

Edexcel GCSE

Mathematics (Linear) – 1MA0

AREA & CIRCUMFERENCE OF CIRCLES SOLUTIONS

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.

Tracing paper may be used.

Items included with question papers

Nil

**Instructions**

Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

Information

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice

Read each question carefully before you start to answer it.

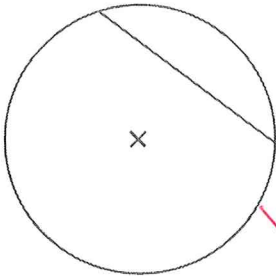
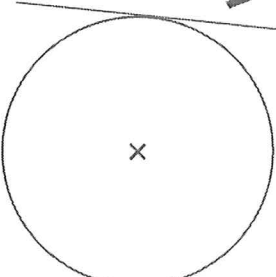
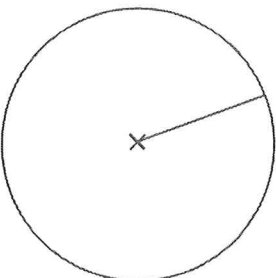
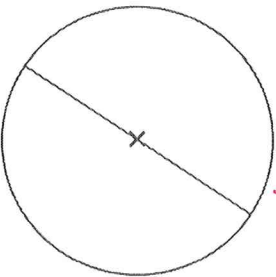
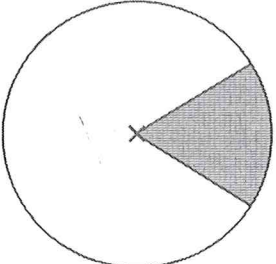
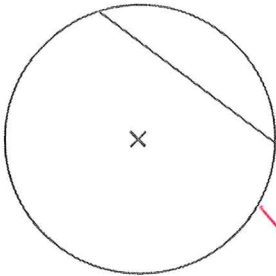
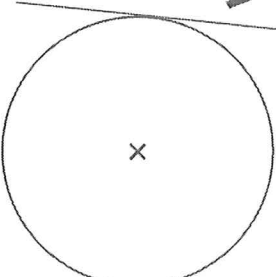
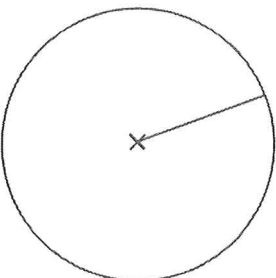
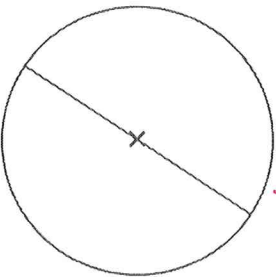
