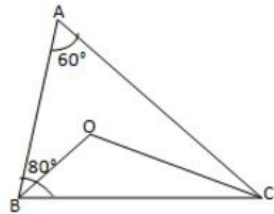




Properties of Triangles Ex 15.2 Q22

Answer :



We know that the sum of all three angles of a triangle is 180° .

Hence, for $\triangle ABC$, we can say that :

$$\angle A + \angle B + \angle C = 180^\circ \quad (\text{Sum of angles of } \triangle ABC)$$

$$\Rightarrow 60^\circ + 80^\circ + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 140^\circ$$

$$\angle C = 40^\circ$$

For $\triangle OBC$:

$$\angle OBC = \frac{\angle B}{2} = \frac{80^\circ}{2} \quad (\text{OB bisects } \angle B.)$$

$$\Rightarrow \angle OBC = 40^\circ$$

$$\angle OCB = \frac{\angle C}{2} = \frac{40^\circ}{2} \quad (\text{OC bisects } \angle C.)$$

$$\Rightarrow \angle OCB = 20^\circ$$

If we apply the above logic to this triangle, we can say that :

$$\angle OCB + \angle OBC + \angle BOC = 180^\circ \quad (\text{Sum of angles of } \triangle OBC)$$

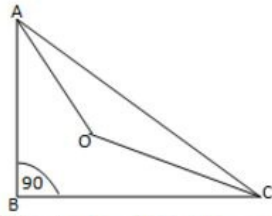
$$20^\circ + 40^\circ + \angle BOC = 180^\circ$$

$$\angle BOC = 180^\circ - 60^\circ$$

$$\angle BOC = 120^\circ$$

Properties of Triangles Ex 15.2 Q23

Answer :



We know that the sum of all three angles of a triangle is 180° .

Hence, for $\triangle ABC$, we can say that :

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\Rightarrow \angle A + 90^\circ + \angle C = 180^\circ$$

$$\angle A + \angle C = 180^\circ - 90^\circ$$

$$\angle A + \angle C = 90^\circ$$

For $\triangle OAC$:

$$\angle OAC = \frac{\angle A}{2} \quad (\text{OA bisects } \angle A.)$$

$$\angle OCA = \frac{\angle C}{2} \quad (\text{OC bisects } \angle C.)$$

On applying the above logic to $\triangle OAC$, we get :

$$\angle AOC + \angle OAC + \angle OCA = 180^\circ \quad (\text{Sum of angles of } \triangle AOC)$$

$$\Rightarrow \angle AOC + \frac{\angle A}{2} + \frac{\angle C}{2} = 180^\circ$$

$$\angle AOC + \frac{\angle A + \angle C}{2} = 180^\circ$$

$$\angle AOC + \frac{90^\circ}{2} = 180^\circ \quad (\because \angle A + \angle C = 90^\circ)$$

$$\angle AOC = 180^\circ - 45^\circ$$

$$\angle AOC = 135^\circ$$

***** END *****