Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- $\text{opp} = 12 \times \sin 40°$
- $12 \times 0.643 = \mathbf{7.71}$ cm

2.2

- $\sin\theta = \dfrac{5}{10} = 0.5$
- $\theta = \mathbf{30}°$

2.3

- $\text{opp} = 8 \times \tan 35°$
- $8 \times 0.700 = \mathbf{5.60}$ cm

2.4

- the opposite and the hypotenuse are involved, so use sine: $\sin 28° = \dfrac{9}{h}$, so $h = \dfrac{9}{\sin 28°}$

$$h = 19.17\ldots = \mathbf{19.2}\text{ cm}$$

2.5

- the adjacent and the hypotenuse are involved, so use cosine: $\cos\theta = \dfrac{6}{11}$

$$\theta = \mathbf{56.9}°$$

3.1

- $\tan\theta = \dfrac{7}{10} = 0.7$
- $\theta = \tan^{-1}(0.7) = \mathbf{35.0}°$

3.2

- $\text{adj} = 15 \times \cos 52°$
- $15 \times 0.616 = \mathbf{9.23}$ cm

3.3

- $\tan\theta = \dfrac{1.2}{5} = 0.24$
- $\theta = \tan^{-1}(0.24) = \mathbf{13.5}°$

3.4

- the height is opposite the 32° angle and 40 m is adjacent, so use tangent: $\tan 32° = \dfrac{h}{40}$
- $h = 40\tan 32°$

$$h = 24.99\ldots = \mathbf{25.0}\text{ m}$$

3.5

(a)

- the height bisects the base, making a right-angled triangle with hypotenuse 10 and adjacent side 6: $\cos\theta = \dfrac{6}{10}$

$$\theta = \mathbf{53.1}°$$

(b)

- $180° - 2 \times 53.13° = \mathbf{73.7}°$