

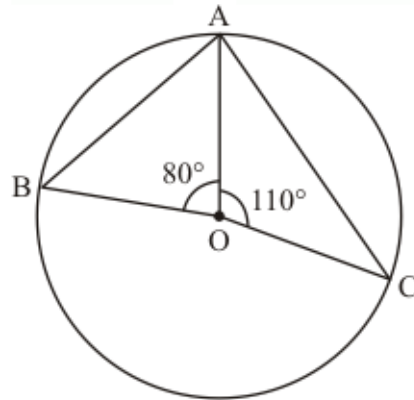


Circles Ex 16.4 Q3

**Answer :**

It is given that

$$\angle BOA = 80^\circ \text{ And } \angle AOC = 110^\circ \text{ (given)}$$



We have to find  $\angle BAC$

In given triangle  $\triangle BOA$

$$\angle BOA = 80^\circ \text{ (Given)}$$

$$OB = OA \quad (\text{Radii of the same circle})$$

Therefore,  $\triangle BOA$  is an isosceles triangle.

$$\text{So, } \angle OBA = \angle OAB \quad \dots (1)$$

$$\angle AOB + \angle OBA + \angle BAO = 180^\circ$$

$$80^\circ + \angle OBA + \angle BAO = 180^\circ \quad (\text{Given } \angle BOA = 80^\circ)$$

$$80^\circ + 2(\angle BAO) = 180^\circ \quad [\text{From (1)}]$$

So

$$2(\angle BAO) = 180^\circ - 80^\circ$$

$$= 100^\circ$$

Again from figure,  $\triangle AOC$  is given triangle and  $\angle COA = 110^\circ$

Now in  $\triangle AOC$ ,

$$OA = OC \quad (\text{Radii of the same circle})$$

$$\angle OAC = \angle OCA$$

$$\angle AOC + \angle OCA + \angle OAC = 180^\circ$$

$$110^\circ + \angle OCA + \angle OAC = 180^\circ \quad (\text{Given that } \angle AOC = 80^\circ)$$

$$110^\circ + 2(\angle OAC) = 180^\circ$$

$$= 2(\angle OAC)$$

$$= 180^\circ - 110^\circ$$

$$= 70^\circ$$

Then,

$$\angle OAC = \frac{70^\circ}{2}$$

$$= 35^\circ$$

Since

$$\angle BAC = \angle BAO + \angle OAC$$

$$= 50^\circ + 35^\circ$$

$$= 85^\circ$$

Hence  $\boxed{\angle BAC = 85^\circ}$

\*\*\*\*\* END \*\*\*\*\*