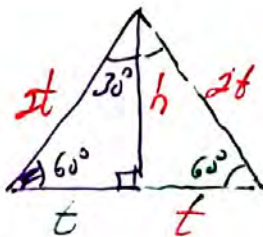


$$\begin{cases} x = r \cos \theta \\ y = r \sin \theta \end{cases} \quad \begin{matrix} (x, y) \\ (r \cos \theta, r \sin \theta) \\ (\cos \theta, \sin \theta) \end{matrix}$$

$30^\circ, 60^\circ, 90^\circ$

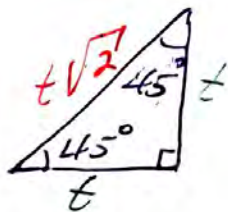


$$\begin{aligned} (2t)^2 &= h^2 + t^2 \\ 4t^2 - t^2 &= h^2 \\ 3t^2 &= h^2 \\ h &= t\sqrt{3} \end{aligned}$$

$$\cos 60^\circ = \frac{t}{2t} = \frac{1}{2}$$

$$\begin{aligned} \sin 60^\circ &= \frac{h}{2t} = \frac{t\sqrt{3}}{2t} \\ &= \frac{\sqrt{3}}{2} \end{aligned}$$

$$\sin 30^\circ = \frac{t}{2t} = \frac{1}{2}$$



$$\begin{aligned} \text{hyp} &= \sqrt{t^2 + t^2} \\ &= t\sqrt{2} \end{aligned}$$

$$\cos 45^\circ = \frac{t}{t\sqrt{2}} = \frac{1}{\sqrt{2}} = \sin 45^\circ$$

$$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\begin{aligned} &\frac{\sqrt{3}}{2} \quad \frac{1}{2} \\ &\frac{\sqrt{2}}{2} \quad \left(\frac{1}{\sqrt{2}}\right) \end{aligned}$$

EX $\triangle ABC$ $C=90^\circ$ $A=40^\circ$ $C=12$

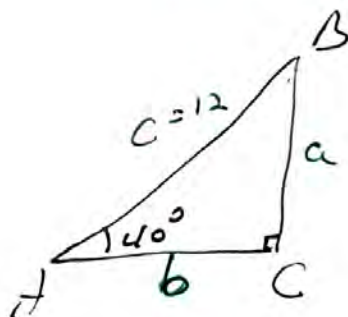
$$\begin{aligned} \angle B &= 90^\circ - A \\ &= 90^\circ - 40^\circ \\ &= \underline{50^\circ} \end{aligned}$$

$$\cos 40^\circ = \frac{b}{12}$$

$$\underline{b = 12 \cos 40^\circ}$$

$$\sin 40^\circ = \frac{a}{12}$$

$$\underline{a = 12 \sin 40^\circ}$$

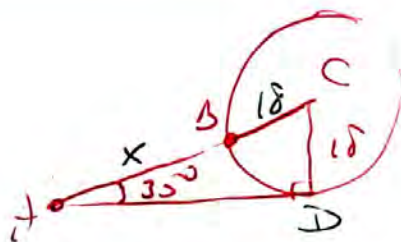


EX $X?$

$$\sin 35^\circ = \frac{18}{x+18}$$

$$x+18 = \frac{18}{\sin 35^\circ}$$

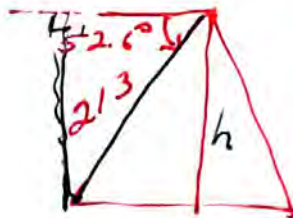
$$\underline{x = \frac{18}{\sin 35^\circ} - 18}$$



5x

$$\sin 52.6^\circ = \frac{h}{213}$$

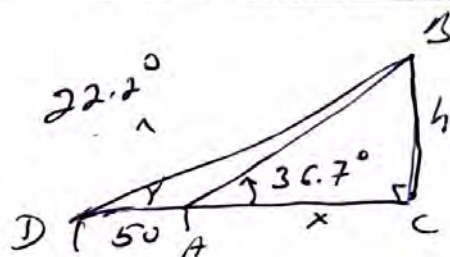
$$h = 213 \sin 52.6^\circ$$



right triangle(s)

$$\triangle ABC \rightarrow \tan 36.7^\circ = \frac{h}{x} \quad (1)$$

$$\triangle DCB \rightarrow \tan 22.2^\circ = \frac{h}{x+50} \quad (2)$$



$$(1) \quad h = x \tan 36.7^\circ = (x+50) \tan 22.2^\circ$$

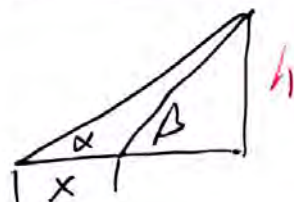
$$x \tan 36.7^\circ = x \tan 22.2^\circ + 50 \tan 22.2^\circ$$

