2.1

- $d^2 = 6^2 + 8^2 = 100$
- $d = \mathbf{10}$ cm

2.2

- $d = \sqrt{l^2 + w^2 + h^2} = \sqrt{4 + 9 + 36} = \sqrt{49} = \mathbf{7}$ cm

2.3

- the projection is the base diagonal, 10 cm: $\tan\alpha = \dfrac{5}{10}$
- $\alpha = \tan^{-1}(0.5) = \mathbf{26.6}^\circ$

2.4

- $d = \sqrt{80^2 + 60^2 + 70^2} = \sqrt{14\,900} = 122.1$ cm
- 122.1 cm $>$ 120 cm, so **yes**, it fits along the space diagonal

2.5

- from the centre to the middle of a side is $6 \div 2 = 3$ cm; slant $= \sqrt{3^2 + 4^2} = \mathbf{5}$ cm

3.1

- the angle with the base is measured to the diagonal's **projection**, the base diagonal, not a base edge

3.2

- base diagonal $= \sqrt{10^2 + 4^2} = \sqrt{116} = 10.77$ cm
- $\tan\alpha = \dfrac{3}{10.77}$
- $\alpha = \mathbf{15.6}^\circ$

3.3

- distance across the field $= \sqrt{40^2 + 30^2} = 50$ m
- $\tan\theta = \dfrac{15}{50} = 0.3$
- $\theta = \mathbf{16.7}^\circ$

3.4

- base diagonal $= \sqrt{10^2 + 10^2} = \sqrt{200}$, so half-diagonal $= \sqrt{50} = 7.07$ cm
- the edge is the hypotenuse: $h^2 = 13^2 - 50 = 119$
- $h = \mathbf{10.9}$ cm

3.5

- base diagonal $= \sqrt{6^2 + 6^2} = \sqrt{72} = 8.49$ cm
- space diagonal $= \sqrt{72 + 6^2} = \sqrt{108} = \mathbf{10.4}$ cm