Chapter 4 Answers:

Section 4.1:

1.)

- P(blue) = 18.4%
- P(brown) = 14.2%
- P(green) = 18.4%
- P(orange) = 20.8%
- P(red) = 14.2%
- P(yellow) = 14.1%

3.)

- P(indigenous person dies) = .58%
- P(non-indigenous person dies) = .29%

In neither case do many people die in prison. However, out of 10,000 indigenous people in prison, 58 of them die while only 29 non-indigenous people die. So this may be a concern.

Section 4.2:

1.)

- a.) P(green or red) = 32.6%
- b.) P(blue, red, or yellow) = 46.6%
- c.) P(not brown) = 85.8%
- d.) P(not green) = 81.6%

3.)

- a.) SS = \{HHH, HHT, HTH, THH, HTT, THT, TTH, TTT\}
- b.) P(2 heads) = 37.5%
- c.) P(at least 2 heads) = 50%
- d.) P(odd number of heads) = 50%
- e.) P(all heads or all tails) = 25%
- f.) P(two heads or two tails) = 75%
- g.) P(not an odd number of heads) = 50%

5.)

- a.) SS = \{(1,1), (1,2), (1,3), (1,4), (1,5), (1,6), (2,2), (2,3), (2,4), (2,5), (2,6), (3,1), (3,2), (3,3), (3,4), (3,5), (3,6), (4,1), (4,2), (4,3), (4,4), (4,5), (4,6), (5,1), (5,2), (5,3), (5,4), (5,5), (5,6), (6,1), (6,2), (6,3), (6,4), (6,5), (6,6)\}
- b.) P(sum of 3) = 5.6%
- c.) P(1\textsuperscript{st} die a 4) = 16.7%
- d.) P(sum of 8) = 13.9%
- e.) P(sum of 3 or sum of 8) = 19.4%
- f.) P(sum of 3 or 1\textsuperscript{st} die a 4) = 22.2%
- g.) P(sum of 8 or 1\textsuperscript{st} die a 4) = 27.8%
- h.) P(not getting a sum of 8) = 86.1%
7.) a.) \( P(\text{red ball}) = 62.5\% \)
b.) \( P(\text{blue ball}) = 37.5\% \)
c.) \( \text{odds of red ball} = 5:3 \)
d.) \( \text{odds of blue ball} = 3:5 \)

Section 4.3:

1.) Owning a refrigerator and owning a car are independent events.

3.) Passing your statistics class and passing your biology class are dependent events.

5.) \( SS = \{2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, JS, QS, KS, AS, 2C, 3C, 4C, 5C, 6C, 7C, 8C, 9C, 10C, 
J\text{C, Q\text{C, K\text{C, A\text{C, 2D, 3D, 4D, 5D, 6D, 7D, 8D, 9D, 10D, JD, QD, KD, AD, 2H, 3H, 4H, 5H, 6H,}
7H, 8H, 9H, 10H, J\text{H, Q\text{H, K\text{H, A\text{H}}}} \}
\)
a.) \( P(\text{Jack/ face card}) = 33.3\% \)
b.) \( P(\text{Heart/ card a 3}) = 25\% \)
c.) \( P(\text{red card/ ace}) = 50\% \)
d.) Jack and face card are not independent.
e.) Red card and ace are independent.

7.) \( P(\text{four heads}) = 6.25\% \)

9.) \( P(3 \text{ kings}) = 4.55 \times 10^{-4} \)

11.) a.) \( P(\text{female}) = 68.4\% \)
b.) \( P(1^{\text{st}} \text{ class}) = 42.9\% \)
c.) \( P(\text{female/ 1}^{\text{st}} \text{ class}) = 69.4\% \)
d.) \( P(\text{female and 1}^{\text{st}} \text{ class}) = 29.8\% \)
e.) \( P(\text{female or 1}^{\text{st}} \text{ class}) = 81.6\% \)
f.) No, female and being in 1\text{st} class are not mutually exclusive.
g.) No, female and being in 1\text{st} class are not independent.

Section 4.4:

1.) Number of meals = 30 meals

3.) Number of shirts = 120 shirts

5.) 3024

7.) 252

9.) 1320

11.) 10