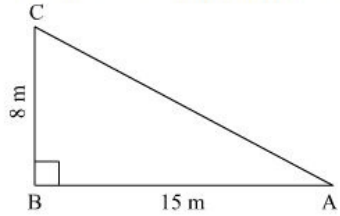
Triangles Ex 4.7 Q3

Answer :

Let us draw the diagram. Let A be the starting point. From point B he goes to the north.
Therefore, we obtained the following drawing.



Now we have to find how far is he from the starting point that is we have to find $l(AC)$.

Now we will use Pythagoras theorem to find the length of AC.

$AC^2 = AB^2 + BC^2$ .....(1)

Let us substituting the values of AB and BC in equation (1) we get,

$$AC^2 = 15^2 + 8^2$$
$$= 225 + 64$$
$$= 289$$

Let us take the square root we get,

$$AC = \pm\sqrt{289}$$
$$AC = \pm 17$$

Since AC is the distance therefore it should be positive.

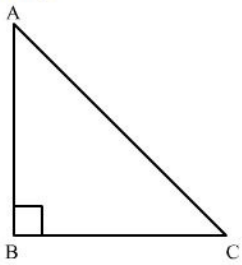
$$\therefore AC = 17 \text{ m}$$

Therefore, he is $\boxed{17 \text{ m}}$ from the starting point.

Triangles Ex 4.7 Q4

Answer :

Let us draw the diagram from the given information we get a right angled triangle ABC as shown below,
Let the window be at the point A. We know that angle formed between the building and ground is always 90°.



Given: AB = 15 m and CA = 17 m

Now we will use Pythagoras theorem to find $l(BC)$.

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

Let us substitute the values we get,

$\therefore 17^2 = 15^2 + BC^2$

$\therefore 289 = 225 + BC^2$

Subtracting 225 from both the sides of the equation we get,

$\therefore 289 - 225 = BC^2$

$\therefore 64 = BC^2$

Let us take the square root we get,

$BC = \sqrt{64}$

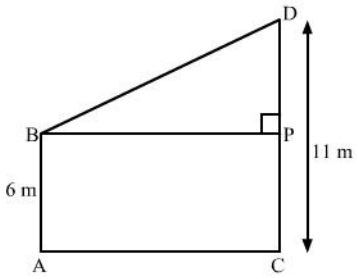
$\therefore BC = 8$

Therefore, the distance of the foot of the ladder from the building is $\boxed{8\text{ m}}$.

Triangles Ex 4.7 Q5

Answer :

Let us draw the diagram from the given information.



Let us draw a perpendicular from B on CD which meets CD at P.

It is clear that BP = 12 m because it is given that distance between feet of the two poles is 12 m.

After drawing the perpendicular we get a rectangle BACP such that AB = PC and BP = AC.

Because of this construction we also obtained a right angled triangle BPD.

Now we will use Pythagoras theorem,

$BD^2 = BP^2 + PD^2$

Let us substitute the values of BP and PD we get,

$BD^2 = 12^2 + 5^2$

$\therefore BD^2 = 144 + 25$

$BD^2 = 169$

Taking the square root we get, $BD = 13$

Therefore, distance between the top of the two poles is $\boxed{13\text{ m}}$.

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