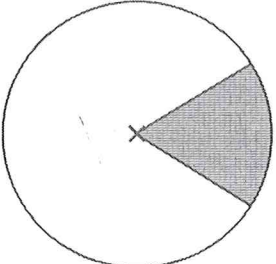
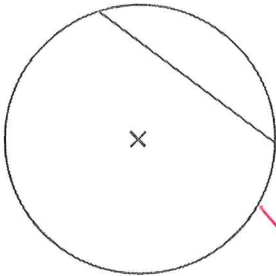
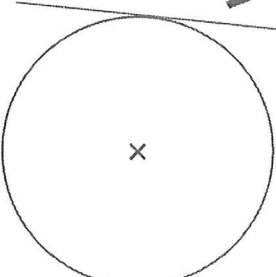
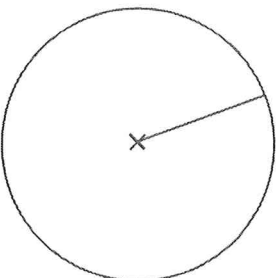
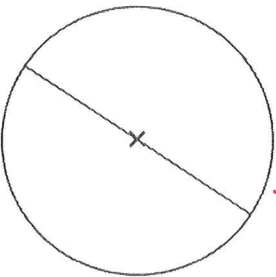
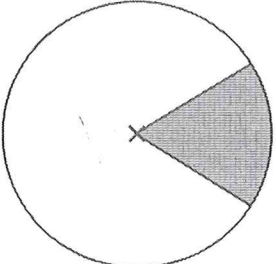
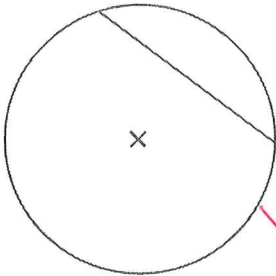
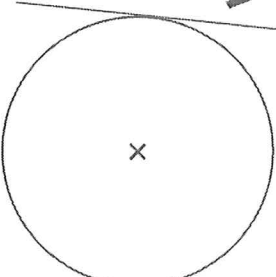
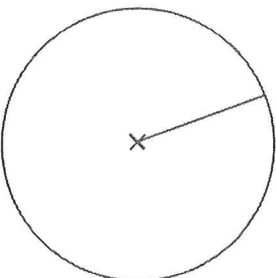
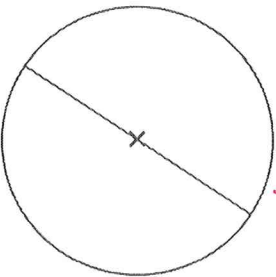
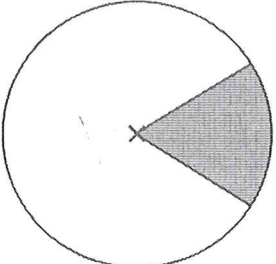
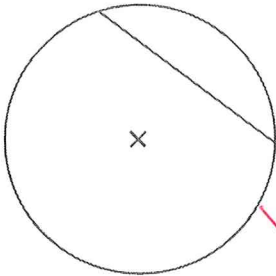
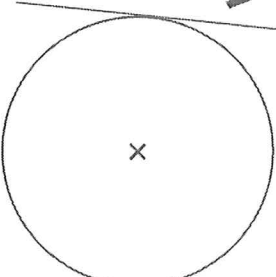
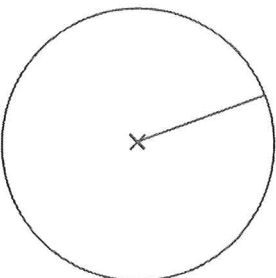
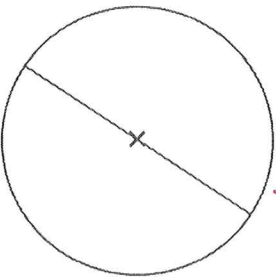
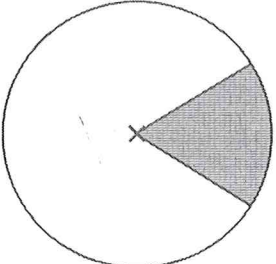
Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Here are 5 diagrams and 5 labels.
In each diagram the centre of the circle is marked with a cross (×).

