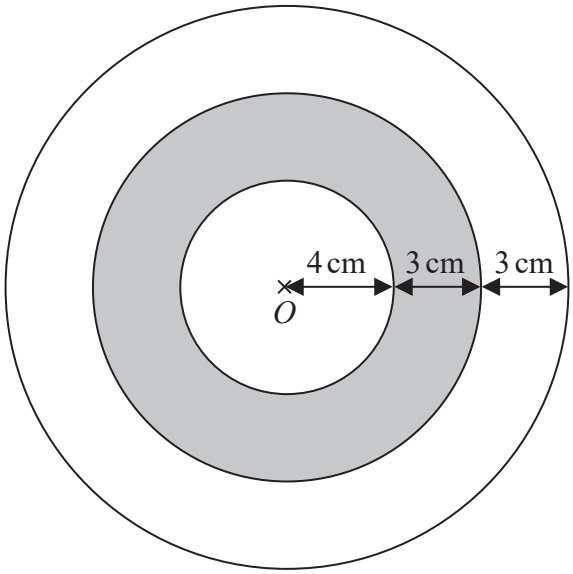
Autumn 2017 Paper 1 Q4

1 The diagram shows a logo made from three circles.



Each circle has centre O.

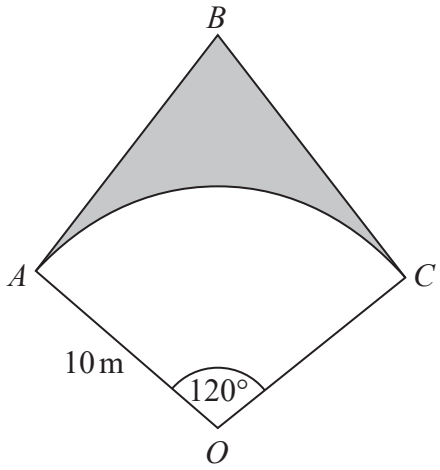
Daisy says that exactly $\frac{1}{3}$ of the logo is shaded.

Is Daisy correct?
You must show all your working.

(Total for Question 1 is 4 marks)

Autumn 2017 Paper 2 Q20

2



OAC is a sector of a circle, centre *O*, radius 10 m.

BA is the tangent to the circle at point *A*.
BC is the tangent to the circle at point *C*.

Angle *AOC* = 120°

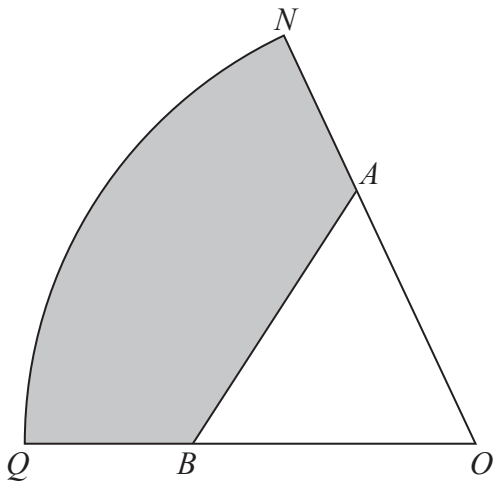
Calculate the area of the shaded region.
Give your answer correct to 3 significant figures.

..... m^2

(Total for Question 2 is 5 marks)

Summer 2017 Paper 2 Q17

3



ONQ is a sector of a circle with centre *O* and radius 11 cm.

A is the point on *ON* and *B* is the point on *OQ* such that *AOB* is an equilateral triangle of side 7 cm.

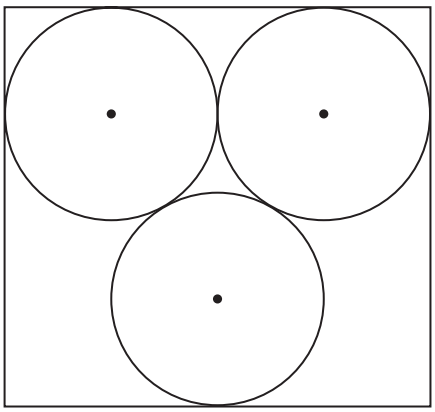
Calculate the area of the shaded region as a percentage of the area of the sector *ONQ*.
Give your answer correct to 1 decimal place.

