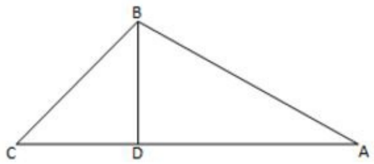
Properties of Triangles Ex 15.5 Q13

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.

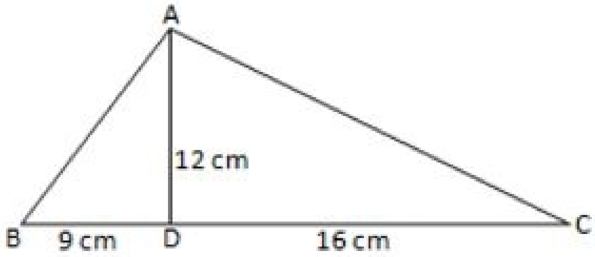
Thus,

$BD = DC$

$DC = 2$ 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 :

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

$AC^2 = 144 + 256 = 400$

$AC = 20$ cm

In $\triangle$ ADB,

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

Using the Pythagoras theorem, we get :

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

$AB^2 = 144 + 81 = 225$

$AB = 15$ 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 **********