

1. a. $P(G | D) = P(G) \Rightarrow \frac{130}{250} = \frac{273}{525} = 0.52$

b. $P(D | G) = P(D) \Rightarrow \frac{130}{273} = \frac{250}{525} = 0.476$

c. $P(D \text{ and } G) = P(D) \cdot P(G) \Rightarrow \frac{130}{525} = \frac{250}{525} \cdot \frac{273}{525} = 0.2476$

d. $\{D, C\}$ or $\{G, B\}$

	Clarke	Diamond	
boy	132	120	252
girl	143	130	273
	275	250	

2. a. $\frac{13}{52} = 0.25$

b. $\frac{39}{52} \cdot \frac{13}{51} = 0.191$

c. $\frac{39}{52} \cdot \frac{38}{51} \cdot \frac{13}{50} = 0.145$

3. a. $\frac{{}_3P_3}{{}_5P_3} = \frac{1}{10}$

b. $\frac{{}_4P_3}{{}_9P_3} = \frac{4}{42} = \frac{2}{21} = 0.0958$

4. f. $P(\text{"choosing } e" | \text{"choosing a vowel"}) = 1/5$

g. $P(\text{"choosing a vowel"} | \text{"choosing } e") = 1$

5. $\frac{9 \cdot 10 \cdot 10 \cdot 10 \cdot 10 - 8 \cdot 9 \cdot 9 \cdot 9 \cdot 9}{9 \cdot 10 \cdot 10 \cdot 10 \cdot 10} = 0.417$

6. ${}_4C_2 \left(\frac{1}{6}\right)^2 \left(\frac{5}{6}\right)^2 = 0.116$

7. $2^4 - 1 = 15$ or $({}_4C_1 + {}_4C_2 + {}_4C_3 + {}_4C_4) = 15$

8. a. ${}_6C_4 (0.65)^4 (0.35)^2 = 0.274$

b. ${}_6C_0 (0.65)^0 (0.35)^6 = 0.0018$

9. a. $0(0.04) + 1(0.92) + 2(0.03) + 3(0.01) = 1.01$

b. The machine is giving slightly more snacks than it should and should be fixed because it is giving the wrong number of snacks 8% of the time.