

8300

GCSE MATHEMATICS

Foundation and Higher tier – Questions by Topic

Geometry

Circles – Finding the area of circles

v1.0

Name _____

Materials

For this paper you must have:

- Mathematical instruments

Information

- The marks for questions are shown in brackets

Advice

- In all calculations, show clearly how you work out your answer

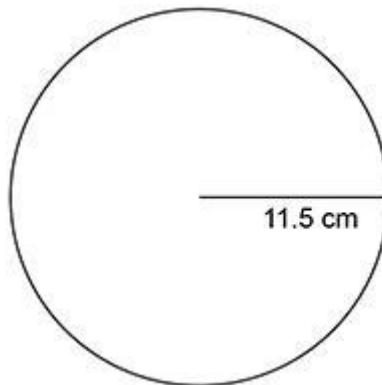
For questions 1 to 4, you may use a calculator.



Q1.

A circle has a radius of 11.5 cm

Not drawn accurately



Work out the area of the circle.

(Total 2 marks)

Q2.

Work out the area of a circle, radius 3.5 cm.

Give your answer to 1 decimal place.

(Total 3 marks)

Q3.

Work out the area of a circle of radius 6 m.

(Total 2 marks)

Q4.

These steps can be used to work out the area of a circle.

Step 1 Square the radius

Step 2 Multiply by 3.14

(a) Use these steps to work out the area of a circle, radius 5 cm.

(2)

(b) The area of a circle is known.

Write down the steps to work out the radius.

(2)

(Total 4 marks)

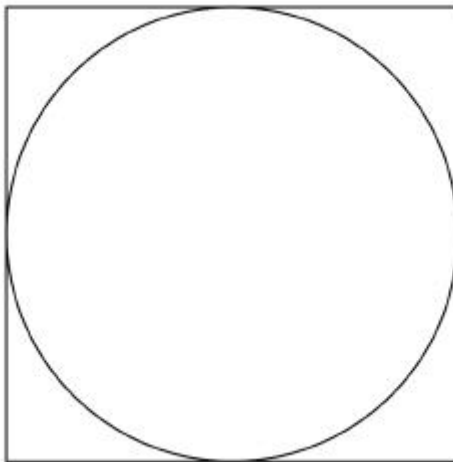
Circles – Finding the area of circles – Cross topic questions.

You must **NOT** use a calculator for questions 5 to 12.



Q5.

Here is a circle touching a square.



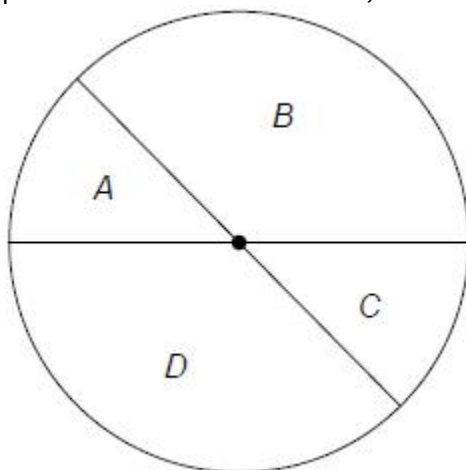
Not drawn
accurately

The area of the square is 64 cm^2
Work out the area of the circle.
Give your answer in terms of π .

(Total 3 marks)

Q6.

A circle has radius 6 cm
Two diameters split the circle into four sectors, as shown.



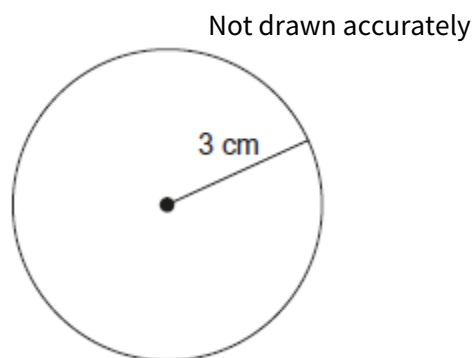
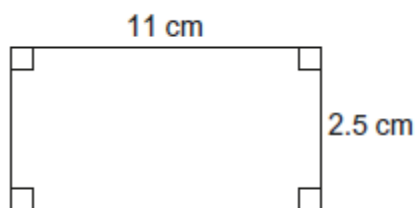
Not drawn
accurately

Area of sector A : Area of sector $B = 1 : 3$
Work out the area of sector A .
Give your answer in terms of π .

