Solutions

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

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

2.1

$$\frac{4}{10} = \mathbf{\frac{2}{5}}$$

2.2

- $1 - 0.3 = \mathbf{0.7}$

2.3

$$\frac{1}{6} \times 240 = \mathbf{40}$$

3.1

- first red $\frac{3}{8}$; after a red is taken, 2 reds out of 7 remain

$$\frac{3}{8} \times \frac{2}{7} = \frac{6}{56} = \mathbf{\frac{3}{28}}$$

3.2

- $0.15 \times 200 = \mathbf{30}$ days

3.3

(a)

- $\text{P(red)} = \frac{5}{10} = \mathbf{\frac{1}{2}}$
- $\text{P(not red)} = \frac{5}{10} = \mathbf{\frac{1}{2}}$
- $\text{P}(A') = 1 - \text{P}(A)$ — they add to 1

(b)

- $\text{P(blue)} = \frac{3}{10}$
- expected number $= \frac{3}{10} \times 250 = \mathbf{75}$

(c)

- first pair $\frac{2}{10}$ and $\frac{8}{10}$
- second pair $\frac{1}{9}, \frac{8}{9}$ after green and $\frac{2}{9}, \frac{7}{9}$ after not green

- exactly one green $= \left(\frac{2}{10} \times \frac{8}{9}\right) + \left(\frac{8}{10} \times \frac{2}{9}\right)$

$$= \frac{16}{90} + \frac{16}{90} = \frac{32}{90} = \mathbf{\frac{16}{45}}$$

(d)

- the first counter is not replaced, so only 9 remain
- the number of greens left depends on what was drawn first, so the two second-stage pairs differ