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

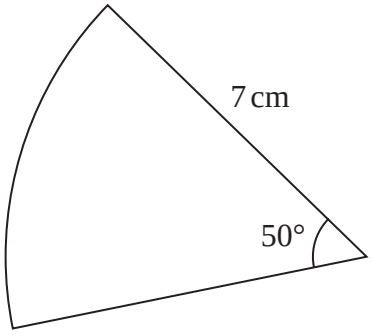

Diagram **NOT** accurately drawn

Work out the length of the arc of the sector.
Give your answer correct to one decimal place.

..... cm

(Total for Question 1 is 2 marks)

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

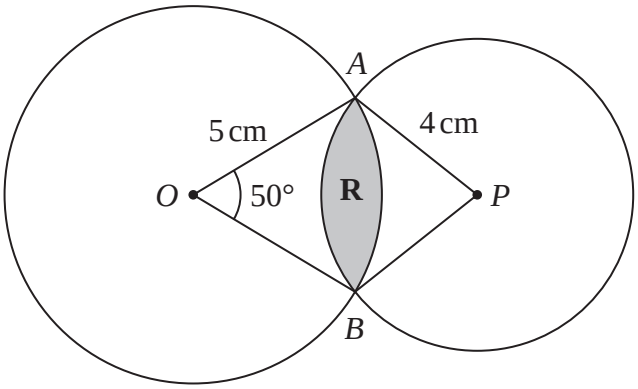

Diagram **NOT** accurately drawn

One of the circles has centre O and radius 5 cm.
The other circle has centre P and radius 4 cm.
Angle $AOB = 50°$

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

..... cm^2

(Total for Question 2 is 6 marks)

3 A circle centre O has radius 9 cm.

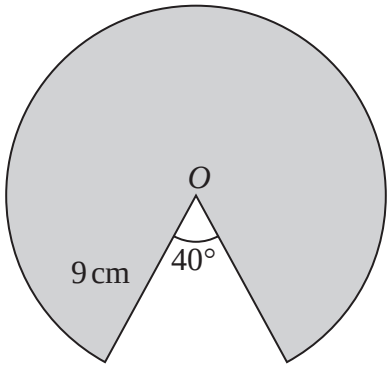

Diagram **NOT** accurately drawn

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

..... cm

(Total for Question 3 is 4 marks)

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

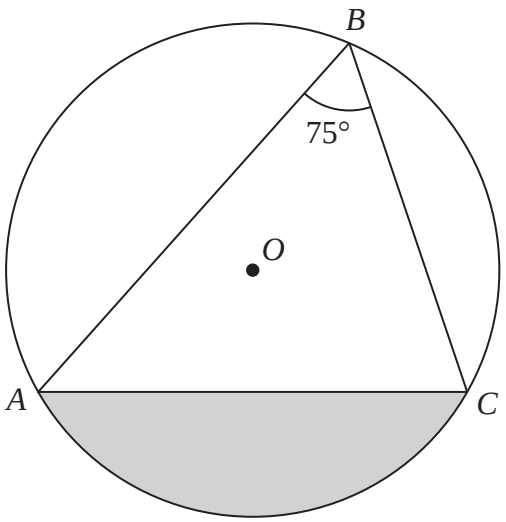

Diagram **NOT** accurately drawn

Angle *ABC* = 75°

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 The diagram shows sector *OPQ* of a circle, centre *O*

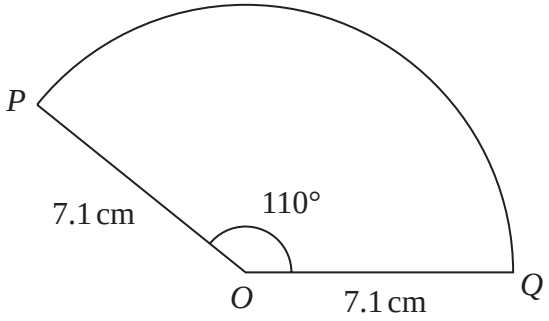

Diagram **NOT** accurately drawn

OP = *OQ* = 7.1 cm
Angle *POQ* = 110°

Calculate the area of sector *OPQ*
Give your answer correct to one decimal place.

