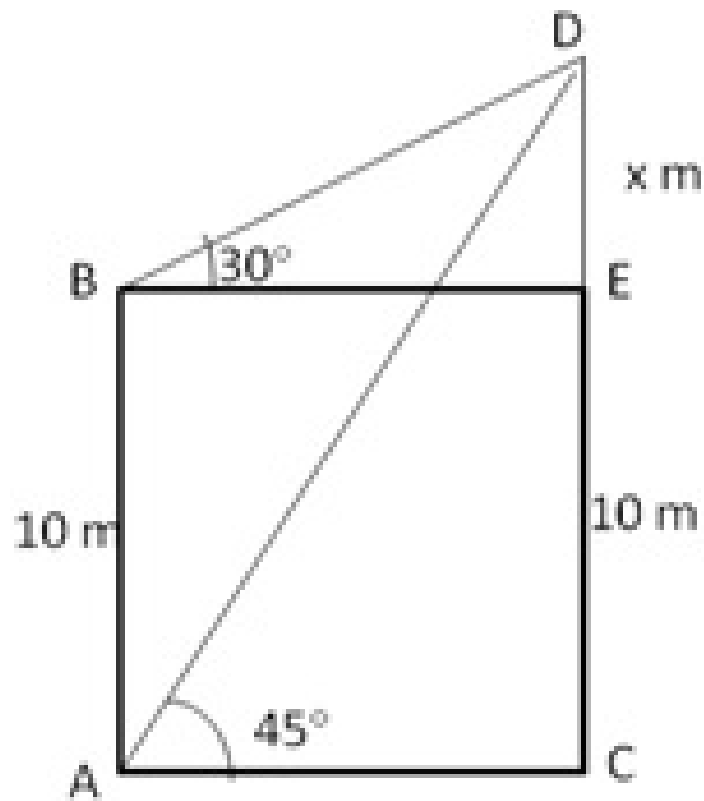




Question 25:

Let AB be the 10 m high building and let CD be the multi - storey building. Draw $BE \perp CD$

Then, $\angle DBE = 30^\circ$ and $\angle DAC = 45^\circ$



Let $ED = x$ meters

$$\text{Then, } \frac{AC}{CD} = \cot 45^\circ$$

$$\Rightarrow \frac{AC}{(10+x)} = 1$$

$$\Rightarrow AC = (10+x) \text{ m} \dots (1)$$

$$\therefore BE = AC = (10+x) \text{ m}$$

In $\triangle BDE$,

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

$$\Rightarrow \frac{x}{(10+x)} = \frac{1}{\sqrt{3}}$$

$$\Rightarrow \sqrt{3}x = 10+x$$

$$\Rightarrow x = \frac{10}{\sqrt{3}-1} \times \frac{\sqrt{3}+1}{\sqrt{3}+1} = 5(\sqrt{3}+1) = 13.66$$

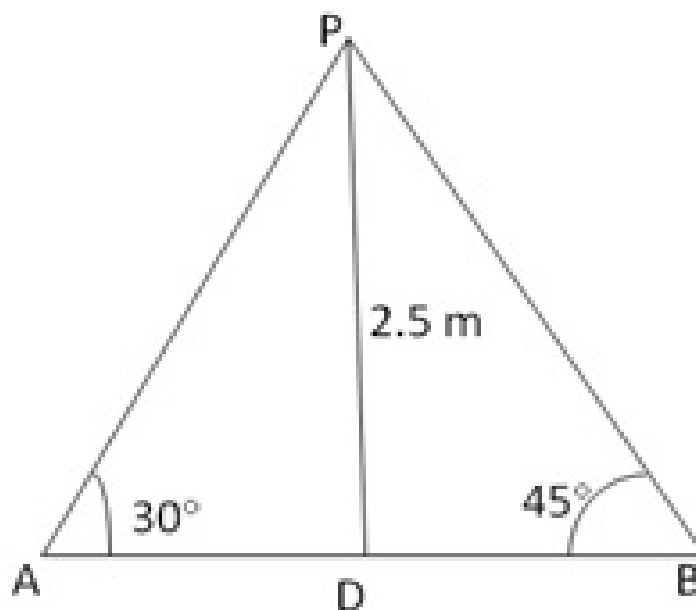
Height of the Multi - storey building = $(10 + 13.66) \text{ m} = 23.66 \text{ m}$

Distance between two building = $(10 + 13.66) \text{ m} = 23.66 \text{ m}$

Question 26:

Let A and B be two points on the bank on opposite sides of the river. Let P be a point on the bridge at a height of 2.5 m

Thus, $PD = 2.5 \text{ m}$



Then, $\angle BAP = 30^\circ$, $\angle ABP = 45^\circ$ and $PD = 2.5 \text{ m}$

$$\frac{DB}{PD} = \cot 45^\circ = \frac{DB}{2.5} = 1 \Rightarrow DB = 2.5 \text{ m}$$

$$\frac{AD}{PD} = \cot 30^\circ$$

$$\frac{AD}{2.5} = \sqrt{3}$$

$$\Rightarrow AD = 2.5\sqrt{3} \text{ m}$$

Height of the river = AB

$$= (AD + DB) = 2.5(\sqrt{3} + 1) \text{ m}$$

$$= \frac{5}{2}(1.732 + 1) \text{ m} = 6.83 \text{ m}$$

***** END *****