

## Stat 345 Solutions - Section 2.5

### Problem 2-70

(a)  $P(A \cap B) = P(A|B)P(B) = (0.4)(0.5) = 0.20$

(b)  $P(B) = P(A \cap B) + P(A' \cap B)$  (formula 2-7), so  $.5 = .2 + P(A' \cap B)$  and  $P(A' \cap B) = .3$

### Problem 2-74

(a)  $P(A) = 0.03$

(b)  $P(A') = 1 - P(A) = 0.97$

(c)  $P(B|A) = 0.40$

(d)  $P(B|A') = 0.05$

(e)  $P(A \cap B) = P(B|A)P(A) = (0.4)(0.03) = 0.012$

(f)  $P(A \cap B') = P(B'|A)P(A) = (0.6)(0.03) = 0.018$

(g)  $P(B) = P(B|A)P(A) + P(B|A')P(A') = (0.4)(0.03) + (0.05)(0.97) = 0.0605$

### Problem 2-76

Let B denote the event a glass breaks, L denote the event large packaging is used.

$$P(B) = P(B|L)P(L) + P(B|L')P(L') = (0.01)(0.60) + (0.02)(0.40) = 0.014$$