..... cm^2

(Total for Question 5 is 2 marks)

6

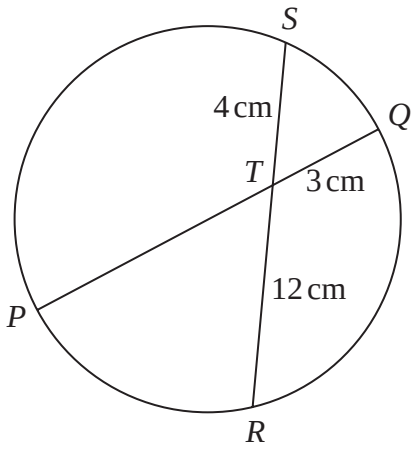

Diagram **NOT** accurately drawn

PTQ is a diameter of a circle.
RTS is a chord of the circle.

$TQ = 3\,\text{cm}$ $ST = 4\,\text{cm}$ $TR = 12\,\text{cm}$

Calculate the radius of the circle.

..... cm

(Total for Question 6 is 3 marks)

7 *AEC* and *BED* are chords of a circle.

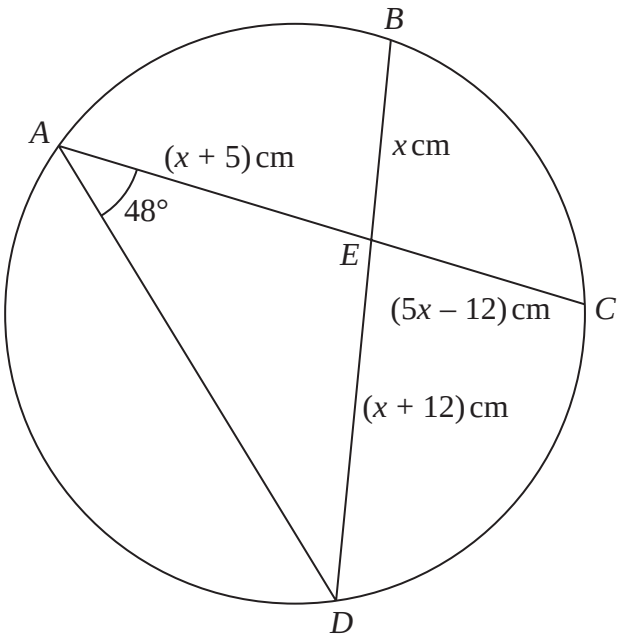

Diagram **NOT** accurately drawn

$AE = (x + 5)$ cm $\quad BE = x$ cm $\quad CE = (5x - 12)$ cm $\quad DE = (x + 12)$ cm

Angle $DAE = 48°$

Work out the size of angle *ADE*
Give your answer correct to one decimal place.

.....°

(Total for Question 7 is 5 marks)

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

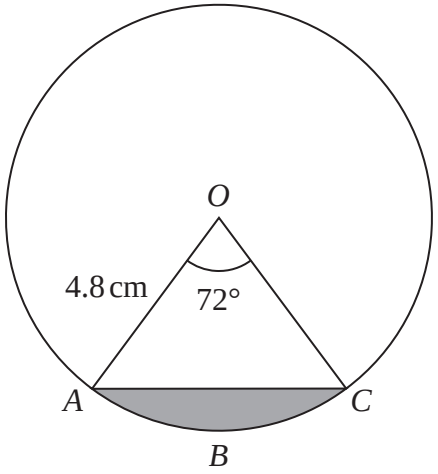

Diagram **NOT** accurately drawn

OABC 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.

..... cm^3

(Total for Question 8 is 5 marks)