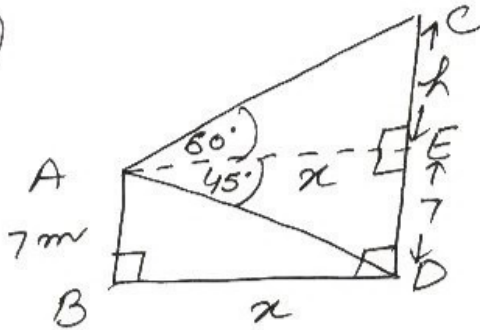


(12)



let AB represents building, CD the cable tower.

In rt $\triangle AED$

$$\tan 45^\circ = \frac{ED}{AE}$$

$$1 = \frac{7}{x}$$

$$\Rightarrow x = 7$$

In rt $\triangle AEC$

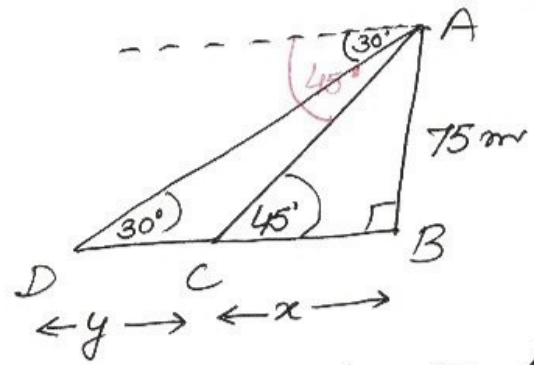
$$\tan 60^\circ = \frac{CE}{AE}$$

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

$$\Rightarrow h = 7\sqrt{3}$$

$$\begin{aligned} \text{height of tower} &= 7\sqrt{3} + 7 \\ &= 7(\sqrt{3} + 1) \text{ m} \\ &= 7(1.73 + 1) \\ &= 7 \times 2.73 \\ &= 19.11 \text{ m} \end{aligned}$$

(13)



let AB represents light house
C, D position of ships

In rt $\triangle CBA$

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

$$1 = \frac{AB}{BC}$$

$$\Rightarrow BC = AB$$

$$\Rightarrow x = 75 \dots \textcircled{1}$$

In rt $\triangle DBA$

$$\tan 30^\circ = \frac{AB}{DB}$$

$$\frac{1}{\sqrt{3}} = \frac{75}{x+y}$$

$$\Rightarrow x+y = 75\sqrt{3}$$

using $\textcircled{1}$

$$\begin{aligned} \Rightarrow y &= 75\sqrt{3} - 75 \\ &= 75(\sqrt{3} - 1) \\ &= 75(1.73 - 1) \\ &= 75 \times 0.73 \\ &= 54.75 \end{aligned}$$

$$\begin{aligned} \therefore \text{diff. between ships} \\ &= 54.75 \text{ m} \end{aligned}$$