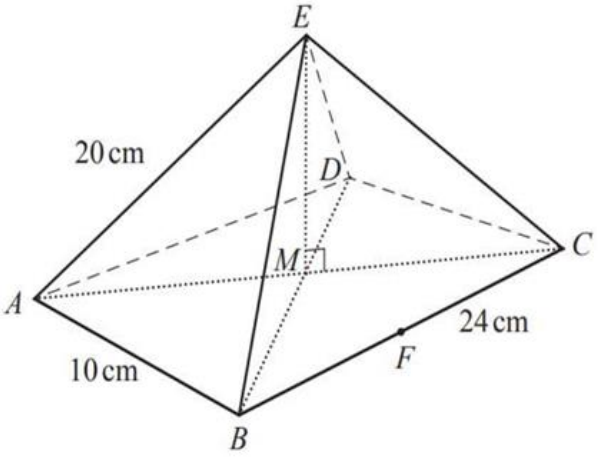
[3M]

7. The length of the diagonal of the rectangle is 10 cm.
The length of the rectangle is 8 cm.
Find the area of the rectangle



[4M]

8. ABCDE is a pyramid with a rectangular base.



NOT TO SCALE

AB = 10 cm and BC = 24 cm. The length of each sloping edge is 20cm.
Vertex E is vertically above the centre of the base, M.

(i) Calculate the length AC.

..... cm [2]

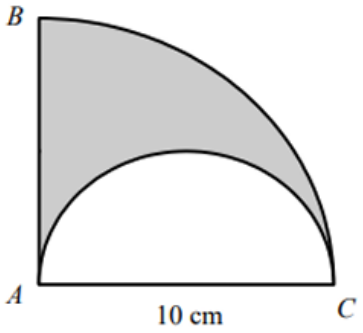
(ii) Calculate EM, the height of the pyramid.

..... cm [3]

(iii) Calculate the volume of the pyramid.

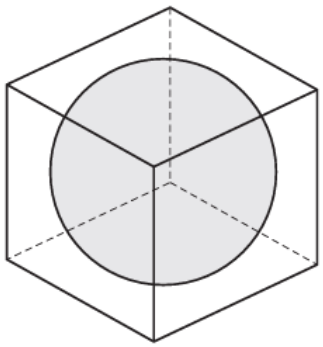
..... cm^3 [2]

9. BAC is a sector of a circle, centre A. AC is the diameter of a semi-circle.
AC is 10 cm. Find the area of the shaded region.
Give your answer in terms of π.



[4M]

10 (a)



NOT TO SCALE

A metal sphere has a volume of 9203 cm^3.
The sphere is inside a cube and touches each face of the cube.

(i) Find the volume of the cube.

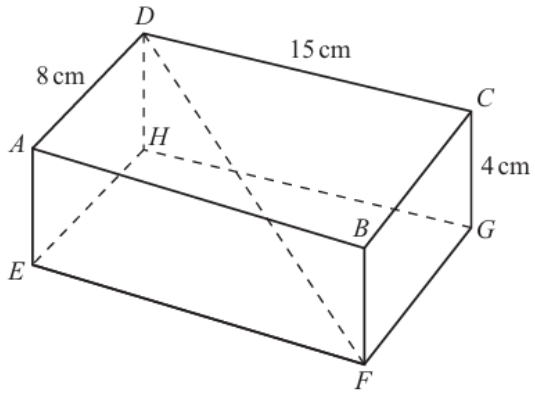
..... cm^3 [4]

(ii) The sphere is melted and poured into the cube.

Find the depth of the metal.

..... cm [2]

(b)



NOT TO SCALE

ABCDEFGH is a cuboid.

(i) Calculate the length *DF*.

..... cm [4]