(Total 3 marks)

Q7.

Which has the **greater** area?



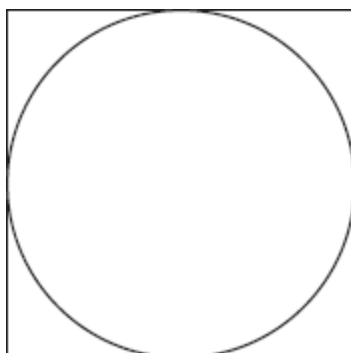
Use $\pi = 3.1$

You **must** show your working.

(Total 3 marks)

Q8.

A circle is drawn inside a square as shown.

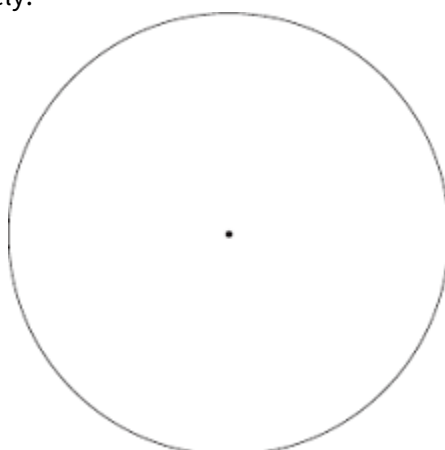


Show that the area of the circle is more than 75% of the area of the square.

(Total 4 marks)

Q9.

This circle is drawn accurately.



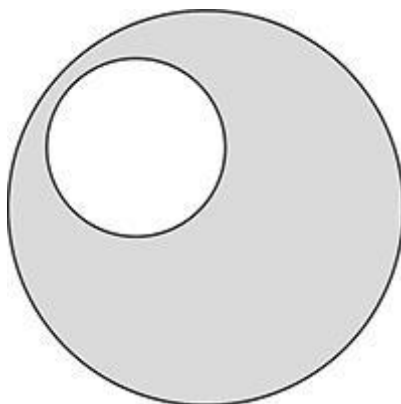
Work out the area of the circle.
Give your answer in terms of π .
State the units of your answer.

(Total 4 marks)

Q10.

A large circle and a small circle are shown.
The radius of the large circle is 12 cm

radius of large circle : radius of small circle = 4 : 1



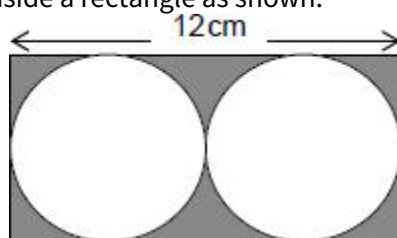
Not drawn
accurately

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

(Total 4 marks)

Q11.

Two identical circles just fit inside a rectangle as shown.



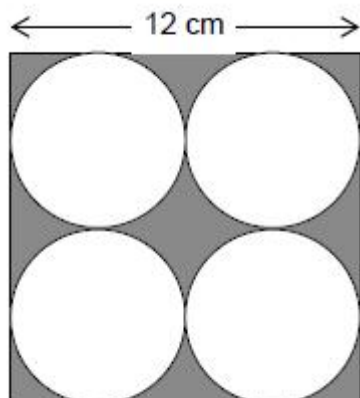
Not drawn accurately

Work out the area of the shaded section.
Give your answer in terms of π

(Total 4 marks)

Q12.

Four identical circles just fit inside a square as shown.