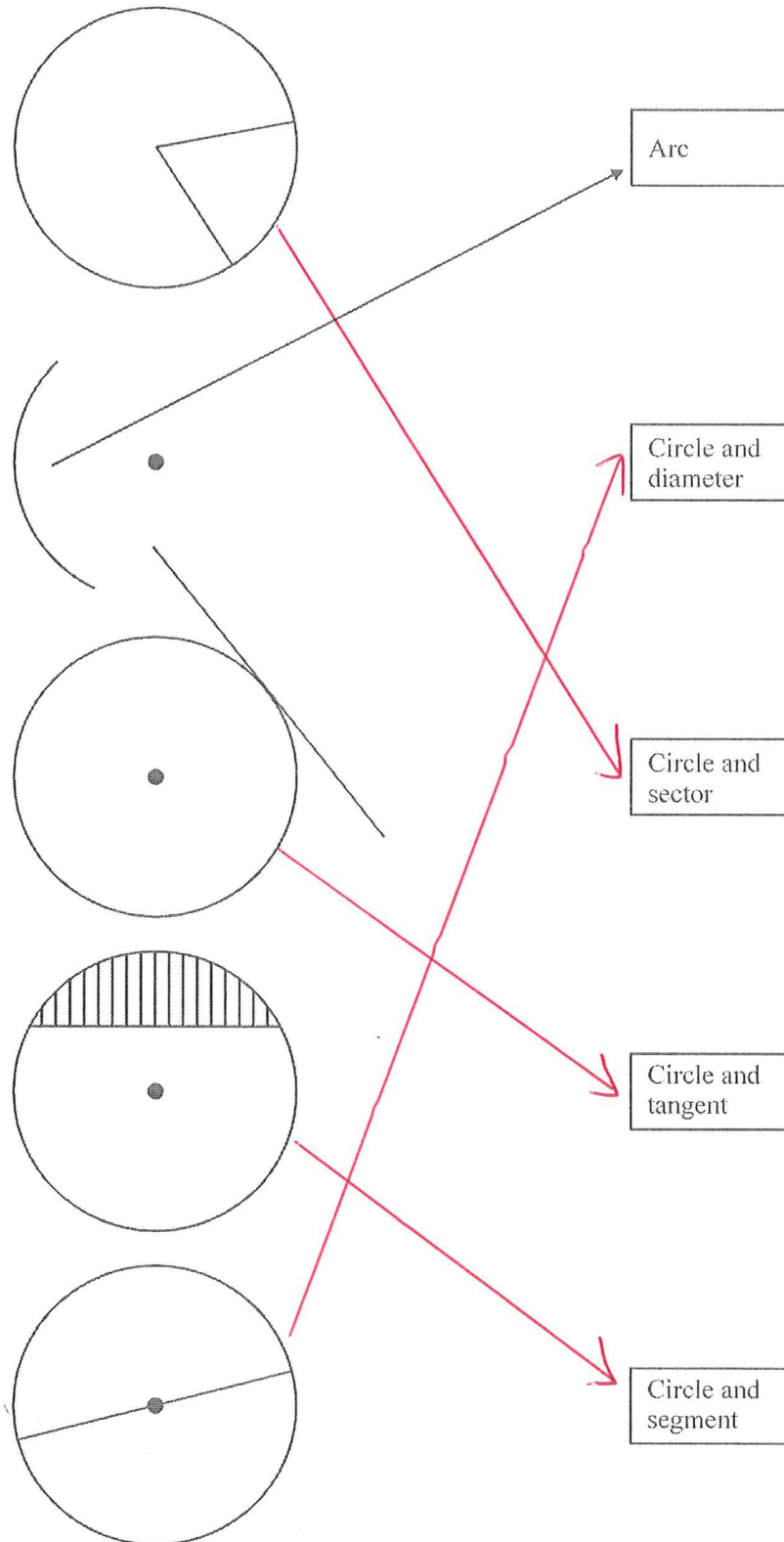
Match each diagram to its label.
One has been done for you.

