In Class pp. 432 - 434

6.53 (a) S = {right, left}. (b) S = {All numbers between 150 and 200 cm}. (Choices of upper and lower limits will vary.) (c) S = {all numbers greater than or equal to 0}, or S = {0, 0.01, 0.02, 0.03,…}. (d) S = {all numbers between 0 and 1440}. (There are 1440 minutes in one day, so this is the *largest* upper limit we could choose; many students will likely give a smaller upper limit.)

6.54 (a) S = {F, M} or {female, male}. (b) S = {6, 7, …, 20}. (c) S = {All numbers between 2.5 and 6 l/min}. (d) S = {All whole numbers between ____ and ____ bpm}. (Choices of upper and lower limits will vary.)

6.55 (a) Legitimate. (b) Not legitimate: The total is more than 1. (c) Legitimate.

6.57 (a) The sum of all 8 probabilities equals 1 and all probabilities satisfy $0 \le p \le 1$. (b) $P(A) = 0.000 + 0.003 + 0.060 + 0.062 = 0.125$. (c) The chosen person is not white. $P(B^c) = 1 - P(B) = 1 - (0.060 + 0.691) = 1 - 0.751 = 0.249$. (d) $P(A^c \cap B) = 0.691$.

6.58 A and B are not independent because P(A and B) = 0.06, but $P(A) \times P(B) = 0.125 \times 0.751 = 0.0939$. For the two events to be independent, these two probabilities must be equal.

6.59 (a) P(undergraduate and score $\ge$ 600) = $0.40 \times 0.50 = 0.20$. P(graduate and score $\ge$ 600) = $0.60 \times 0.70 = 0.42$. (b) P(score $\ge$ 600) = P(UG and score $\ge$ 600) + P(G and score $\ge$ 600) = 0.20 + 0.42 = 0.62

6.61 (a) P(under 65) = 0.321 + 0.124 = 0.445. P(65 or older) = 1 − 0.445 = 0.555 OR 0.365 + 0.190 = 0.555. (b) P(tests done) = 0.321 + 0.365 = 0.686. P(tests not done) = 1 − 0.686 = 0.314 OR 0.124 + 0.190 = 0.314. (c) P(A and B) = 0.365; $P(A) \times P(B) = (0.555) \times (0.686) = 0.3807$. Thus, events A and B are not independent; tests were done less frequently on older patients than would be the case if these events were independent.

6.64 P(first child is albino) = $0.5 \times 0.5 = 0.25$. P(both of two children are albino) = $0.25 \times 0.25 = 0.0625$ P(neither is albino) = $(1-0.25) \times (1-0.25) = 0.5625$.