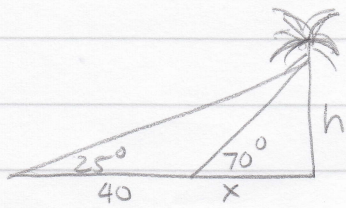


1.



$$\frac{h}{x} = \tan 70^\circ \rightarrow h = x \tan 70^\circ$$

$$\frac{h}{40+x} = \tan 25^\circ \rightarrow h = (\tan 25^\circ)(40+x)$$

$$x \tan 70^\circ = (40+x) \tan 25^\circ$$

$$x \tan 70^\circ = 40 \tan 25^\circ + x \tan 25^\circ$$

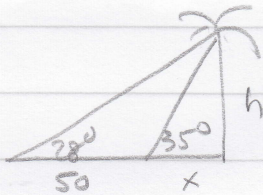
$$x \tan 70^\circ - x \tan 25^\circ = 40 \tan 25^\circ$$

$$x(\tan 70^\circ - \tan 25^\circ) = 40 \tan 25^\circ$$

$$x = \frac{40 \tan 25^\circ}{\tan 70^\circ - \tan 25^\circ}$$

$$h = \frac{40 \tan 25^\circ}{\tan 70^\circ - \tan 25^\circ} \cdot \tan 70^\circ \approx 22.5 \text{ ft}$$

2.



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

$$\tan 28^\circ = \frac{h}{50+x} \rightarrow h = (50+x) \tan 28^\circ$$

$$x \tan 35^\circ = (50+x) \tan 28^\circ$$

$$x \tan 35^\circ = 50 \tan 28^\circ + x \tan 28^\circ$$

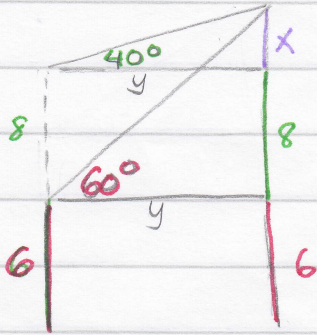
$$x \tan 35^\circ - x \tan 28^\circ = 50 \tan 28^\circ$$

$$x(\tan 35^\circ - \tan 28^\circ) = 50 \tan 28^\circ$$

$$x = \frac{50 \tan 28^\circ}{\tan 35^\circ - \tan 28^\circ}$$

$$h = x \tan 35^\circ \rightarrow h = \frac{50 \tan 28^\circ}{\tan 35^\circ - \tan 28^\circ} \cdot \tan 35^\circ \approx 110.5 \text{ ft}$$

3



$$\tan 60^\circ = \frac{x+8}{y} \rightarrow x+8 = y \tan 60^\circ$$

$$x = y \tan 60^\circ - 8 \quad \left\{ \begin{array}{l} \text{both} \\ \leftarrow x \end{array} \right.$$

$$\tan 40^\circ = \frac{x}{y} \rightarrow x = y \tan 40^\circ$$

$$y \tan 60^\circ - 8 = y \tan 40^\circ$$

$$y \tan 60^\circ - y \tan 40^\circ = 8$$

$$y (\tan 60^\circ - \tan 40^\circ) = 8$$

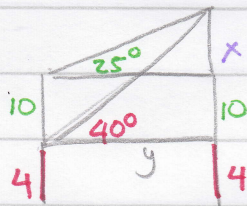
$$y = \frac{8}{\tan 60^\circ - \tan 40^\circ}$$

$$x = y \tan 40^\circ$$

$$= \frac{8}{\tan 60^\circ - \tan 40^\circ} \cdot \tan 40^\circ \approx 7.5 \text{ ft}$$

$$\text{Total ht} = 6 + 8 + 7.5 = 21.5 \text{ ft}$$

4.



$$\tan 25^\circ = \frac{x}{y} \rightarrow x = y \tan 25^\circ$$

$$\tan 40^\circ = \frac{x+10}{y} \rightarrow x+10 = y \tan 40^\circ$$

$$x = y \tan 40^\circ - 10 \quad \left\{ \begin{array}{l} \text{both} \\ \leftarrow x \end{array} \right.$$

$$y \tan 25^\circ = y \tan 40^\circ - 10$$

$$10 = y \tan 40^\circ - y \tan 25^\circ$$

$$10 = y (\tan 40^\circ - \tan 25^\circ)$$

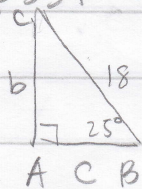
$$y = \frac{10}{\tan 40^\circ - \tan 25^\circ}$$

$$x = y \tan 25^\circ = \frac{10}{\tan 40^\circ - \tan 25^\circ} \cdot \tan 25^\circ = 12.5 \text{ ft}$$

$$\text{Total ht} = 4 + 10 + 12.5 = 26.5 \text{ ft}$$

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1.