Not drawn
accurately

Work out the area of the shaded section.
Give your answer in terms of π .

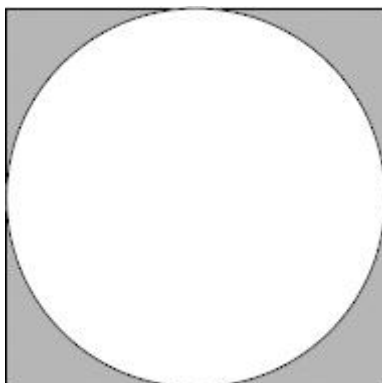
(Total 4 marks)

For the rest of the questions, you may use a calculator.



Q13.

The diagram shows a circle of radius 5 cm inside a square.



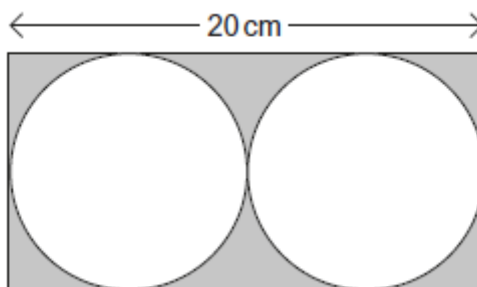
Work out the shaded area.

Not drawn accurately

(Total 4 marks)

Q14.

Two identical circles fit inside a rectangle as shown.



Not drawn accurately

The length of the rectangle is 20 cm
Work out the area of the shaded section.

(Total 6 marks)

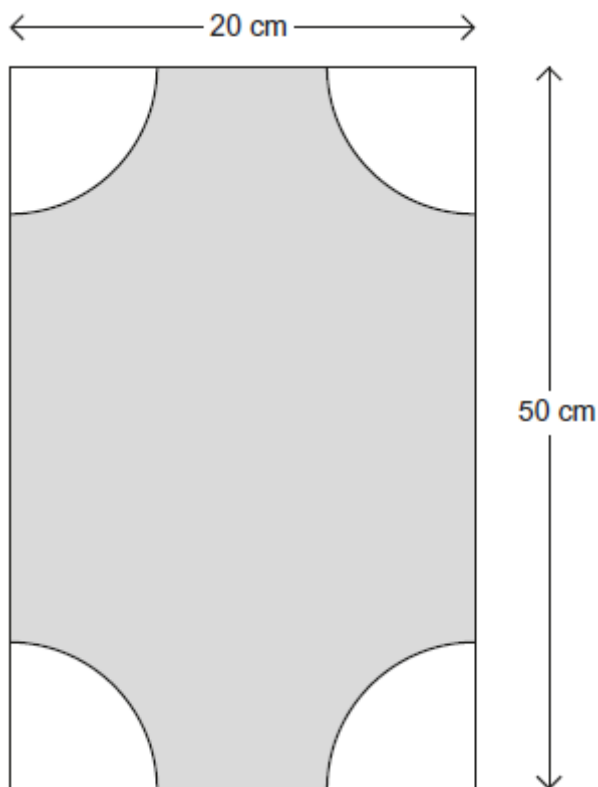
Q15.

(a) Work out the area of a circle of radius 6 cm

(2)

(b) Quarter circles of radius 6 cm are cut from the corners of a rectangle as shown.

Not drawn accurately



Work out the shaded area.

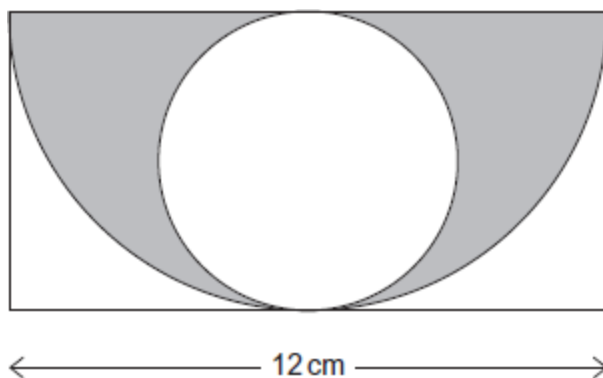
(3)

(Total 5 marks)

Q16.

