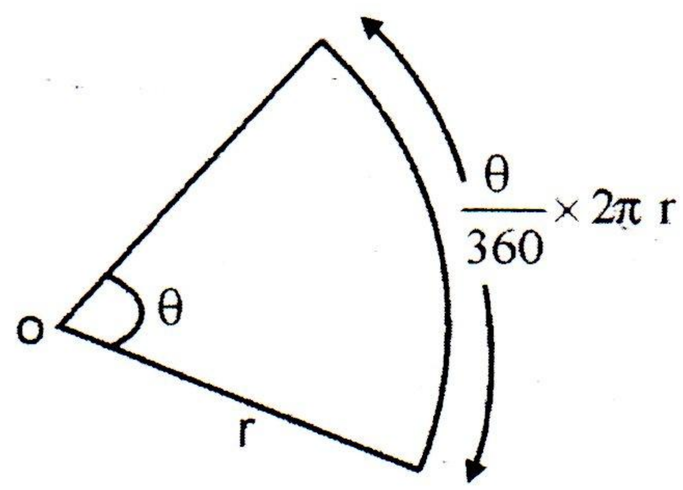
Area of sector, segment and shaded shapes

An arc is a part of the circumference of a circle.

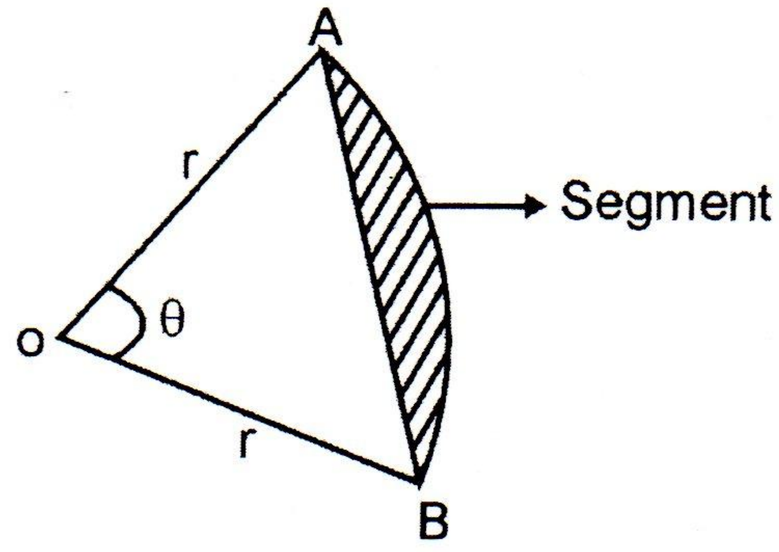
Arc length = $\frac{\theta}{360} \times 2\pi r$



Sector: A segment is the area enclosed between an are and two radii.

Area of sector = $\frac{\theta}{360} \times \pi r^2$

Segment: A segment is the area enclosed between an are and a chord.



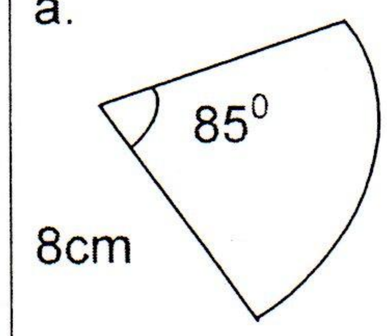
Area of segment = Area of sector AOB – Area of ▷ AOB

$$= \frac{\theta \times \pi r^2}{360} - \frac{1}{2} r^2 \sin\theta$$

$$= r^2 \left[\frac{\pi \times \theta}{360^\circ} - \frac{\sin\theta}{2} \right]$$

1) For each of these sectors, calculate i the arc length ii the sector area
Diagram Not Accurately Drawn.

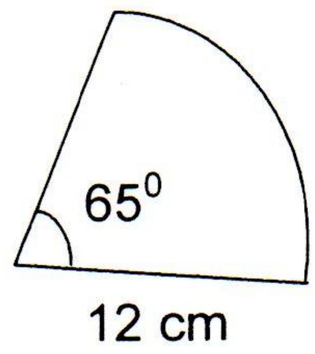
a.