Diagram	Label			
				
				
				
				
				

(3 marks)

2. Here are some diagrams relating to a circle.

Draw an arrow from each of the diagrams to its mathematical name.
The arrow showing an arc is drawn for you.



(3 marks)

3. The radius of a circle is 3.60 m.

Work out the area of the circle.

Give your answer correct to 3 significant figures.

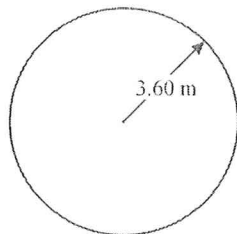


Diagram NOT
accurately drawn

$$A = \pi \times r^2$$

$$A = \pi \times 3.6^2$$

$$40.7 \text{ m}^2$$

(3 marks)

4. The diameter of a wheel on Harry's bicycle is 0.65 m.

Calculate the circumference of the wheel.

Give your answer correct to 2 decimal places.

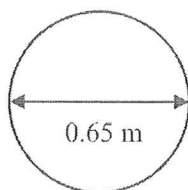


Diagram NOT
accurately drawn

$$C = \pi \times d$$

$$C = \pi \times 0.65$$

$$2.04 \text{ m}$$

(3 marks)

- 5.

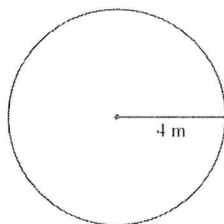


Diagram NOT
accurately drawn

The radius of a circle is 4 m.

Work out the area of the circle.

Give your answer correct to 3 significant figures.

$$A = \pi \times r^2$$

$$A = \pi \times 4^2$$

$$50.3 \text{ m}^2$$

(3 marks)

6. A circle has a radius of 6.1 cm.
Work out the circumference of the circle.

Give your answer correct to 3 significant figures.

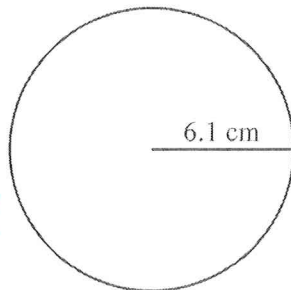


Diagram NOT
accurately drawn

$$D = 6.1 \times 2 = 12.2$$

$$C = \pi \times d$$

$$C = \pi \times 12.2$$

$$\underline{\underline{38.3 \text{ cm}}}$$

(3 marks)

7. The radius of a circle is 6.4 cm.

Work out the circumference of this circle.

Give your answer correct to 1 decimal place.

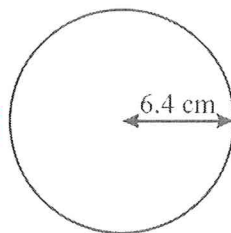


Diagram NOT
accurately drawn

$$D = 6.4 \times 2 = 12.8$$

$$C = \pi \times d$$

$$C = \pi \times 12.8$$

$$\underline{\underline{40.2 \text{ cm}}}$$

(3 marks)

- 8.

$$A = \pi \times r^2$$

$$A = \pi \times 9.7^2$$

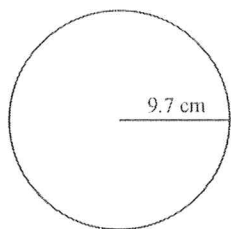


Diagram NOT
accurately drawn

The radius of the circle is 9.7 cm.

Work out the area of the circle.

Give your answer to 3 significant figures.

$$\underline{\underline{296 \text{ cm}^2}}$$

(3 marks)

9. The diameter of a circle is 12 centimetres.

- (a) Work out the circumference of the circle.
Give your answer, in centimetres, correct to 1 decimal place.

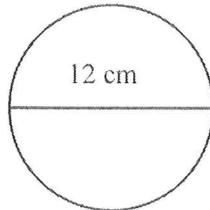


Diagram NOT
drawn accurately

$$C = \pi \times d$$
$$C = \pi \times 12$$

$$37.7 \text{ cm}$$

(3 marks)

10. Here is a tile in the shape of a semicircle.

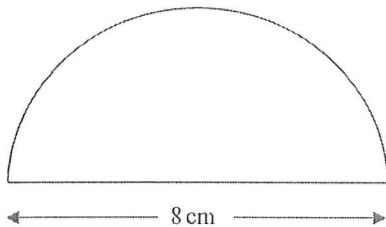


Diagram NOT
accurately drawn

The diameter of the semicircle is 8 cm.

Work out the perimeter of the tile.

