HW 4
STAT 346, Spring 2010

I'll make each homework assignment worth 10 points, so that when I count your best 10 of 13 assignment scores, your overall homework score will be out of 100 points possible. For this assignment, three of the six problems to be turned in (Problems 3 through 8) will be selected for grading, with one of them being made to be worth 4 points and the other two worth 3 points apiece.

1) Do Exercise 2 on p. 93 of the text.

2) Do Exercise 17 on p. 95 of the text.

3) Do Exercise 15 on p. 109 of the text. (*Hint*: Imagine selecting someone at random from the town. Letting M be the event that the selected person is married, and F be the event that the selected person is female, (assuming no gay marriages, so that the number of married women must equal the number of married males) we have $P(M \cap F) = P(M \cap F^C)$. This can be used to obtain $P(F)$, and then you just need to figure out how to get the desired probability, which is $P(M)$.)

4) Suppose $P(B^C) = 0.6$ and $P(A|B) = 0.8$. Give the values of (a) $P(A \cap B)$, and (b) $P(A^C|B)$.

5) Suppose a bag contains 10 new tennis balls and 2 used tennis balls, and from this bag 2 balls are randomly selected and played with. These balls are then returned to the bag in a used condition (whether they were originally new or originally used). Then, if a ball is randomly selected from the 12, which is the probability that it will be used?

6) Do Exercise 28 on p. 133 of the text. (Assume independence (like we usually do with dice).)

7) Consider Exercise 37 on p. 134 of the text. Ignore the switches located at 4, 5, and 6 (i.e., remove them from the figure, or equivalently just assume that they are always closed), and give the probability for the case of $p = 0.9$.

8) Do Exercise 45 on p. 135 of the text. (Assume independence for the two initial draws. With the drawing of two balls from the 14 in the third urn, assume that a subset of two different balls will be selected (i.e., those draws will be made without replacement).)

9) Do Exercise 4 on p. 130 of the text.

10) Do Exercise 7 on p. 131 of the text. (Assume independence. Note that the selections are with replacement.)

11) Do Exercise 8 on p. 131 of the text.

12) Do Exercise 13 on p. 132 of the text. (Round your answer, which should be close to 1, to 4 significant digits in order to better indicate exactly how close the probability is to 1.)

13) Do Exercise 20 on p. 132 of the text.

14) Do Review Problem 1 on p. 139 of the text. (Note the similarity with Problem 11 above, but also note the differences.)

15) Do Review Problem 14 on p. 140 of the text. (Assume independence.)

Turn in solutions for Problems 3 through 8, but not Problems 1, 2, and 9 through 15.