

1.

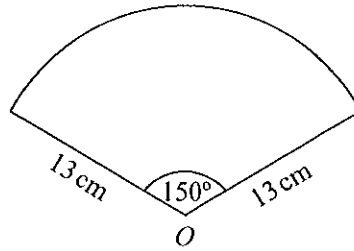


Diagram **NOT** accurately drawn

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

The radius of the circle is 13 cm.

The angle of the sector is  $150^\circ$ .

Calculate the area of the sector.

Give your answer correct to 3 significant figures.

$$\frac{150}{360} \times \pi (13)^2 = 221.2204827$$

$$\dots\dots\dots 221 \dots\dots\dots \text{cm}^2$$

(Total 2 marks)

2.

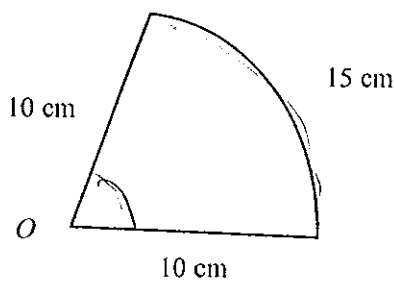


Diagram **NOT** accurately drawn

The diagram shows a sector of a circle, centre  $O$ , radius 10 cm.

The arc length of the sector is 15 cm.

Calculate the area of the sector.

$$\text{arc length} = \frac{\theta}{360} \times 2\pi r$$

$$15 = \frac{\theta}{360} \times 2(\pi)(10)$$

$$\theta = 85.94366927$$

$$\frac{85.94366927}{360} \times \pi (10)^2$$

$$\dots\dots\dots 75 \dots\dots\dots \text{cm}^2$$

(Total 4 marks)

3.

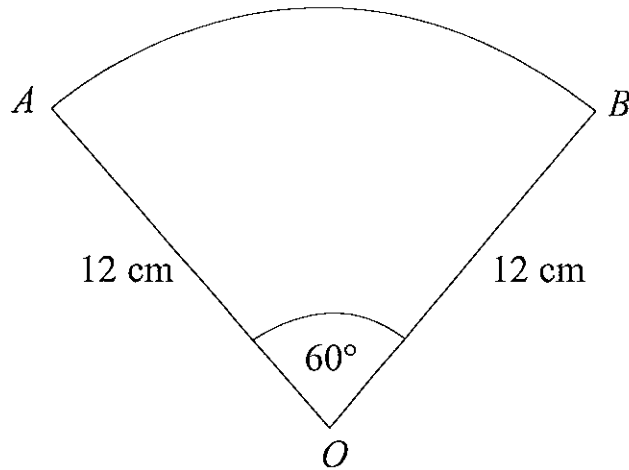


Diagram **NOT** accurately drawn

$OAB$  is a sector of a circle, centre  $O$ .

Angle  $AOB = 60^\circ$ .

$OA = OB = 12$  cm.

Work out the length of the arc  $AB$ .

Give your answer in terms of  $\pi$ .

$$\frac{60}{360} \times 2(\pi)(12)$$
$$= 4\pi$$

.....  $4\pi$  ..... cm  
(Total 3 marks)

4.

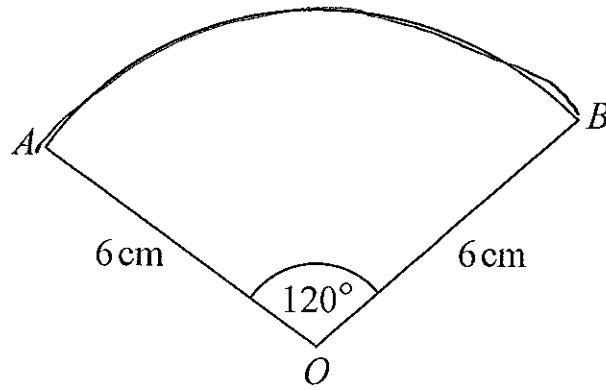


Diagram **NOT** accurately drawn

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

The radius of the circle is 6 cm.

Angle  $AOB = 120^\circ$ .

Work out the **perimeter** of the sector.

Give your answer in terms of  $\pi$  in its simplest form.

$$\begin{aligned} \text{Arc Length} &= \frac{120}{360} \times 2(\pi)(6) \\ &= 4\pi \end{aligned}$$

$$\text{Perimeter} = 4\pi + 12$$

$$\begin{aligned} &\underline{\quad 4\pi + 12 \quad} \text{ cm} \\ &\text{(Total 3 marks)} \end{aligned}$$

5.

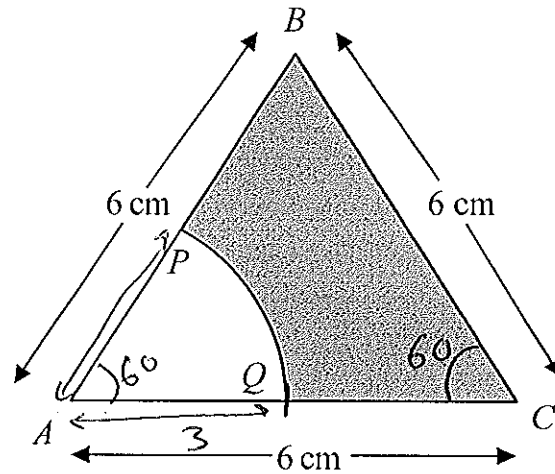


Diagram NOT accurately drawn

The diagram shows an equilateral triangle  $ABC$  with sides of length  $6\text{ cm}$ .

$P$  is the midpoint of  $AB$ .

$Q$  is the midpoint of  $AC$ .