Arc=_____

Area=_____

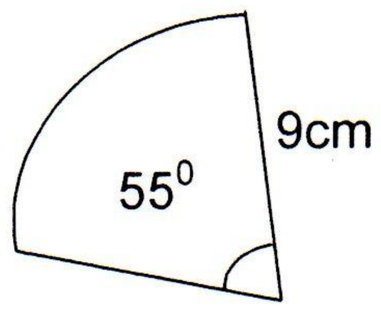
b.



Arc=_____

Area=_____

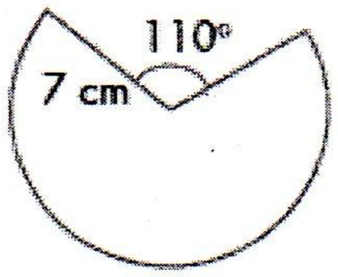
c.



Arc=_____

Area=_____

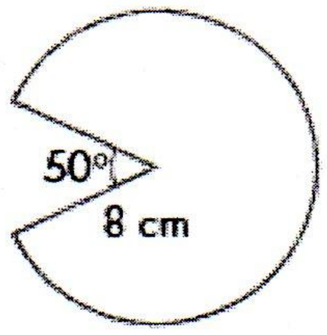
d.



Arc=_____

Area=_____

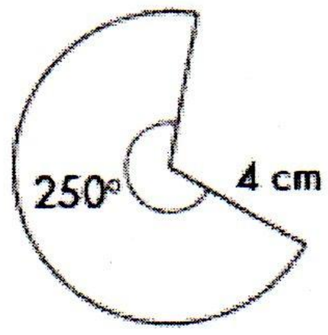
e.



Arc=_____

Area=_____

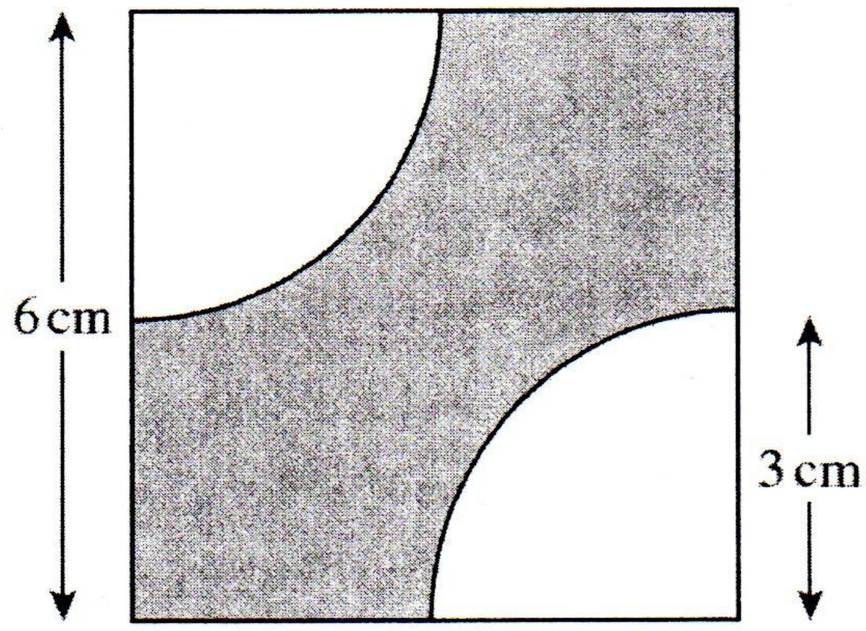
f.



