Chapter 5

18. (a) No, some plants are tall with green pods, so "tall" and "green pods" are not mutually exclusive.

(b) 1200/1600 were tall, 1200/1600 were green. If independent, Pr[tall and green] = Pr[tall] \times Pr[green] = \frac{3}{4} \times \frac{3}{4} = \frac{9}{16}, or 900 out of 1600. There were 900 out of 1600, so it appears that green and tall are independent.

21. (a) Pr[rain on random day in Vancouver] = (0.25 \times 0.58) + (0.25 \times 0.38) + (0.25 \times 0.25) + (0.25 \times 0.53) = 0.435.

(b) Pr[winter| raining] = Pr[raining| winter] \times Pr[winter] / Pr[raining] = 0.58 \times 0.25 / 0.435 = 0.333

28. There are two ways to get blackjack. The first card is an ace (4/52) and the second card is a 10, J, Q, or K (16/51), or the first card is 10, J, Q or K (16/52) and the second card is an ace (4/51). In either case, the probability is 0.024. Since there are two routes, the overall probability is 0.048.

33. The probability that a given kid was not born during this time period is \frac{365–56}{365} = 0.8466. The probability that all 21 have a birthday outside of this interval is (0.8466)^{21} = 0.030.