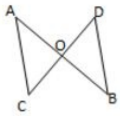
Properties of Triangles Ex 15.2 Q26

Answer :



We know that $AC \parallel BD$ and AB cuts AC and BD at A and B, respectively.

$\therefore \angle CAB = \angle DBA$ (Alternate interior angles)

$\Rightarrow \angle DBA = 35^{\circ}$

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

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

$\angle DBO + \angle ODB + \angle BOD = 180^{\circ}$

$\Rightarrow 35^{\circ} + 55^{\circ} + \angle BOD = 180^{\circ}$ ($\because \angle DBO = \angle DBA$ and $\angle ODB = \angle CDB$)

$\angle BOD = 180^{\circ} - 90^{\circ}$

$= \angle BOD = 90^{\circ}$

Properties of Triangles Ex 15.2 Q27

Answer :

In the given triangle, $AC \parallel QP$ and BR cuts AC and QP at C and Q, respectively.

$\therefore \angle QCA = \angle CQP$ (Alternate interior angles)

Because $RP \parallel AB$ and BR cuts AB and RP at B and R, respectively, $\angle ABC = \angle PRQ$ (alternate interior angles).

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

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

$\angle ABC + \angle ACB + \angle BAC = 180^{\circ}$

$\Rightarrow \angle ABC + \angle ACB + 90^{\circ} = 180^{\circ}$ (Right angled at A)

$\Rightarrow \angle ABC + \angle ACB = 90^{\circ}$

Using the same logic for $\triangle PQR$, we can say that :

$\angle PQR + \angle PRQ + \angle QPR = 180^{\circ}$

$\Rightarrow \angle ABC + \angle ACB + \angle QPR = 180^{\circ}$ ($\because \angle ABC = \angle PRQ$ and $\angle QCA = \angle CQP$)

Or,

$90^{\circ} + \angle QPR = 180^{\circ}$ ($\because \angle ABC + \angle ACB = 90^{\circ}$)

$\mathbf{\angle QPR = 90^{\circ}}$

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