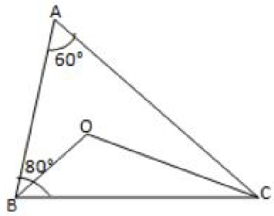
Properties of Triangles Ex 15.2 Q22

Answer :



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

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

$\angle A+\angle B+\angle C=180^{\circ}$ (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 :

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

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

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

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

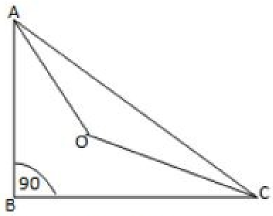
If we apply the above logic to this triangle, we can say that :

$\angle OCB+\angle OBC+\angle BOC=180^{\circ}$ (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 :

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

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

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

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

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

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

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

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

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

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