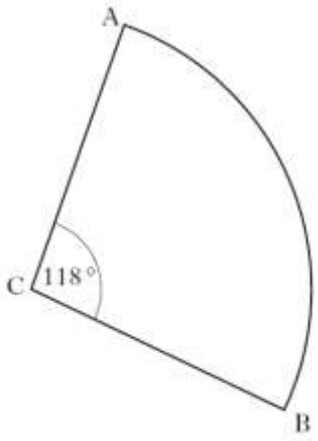
Arcs & Sectors

1. The diagram below shows a sector of a circle, centre C.



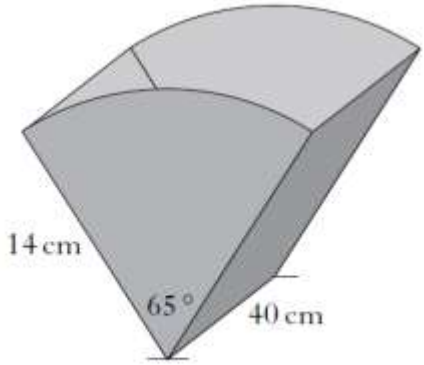
The radius of the circle is 10·5 centimetres and angle ACB is 118°.
Calculate the length of arc AB.

2. The ends of a magazine rack are identical.

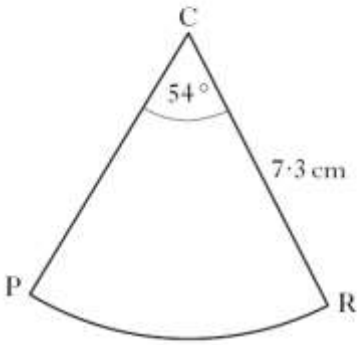
Each end is a sector of a circle with radius 14 centimetres.
The angle in each sector is 65°.

The sectors are joined by two rectangles, each with length 40 centimetres.

The exterior is covered by material.
What area of material is required?



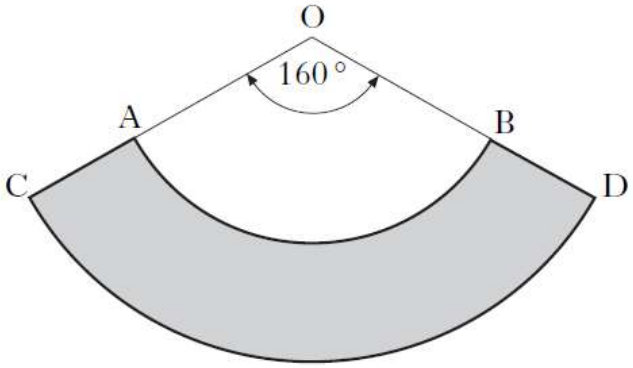
3. The diagram below shows a sector of a circle, centre C.



The radius of the circle is 7·3 centimetres and angle PCR is 54°.
Calculate the area of the sector PCR.

4. A pet shop manufactures protective dog collars.

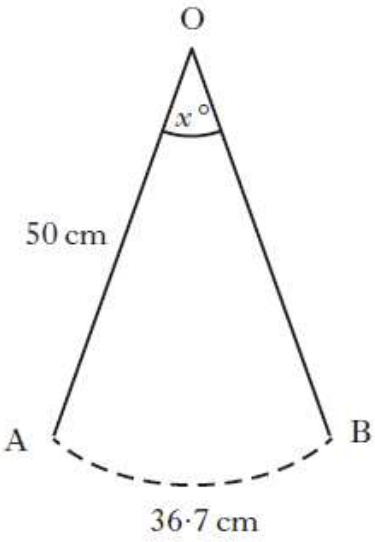
In the diagram below the shaded area represents one of these collars.

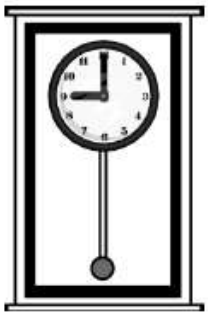


AB and CD are arcs of the circles with centres at O.
The radius, OA, is 10 inches and the radius, OC, is 18 inches.
Angle AOB is 160°.

Calculate the area of a collar.

5. As the pendulum of a clock swings, its tip moves through an arc of a circle.





The length of the pendulum is 50 centimetres.
The length of the arc is 36·7 centimetres.

Calculate $x°$, the angle through which the pendulum swings.