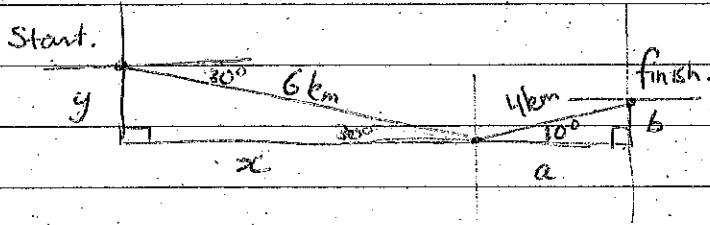


56 Q8



a) How far East?

find x and a .

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 30^\circ = \frac{x}{6}$$

$$x = 6 \cos 30^\circ = 5.20$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 10^\circ = \frac{a}{4}$$

$$a = 4 \cos 10^\circ = 3.94$$

$$\begin{aligned} \therefore \text{TOTAL East} &= x + a \\ &= 5.20 + 3.94 \\ &= \underline{\underline{9.14 \text{ km}}} \end{aligned}$$

Boat is 9.14 km from starting pt.

$$b) \sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 30^\circ = \frac{y}{6}$$

$$y = 6 \sin 30^\circ = 3$$

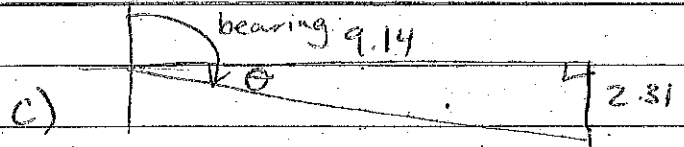
$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 10^\circ = \frac{b}{4}$$

$$b = 4 \sin 10^\circ = 0.69$$

$$\begin{aligned} \therefore \text{South} &= y - b \\ &= 3 - 0.69 \\ &= \underline{\underline{2.31}} \end{aligned}$$

\therefore Boat is 2.31 km South



$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$= \frac{2.31}{9.14}$$

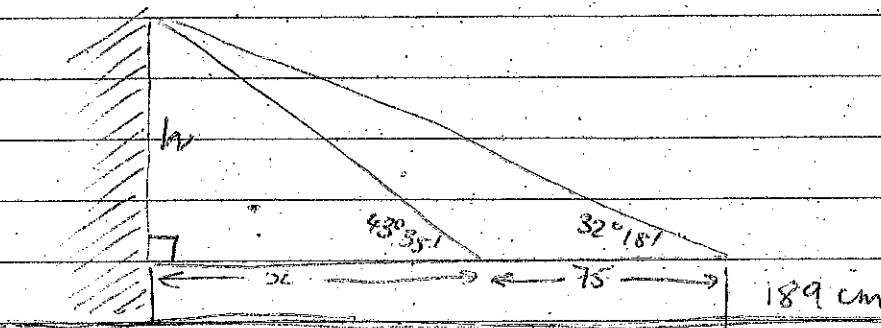
$$\theta = \tan^{-1}(0.2527)$$

$$= 14.18^\circ$$

\therefore Bearing of boat from start is $(90^\circ + 14.18^\circ)$

$$= \underline{\underline{104.18^\circ}} \quad \checkmark$$

5F Q 7.



a) from small Δ

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 43^\circ 35' = \frac{h}{x}$$

$$\therefore h = x \tan 43^\circ 35'$$

from large Δ

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 32^\circ 18' = \frac{h}{(x+75)}$$

$$\therefore h = (x+75) \tan 32^\circ 18'$$

b) Since h is same in both Δ 's

$$x \tan 43^\circ 35' = (x+75) \tan 32^\circ 18'$$

$$x \tan 43^\circ 35' = x \tan 32^\circ 18' + 75 \tan 32^\circ 18'$$

$$x \tan 43^\circ 35' - x \tan 32^\circ 18' = 75 \tan 32^\circ 18'$$

$$x (\tan 43^\circ 35' - \tan 32^\circ 18') = 75 \tan 32^\circ 18'$$

$$x = \frac{75 \tan 32^\circ 18'}{(\tan 43^\circ 35' - \tan 32^\circ 18')}$$

$$= 148.40$$

c) now $h = x \tan 43^\circ 35'$

$$= 148.40 \tan 43^\circ 35'$$

$$= 141.24 \text{ m}$$

$$\therefore \text{Total height of building is } (141.24 + 1.89) = \underline{\underline{143.13 \text{ m}}}$$