.....%

(Total for Question 3 is 5 marks)

Summer 2017 Paper 2 Q21

4 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.

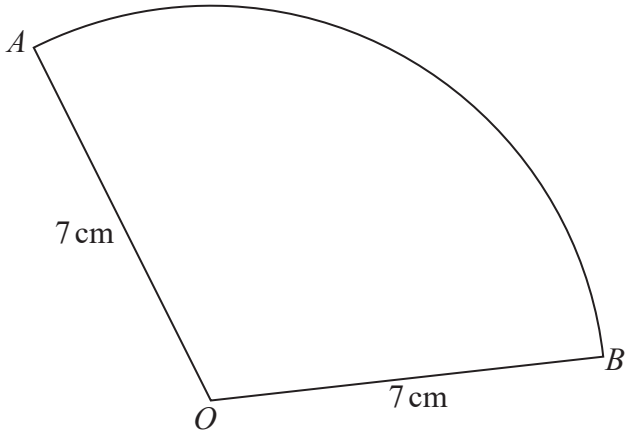
Work out the area of the rectangle.
Give your answer correct to 3 significant figures.

..... mm^2

(Total for Question 4 is 4 marks)

Summer 2019 Paper 2 Q12

5 *OAB* is a sector of a circle with centre *O* and radius 7 cm.



The area of the sector is 40 cm^2

Calculate the perimeter of the sector.
Give your answer correct to 3 significant figures.

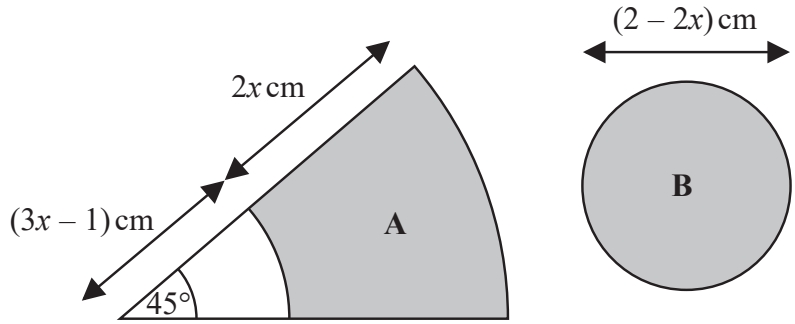
..... cm

(Total for Question 5 is 4 marks)

Summer 2020 Paper 1 Q22

6 The diagram shows two shaded shapes, **A** and **B**.

Shape **A** is formed by removing a sector of a circle with radius $(3x - 1)$ cm from a sector of the circle with radius $(5x - 1)$ cm.
Shape **B** is a circle of diameter $(2 - 2x)$ cm.



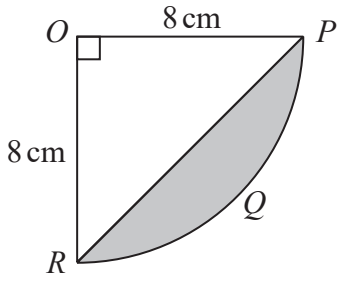
The area of shape **A** is equal to the area of shape **B**.

Find the value of x.
You must show all your working.

.....

(Total for Question 6 is 5 marks)

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



OPR is a triangle.

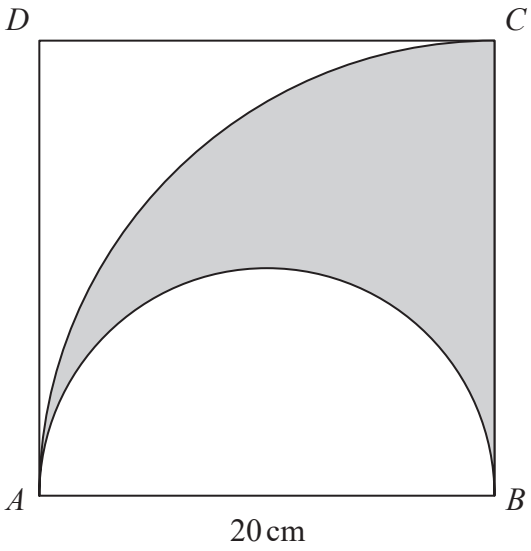
Work out the area of the shaded segment PQR.
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 7 is 4 marks)

