

- 1 The diagram shows a regular octagon $ABCDEFGH$.

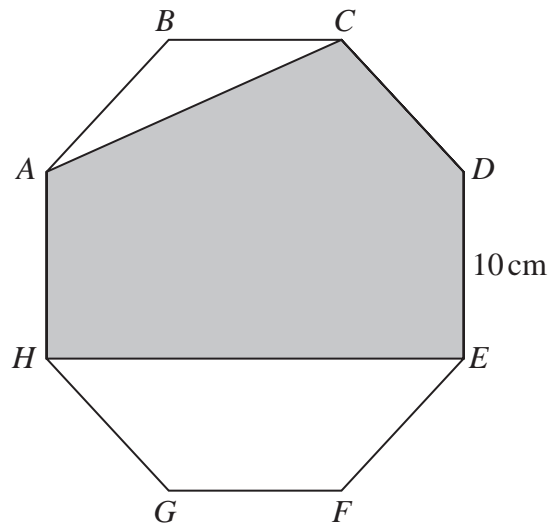


Diagram **NOT**
accurately drawn

Each side of the octagon has length 10 cm .

Find the area of the shaded region $ACDEH$.
Give your answer correct to the nearest cm^2

..... cm²

(Total for Question 1 is 6 marks)

- 2 The diagram shows two circles such that the region **R**, shown shaded in the diagram, is the region common to both circles.

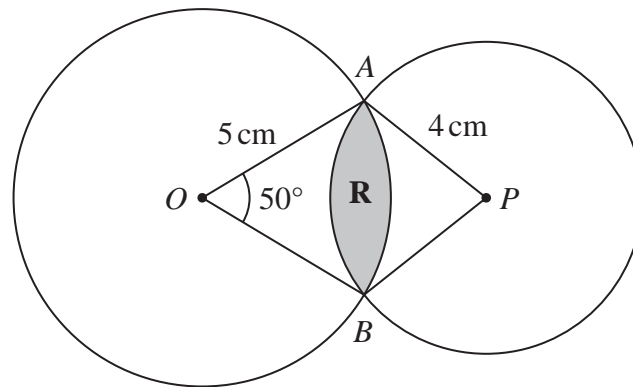


Diagram **NOT**
accurately drawn

One of the circles has centre O and radius 5 cm .

The other circle has centre P and radius 4 cm .

Angle $AOB = 50^\circ$

Calculate the area of region **R**.

Give your answer correct to 3 significant figures.

..... cm²

(Total for Question 2 is 6 marks)

- 3 The diagram shows a rectangle $ABCD$ and a semicircle with diameter AB where $AB = 12\text{ cm}$. The point E lies on DC and also on the semicircle.

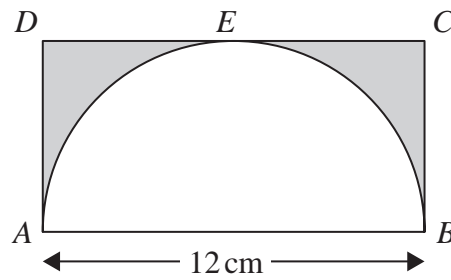


Diagram **NOT**
accurately drawn

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

..... cm^2

(Total for Question 3 is 3 marks)

- 4 A , B and C are points on a circle with centre O .

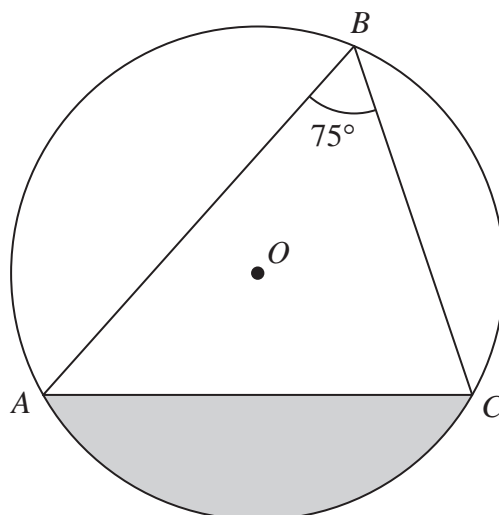


Diagram **NOT**
accurately drawn

Angle $ABC = 75^\circ$

The area of the shaded segment is 200 cm^2

Calculate the radius of the circle.

