CSE 321: Discrete Structures
Assignment #6
Due: Wednesday, May 18

Reading Assignment: Section 5.1-5.3, 7.1 of Rosen.

Problems: (note: you don't need to simplify answers (i.e., you can leave binomial coefficients intact. For probability problems, please describe the process of how to get the answer.)

1. Section 4.2, exercise 34, 40
2. Section 4.3, exercise 38, 40
3. Section 4.4, exercise 8, 22
4. A deck of 10 cards, each bearing a distinct number from 1 to 10, is shuffled to mix the cards thoroughly, so that each order is equally likely. What is the probability that the top three cards are in sorted (increasing) order?
5. Suppose that each of the students in a 100 person class is assigned uniformly and independently to one of four quiz sections. What is the probability that all six students named "David" are assigned to the same section?
6. Eight men and seven women, all single, happen randomly to have purchased single seats in the same 15-seat row of a theatre. What is the probability that the first two seats contain a (legally) marriageable couple?
7. A fair coin is flipped n times. What is the probability that all the heads occur at the end of the sequence?
8. Suppose that A and B are events in a probability space, and that $Pr(A) = 0.5$, $Pr(B) = 0.2$ and $Pr(A \cup B) = 0.6$. What is $Pr(A \cap B)$?
9. Suppose we choose randomly and independently two subsets A and B from the set of all possible non-empty subsets of $\{1, 2, \ldots, n\}$. What is the probability that $min(A) = min(B)$ (where $min(A)$ denotes the minimum number from the set A).