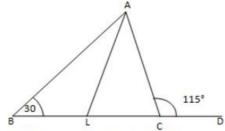


Properties of Triangles Ex 15.3 Q13

Answer:



∠ACD and ∠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:

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

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

Or,

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

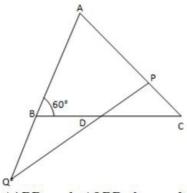
$$= \angle ALC = \frac{145}{2} = 72\frac{1}{2}$$
°

Thus,

$$\angle ALC = 72\frac{1}{2}$$
°

Properties of Triangles Ex 15.3 Q14

Answer:



∠ABD and ∠QBD form a linear pair.

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

$$\Rightarrow$$
 60° + \angle QBC = 180°

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

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

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

In \triangle QBD:

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

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

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

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

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

In \triangle AQP:

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

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

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

$$\angle APD = \angle APQ$$

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