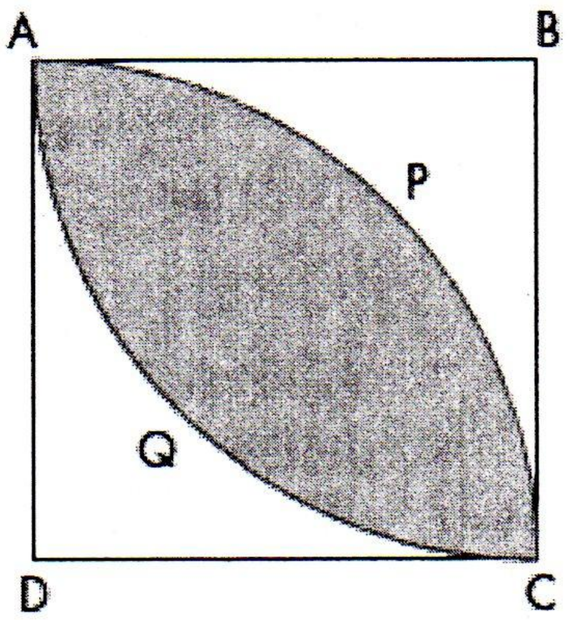
Arc=_____

Area=_____

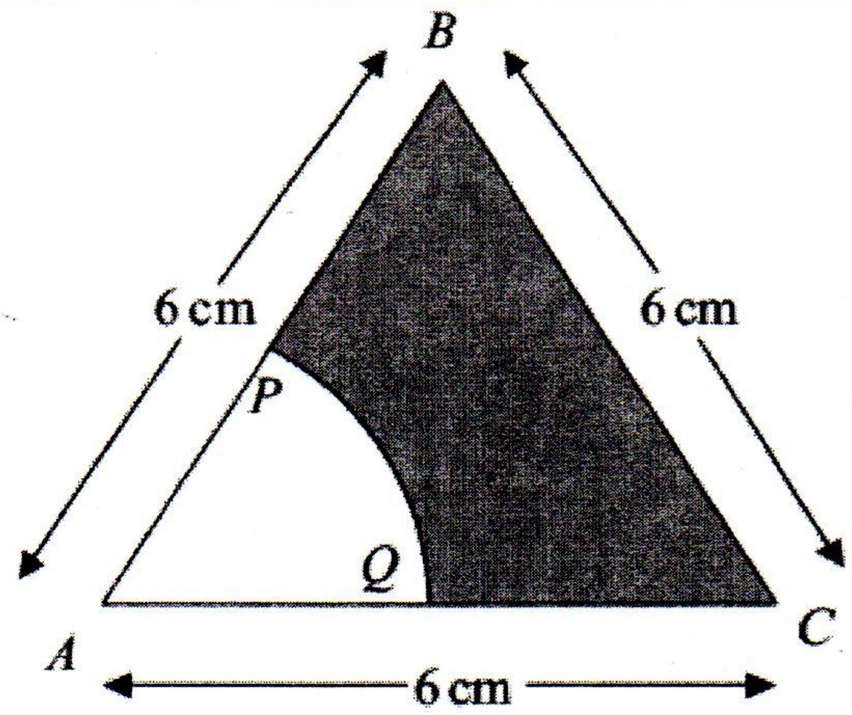
2. The diagram shows a square and two quarter circles.
The square has sides of 6 cm.
The radius of each circle is 3 cm.
Find the area of the shaded region.



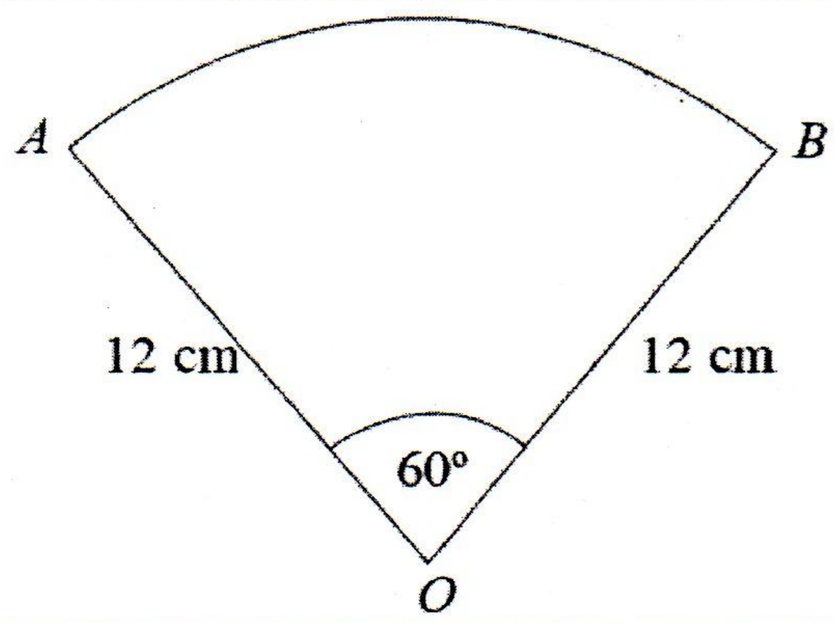
3. ABCD is a square of side length 8 cm. APC and AQC are arcs of the circles with centres D and B.
Calculate the area of the shaded part.