The diagram shows a rectangle, a semi-circle and a circle.

Not drawn accurately

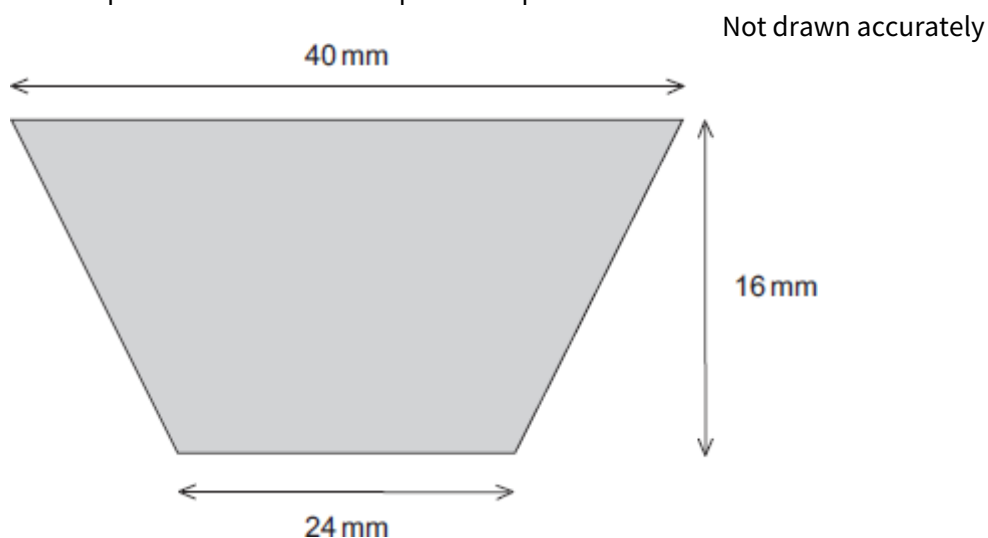


Work out the area of the **circle**.

(Total 4 marks)

Q17.

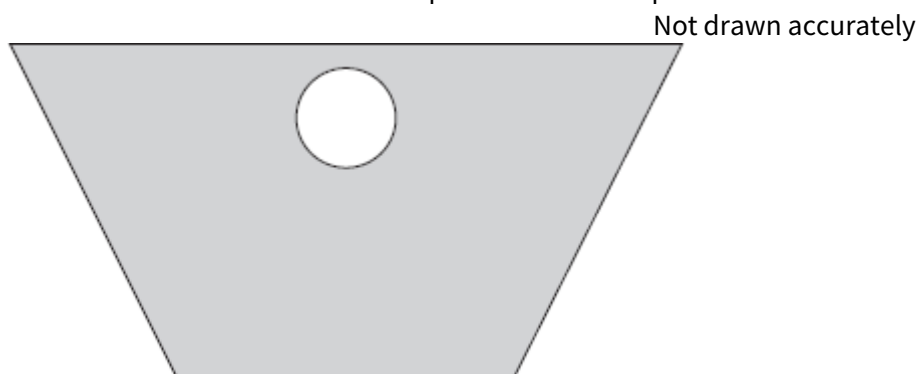
- (a) A jeweller has a piece of silver in the shape of a trapezium.



Work out the area of the trapezium.

(2)

- (b) She cuts out a circle of radius 4 mm from the trapezium to make a pendant.



Work out the area of the circle.

(2)

- (c) The silver from the circle is waste material.
What percentage of silver does the jeweller waste making the pendant?

(2)

(Total 6 marks)

Q18.

