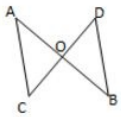
Properties of Triangles Ex 15.2 Q26

Answer :



We know that AC || 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 || QP and BR cuts AC and QP at C and Q, respectively.

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

Because RP || 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 **********