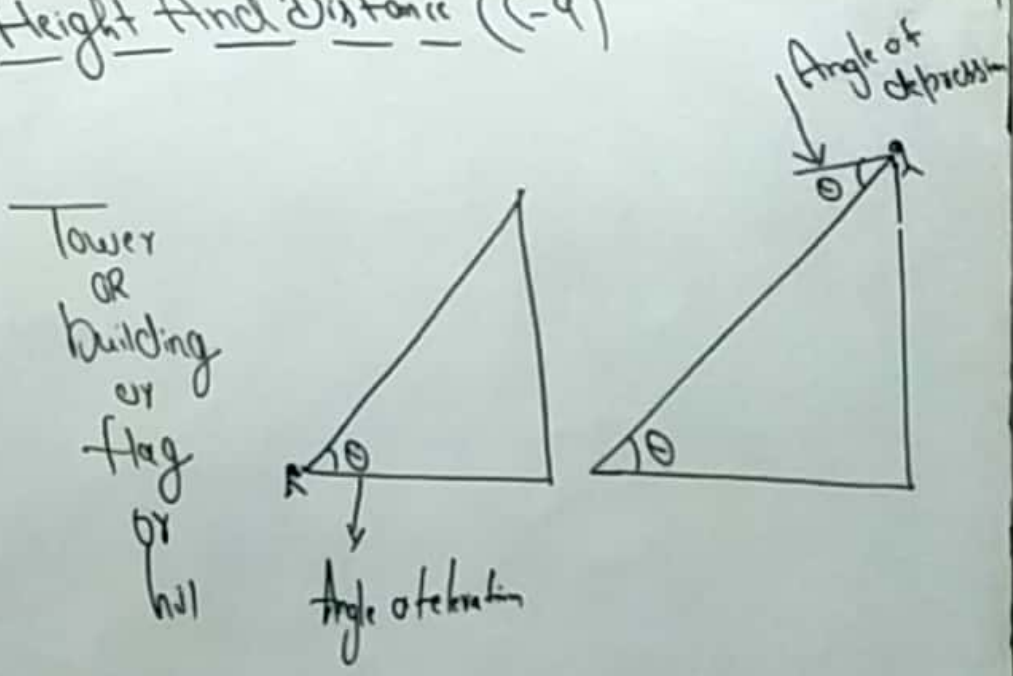
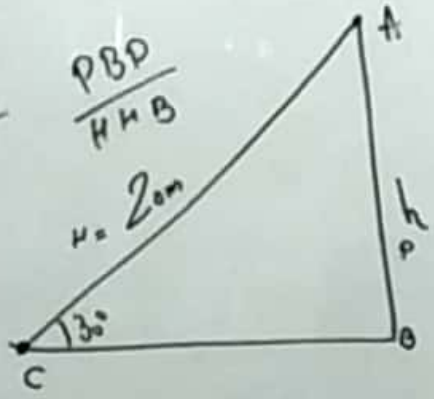
Height And Distance (I-9)



Ex-9.1

① PBD / HHB



Suppose AB is pole of ht = h

Rope AC = 20m

$\angle ACB = 30°$

In ΔABC $\sin 30 = \frac{P}{H}$

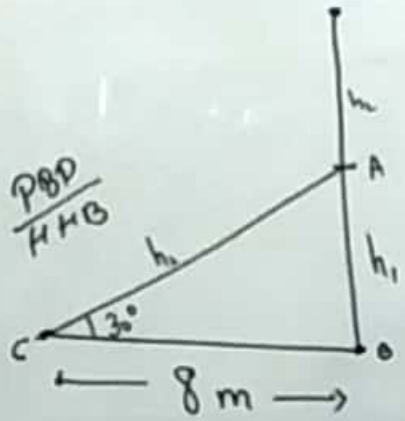
$\downarrow$

$\frac{1}{2} = \frac{AB}{AC}$

so $\frac{1}{2} = \frac{h}{20}$

$h = 10m$

② 2011



In ΔABC

$\cot 30° = \frac{B}{H}$

$\downarrow$

$\frac{\sqrt{3}}{2} = \frac{8}{h_2}$

$\sqrt{3}\, h_2 = 16$

$h_2 = 16/\sqrt{3}$

In ΔABC

$\tan 30° = \frac{P}{B}$

$\downarrow$

$\frac{1}{\sqrt{3}} = \frac{h_1}{8}$

$h_1 = 8/\sqrt{3}$

Total ht

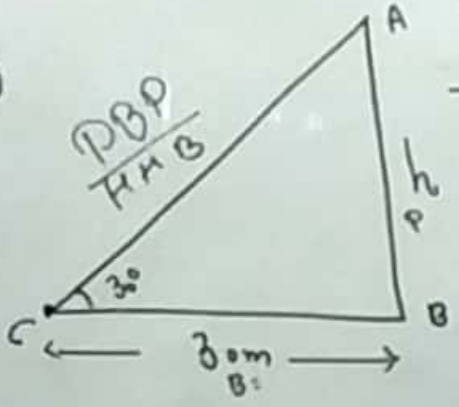
$= h_1 + h_2$

$= \frac{16}{\sqrt{3}} + \frac{8}{\sqrt{3}}$

$= \frac{24}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

$= \frac{24\sqrt{3}}{3} = 8\sqrt{3}$ Ω

④



PBP / HMB

Tower = AB

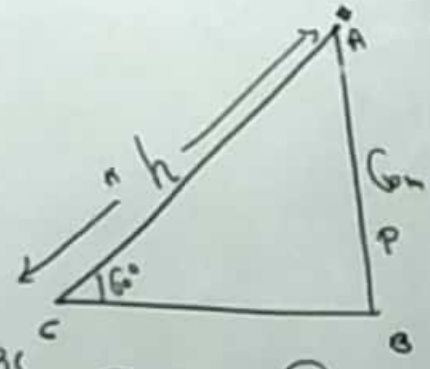
In ΔABC

$\tan 30 = \frac{P}{B}$

$\frac{1}{\sqrt{3}} = \frac{h}{30}$

$h = \frac{30}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{30\sqrt{3}}{3} = 10\sqrt{3}$

5



In ΔABC

$\sin 60 = \frac{P}{H}$

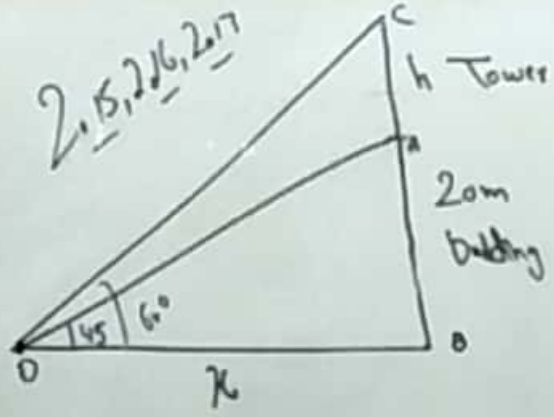
$\frac{\sqrt{3}}{2} = \frac{60}{h}$

$\sqrt{3}h = 120$

$h = \frac{120}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{120\sqrt{3}}{3}$

$h = 40\sqrt{3}$

⑦ 2,15,216,217



In ΔABD

$\tan 45 = \frac{P}{B}$

$1 = \frac{20}{x}$

$x = 20$

In ΔCBD

$\tan 60 = \frac{P}{B}$

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

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

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

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

$h = 20(\sqrt{3} - 1)$ m