4a. The diagram shows an equilateral triangle *ABC* with sides of length 6 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.
..... cm^2

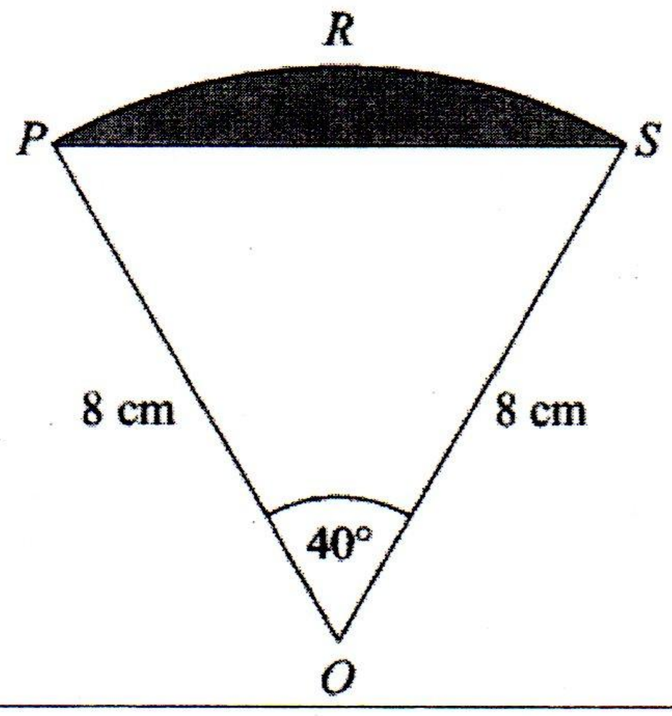


4b. OAB is a sector of a circle, centre *O*.
Angle *AOB* = 60°
OA = *OB* = 12 cm.
Work out the length of the arc *AB*.
Give your answer in terms of π.

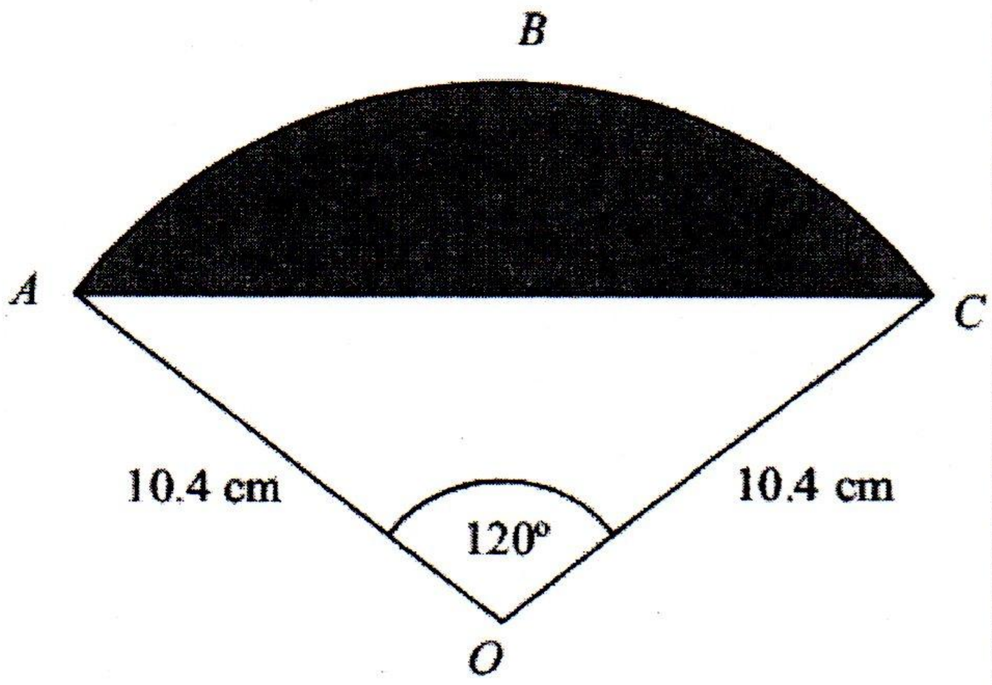


4c. The diagram shows a sector of a circle with centre *O*.
The radius of the circle is 8 cm.
PRS is an arc of the circle.
PS is a chord of the circle.
Angle *POS* = 40°

Calculate the area of the shaded segment.
Give your answer correct to 3 significant figures.
..... cm^2

