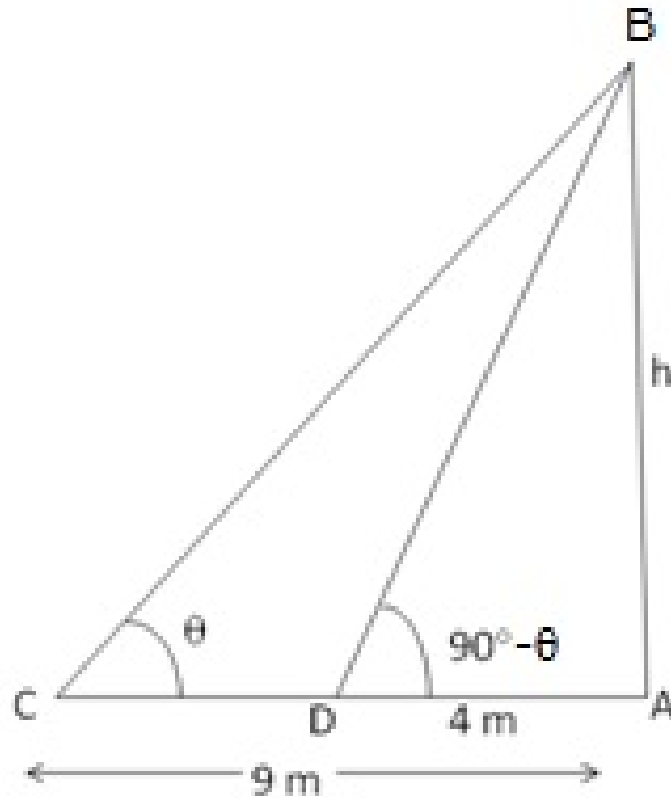




Question 23:

Let AB be the tower and let C and D be the two positions of the observer. Then, AC = 9 meters, and AD = 4 meters.

Let  $\angle ACB = \theta$



Then,  $\angle ADB = (90^\circ - \theta)$

Let AB = h meters

From right  $\triangle CAB$ , we have

$$\frac{AB}{AC} = \tan \theta$$

$$\Rightarrow \frac{h}{9} = \tan \theta$$

$$\Rightarrow h = 9 \tan \theta$$

From right  $\triangle DAB$ , we have

$$\frac{AB}{AD} = \tan(90^\circ - \theta) \Rightarrow \frac{h}{4} = \cot \theta$$

$$\Rightarrow h = 4 \cot \theta$$

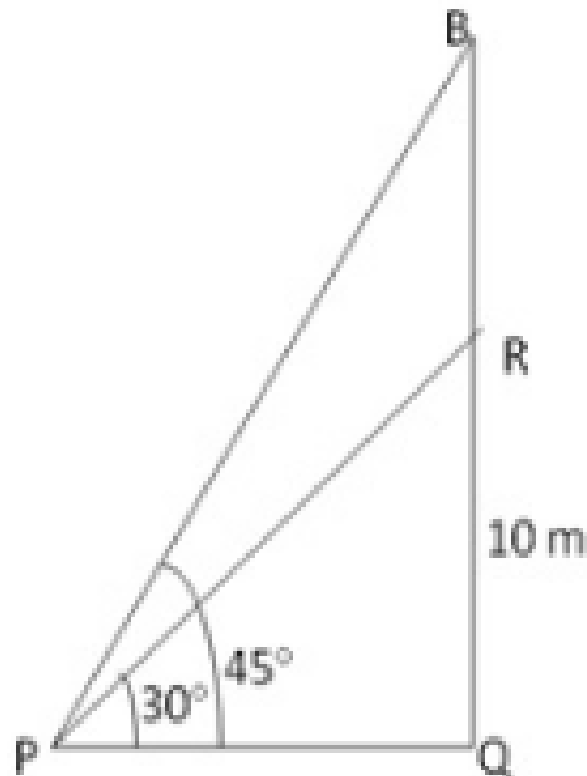
from (1) & (2), we get

$$h^2 = 36 \Rightarrow h = 6$$

Hence, the height of tower is 6 meters.

Question 24:

Let P be the point of observation RQ is the building and BR is the flag staff of height h,  $\angle BPQ = 45^\circ$ ,  $\angle RPQ = 30^\circ$



$$\frac{PQ}{QR} = \cot 30^\circ = \sqrt{3}$$

$$\frac{PQ}{10} = \sqrt{3}$$

$$\Rightarrow PQ = 10\sqrt{3} \text{ m} \text{ --- (1)}$$

from right  $\triangle PBQ$  we have

$$\frac{PQ}{QB} = \frac{PQ}{10+h} = \cot 45^\circ = 1$$

$$PQ = 10+h \text{ --- (2)}$$

From (1) and (2), we have

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

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

$$= (10 \times 1.73 - 10) \text{ m}$$

$$= (17.3 - 10) = 7.3 \text{ m}$$

Hence distance of building is and length of the flags staff is 7.3 m

\*\*\*\*\* END \*\*\*\*\*