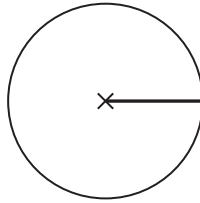


1 The centre of this circle is marked with a cross (×).

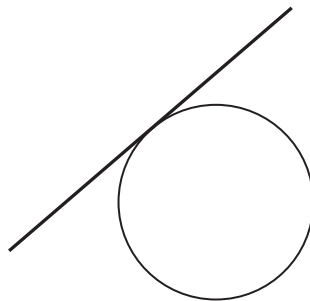


(a) Write down the mathematical name of the straight line shown in the circle.

.....

(1)

(b) Write down the mathematical name of the straight line that is touching the circle.

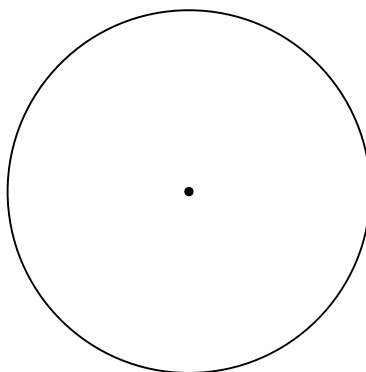


.....

(1)

(Total for Question 1 is 2 marks)

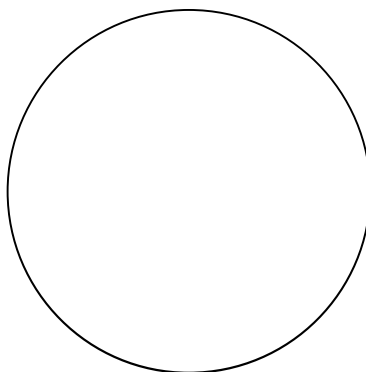
2



(a) On the diagram above, draw a diameter of the circle.

(1)

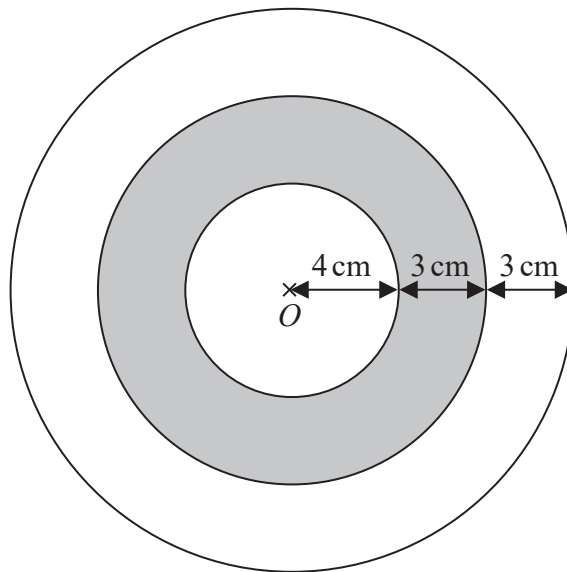
(b) On the diagram below, draw a segment of the circle.
Shade the segment.



(1)

(Total for Question 2 is 2 marks)

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



Each circle has centre O .

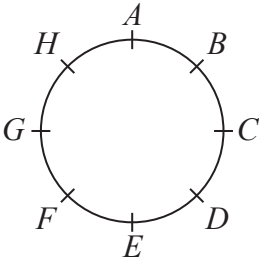
Daisy says that exactly $\frac{1}{3}$ of the logo is shaded.

Is Daisy correct?

You must show all your working.

(Total for Question 3 is 4 marks)

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

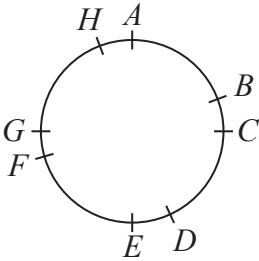


There are 8 points equally spaced on the circumference of the circle.

(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)

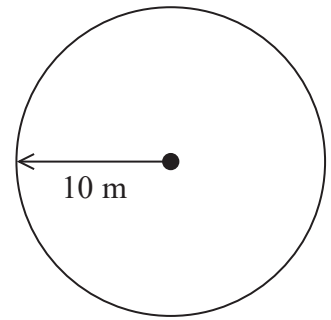
(Total for Question 4 is 3 marks)

- 5 Balena has a garden in the shape of a circle of radius 10 m.
He is going to cover the garden with grass seed to make a lawn.

Grass seed is sold in boxes.

Each box of grass seed will cover 46 m^2 of garden.

Balena wants to cover all the garden with grass seed.



