Homework 9

Do the problems on **Webwork** and turn the following problems in class on Mar. 30th.

Homework should be written neatly and clearly explained. If it requires more than one sheet, the sheets must be stapled. Include your name and id number in the top right corner of your homework.

Problem 1. Roll a fair 6 sided die. Let X_1 be the result of this die roll.

Then roll the same die until you get a number less than or equal to X_1. Let X_2 be the result of this die roll.

(a) What is the marginal pmf of X_1?

(b) What is the conditional pmf of X_2 given X_1?

(c) Compute the joint pmf of (X_1, X_2).

(d) Compute the marginal pmf of X_2

(e) Compute the conditional pmf of X_1 given X_2.

(f) Compute the expectation of X_2.

Note: some of these don't simplify to particularly nice numbers.

Problem 2. Two people agree to meet at a given time, but they are both late. The distribution of the amount of time that they are late is an exponential random variable with parameter 1, in minutes. Additionally, the amounts of time they are late are independent.

Compute the probability that the person who arrives first will wait more than one minute for the other.