



Some Applications of Trigonometry Ex 12.1 Q64

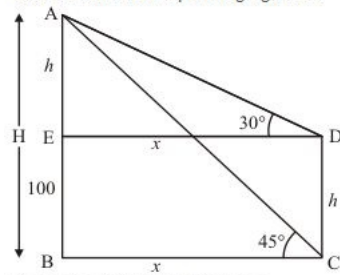
Answer :

Let AB be the height of Rock which is H m. and makes an angle of elevations 45° and 30° respectively from the bottom and top of tower whose height is 100 m.

Let $AE = h$ m, $BC = x$ m and $CD = 100$. $\angle ACB = 45^\circ$, $\angle ADE = 30^\circ$

We have to find the height of the rock

We have the corresponding figure as



So we use trigonometric ratios.

In $\triangle ABC$,

$$\begin{aligned}\tan 45^\circ &= \frac{AB}{BC} \\ \Rightarrow 1 &= \frac{100+h}{x} \\ \Rightarrow x &= 100+h\end{aligned}$$

Again in $\triangle ADE$

$$\tan 30^\circ = \frac{AE}{DE}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{x}$$

$$\Rightarrow 100 + h = \sqrt{3}h$$

$$\Rightarrow h = 136.65$$

$$H = 100 + 136.65$$

$$\Rightarrow H = 236.65$$

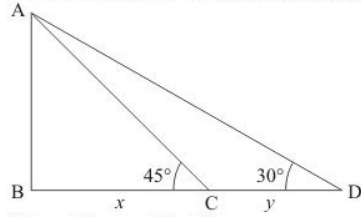
Hence the height of rock is 236.65 m.

Some Applications of Trigonometry Ex 12.1 Q65

Answer :

Let AB be the light house of 150 m. and angle of depression of two ship C and D are 30° and 45° respectively.

Let, $BC = x$, $CD = y$ and $\angle ADB = 30^\circ$, $\angle ACB = 45^\circ$.



We use trigonometric ratios.

In a triangle ABC ,

$$\Rightarrow \tan 45^\circ = \frac{AB}{BC}$$

$$\Rightarrow 1 = \frac{150}{x}$$

$$\Rightarrow x = 150$$

Again in a triangle ABD ,

$$\Rightarrow \tan 30^\circ = \frac{AB}{BD}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{150}{x+y}$$

$$\Rightarrow x + y = 150\sqrt{3}$$

$$\Rightarrow 150 + y = 150\sqrt{3}$$

$$\Rightarrow y = 150\sqrt{3} - 150$$

$$\Rightarrow y = 150(\sqrt{3} - 1)$$

$$\Rightarrow y = 150 \times 0.732$$

Hence distance between the ships is **109.8** m.

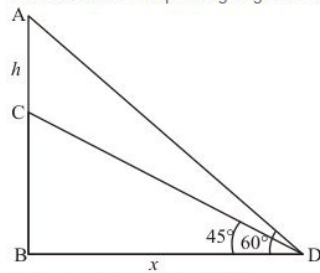
Some Applications of Trigonometry Ex 12.1 Q66

Answer :

Let BC be the tower height of 5 m. flag height is h m and an angle of elevation of top of tower is 45° and an angle of elevation of the top of flag is 60° .

Let, $AC = h$ m and $BC = 5$ m and $\angle ADB = 60^\circ$, $\angle CDB = 45^\circ$

We have the corresponding angle as follows



So we use trigonometric ratios.

In a triangle BCD ,

$$\Rightarrow \tan 45^\circ = \frac{BC}{BD}$$

$$\Rightarrow 1 = \frac{5}{x}$$

$$\Rightarrow x = 5$$

Again in a triangle ABD ,

$$\Rightarrow \tan 60^\circ = \frac{AB}{BD}$$

$$\Rightarrow \sqrt{3} = \frac{5+h}{5}$$

$$\Rightarrow h = 5(\sqrt{3} - 1)$$

$$\Rightarrow h = 3.66$$

Hence the height of flag is 3.66 m.

***** END *****