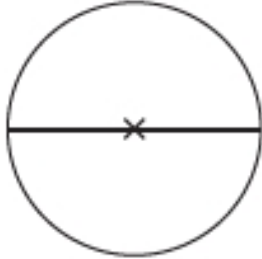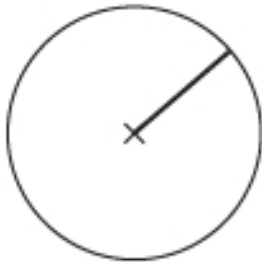# G065 Circles and sectors

Q1.

Here are four circles and four straight lines.
Each circle has its centre marked with a cross (✕).
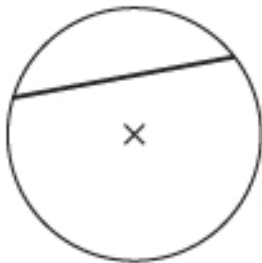
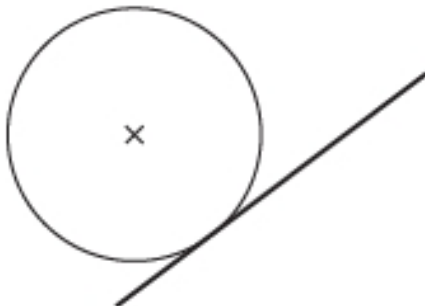Draw an arrow from each straight line to its mathematical name.
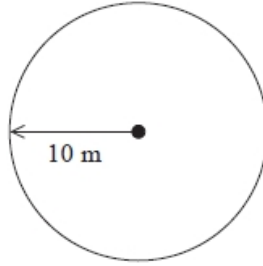

Radius

Chord

Tangent

Diameter

(Total for question = 2 marks)

Q2.

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.

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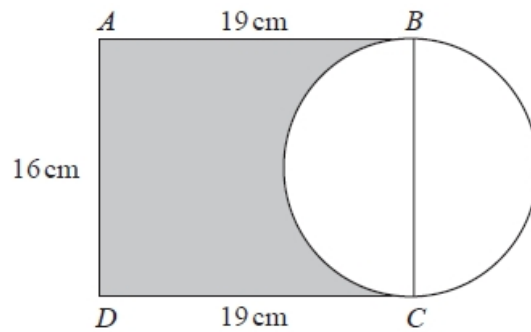
(1)

(Total for question = 5 marks)

Q3.

Here is a diagram showing a rectangle, *ABCD*, and a circle.
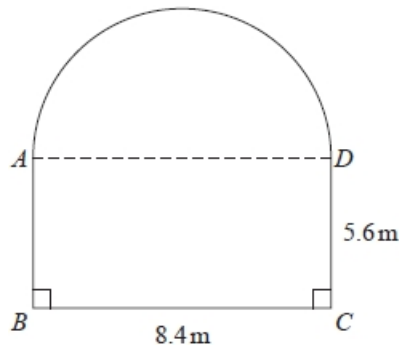

BC is a diameter of the circle.

Calculate the percentage of the area of the rectangle that is shaded.
Give your answer correct to 1 decimal place.

....%

(Total for question is 4 marks)

Q4.

A garden is in the shape of a rectangle, *ABCD*, and a semicircle.
AD is the diameter of the semicircle.

Carol is going to cover the garden with fertiliser.

A box of fertiliser costs £4.99
Carol has been told that one box of fertiliser will cover 12 m^2 of garden.

(a) Work out the cost of buying enough fertiliser to cover the garden completely.

£ ....

(5)

Carol finds out that one box of fertiliser will cover more than 12 m^2 of garden.

(b) Explain how this might affect the number of boxes she needs to buy.
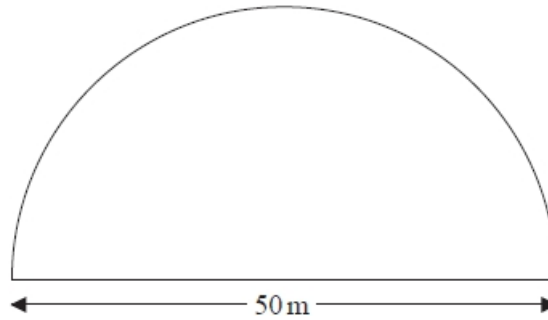
....

....

(1)

(Total for question = 6 marks)

Q5.

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.

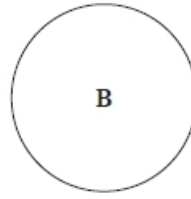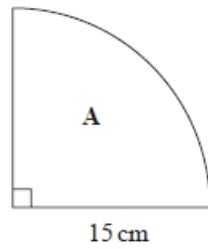| Total cost = £29.86 per metre of fence plus £180 for each day's work |
| --- |

Jim takes three days to build the fence.

Work out the total cost.

£ ....

(Total for question = 5 marks)

Q6.

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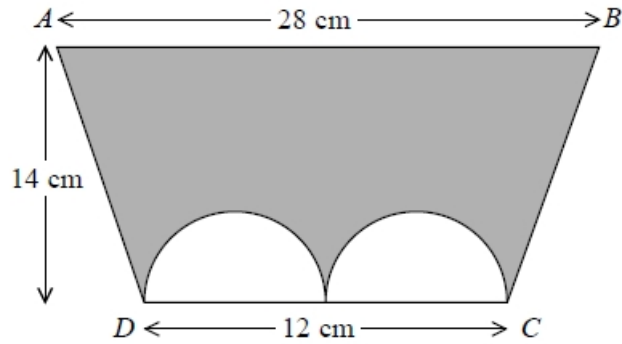**B** is in the shape of a circle.

