



# Some Applications of Trigonometry Ex 12.1 Q64

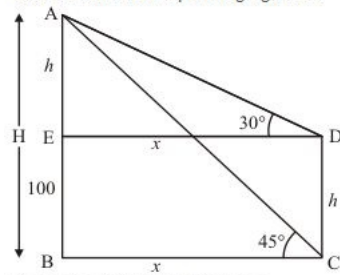
**Answer :**

Let  $AB$  be the height of Rock which is  $H$  m. and makes an angle of elevations  $45^\circ$  and  $30^\circ$  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  $\triangle ADE$

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

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

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

$$\Rightarrow h = 136.65$$

$$H = 100 + 136.65$$

$$\Rightarrow H = 236.65$$

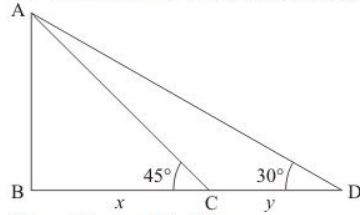
Hence the height of rock is 236.65 m.

## 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  $30^\circ$  and  $45^\circ$  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.

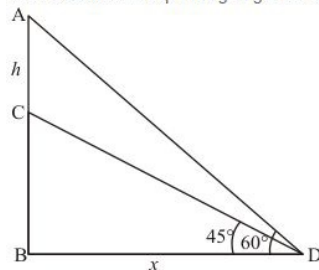
Some Applications of Trigonometry Ex 12.1 Q66

**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  $45^\circ$  and an angle of elevation of the top of flag is  $60^\circ$ .

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 \*\*\*\*\*