

7. **Circle**

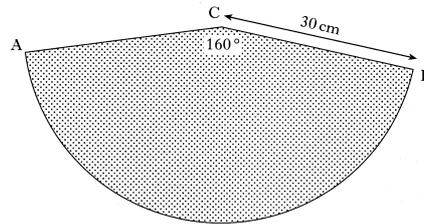
Area of sector, arc length, angle of sector ..... 32 - 35  
 Angles in the circle, using Pythagoras with sectors and angles ..... 32 - 35

*NB There is considerable overlap between these questions and those on Pythagoras and Trigonometry.*

10. The diagram shows a sector of a circle, centre, C.

Angle ACB is  $160^\circ$ ,  
 and the radius of the circle is 30 cm.

Calculate the length of the arc AB.



3 KU

11. The diagram shows the design of an earring.

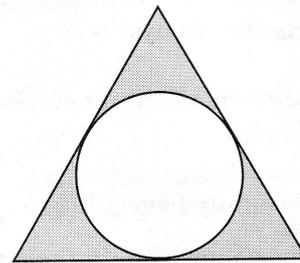
The earring consists of a circle  
 inside an equilateral triangle.

The sides of the triangle are tangents to the circle.

The radius of the circle is 8 mm

The distance from the centre of the circle  
 to **each** vertex of the triangle is 17mm.

Calculate the perimeter of the triangle.



4 RE

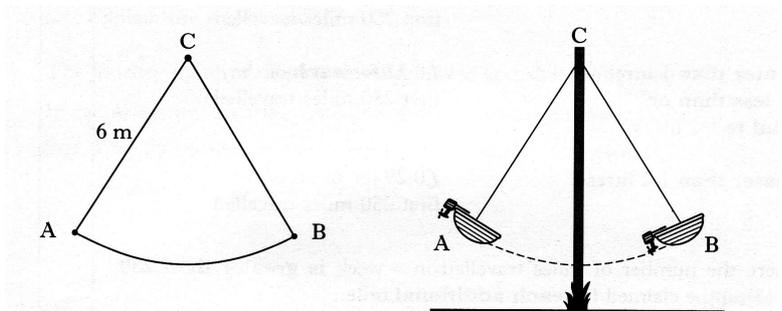
12. The boat on a carnival ride travels along an arc of a circle, centre C.

The boat is attached to C  
 by a rod 6 metres long.

The rod swings from position CA  
 to position CB.

The length of the arc AB is 7 metres.

Find the angle through which the  
 rod swings from position A to position B.



4 RE

13. The diagram shows a tent.

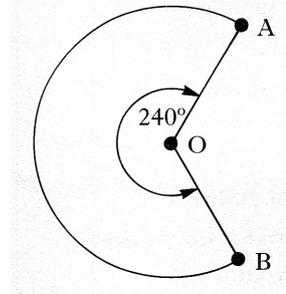
The shape of the material used  
 to make the tent is a sector of a  
 circle as shown in the diagram.

O is the centre of the circle.

OA and OB are radii of length 3 metres.

Angle AOB is  $240^\circ$

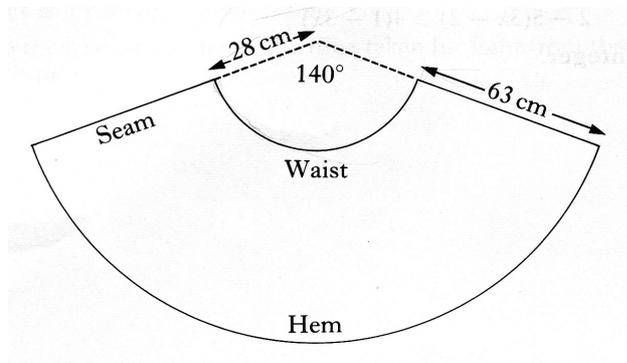
Calculate the area of this piece of material.



3 KU

14. The pattern for a skirt consists of part of the sector of a circle.

Calculate the length of the waist shown on the pattern.



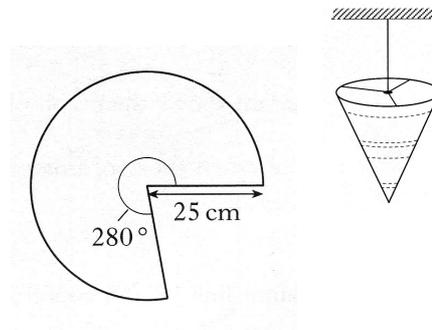
3 KU

15. A lampshade is made in the shape of a cone, as shown.

The shape of the material used for the lampshade is a sector of a circle.

The circle has radius 25 centimetres and the angle of the sector is  $280^\circ$

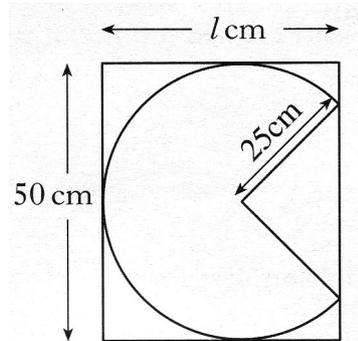
- a) Find the area of the sector of the circle.



3 KU

Each sector is cut from a rectangular piece of material, 50 centimetres wide.

- b) Find to the nearest centimetre the minimum length  $l$ , required for the piece of material.

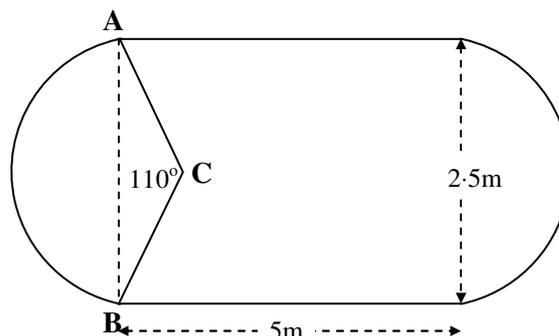


4 RE

16. A large shop display table is in the shape of a rectangle with a circle segment at both ends, as shown in the diagram below.

The rectangle at the centre measures 5 metres by 2.5 metres.

AC and BC are radii of the circle and angle ACB is  $110^\circ$ .



- (a) Show that AC, the radius of the segment, is 1.53 m correct to 3 significant figures.

3 RE

- (b) To stand comfortably around this table it is estimated that an average person requires 75 cm of table edge.

How many people can stand comfortably at the table described above?

4 RE