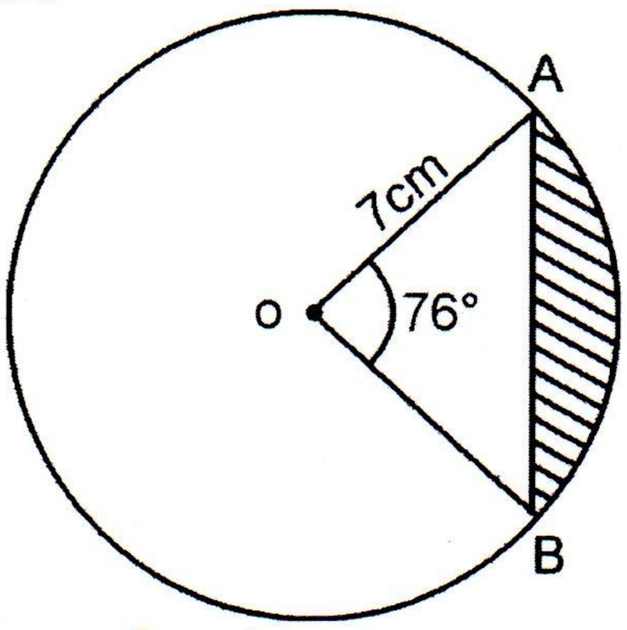


4d. The diagram shows a sector *OABC* of a circle with centre *O*.
OA = *OC* = 10.4 cm. Angle *AOC* = 120°.
(i) Calculate the length of the arc *ABC* of the sector.
Give your answer correct to 3 significant figures.
..... cm
(ii) Calculate the area of the shaded segment *ABC*.
Give your answer correct to 3 significant figures.
..... cm^2



Calculate the area of the segment shaded in each circle.