Give your answer correct to 2 decimal places.

$$C = \pi \times d$$

$$C = \pi \times 8 = 25.13$$

$$\text{Semi-circle} = \frac{25.13}{2} = 12.566$$

$$+ \text{Base} = 12.566 + 8 = 20.57$$

$$20.57 \text{ cm}$$

(3 marks)

11. $D = 2 \times 8 = 16$

$$C = \pi \times d$$

$$C = \pi \times 16$$

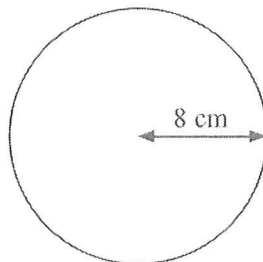


Diagram NOT
accurately drawn

The radius of this circle is 8 cm.

Work out the circumference of the circle.

Give your answer correct to 2 decimal places.

$$50.27 \text{ cm}$$

(3 marks)

12.

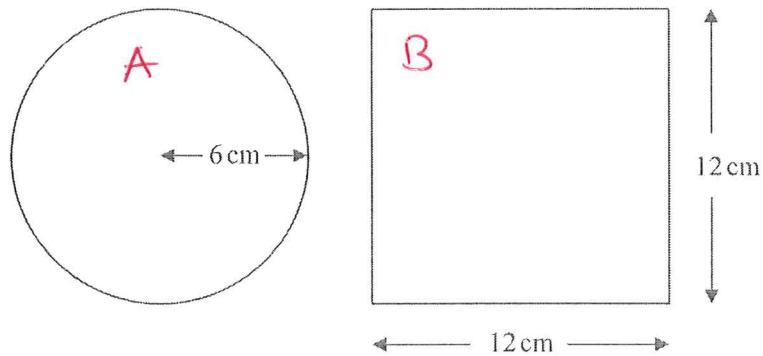


Diagram NOT accurately drawn

A circle has a radius of 6 cm.

A square has a side of length 12 cm.

Work out the difference between the area of the circle and the area of the square.
Give your answer correct to one decimal place.

$$A = \pi \times 6^2 = 113.1$$

$$B = 12 \times 12 = 144$$

$$B - A = 144 - 113.1 = 30.9 \quad \underline{\underline{30.9 \text{ cm}^2}}$$

(4 marks)

13. The top of a table is a circle.
The radius of the top of the table is 50 cm.



- (a) Work out the area of the top of the table.

$$\pi \times 50^2$$

$$\underline{\underline{7853.98 \text{ cm}^2}}$$

(2)

The base of the table is a circle.
The diameter of the base of the table is 40 cm.

- (b) Work out the circumference of the base of the table.

$$\pi \times 40$$

$$\underline{\underline{125.66 \text{ cm}}}$$

(2)

(4 marks)

14.

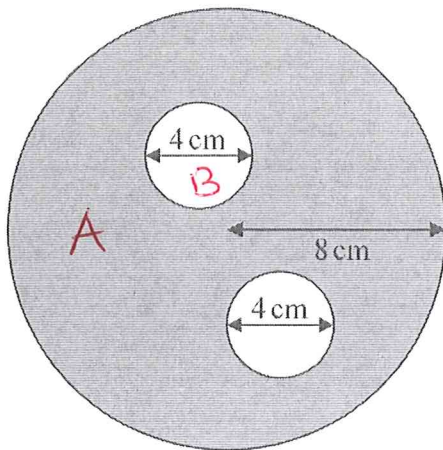


Diagram NOT accurately drawn

The diagram shows two small circles inside a large circle.
The large circle has a radius of 8 cm.

Each of the two small circles has a diameter of 4 cm.

(a) Write down the radius of each of the small circles.

$$R = 4 \div 2 = 2$$

..... 2 cm

(1)

(b) Work out the area of the region shown shaded in the diagram.
Give your answer correct to one decimal place.

$$A = \pi \times 8^2 = 201.1$$

$$B = \pi \times 2^2 = 12.6$$

$$12.6 \times 2 = 25.2$$

$$A - 25.2 = 175.9$$

..... 175.9 cm²

(4)

(5 marks)