

1. C

2. $\tan 27^\circ = \frac{31.73}{x}$

$$x = \frac{31.73}{\tan 27^\circ}$$

$$x = 62.27 \text{ m}$$

3.

① Pythagoras

$$12^2 = 5^2 + x^2$$

$$144 = 25 + x^2$$

$$119 = x^2$$

$$\sqrt{119} = x$$

$$10.91 = x$$

$$\therefore m \overline{CD} = 10.91 - 2 \\ = 8.91 \text{ m}$$

② $\tan \theta = \frac{5}{8.91}$

$$\tan \theta = 0.561167$$

$$\theta = \tan^{-1}(0.561167)$$

$$\theta = 29.3^\circ$$

4. $\tan 33^\circ = \frac{x}{22}$

$$x = 22 \tan 33^\circ$$

$$x = 14.29 \text{ m}$$

5. $\tan 55^\circ = \frac{8}{x}$

$$x = \frac{8}{\tan 55^\circ}$$

$$x = 5.6 \text{ m}$$

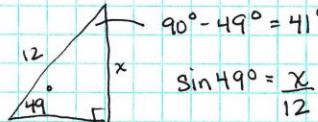
$$\tan 40^\circ = \frac{y}{5.6}$$

$$y = 5.6 \tan 40^\circ$$

$$y = 4.7 \text{ m}$$

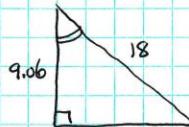
$$\therefore \text{Height of building} = 8 \text{ m} + 4.7 \text{ m} \\ = 12.7 \text{ m}$$

6. $90^\circ - 49^\circ = 41^\circ \quad ①$



$$\sin 49^\circ = \frac{x}{12}$$

$$x = 9.06 \text{ km} \quad ②$$



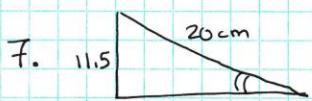
$$\cos \theta = \frac{9.06}{18}$$

$$\cos \theta = 0.50314$$

$$\theta = \cos^{-1}(0.50314)$$

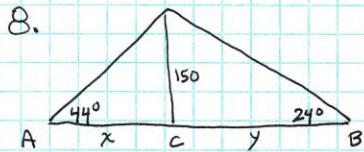
$$\theta = 59.8^\circ$$

$$\therefore \text{Angle formed by paths} = 41^\circ + 59.8^\circ \\ = 100.8^\circ$$



$$\begin{aligned}\sin \theta &= \frac{11.5}{20} \\ \sin \theta &= 0.575 \\ \theta &= \sin^{-1}(0.575)\end{aligned}$$

$$\theta = 35.1^\circ$$



$$\textcircled{1} m\overline{AC} : \tan 44^\circ = \frac{150}{x}$$

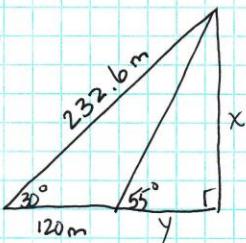
$$\begin{aligned}x &= \frac{150}{\tan 44^\circ} \\ x &= 155.33 \text{ m}\end{aligned}$$

$$\textcircled{2} m\overline{CB} = \tan 24^\circ = \frac{150}{y}$$

$$\begin{aligned}y &= \frac{150}{\tan 24^\circ} \\ y &= 336.91 \text{ m}\end{aligned}$$

$$\therefore d(A, B) = 155.33 + 336.91 \\ = 492.24 \text{ m}$$

9.



a) Height of the tower : $\sin 30^\circ = \frac{x}{232.6}$

$$x = 232.6 (\sin 30^\circ)$$

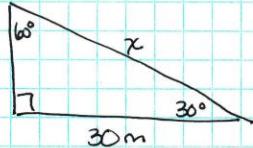
$$x = 116.3 \text{ m}$$

b) Distance from Dennis to the tower

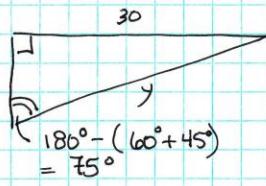
$$\tan 55^\circ = \frac{116.3}{y}$$

$$\begin{aligned}y &= \frac{116.3}{\tan 55^\circ} \\ y &= 81.43 \text{ m}\end{aligned}$$

10.



$$\begin{aligned}\cos 30^\circ &= \frac{30}{x} \\ x &= \frac{30}{\cos 30^\circ} \\ x &= 34.64 \text{ m}\end{aligned}$$



$$\begin{aligned}\sin 75^\circ &= \frac{30}{y} \\ y &= \frac{30}{\sin 75^\circ} \\ y &= 31.06 \text{ m}\end{aligned}$$

Distance covered by the ball = $34.64 + 31.06$
= 65.7 m