Q.5

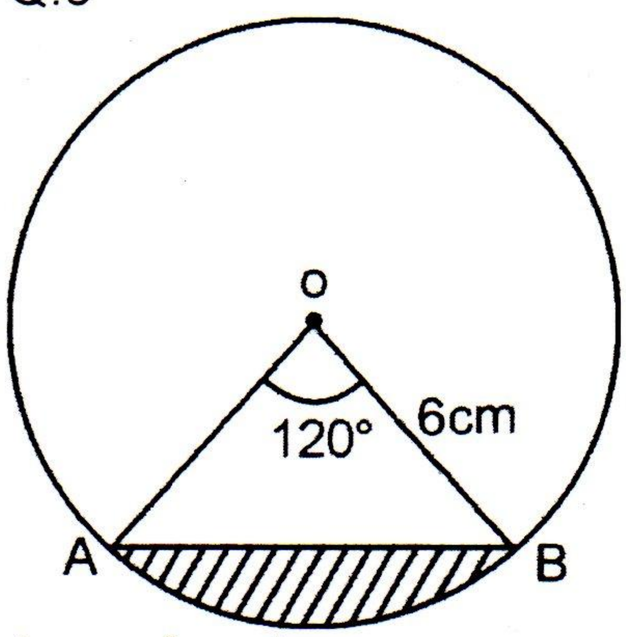


Area of sector:_____

Area of triangle:_____

Area of segment:_____

Q.6

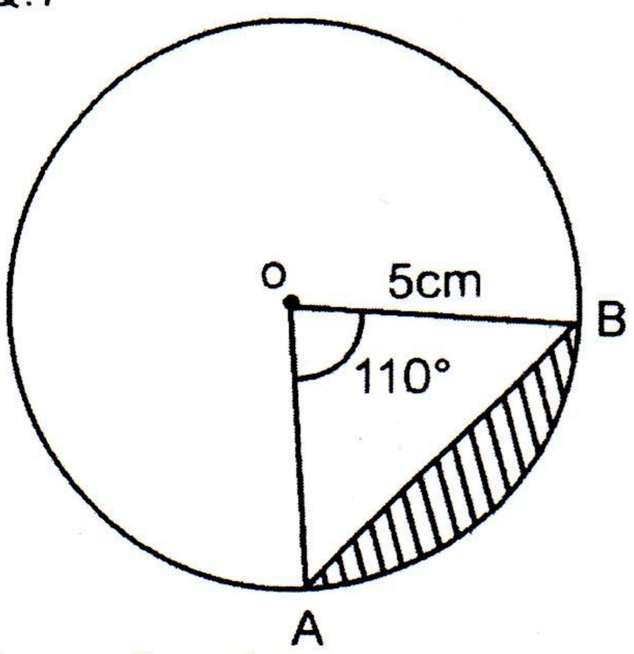


Area of sector:_____

Area of triangle:_____

Area of segment:_____

Q.7

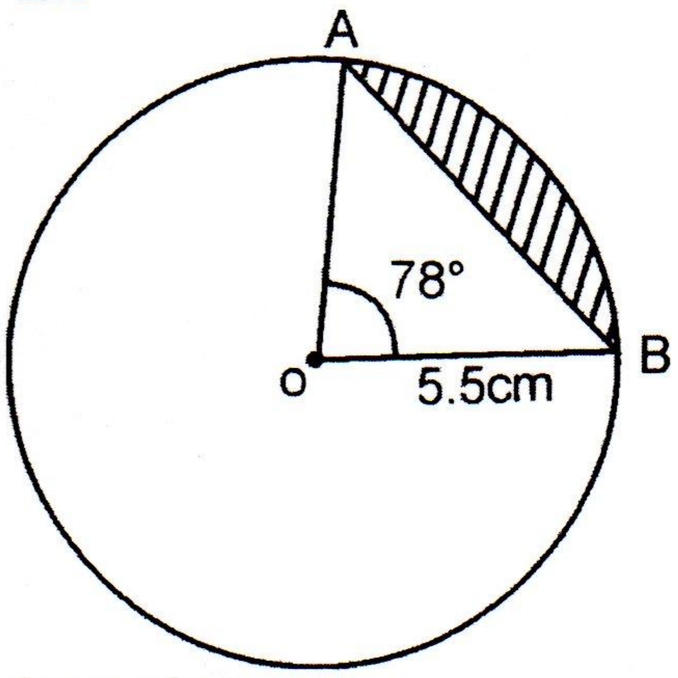


Area of sector:_____

Area of triangle:_____

Area of segment:_____

Q.8

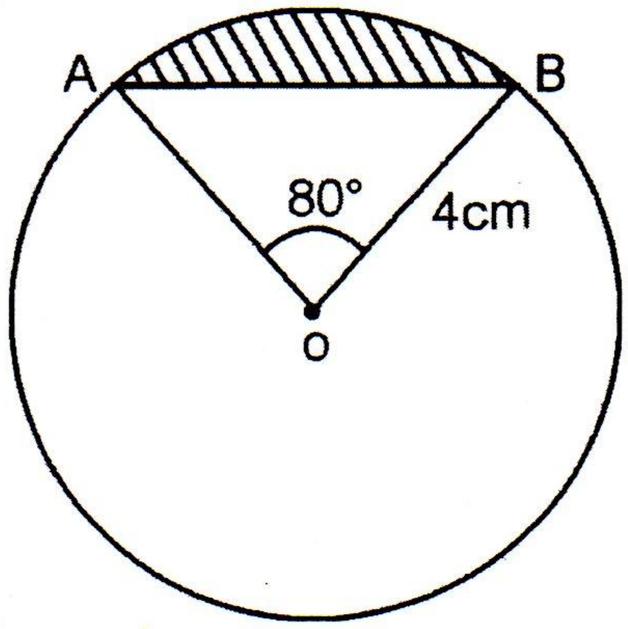


Area of sector:_____

Area of triangle:_____

Area of segment:_____

Q.9

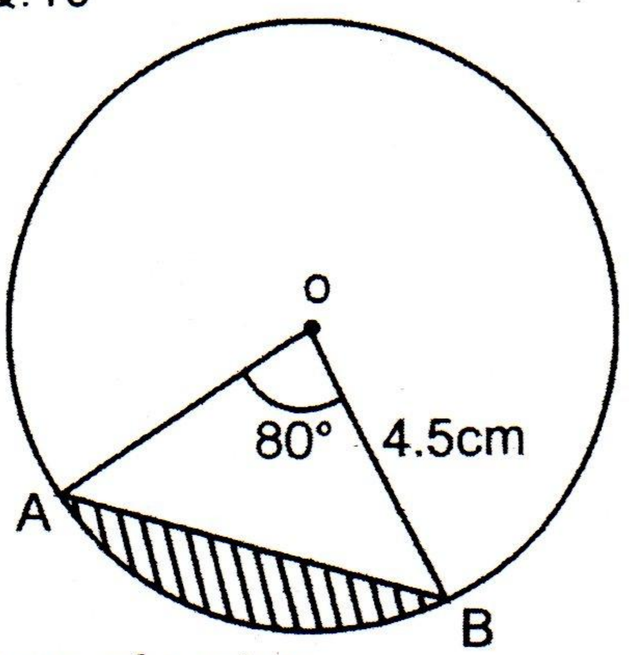


