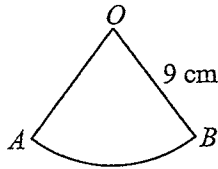


<b>Exercise 8E   Exam Practice</b>
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1

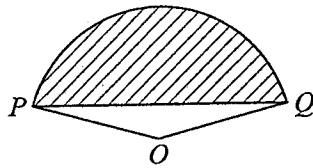


The diagram shows the circular sector  $OAB$ , centre  $O$ , which has a radius of 9 cm and a perimeter of 22 cm.

Find

- a the length of the arc  $AB$ , (2 marks)
- b the size of  $\angle AOB$  in radians correct to 2 decimal places, (2 marks)
- c the area of sector  $OAB$ . (2 marks)

2

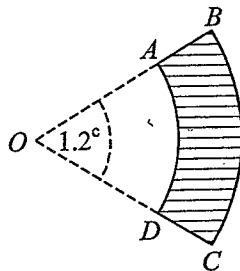


The diagram shows a circular sector  $OPQ$  of radius 12 cm in which  $\angle POQ = 150^\circ$ .

Calculate

- a the area of sector  $OPQ$ , giving your answer in terms of  $\pi$ , (2 marks)
- b the area of triangle  $OPQ$ , (2 marks)
- c the area of the shaded segment in  $\text{cm}^2$  correct to 1 decimal place. (2 marks)

3



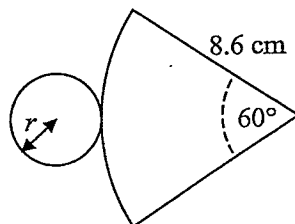
The diagram shows concentric circular sectors  $OAD$  and  $OBC$  of radius 10.6 cm and 14.2 cm respectively.

$OAB$  and  $ODC$  are straight lines and  $\angle BOC = 1.2$  radians.

Calculate correct to an appropriate level of accuracy

- a the perimeter of the shaded region, (4 marks)
- b the area of the shaded region. (3 marks)

4

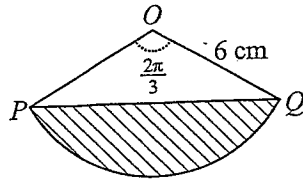


The diagram shows the net of a cone. It consists of a circular sector of radius 8.6 cm and angle  $60^\circ$  joined to a circle of radius  $r$  cm.

Giving your answers correct to 3 significant figures, calculate

- a the value of  $r$ , (4 marks)
- b the volume of the cone. (5 marks)

5

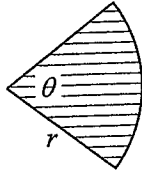


The diagram shows the sector  $OPQ$  of a circle, centre  $O$ .

Given that the radius of the circle is 6 cm and that  $\angle POQ = \frac{2\pi}{3}$ , find correct to 1 decimal place

- a the area of sector  $OPQ$  in  $\text{cm}^2$ , (2 marks)  
 b the area of the shaded segment in  $\text{cm}^2$ , (3 marks)  
 c the perimeter of the shaded segment in cm. (5 marks)

6



A sector of a circle of radius  $r$  cm has an area of  $300 \text{ cm}^2$ .

- a Show that the angle,  $\theta$  radians, subtended by the arc of the sector at its centre is given by

$$\theta = \frac{600}{r^2}. \quad (2 \text{ marks})$$

Given also that the perimeter of the sector is 72 cm,

- b show that  $r$  satisfies the equation

$$r^2 - 36r + 300 = 0, \quad (4 \text{ marks})$$

- c find the larger of the possible values of  $r$  in the form  $a + b\sqrt{6}$ . (4 marks)

Exercise 8E	Exam Practice
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- |   |                        |                              |                         |
|---|------------------------|------------------------------|-------------------------|
| 1 | a 4 cm                 | b 0.44                       | c $18 \text{ cm}^2$     |
| 2 | a $60\pi \text{ cm}^2$ | b $36 \text{ cm}^2$          | c $152.50 \text{ cm}^2$ |
| 3 | a 37.0 cm (3 sf)       | b $53.6 \text{ cm}^2$ (3 sf) |                         |
| 4 | a 1.43                 | b $18.2 \text{ cm}^3$        |                         |
| 5 | a $37.7 \text{ cm}^2$  | b $22.1 \text{ cm}^2$        | c 23.0 cm               |
| 6 | c $18 + 2\sqrt{6}$     |                              |                         |