- (a) Calculate the area of a circle of radius 4.5 cm.
Give your answer to 3 significant figures.
- (b) Calculate the radius of a circle with circumference 93 cm.

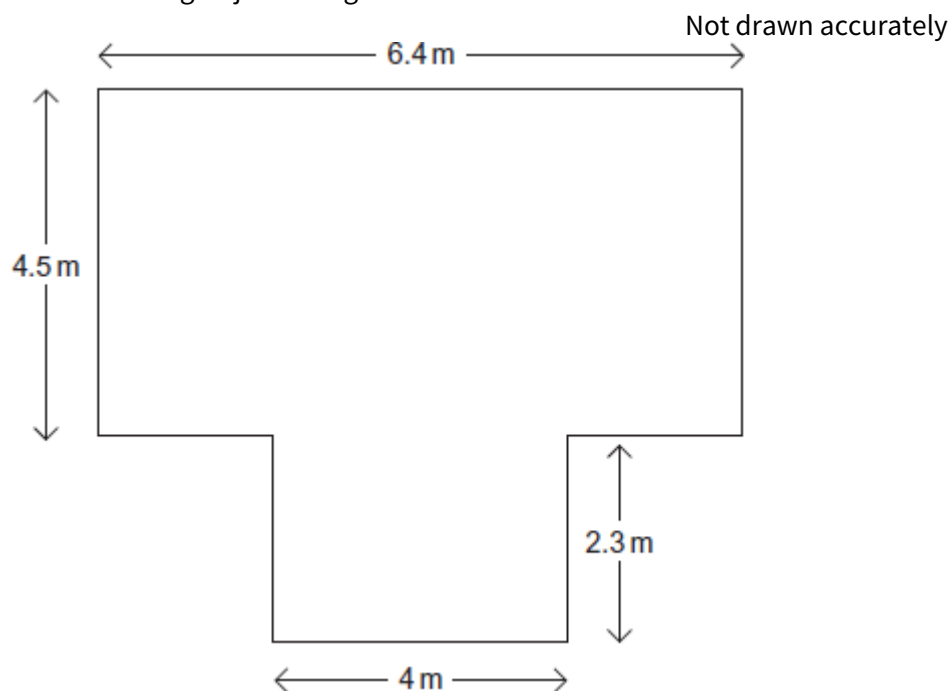
(3)

(3)

(Total 6 marks)

Q19.

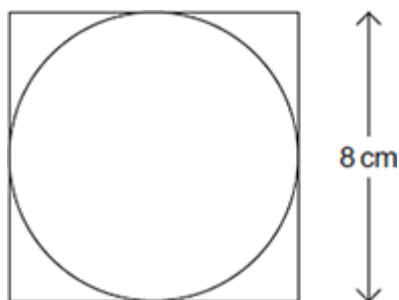
This diagram shows Adam's garden.
It is in the shape of two rectangles joined together.



- (a) Work out the area of the garden. (2)
- (b) Adam makes a flower bed.
It is a circle of radius 1.7 m.
Work out the area of the flower bed. (2)
- (c) Adam says,
“The area of the flower bed is less than 25% of the area of the garden.”
Is he correct?
You **must** show your working. (3)
- (Total 7 marks)**

Q20.

The diagram shows a circle inside a square.

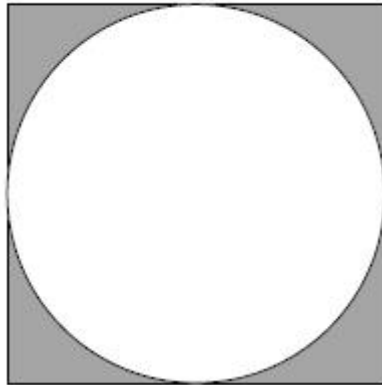


Work out the area of the circle.

(Total 3 marks)

Q21.

The diagram shows a circle of radius 7 cm inside a square.



Not drawn
accurately

Work out the shaded area.

(Total 4 marks)