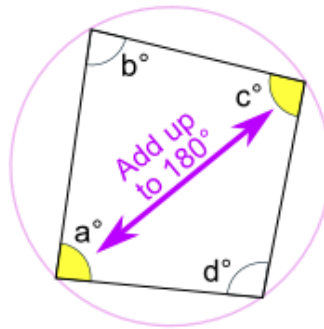


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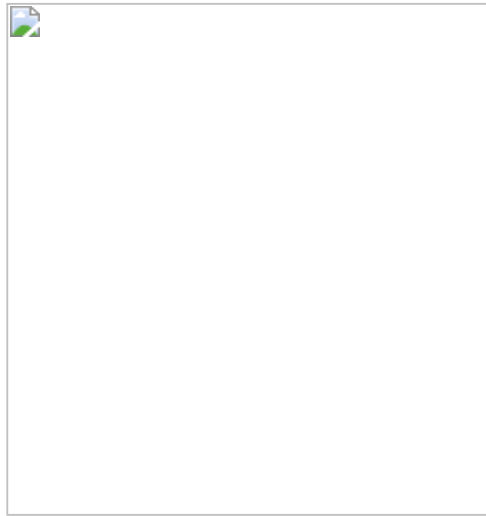
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## NCERT Class 9 Solutions: Circles (Chapter 10) Exercise 10.5 – Part 1

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Q-1 In the figure, P, Q and R are three points on a circle with center O such that  $\angle QOR = 30^\circ$  and  $\angle POQ = 60^\circ$ . If S is a point on the circle other than the arc PQR, find  $\angle PSR$ .



Solution:

Given,

- P, Q, R are three points on a circle
- Its center is O
- Also,  $\angle QOR = 30^\circ$  and  $\angle POQ = 60^\circ$

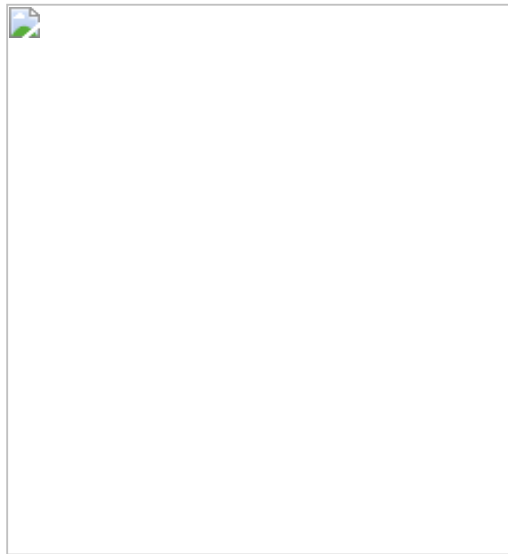
Now,

- $\angle POR = \angle POQ + \angle QOR$
- $\angle POR = 60^\circ + 30^\circ$  (  $\angle QOR = 30^\circ$  and  $\angle POQ = 60^\circ$  )
- $\angle POR = 90^\circ$

We know angle subtend by an arc at the center is double the angle subtended by the same arch at the any point on the remaining part of the circle.

$$\text{Therefore, } \angle PSR = \frac{1}{2} \angle POR = \frac{1}{2} \times 90^\circ = 45^\circ$$

Q-2 A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and at a point on the major arc.



Solution:

Given, PR is equal to the radius of the circle.

- In  $\triangle OPR$ ,  $OP = OR = PR = \text{Radius of the circle}$ .
- Thus,  $\triangle OPR$  is an equilateral triangle, and,  $\angle POR = 60^\circ$

Since angle subtended by an arc at any point on the remainder of the circle is half the angle subtended by the same arc at the center. Therefore,  $\angle PQR = \frac{1}{2} \angle POR =$

$$\frac{1}{2} \times 60^\circ = 30^\circ (\because \angle POR = 60^\circ)$$

Since, PQRD is a cyclic quadrilateral,

- $\angle PQR + \angle PDR = 180^\circ$  (Opposite angles of cyclic quadrilateral)
- $\angle PDR = 180^\circ - 30^\circ = 150^\circ$  ( $\because \angle PQR = 30^\circ$ )
- Thus the angles subtended by the chord with length equal to the radius are  $150^\circ$  on major arc and  $30^\circ$  on minor arc.