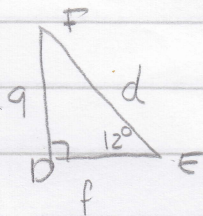


Right $\Delta \rightarrow$ SOH CAH TOA

$$\frac{b}{18} = \frac{\sin 25^\circ}{1} \rightarrow b = 18 \cdot \sin 25^\circ \approx 7.61$$

$$\frac{c}{18} = \frac{\cos 25^\circ}{1} \rightarrow c = 18 \cdot \cos 25^\circ \approx 16.3$$

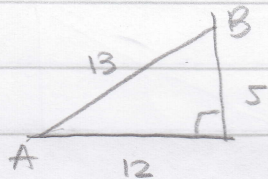
RT Δ 3
SOH CAH
TOA



$$\frac{\sin 12^\circ}{1} = \frac{9}{d} \rightarrow 9 = d \sin 12^\circ \rightarrow d = \frac{9}{\sin 12^\circ} \approx 43.3$$

$$\frac{\tan 12^\circ}{1} = \frac{9}{f} \rightarrow 9 = f \tan 12^\circ \rightarrow f = \frac{9}{\tan 12^\circ} \approx 42.3$$

5



$$\sin A = \frac{5}{13}$$

$$\cos B = \frac{5}{13}$$

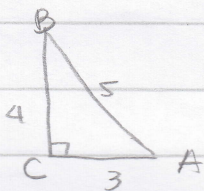
$$\tan A = \frac{5}{12}$$

$$\cot B = \frac{5}{12}$$

$$\sec A = \frac{13}{12}$$

$$\csc B = \frac{13}{12}$$

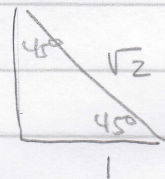
7



$$\sin A = \frac{4}{5} \rightarrow A = \sin^{-1}\left(\frac{4}{5}\right) \approx 53.1^\circ$$

$$B = 180^\circ - 90^\circ - 53.1^\circ = 36.9^\circ$$

9

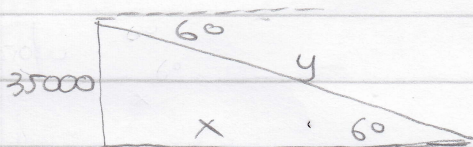


$$\tan 45^\circ = 1$$

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

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

13:



$$\frac{\tan 6^\circ}{1} = \frac{35000}{x}$$

$$x \tan 6^\circ = 35000$$

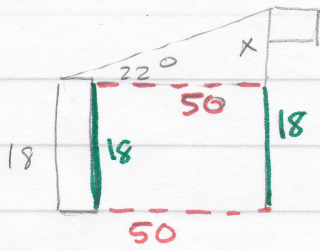
$$x = \frac{35000}{\tan 6^\circ} \approx 333,000$$

air distance = y $\rightarrow \sin 6^\circ = \frac{35000}{y} \rightarrow y \sin 6^\circ = 35000$

$$y = \frac{35000}{\sin 6^\circ} \approx 335,000$$

9-1 #2

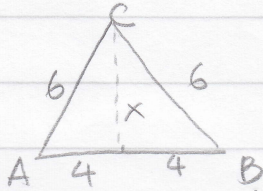
15



$$\frac{\tan 22^\circ}{1} = \frac{x}{50} \rightarrow x = 50 \tan 22^\circ = 20.2 \text{ ft}$$

$$\text{Flagpole} = 18 + 20.2 = 38.2 \text{ ft}$$

17



$$\angle A \cong \angle B$$

$$\cos A = \frac{4}{6} \rightarrow A = \cos^{-1}\left(\frac{4}{6}\right) \approx 48.2^\circ$$

$$B = 48.2^\circ$$

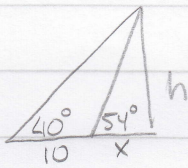
$$\angle C = 180^\circ - 2(48.2^\circ) = 83.6^\circ$$

$$x^2 + 4^2 = 6^2$$

$$x^2 = 20$$

$$x = 2\sqrt{5} \rightarrow \text{Area} = \frac{8 \cdot 2\sqrt{5}}{2} = 8\sqrt{5} \text{ ft}^2 \approx 17.9 \text{ ft}^2$$

23



$$\frac{\tan 54^\circ}{1} = \frac{h}{x} \rightarrow h = x \tan 54^\circ$$

$$\tan 40^\circ = \frac{h}{10+x} \rightarrow (10+x) \tan 40^\circ = h$$

$$\tan 40^\circ (10+x) = x \tan 54^\circ$$

$$10 \tan 40^\circ + x \tan 40^\circ = x \tan 54^\circ$$

$$10 \tan 40^\circ = x \tan 54^\circ - x \tan 40^\circ$$

$$10 \tan 40^\circ = x (\tan 54^\circ - \tan 40^\circ)$$

$$x = \frac{10 \tan 40^\circ}{(\tan 54^\circ - \tan 40^\circ)}$$

$$h = x \tan 54^\circ \rightarrow$$

$$= \frac{10 \cdot \tan 40^\circ}{(\tan 54^\circ - \tan 40^\circ)} \cdot \tan 54^\circ$$

$$= 21.5 \text{ m}$$