Stat 345 Solutions - Section 2.4

Problem 2-58

(a) $P(A) = \frac{82}{100}$ (b) $P(B) = \frac{90}{100}$ (c) $P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{80/100}{90/100} = \frac{80}{90} = \frac{8}{9}$ (d) $P(B|A) = \frac{P(A \cap B)}{P(A)} = \frac{80/100}{82/100} = \frac{80}{82} = \frac{40}{41}$ (e) $P(B|A) = \frac{40}{41}$ (f) $P(A|B') = \frac{P(A \cap B')}{P(B')} = \frac{2/100}{10/100} = \frac{2}{10} = \frac{1}{5}$

Problem 2-62

- (a) Let $D_i = i^{th}$ chip selected is defective, i = 1, 2. $P(D_1) = \frac{20}{100} = \frac{1}{5}$.
- (b) $P(D_2|D_1) = \frac{19}{99}$
- (c) $P(D_1 \cap D_2) = P(D_2|D_1)P(D_1) = \frac{19}{99}\frac{1}{5} = \frac{19}{495} = .0384.$ Note that you can get this from a tree pretty easily.
- (d) Same as (a). The answer to (c) also would change to .04.