Area of sector:_____

Area of triangle:_____

Area of segment:_____

Q.10

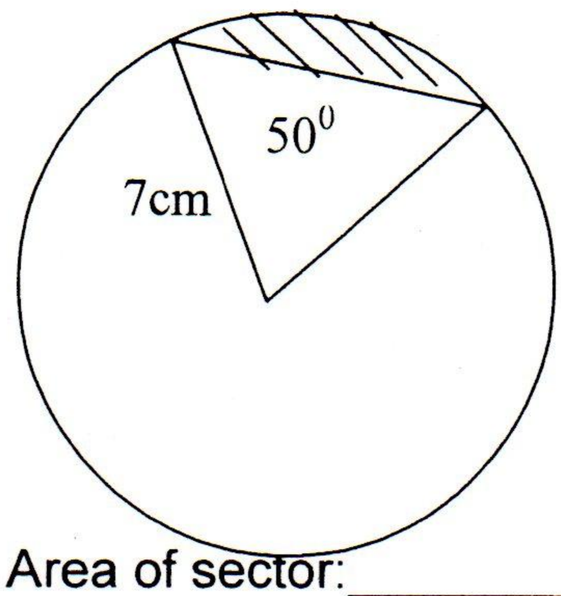


Area of sector:_____

Area of triangle:_____

Area of segment:_____

Q.11

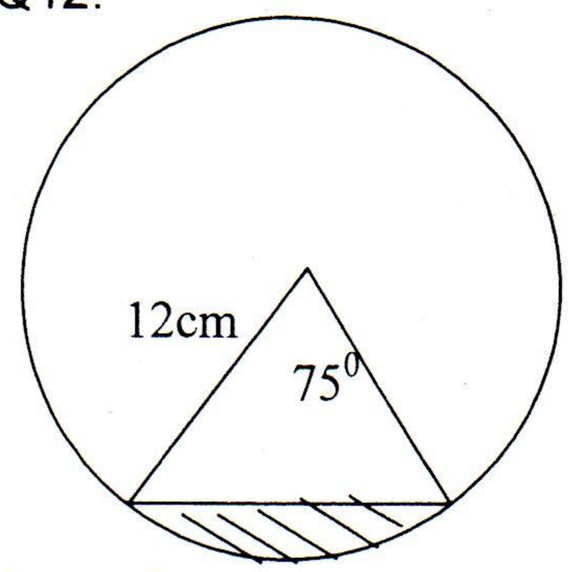


Area of sector:_____

Area of triangle:_____

Area of segment:_____

Q12.

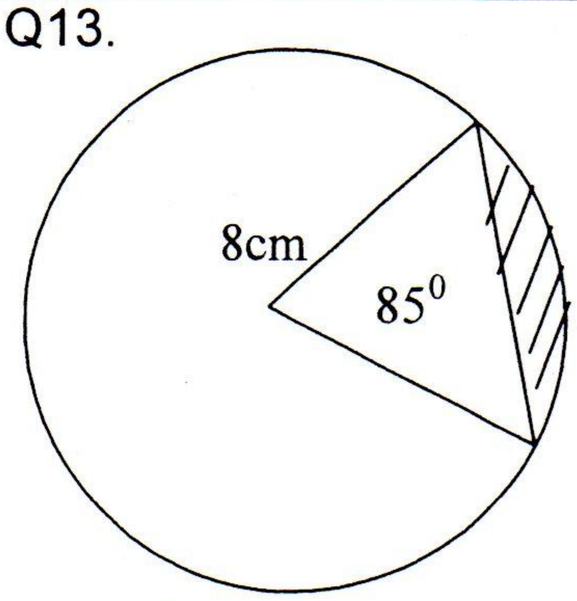


Area of sector:_____

Area of triangle:_____

Area of segment:_____

Q13.



Area of sector:_____

Area of triangle:_____

Area of segment:_____