15 cm

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

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

(Total for question = 3 marks)

Q7.

The diagram shows a trapezium *ABCD* and two identical semicircles.

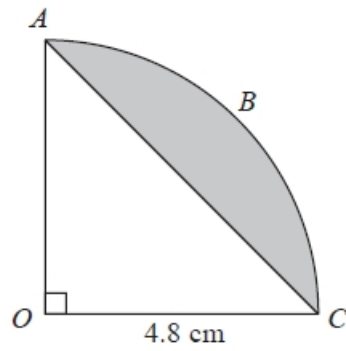The centre of each semicircle is on *DC*.

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

.... cm²

(Total for question = 4 marks)

Q8.

The arc *ABC* is a quarter of a circle with centre *O* and radius 4.8 cm.
AC is a chord of the circle.
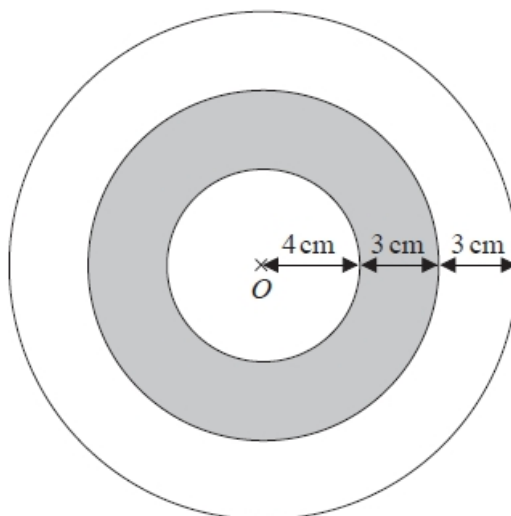
Work out the area of the shaded segment.
Give your answer correct to 3 significant figures.

.... cm²

(Total for question = 3 marks)

The diagram shows a logo made from three circles.

Each circle has centre O.

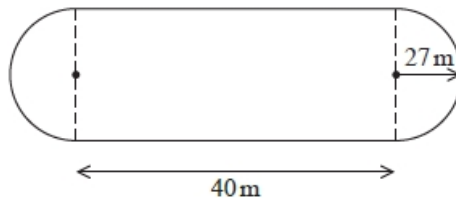Daisy says that exactly $\frac{1}{3}$ of the logo is shaded.

Is Daisy correct?
You must show all your working.

(Total for question = 4 marks)

Q10.

The diagram shows a cycle track.

The track has two straight sides each of length 40 m.
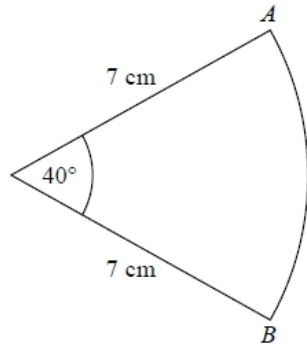Each end of the track is a semicircle of radius 27 m.

The diameter of each wheel of Ian's bike is 590 mm.
Ian is going to ride his bike around the track once.

Calculate how many complete revolutions each wheel of his bike will make.

....

(Total for question = 5 marks)

Q11.

The diagram shows a sector of a circle of radius 7 cm.

Work out the length of arc *AB*.
Give your answer correct to 3 significant figures.

.... cm

(Total for question = 2 marks)

Q12.

The diagram shows a sector of a circle of radius 4 cm.
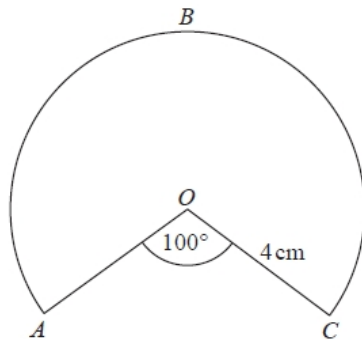
Work out the length of the arc *ABC*.
Give your answer correct to 3 significant figures.

.... cm

(Total for question = 2 marks)

Q13.

The diagram shows a sector of a circle of radius 9 cm.
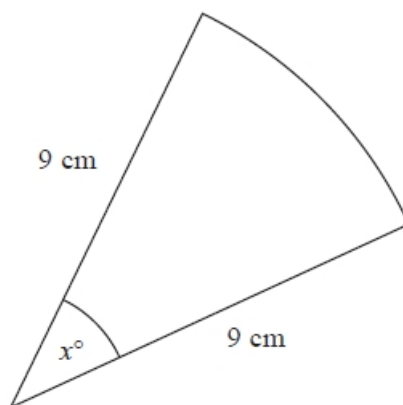
The sector has a perimeter of 25 cm.

Work out the value of x.
Give your answer correct to 1 decimal place.

....

(Total for question = 4 marks)

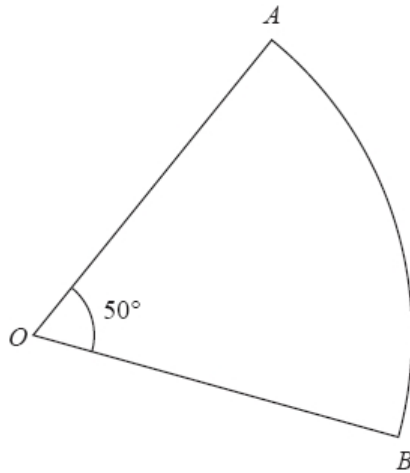**Q14.**

The diagram shows sector *OAB* of a circle, centre *O*.

Diagram **NOT** accurately drawn

Angle *AOB* = 50°
Sector *OAB* has area 20π cm^2

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

.... cm

(Total for question = 5 marks)