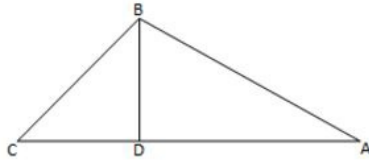




Properties of Triangles Ex 15.5 Q13

Answer :



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

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

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

$$100^\circ + 35^\circ + \angle ACB = 180^\circ$$

$$\Rightarrow \angle ACB = 180^\circ - 135^\circ$$

$$\Rightarrow \angle ACB = 45^\circ$$

$$\angle C = 45^\circ$$

If we apply the above rule on $\triangle BCD$, we can say that :

$$\angle BCD + \angle BDC + \angle CBD = 180^\circ$$

$$45^\circ + 90^\circ + \angle CBD = 180^\circ \quad (\because \angle ACB = \angle BCD \text{ and } BD \perp AC)$$

$$\Rightarrow \angle CBD = 180^\circ - 135^\circ$$

$$\Rightarrow \angle CBD = 45^\circ$$

We know that the sides opposite to equal angles have equal length.

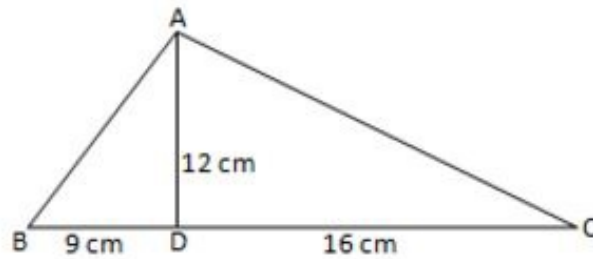
Thus,

$$BD = DC$$

$$DC = 2 \text{ cm}$$

Properties of Triangles Ex 15.5 Q14

Answer :



In $\triangle ADC$,

$\angle ADC = 90^\circ$ (AD is an altitude on BC.)

Using the Pythagoras theorem, we get :

$$12^2 + 16^2 = AC^2$$

$$AC^2 = 144 + 256 = 400$$

$$AC = 20 \text{ cm}$$

In $\triangle ADB$,

$\angle ADB = 90^\circ$ (AD is an altitude on BC.)

Using the Pythagoras theorem, we get :

$$12^2 + 9^2 = AB^2$$

$$AB^2 = 144 + 81 = 225$$

$$AB = 15 \text{ cm}$$

In $\triangle ABC$,

$$BC^2 = 25^2 = 625$$

$$AB^2 + AC^2 = 15^2 + 20^2 = 625$$

$$AB^2 + AC^2 = BC^2$$

Because it satisfies the Pythagoras theorem, we can say that $\triangle ABC$ is right angled at A.

***** END *****