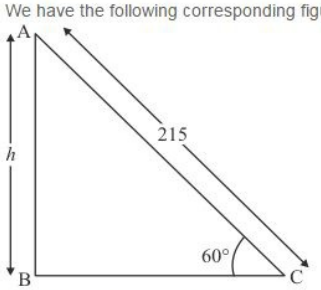
## Some Applications of Trigonometry Ex 12.1 Q37

**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 :**

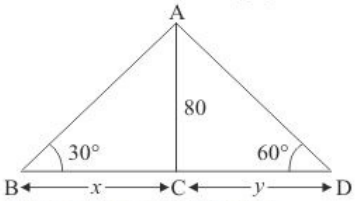
Let *AB* and *AD* be the two men either side of cliff and height of cliff is 80 m.

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.

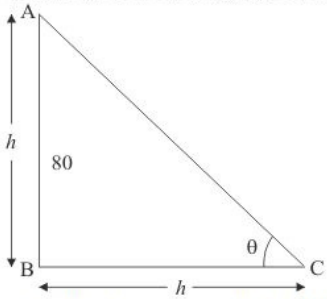
Some Applications of Trigonometry Ex 12.1 Q39

**Answer :**

Let $\theta$ 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 **********