Give your answer correct to 3 significant figures.

..... cm

(Total for Question 4 is 5 marks)

- 5 A , B and C are points on a circle with centre O .

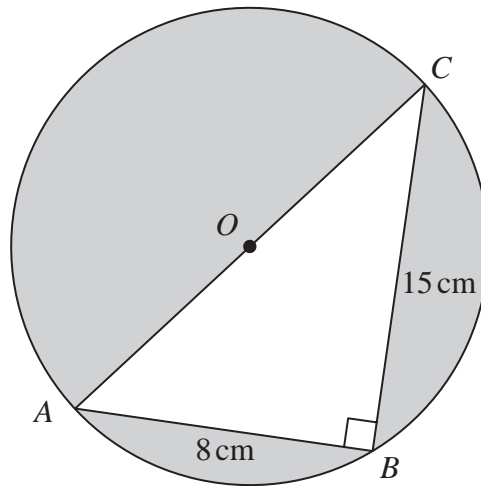


Diagram **NOT**
accurately drawn

AOC is a diameter of the circle.

$AB = 8\text{ cm}$ $BC = 15\text{ cm}$

Angle $ABC = 90^\circ$

Work out the total area of the regions shown shaded in the diagram.
Give your answer correct to 3 significant figures.

..... cm²

(Total for Question 5 is 5 marks)

6

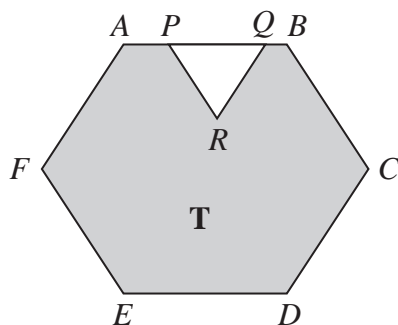


Diagram **NOT**
accurately drawn

The diagram shows a shaded region **T** formed by removing an equilateral triangle PQR from a regular hexagon $ABCDEF$.

The points P and Q lie on AB such that $AB = 1.5 \times PQ$

Given that the area of region **T** is $72\sqrt{3} \text{ cm}^2$

work out the length of PQ .

..... cm

(Total for Question 6 is 4 marks)

7 The diagram shows four identical circles drawn inside a square.

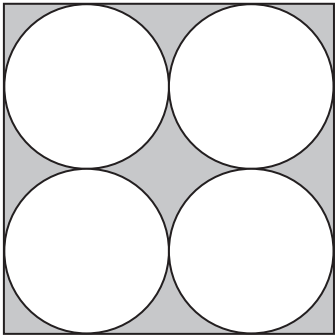


Diagram **NOT**
accurately drawn

Each circle touches two other circles and two sides of the square.

The region inside the square that is outside the circles, shown shaded in the diagram, has a total area of 40 cm^2

Work out the perimeter of the square.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 7 is 4 marks)

8 Jonty has a storage container in the shape of a cuboid, as shown in the diagram.

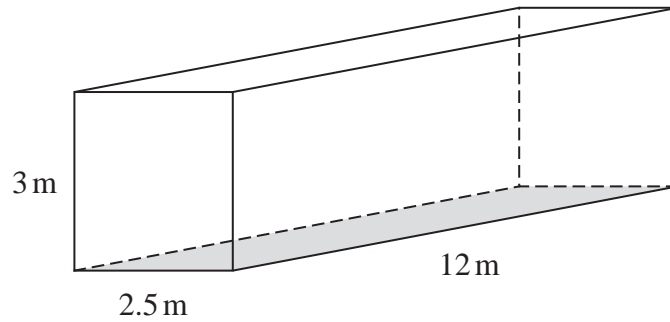


Diagram **NOT**
accurately drawn

Jonty is going to paint the outside of his storage container, apart from the base which is shown shaded in the diagram.

