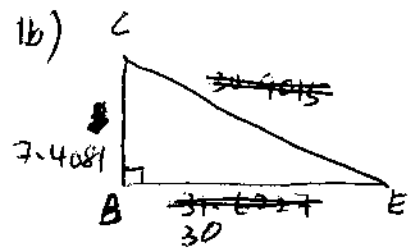


Term 1 week 6

$$(a) BC^2 = 8^2 + 10^2 - 2(8)(10)\cos 47^\circ$$
$$= 54.8802$$

$$BC = 7.41 \text{ cm (3 s.f.)}$$



$$CE = \sqrt{30^2 + 7.4081^2}$$
$$= 30.9011 \text{ cm}$$

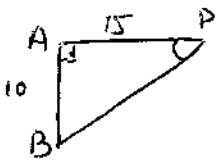
$$AE = \sqrt{10^2 + 30^2}$$
$$= 31.6227 \text{ cm}$$

~~$\cos \angle CEA = \frac{30^2 + 31.6227^2 - 64}{2(30)(31.6227)}$~~

$$\cos \angle CEA = \frac{30.9011^2 + 31.6227^2 - 64}{2(30.9011)(31.6227)}$$

$$= 0.9675$$

$$\angle CEA = \underline{\underline{14.6^\circ}}$$



$$\tan \angle APB = \frac{10}{15}$$

$$\angle APB = 33.690^\circ$$

$$\angle BPE = 180^\circ - 2(33.690)$$

$$= \underline{\underline{112.6^\circ}}$$

1d. Area of $\triangle ABC = \frac{1}{2} \times 8 \times 10 \times \sin 47^\circ$

$$= 29.3 \text{ cm}^2$$

$$\underline{2i)} \tan \angle b = \frac{24}{250}$$

$$\angle b = 5.5^\circ$$

$$\therefore \text{Angle of elevation} = 5.5^\circ$$

$$\underline{2ii)} \tan 5^\circ = \frac{24}{CD}$$

$$CD = \frac{24}{\tan 5^\circ}$$

$$= 274.3212 \text{ m}$$

$$BC^2 = 274.3212^2 + 250^2 - 2(250)(274.3212) \cos 57^\circ$$

$$= 63049.10394$$

$$\sim BC = 251 \text{ m}$$

$$\underline{2iii)} \frac{AD}{\sin 100^\circ} = \frac{250}{\sin 37^\circ}$$

$$AD = \frac{250}{\sin 37^\circ} \times \sin 100^\circ$$

$$= 409 \text{ m}$$

$$\begin{aligned} 3a) \quad \sin 30^\circ &= \frac{h}{BC} \\ BC &= \frac{h}{\sin 30^\circ} \\ &= (2h) \text{ mm} \end{aligned}$$

$$\begin{aligned} \sin 53^\circ &= \frac{2h}{AC} \\ AC &= \frac{2h}{\sin 53^\circ} \\ &= \frac{2h}{0.8} \\ &= \cancel{2h} (2.5h) \text{ mm} \end{aligned}$$

$$\begin{aligned} 3b) \quad \sin \angle CAF &= \frac{CF}{AC} \\ &= \frac{h}{2.5h} \\ &= 0.4 \end{aligned}$$

$$3c) \quad \text{If } h = 12 \text{ mm}$$

$$AC = 30$$

$$BC = 24$$

$$AB^2 + 24^2 = 30^2$$

$$AB^2 = 900 - 576$$

$$= 324$$

$$AB = 18 \text{ mm}$$
