Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- $c = \sqrt{5^2 + 12^2} = \sqrt{169} = \mathbf{13}$ cm.

2.2

- $b = \sqrt{10^2 - 6^2} = \sqrt{64} = \mathbf{8}$ cm.

2.3

- $d = \sqrt{9^2 + 12^2} = \sqrt{225} = \mathbf{15}$ cm.

2.4

- $c = \sqrt{7^2 + 9^2} = \sqrt{130} = 11.4017\ldots = \mathbf{11.4}$ cm.

3.1

(a)

- $h = \sqrt{17^2 - 8^2} = \sqrt{225} = \mathbf{15}$ m.

(b)

- $h_2 = \sqrt{17^2 - 10^2} = \sqrt{189} = \mathbf{13.7}$ m to one decimal place.

(c)

- Use the unrounded value: $\Delta h = 15 - \sqrt{189} = 1.2522\ldots = \mathbf{1.3}$ m.

3.2

(a)

- The east and north directions are perpendicular, so use $d^2 = 8^2 + 6^2$.
- $d = \mathbf{10}$ km.
- Saving $s = 8 + 6 - 10 = \mathbf{4}$ km.

(b)

- The longest side would be the hypotenuse, so compare 11^2 with $6^2 + 8^2$.
- These give **121 and 100**.
- They are unequal, so the triangle is **not right-angled**.

3.3

- Pythagoras: $c^2 = a^2 + b^2 = 5^2 + 12^2 = 25 + 144 = 169$.
- $c = \sqrt{169} = \mathbf{13}$ cm.

3.4

- The diagonal is the hypotenuse: $h^2 + 80^2 = 100^2$.
- $h^2 = 10\,000 - 6400 = 3600$.
- $h = \sqrt{3600} = \mathbf{60}$ cm.

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