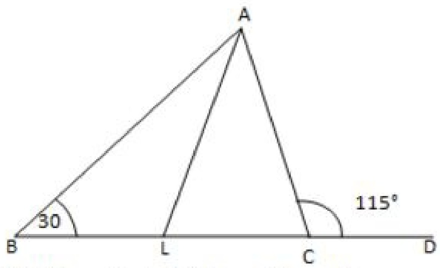
Properties of Triangles Ex 15.3 Q13

Answer :



$\angle ACD$ and $\angle ACL$ make a linear pair.

$\therefore \angle ACD + \angle ACB = 180^\circ$

$\Rightarrow 115^\circ + \angle ACB = 180^\circ$

$\angle ACB = 180^\circ - 115^\circ$

$\angle ACB = 65^\circ$

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

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

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

$\Rightarrow 30^\circ + \angle BAC + 65^\circ = 180^\circ$

Or,

$\angle BAC = 85^\circ$

$= \angle LAC = \frac{\angle BAC}{2} = \frac{85^\circ}{2}$

Using the above rule for $\triangle ALC$, we can say that :

$\angle ALC + \angle LAC + \angle ACL = 180^\circ$

$\Rightarrow \angle ALC + \frac{85^\circ}{2} + 65^\circ = 180^\circ \quad (\because \angle ACL = \angle ACB)$

Or,

$\angle ALC = 180^\circ - \frac{85^\circ}{2} - 65^\circ$

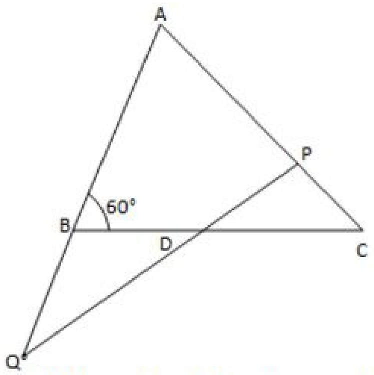
$= \angle ALC = \frac{145^\circ}{2} = 72\frac{1}{2}^\circ$

Thus,

$\angle ALC = 72\frac{1}{2}^\circ$

Properties of Triangles Ex 15.3 Q14

Answer :



$\angle$ ABD and $\angle$ QBD form a linear pair.

$\therefore \angle ABC + \angle QBC = 180^\circ$

$\Rightarrow 60^\circ + \angle QBC = 180^\circ$

$\boldsymbol{\angle QBC = 120^\circ}$

$\angle PDC = \angle BDQ$ (Vertically opposite angles)

$\Rightarrow \angle BDQ = 15^\circ$

In $\triangle$ QBD :

$\angle QBD + \angle QDB + \angle BQD = 180^\circ$ (Sum of angles of $\triangle$ QBD)

$120^\circ + 15^\circ + \angle BQD = 180^\circ$

$\angle BQD = 180^\circ - 135^\circ$

$\angle BQD = 45^\circ$

$\boldsymbol{\angle AQD = \angle BQD = 45^\circ}$

In $\triangle$ AQP :

$\angle QAP + \angle AQP + \angle APQ = 180^\circ$ (Sum of angles of $\triangle$ AQP)

$80^\circ + 45^\circ + \angle APQ = 180^\circ$

$\boldsymbol{\angle APQ = 55^\circ}$

$\boldsymbol{\angle APD = \angle APQ}$

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