3.4.1 **(a)** 0.33 + 0.25 + 0.12 = 0.70

(b) 0.03 + 0.20 = 0.23

(c) 0.25 + 0.12 + 0.07 = 0.44

3.4.2 **(a)** 1 - 0.07 = 0.93

(b) 1 - 0.03 - 0.20 = 0.77

(c) 0.20 + 0.33 + 0.25 = 0.78

• **3.4.3** **(a)** Pr{20 < Y < 30} = 0.41 + 0.21 = 0.62

(b) 0.41 + 0.21 + 0.03 = 0.65

(c) 0.01 + 0.34 = 0.35

3.4.4 **(a)** 0.01 + 0.34 + 0.41 = 0.76

(b) 1 – 0.01 = 0.99

(c) 0.34 + 0.41 + 0.21 = 0.96

3.4.5 **(a)** (0.35)(0.35) = 0.1225

(b) (0.35)(0.24) = 0.084

(c) (0.35)(0.24) + (0.24)(0.35) = 0.168

3.5.1 **(a)** 610/5000 = 0.122

(b) (130 + 26 + 3 + 1)/5000 = 160/5000 = 0.032

(c) (1400 + 1760 + 750)/5000 = 0.782

3.5.2 **(a)** (3)(610)/22,435 = 0.0816

(b) [(7)(130) + (8)(26) + (9)(3) + (10)(1)]/22,345 = 0.0515

(c) Choosing a young at random gives a selection of broods which is not random, but is biased toward larger broods (because a larger brood has more chances to be selected). Therefore, Pr{Y' ≥ 7} is larger than Pr{Y ≥ 7}.

3.5.3 μ_Y = (1)(90/5000) + (2)(230/5000) + (3)(610/5000) + (4)(1400/5000) + (5)(1760/5000) + (6)(750/5000) + (7)(130/5000) + (8)(26/5000) + (9)(3/5000) + (10)(1/5000) = 22435/5000 = 4.487.

3.5.4 **(a)** 0.189 + 0.027 = 0.216

(b) 0.343 + 0.441 + 0.189 = 0.973

• **3.5.5** (0)(0.343) + (1)(0.441) + (2)(0.189) + (3)(0.027) = 0.9

• **3.5.6** VAR(Y) = $(0 - 0.9)^2(0.343) + (1 - 0.9)^2\,(0.441) + (2 - 0.9)^2\,(0.189) + (3 - 0.9)^2\,(0.027) = 0.63$.
Thus, the standard deviation is $\sqrt{0.63}$ = 0.794.

3.5.7 **(a)** 0.047 + 0.004 = 0.051

(b) 0.316 + 0.422 = 0.738

(c) 1 – 0.316 = 0.684

3.5.8 The mean is (0)(0.316) + (1)(0.422) + (2)(0.211) + (3)(0.047) + (4)(0.004) = 1.001

3.5.9 (0)(0.15) + (1)(0.50) + (2)(0.35) = 1.2

3.5.10 VAR(Y) = $(0 - 1.2)^2(0.15) + (1 - 1.2)^2\,(0.50) + (2 - 1.2)^2\,(0.35) = 0.46$. Thus, the standard deviation is $\sqrt{0.46}$ = 0.678.