**Homework 1**

1. (a) The distribution of the number of patients chosen for screening is a binomial distribution.   
    There are a fixed number of patients n, and there are only two possible outcomes: chosen   
    for the screening or not chosen for the screening. Moreover, we are given that each trial is   
    independent of each other, and in turn we can assume that the probability of the patients   
    being chosen remains the same.
2. (b) The distribution for the number of patients who enter the study is a Bernoulli distribution.   
    As opposed to part (a), we do not have a fixed number of patients in this situation. The   
    number of patients who enter the study is dependent on the number of patients who were   
    screened. We are given the probability r that these screened people enter the study, which   
    is all we need for a Bernoulli distribution.
3. (a) The distribution of the number of interns who are promoted is
4. (b) The distribution of the number of part time employees who are not promoted is
5. (c) The distribution of the total number of employees who are promoted is
6. (a) The distribution of is just another binomial distribution
7. (b) Both discrete random variables and have the same probability of success . The   
    parameters and simply represent the number of trials. Adding these two random   
    variables just represent the fact that you have more trials.