$$x (\tan 36.7^\circ - \tan 22.2^\circ) = 50 \tan 22.2^\circ$$

$$x = \frac{50 \tan 22.2^\circ}{\tan 36.7^\circ - \tan 22.2^\circ}$$

$$h = \frac{50 \tan 22.2^\circ}{\tan 36.7^\circ - \tan 22.2^\circ} \tan 36.7^\circ$$
$$= \frac{50 \tan 22.2^\circ \tan 36.7^\circ}{\tan 36.7^\circ - \tan 22.2^\circ}$$

$$h = \frac{x \tan \alpha \tan \beta}{\tan \beta - \tan \alpha}$$



#22

$$h = \frac{50 \tan 60^\circ \tan 45^\circ}{\tan 60^\circ - \tan 45^\circ}$$

$$= \frac{50 \sqrt{3} \left(\frac{\sqrt{2}}{2}\right)}{\sqrt{3} - \frac{\sqrt{2}}{2}}$$

$$= \frac{50 \sqrt{6}}{2} \cdot \frac{1}{2\sqrt{3} - \sqrt{2}}$$

$$= \frac{50 \sqrt{6}}{2\sqrt{3} - \sqrt{2}}$$



$$= \frac{50 \sqrt{6}}{2\sqrt{3} - \sqrt{2}}$$

$$\tan 13^\circ = \frac{y}{x} \rightarrow y = x \tan 13^\circ$$

$$\tan 19^\circ = \frac{y}{25-x} \rightarrow y = (25-x) \tan 19^\circ$$

$$x \tan 13^\circ = 25 \tan 19^\circ - x \tan 19^\circ$$

$$x(\tan 13^\circ + \tan 19^\circ) = 25 \tan 19^\circ$$

$$x = \frac{25 \tan 19^\circ}{\tan 13^\circ + \tan 19^\circ}$$

$$y = \frac{25 \tan 19^\circ}{\tan 13^\circ + \tan 19^\circ} \tan 13^\circ$$

$$\approx 3.5 \text{ mi}$$

$$13' \approx$$

$$\begin{array}{r}
 \text{✓} \\
 1.73205 \\
 \hline
 3 \overline{) 1.73205} \quad \begin{array}{l} \text{1} \times \text{1} \\ \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \\
 \underline{200} \quad \begin{array}{l} \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \quad \begin{array}{l} \text{1} \times \text{2} \\ \text{1} \times \text{7} \end{array} \\
 \underline{189} \quad \begin{array}{l} \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \quad \begin{array}{l} \text{1} \times \text{2} \\ \text{1} \times \text{7} \end{array} \\
 \underline{1100} \quad \begin{array}{l} \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \quad \begin{array}{l} \text{1} \times \text{2} \\ \text{1} \times \text{7} \end{array} \\
 \underline{1029} \quad \begin{array}{l} \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \quad \begin{array}{l} \text{1} \times \text{2} \\ \text{1} \times \text{7} \end{array} \\
 \underline{7100} \quad \begin{array}{l} \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \quad \begin{array}{l} \text{1} \times \text{2} \\ \text{1} \times \text{7} \end{array} \\
 \underline{6924} \quad \begin{array}{l} \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \quad \begin{array}{l} \text{1} \times \text{2} \\ \text{1} \times \text{7} \end{array} \\
 \underline{1760000} \quad \begin{array}{l} \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \quad \begin{array}{l} \text{1} \times \text{2} \\ \text{1} \times \text{7} \end{array} \\
 \underline{1732025} \quad \begin{array}{l} \text{2} \times \text{7} \\ \text{3} \times \text{4} \end{array} \quad \begin{array}{l} \text{1} \times \text{2} \\ \text{1} \times \text{7} \end{array}
 \end{array}$$

$$1667'$$

$$\begin{array}{r}
 25.82 \\
 \hline
 667 \overline{) 25.82} \quad \begin{array}{l} \text{2} \times \text{1} \\ \text{4} \times \text{5} \\ \text{5} \times \text{0} \end{array} \\
 \underline{4} \quad \begin{array}{l} \text{2} \times \text{1} \\ \text{4} \times \text{5} \\ \text{5} \times \text{0} \end{array} \\
 \underline{267} \quad \begin{array}{l} \text{2} \times \text{1} \\ \text{4} \times \text{5} \\ \text{5} \times \text{0} \end{array} \\
 \underline{225} \quad \begin{array}{l} \text{2} \times \text{1} \\ \text{4} \times \text{5} \\ \text{5} \times \text{0} \end{array} \\
 \underline{4200} \quad \begin{array}{l} \text{2} \times \text{1} \\ \text{4} \times \text{5} \\ \text{5} \times \text{0} \end{array} \\
 \underline{4064} \quad \begin{array}{l} \text{2} \times \text{1} \\ \text{4} \times \text{5} \\ \text{5} \times \text{0} \end{array} \\
 \underline{13600} \quad \begin{array}{l} \text{2} \times \text{1} \\ \text{4} \times \text{5} \\ \text{5} \times \text{0} \end{array} \\
 \underline{10324} \quad \begin{array}{l} \text{2} \times \text{1} \\ \text{4} \times \text{5} \\ \text{5} \times \text{0} \end{array}
 \end{array}$$