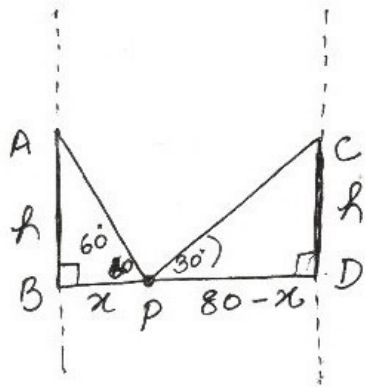


(10)



let AB, CD represent poles,  
P is point of observ.

In rt  $\Delta ABP$

$$\tan 60^\circ = \frac{h}{x}$$

$$\sqrt{3}x = h \dots \textcircled{1}$$

In rt  $\Delta CDP$

$$\tan 30^\circ = \frac{h}{80-x}$$

$$\frac{1}{\sqrt{3}} = \frac{h}{80-x}$$

$$\Rightarrow 80-x = h\sqrt{3}$$

using (i)

$$80-x = \sqrt{3}x \times \sqrt{3}$$

$$\Rightarrow 4x = 80$$

$$\Rightarrow x = 20$$

Sub. in  $\textcircled{1}$

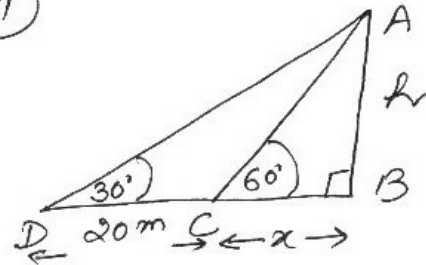
$$h = \sqrt{3} \times 20$$

$$= 20\sqrt{3}$$

$$\therefore \text{height of poles} = 20\sqrt{3} \\ = 20 \times 1.73 \\ = 24.6 \text{ m}$$

distance of poles from point of observation  
20 m, 60 m

(11)



In rt  $\Delta CBA$

$$\tan 60^\circ = \frac{AB}{BC}$$

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

$$\Rightarrow h = \sqrt{3}x \dots \textcircled{1}$$

In rt  $\Delta DBA$

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

$$\frac{1}{\sqrt{3}} = \frac{h}{20+x}$$

$$\Rightarrow h\sqrt{3} = 20+x$$

using (i)

$$\sqrt{3}x \times \sqrt{3} = 20+x$$

$$\Rightarrow 3x - x = 20$$

$$\Rightarrow 2x = 20$$

$$\Rightarrow x = \frac{20}{2}$$

$$\Rightarrow x = 10$$

Sub  $\textcircled{1}$

$$h = 10\sqrt{3}$$

$$\therefore \text{height of tower} = 10\sqrt{3} \\ = 10 \times 1.73 \\ = 17.3 \text{ m}$$

$$\text{width of canal} = x + 20 \\ = 17.3 + 20 \\ = 37.3 \text{ m}$$