Exercise 11B

Question 1:

(i) Join BO.

In ΔBOC we have

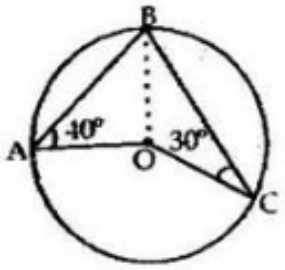
$OC = OB$ [Each equal to theradius]

$\Rightarrow \angle OBC = \angle OCB$ [$\because$ base angles of an isosceles triangle are equal]

$\Rightarrow \angle OBC = 30°$ [$\because \angle OCB = 30°$]

Thus, we have,

$\angle OBC = 30°$ .....(1)



Now, in ΔBOA, we have

$OB = OC$ [Each equal to the radius]

$\Rightarrow \quad \angle OAB = \angle OBA$ [$\because$ base angles of an isosceles triangle are equal]

$\Rightarrow \quad \angle OBA = 40°$ [$\because \angle OAB = 40°$, given]

Thus, we have,

$\angle OBA = 40°$ .....(2)

$\therefore \quad \angle ABC = \angle OBC + \angle OBA$

$\Rightarrow \quad = 30° + 40°$ [from (1) and (2)]

$\Rightarrow \quad \angle ABC = 70°$

The angle subtended by an arc of a circle at the centre is double the angle subtended by the arc at any point on the circumference.

$\therefore \quad \angle AOC = 2 \times \angle ABC$

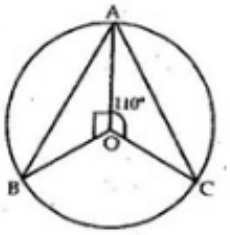
$= 2 \times 70° = 140°$

(ii) $\angle BOC = 360° - (\angle AOB + \angle AOC)$

$= 360° - (90° + 110°)$

$= 360° - 200° = 160°$

We know that $\angle BOC = 2\angle BAC$



$\Rightarrow \quad \angle BAC = \frac{160°}{2} = 80°$ [$\because \angle BOC = 160°$]

$\therefore \quad \angle BAC = 80°$.

********** END **********