- (a) Work out an estimate for the number of boxes of grass seed Balena needs.
You must show your working.

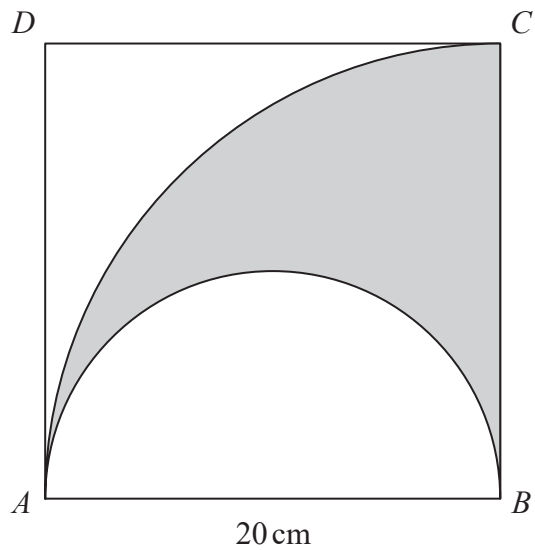
.....
(4)

- (b) Is your estimate for part (a) an underestimate or an overestimate?
Give a reason for your answer.

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

(Total for Question 5 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.

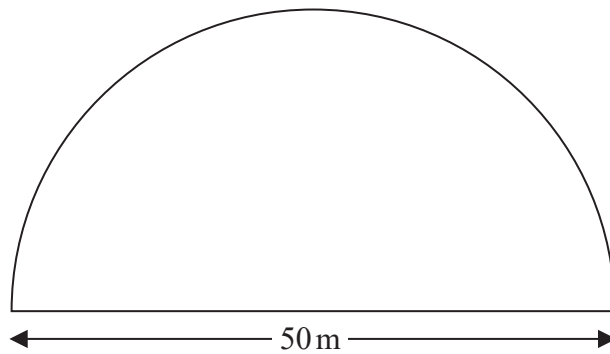


AB is the diameter of the semicircle.
 AC is an arc of a circle with centre B .

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

(Total for Question 6 is 4 marks)

- 7 A farmer has a field in the shape of a semicircle of diameter 50 m.



The farmer asks Jim to build a fence around the edge of the field.
Jim tells him how much it will cost.

Total cost = £29.86 per metre of fence plus £180 for each day's work

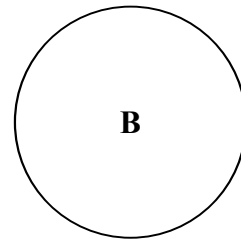
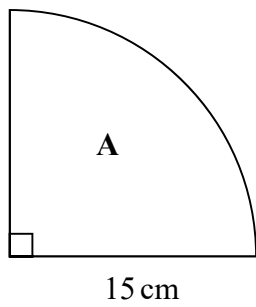
Jim takes three days to build the fence.

Work out the total cost.

£.....

(Total for Question 7 is 5 marks)

- 8 **A** is in the shape of a quarter circle of radius 15 cm.
B is in the shape of a circle.

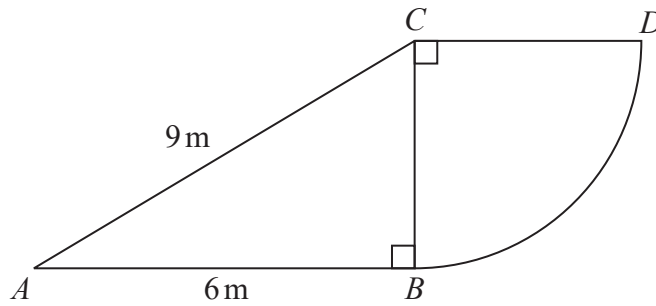


The area of **A** is 9 times the area of **B**.

Show that the radius of **B** is 2.5 cm.

(Total for Question 8 is 3 marks)

- 9 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.

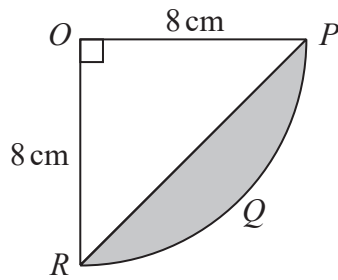
Give your answer correct to 3 significant figures.

You must show all your working.

..... m^2

(Total for Question 9 is 4 marks)

10 The diagram shows a sector $OPQR$ of a circle, centre O and radius 8 cm.



OPR is a triangle.

Work out the area of the shaded segment PQR .

Give your answer correct to 3 significant figures.

..... cm²

(Total for Question 10 is 4 marks)