Autumn 2018 Paper 1 Q7

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



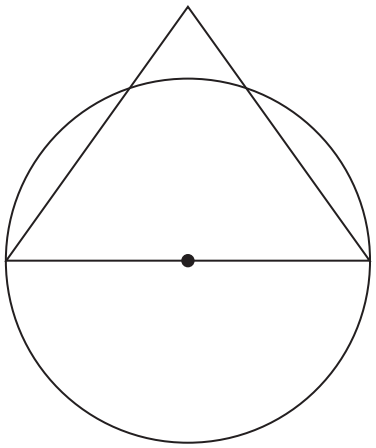
AB is the diameter of the semicircle.
AC is an arc of a circle with centre *B*.

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

(Total for Question 8 is 4 marks)

Autumn 2018 Paper 2 Q13

9 The diagram shows a circle and an equilateral triangle.



One side of the equilateral triangle is a diameter of the circle.
The circle has a circumference of 44 cm.

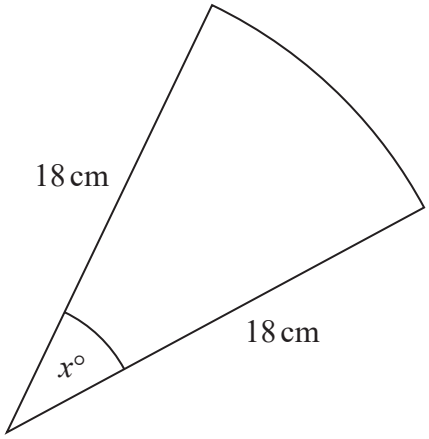
Work out the area of the triangle.
Give your answer correct to 3 significant figures.

.....cm^2

(Total for Question 9 is 3 marks)

Autumn 2022 Paper 1 Q15

10 The diagram shows a sector of a circle of radius 18 cm.



The length of the arc is 4π cm.

Work out the value of x.

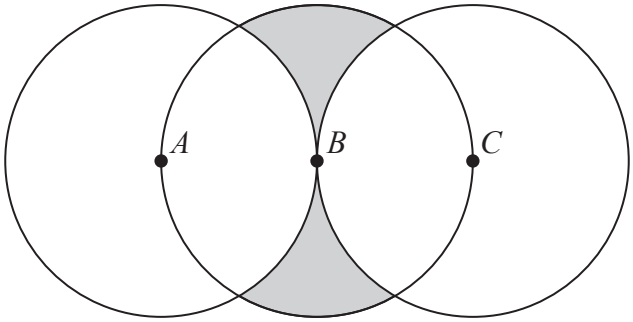
$x =$ .....

(Total for Question 10 is 3 marks)

Summer 2022 Paper 1 Q21

11 The diagram shows three circles, each of radius 4 cm.

The centres of the circles are A, B and C such that ABC is a straight line and $AB = BC = 4$ cm.



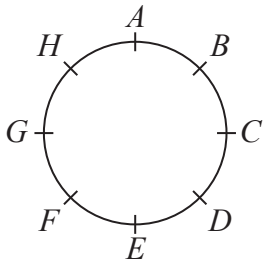
Work out the total area of the two shaded regions.
Give your answer in terms of π

..... cm^2

(Total for Question 11 is 5 marks)

Autumn 2017 Paper 2 Q3

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



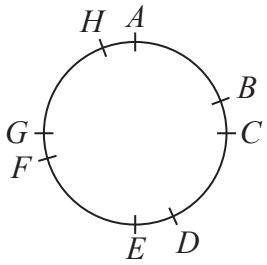
There are 8 points equally spaced on the circumference of the circle.

(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 12 is 3 marks)