Solutions

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

2.1

- $Z = \dfrac{56 - 50}{4} = 1.5$

2.2

- use $P(X \geqslant 19.5)$

3.1 B

- $P(Z > 1) = 1 - 0.8413 = 0.1587$

3.2

(a)

- $Z = \dfrac{90 - 82}{5} = 1.6$; $P(X > 90) = 1 - \Phi(1.6) = 1 - 0.9452 = 0.0548$

(b)

- top 10%: $\Phi(z) = 0.90 \Rightarrow z = 1.282$; $x = 82 + 1.282(5) = 88.4$ cm

3.3

- $X \sim B(100, 0.5) \approx N(50, 25)$; continuity correction $P(X \geqslant 60) \to P(Y > 59.5)$; $Z = \dfrac{59.5 - 50}{5} = 1.9$; $P = 1 - \Phi(1.9) = 1 - 0.9713 = 0.0287$