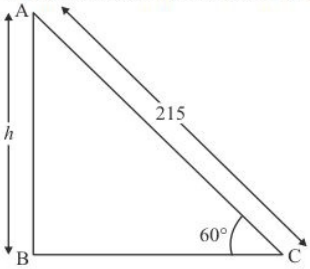
Some Applications of Trigonometry Ex 12.1 Q37

Answer :

Let *AB* be the balloon of height *h*. And the balloon is connected to the metrological ground station by a cable of length 215 m. Let *AC* = 215 and $\angle ACB = 60°$

Here we have to find height of balloon.

We have the following corresponding figure



So we use trigonometric ratios

In a triangle *ABC*,

$$\Rightarrow \quad \sin C = \frac{AB}{AC}$$

$$\Rightarrow \quad \sin 60° = \frac{h}{215}$$

$$\Rightarrow \quad \frac{\sqrt{3}}{2} = \frac{h}{215}$$

$$\Rightarrow \quad h = 186$$

Hence the height of balloon is $\boxed{186}$ m.

Some Applications of Trigonometry Ex 12.1 Q38

Answer :

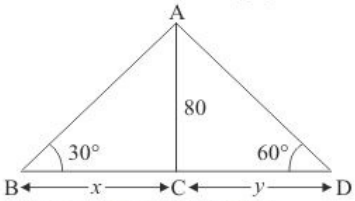
Let *AB* and *AD* be the two men either side of cliff and height of cliff is 80 m.

And makes an angle of elevation, 30° and 60° respectively of the top of the cliff

We have given that *AC* = 80 m. Let *BC* = *x* and *CD* = *y*. And $\angle ABC = 30°, \angle ADC = 60°$

Here we have to find height of cliff.

We have the corresponding figure as follows



So we use trigonometric ratios.

In a triangle ABC,

$$\Rightarrow \quad \tan B = \frac{AC}{BC}$$

$$\Rightarrow \quad \tan 30° = \frac{80}{x}$$

$$\Rightarrow \quad \frac{1}{\sqrt{3}} = \frac{80}{x}$$

$$\Rightarrow \quad x = 80\sqrt{3}$$

Again in a triangle ADC

$$\Rightarrow \quad \tan D = \frac{AC}{CD}$$

$$\Rightarrow \quad \tan 60^\circ = \frac{80}{y}$$

$$\Rightarrow \quad \sqrt{3} = \frac{80}{y}$$

$$\Rightarrow \quad y = \frac{80}{\sqrt{3}}$$

$$\Rightarrow \quad x + y = 80\sqrt{3} + \frac{80}{\sqrt{3}}$$

$$\Rightarrow \quad x + y = \frac{320}{\sqrt{3}}$$

$$\Rightarrow \quad x + y = 184.8$$

Hence the height of cliff is $\boxed{184.8}$ m.

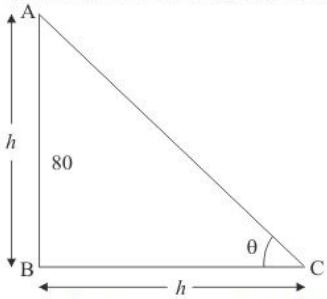
Some Applications of Trigonometry Ex 12.1 Q39

Answer :

Let θ be the angle of elevation of sun. Let AB be the vertical pole of height h and BC be the shadow of equal length h.

Here we have to find angle of elevation of sun.

We have the corresponding figure as follows



So we use trigonometric ratios to find the required angle.

In a triangle ABC,

$$\Rightarrow \quad \tan\theta = \frac{AB}{BC}$$

$$\Rightarrow \quad \tan\theta = \frac{h}{h}$$

$$\Rightarrow \quad \tan\theta = 1$$

$$\Rightarrow \quad \theta = 45^\circ$$

Hence the angle of elevation of sun is $\boxed{45^\circ}$.

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