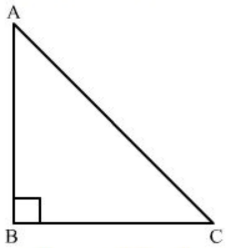
Triangles Ex 4.7 Q26

Answer :

We will draw the figure from the given information as below,



Let AB be the vertical pole of length 18 m and let the stake be at the point C so the wire will be taut.

Therefore, we have $AB = 18\text{ m}$, $AC = 24\text{ m}$ and we have to find BC.

Now we will use Pythagoras theorem,

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

Let us substitute the values we get,

$$24^2 = 18^2 + BC^2$$

$$576 = 324 + BC^2$$

Subtracting 324 from both sides of the equation we get,

$$BC^2 = 576 - 324$$

$$BC^2 = 252$$

We can rewrite the 252 as 36×7, therefore, our equation becomes,

$$BC^2 = 36 \times 7$$

Now we will take the square root,

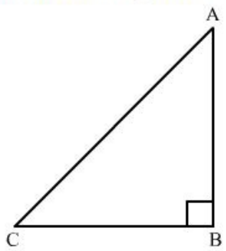
$$BC = 6 \times \sqrt{7}$$

Therefore, the stake should be $\boxed{6\sqrt{7}\text{ m}}$ far from the base of the pole so that the wire will be taut.

Triangles Ex 4.7 Q27

Answer :

Let us draw the figure first.



An aeroplane which flies due north at a speed of 1000 km/hr covers the distance AB after $1\frac{1}{2}$ hr and another aeorplane that flies due west at the speed of 1200 km/hr covers the distance BC after $1\frac{1}{2}$ hr.

We know that $\text{speed} = \dfrac{\text{distance}}{\text{time}}$

$$\therefore \text{distance} = \text{speed} \times \text{time}$$

Let us calculate AB first as shown below,

$$AB = 1000 \times 1.5$$

$$\therefore AB = 1500\text{ km}$$

Similarly we can calculate BC.

$$BC = 1200 \times 1.5$$

$$\therefore BC = 1800 \text{ km}$$

Now we have find AC. To find AC we will use Pythagoras theorem,

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

$$\therefore AC^2 = (1500)^2 + (1800)^2$$

$$\therefore AC^2 = 2250000 + 3240000$$

$$\therefore AC^2 = 5490000$$

Taking square root we get,

$$AC = 2343.07$$

Therefore, after $1\frac{1}{2}$ hrs the aeroplanes will be approximately $\boxed{2343 \text{ km}}$ far apart.

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