He needs enough paint to cover the four sides and the top.

Each tin of paint covers an area of 15 m^2

The cost of each tin of paint recently increased by 10%

After the increase, the cost of each tin of paint is £26.95

Jonty says

“**Before** the increase, I could have bought enough paint for less than £200”

Show that Jonty is correct.

Show your working clearly.

(Total for Question 8 is 6 marks)

9 A , B and C are points on a circle, centre O

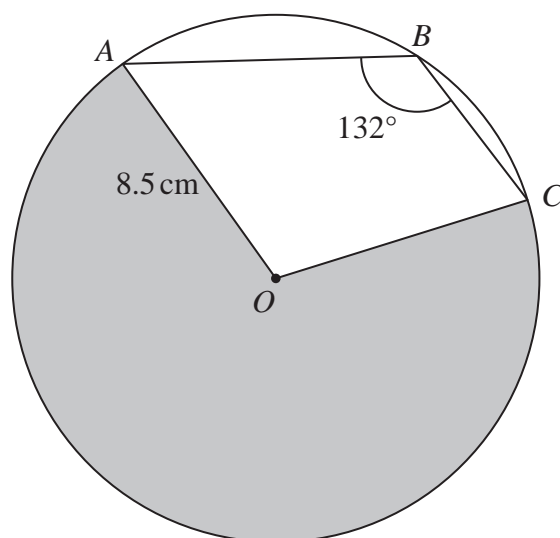


Diagram **NOT**
accurately drawn

The radius of the circle is 8.5 cm

Angle $ABC = 132^\circ$

Work out the perimeter of the shaded sector AOC

Give your answer correct to 3 significant figures.

..... cm

(Total for Question 9 is 3 marks)

10 The diagram shows the cross section of a circular water pipe.

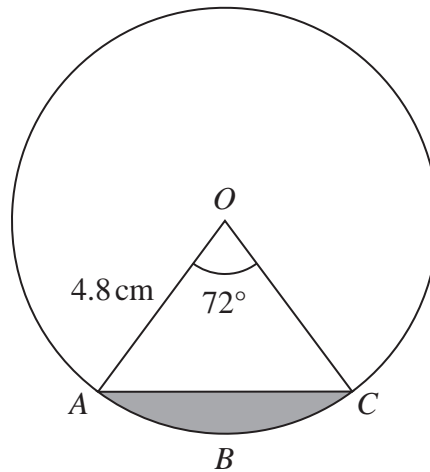


Diagram **NOT**
accurately drawn

OAC is a sector of the circle, centre O

The shaded region in the diagram represents the water flowing in the pipe.

The water flows at 14 cm/s in the pipe.

Work out the volume of water that has flowed through the pipe in 3 minutes.

Give your answer in cm^3 correct to 3 significant figures.

.....cm³

(Total for Question 10 is 5 marks)

11 The diagram shows two circles with centre O and a regular pentagon $ABCDE$

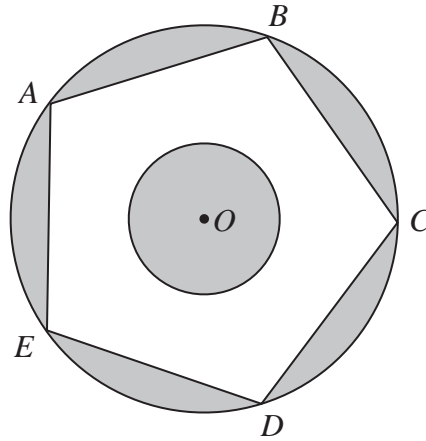


Diagram **NOT**
accurately drawn

A , B , C , D and E are points on the larger circle.
The pentagon has sides of length 8 cm.

The diagram is shaded such that

$$\text{shaded area} = \text{unshaded area}$$

Work out the radius of the smaller circle.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 11 is 6 marks)
