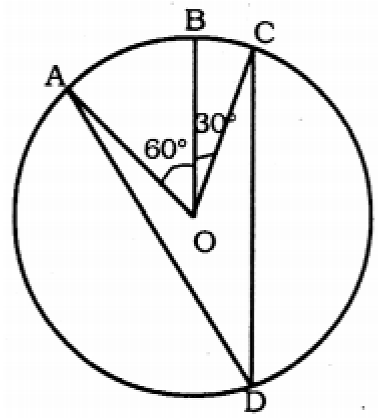
Class Notes

Class: IX	**Topic:** CH – 10, "Circles" Ex-10.5
Subject: Mathematics	

Q1. In the figure, A, B and C are three points on a circle with centre O such that ∠BOC = 30° and ∠AOB= 60°. If D is a point on the circle other than the arc ABC, find ∠ADC.



Solution. We have a circle with centre O, such that ∠AOB 60° and ∠BOC = 30°

∵ ∠AOB + ∠BOC = ∠AOC

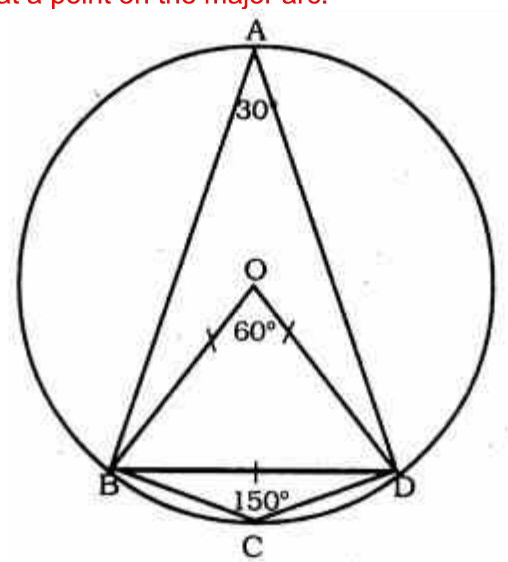
∴ ∠AOC = 60° + 30° = 90°

Now, the arc ABC subtends ∠AOC = 90° at the centre and ∠ADC at a point D on the circle other than the arc ABC.

$$\angle ADC = \frac{1}{2}\angle AOC$$

$$\angle ADC = \frac{1}{2} \times 90° = 45°$$

Q2. 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 also at a point on the major arc.



Solution. We have a circle having a chord BD equal to radius of the circle.

∴ OD = OB = DB

∴ ΔDOB is an equilateral triangle.

Since, each angle of an equilateral = 60°.

$\Rightarrow \angle DOB = 60°$

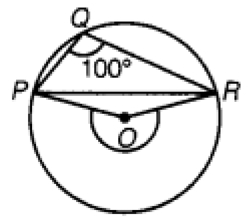
Since, the arc DCB makes reflex $\angle DOB = 360° – 60° = 300°$ at the centre of the circle and $\angle BCD$ at a point on the minor arc of the circle.

$\angle BCD = \frac{1}{2}[\text{reflex} \angle DOB] = \frac{1}{2} \times 300° = 150°$

Similarly, $\angle BAD = \frac{1}{2}[\angle BOD] = \frac{1}{2} \times 60° = 30°$

Q.3 In the figure, $\angle PQR = 100°$, where P, Q and R are points on a circle with centre O. Find $\angle OPR$.

Solution:



Here, reflex $\angle POR = 2\angle PQR = 2 \times 100° = 200°$

[since, the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle]

In ΔOPR, $\angle POR = 360° - 200° = 160°$ ...(i)

Again, in ΔOPR, $OP = OR$ [radii of the same circle]

$\therefore$ $\angle ORP = \angle OPR$ ...(ii)

[$\because$ angles opposite to equal sides of a triangle are also equal]

Also, $\angle OPR + \angle ORP + \angle POR = 180°$ [by angle sum property of triangle]

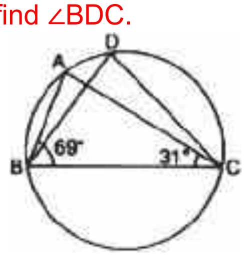
On putting the values from eqs. (i) and (ii), we get

$\angle OPR + \angle OPR + 160° = 180°$

$\Rightarrow$ $2\angle OPR = 180° - 160° = 20°$

$\Rightarrow$ $\angle OPR = \frac{20°}{2} = 10°$

Q.4 In the figure, $\angle ABC = 69°$ $\angle ACB$ 31°, find $\angle BDC$.



Solution: We have, in ΔABC,

$\angle ABC = 69°$ and $\angle ACB = 31°$

But $\angle ABC + \angle ACB + \angle BAC = 180°$[ASP]

$\therefore 69° + 31° + \angle BAC = 180°$

$\Rightarrow \angle BAC = 180° – 69° – 31° = 80°$

Since, angles in the same segment of a circle are equal.

$\therefore \angle BAC = \angle BAC$

$\Rightarrow \angle BDC = 80°$

ASSIGNMENT : PRACTICE SIMILAR SUMS FROM R.S.AGRAWAL.

NOTE: THE STUDENTS ARE ADVISED TO WRITE THIS CONTENT IN THEIR MATHS FAIR NOTEBOOK.

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" CONTENT ABSOLUTELY PREPARED AT HOME "