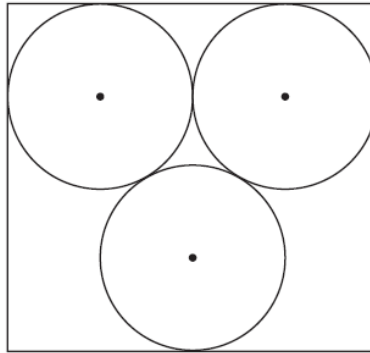


- 1 The diagram shows 3 identical circles inside a rectangle. Each circle touches the other two circles and the sides of the rectangle, as shown in the diagram.



The radius of each circle is 24 mm.

Work out the area of the rectangle.
Give your answer correct to 3 significant figures.

..... mm²

(Total for Question is 4 marks)

- 2 A square, with sides of length x cm, is inside a circle.
Each vertex of the square is on the circumference of the circle.

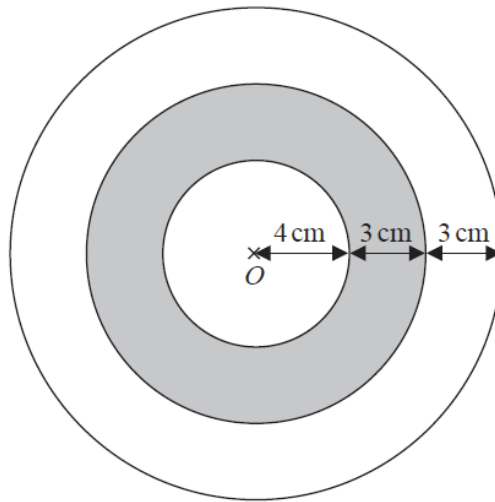
The area of the circle is 49 cm^2 .

Work out the value of x .

Give your answer correct to 3 significant figures.

(Total for Question is 4 marks)

- 3 The diagram shows a logo made from three circles.



Each circle has centre O .

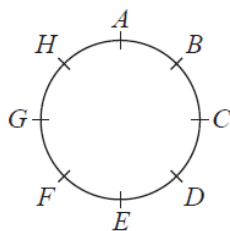
Daisy says that exactly $\frac{1}{3}$ of the logo is shaded.

Is Daisy correct?

You must show all your working.

(Total for Question is 4 marks)

- 4 Hasmeet walks once round a circle with diameter 80 metres.

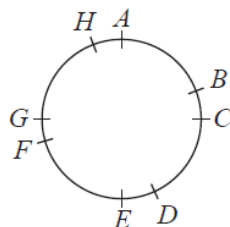


There are 8 points equally spaced on the circumference of the circle.

- (a) Find the distance Hasmeet walks between one point and the next point.

.....m
(2)

Four of the points are moved, as shown in the diagram below.



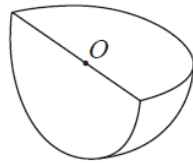
Hasmeet walks once round the circle again.

- (b) Has the mean distance that Hasmeet walks between one point and the next point changed?
You must give a reason for your answer.

.....
.....
(1)

(Total for Question is 3 marks)

- 5 Shape S is one quarter of a solid sphere, centre O .



Shape S

The volume of S is $576\pi \text{ cm}^3$

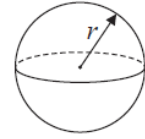
Find the surface area of S.

Give your answer correct to 3 significant figures.

You must show your working.

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

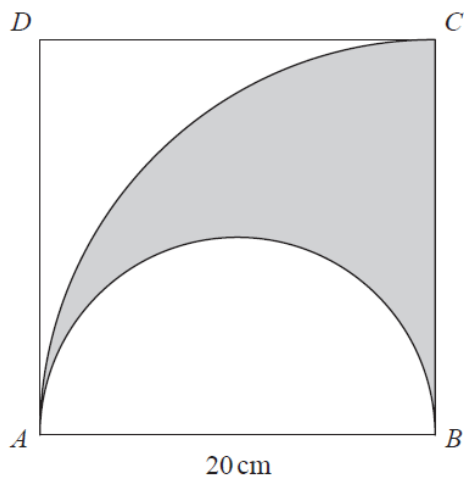
$$\text{Surface area of sphere} = 4\pi r^2$$



..... cm^2

(Total for Question is 5 marks)

- 6 The diagram shows a square $ABCD$ with sides of length 20 cm. It also shows a semicircle and an arc of a circle.

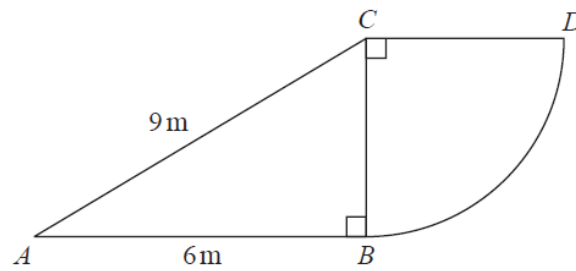


AB is the diameter of the semicircle.
 AC is an arc of a circle with centre B .

Show that $\frac{\text{area of shaded region}}{\text{area of square}} = \frac{\pi}{8}$

(Total for Question is 4 marks)

- 7 The diagram shows a right-angled triangle and a quarter circle.



The right-angled triangle ABC has angle $ABC = 90^\circ$
The quarter circle has centre C and radius CB .

Work out the area of the quarter circle.
Give your answer correct to 3 significant figures.
You must show all your working.

..... m^2

(Total for Question is 4 marks)