$APQ$  is a sector of a circle, centre  $A$ .

Calculate the area of the shaded region.

Give your answer correct to 3 significant figures.

$$\text{Shaded Area} = \text{Triangle Area} - \text{Sector Area}$$

$$\begin{aligned} \triangle &= \frac{1}{2} (6)(6) \sin(60) \\ &= 9\sqrt{3} \quad (15.58845727) \end{aligned}$$

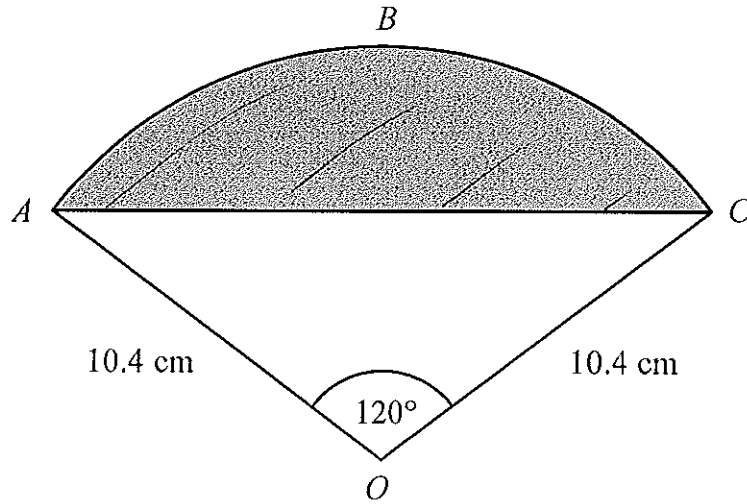
$$\begin{aligned} \text{Sector} &= \frac{60}{360} \times \pi (3)^2 \\ &= \frac{3}{2} \pi \end{aligned}$$

$$\begin{aligned} \text{Shaded Area} &= 9\sqrt{3} - \frac{3}{2} \pi \\ &= 10.87606829 \end{aligned}$$

..... 10.9 .....  $\text{cm}^2$   
(Total 4 marks)

6.

Diagram **NOT** accurately drawn



The diagram shows a sector  $OABC$  of a circle with centre  $O$ .

$OA = OC = 10.4$  cm.

Angle  $AOC = 120^\circ$ .

- (a) Calculate the length of the arc  $ABC$  of the sector.  
Give your answer correct to 3 significant figures.

$$\frac{120}{360} \times 2(\pi)(10.4)$$

$$= 21.78170906 \dots \dots \dots 21.8 \dots \dots \dots \text{cm}$$

(3)

- (b) Calculate the area of the shaded segment  $ABC$ .  
Give your answer correct to 3 significant figures.

Area of Sector - Area of triangle.

$$\frac{120}{360} \times \pi(10.4)^2 - \frac{1}{2}(10.4)(10.4) \sin(120)$$

$$= 66.4302333 \dots \dots \dots 66.4 \dots \dots \dots \text{cm}^2$$

(4)

(Total 7 marks)

7. The diagram shows a sector of a circle with centre  $O$ .  
The radius of the circle is 8 cm.

$PRS$  is an arc of the circle.  
 $PS$  is a chord of the circle.  
Angle  $POS = 40^\circ$

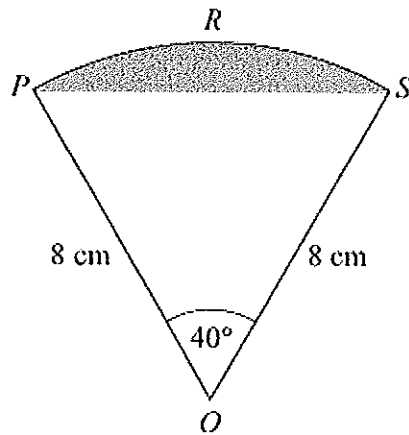


Diagram NOT accurately drawn

Calculate the area of the shaded segment.  
Give your answer correct to 3 significant figures.

$$\begin{aligned} & \text{Sector Area} - \text{Triangle Area.} \\ & \frac{40}{360} \times \pi (8)^2 - \frac{1}{2}(8)(8) \sin(40) \\ & = 1.771010916 \end{aligned}$$

$$\dots 1.77 \dots \text{ cm}^2$$

(Total 5 marks)

8.

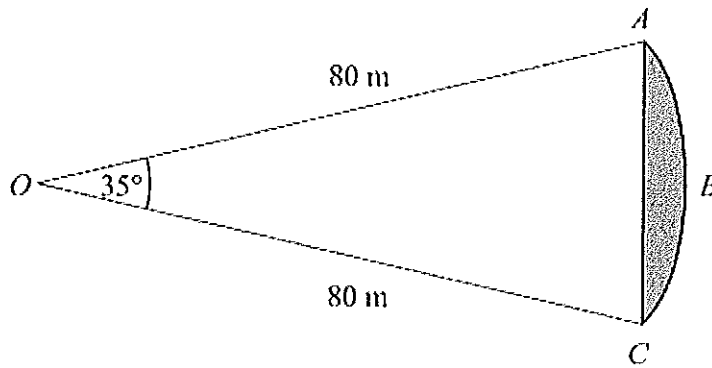


Diagram NOT accurately drawn

$ABC$  is an arc of a circle centre  $O$  with radius 80 m.  
 $AC$  is a chord of the circle.  
Angle  $AOC = 35^\circ$ .

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

$$\frac{35}{360} \times \pi (80)^2 - \frac{1}{2} (80)(80) \sin(35)$$

$$= 119.3241659$$

.....119..... m<sup>2</sup>

(Total 5 marks)