Prob/Stat/Discrete

Homework 2.5 Name_____

1. Three men and three women line up at a checkout counter in a store.
    a. In how many ways can they line up?
    b. In how many ways can they line up if the first person in line is a woman, and then the line alternates by gender- that is a woman, a man, a woman, a man, and so on?
    c. Find the probability that the first person in line is a woman and the line alternates by gender.

2. Seven performers, A, B, C, D, E, F and G, are to appear in a fund raiser. The order of performance is determined by random selection. Find the probability that
    a. D will perform first.
    b. E will perform sixth and B will perform last.
    c. They will perform in the following order: C, D, B, A, G, F, E.
    d. F or G will perform first.

3. A political discussion group consists of five Democrats and six Republicans. Four people are selected to attend a conference.
    a. In how many ways can four people be selected from this group of eleven?
    b. In how many ways can four Republicans be selected from the six Republicans?
    c. Find the probability that the selected group will consist of all Republicans.

4. A state lottery is designed so that a player chooses five numbers from 1 to 30 on one lottery ticket. What is the probability that a player with one lottery ticket will win? What is the probability of winning if 100 different lottery tickets are purchased?

5. A committee of five people is to be formed from six lawyers and seven teachers. Find the probability that
    a. All are lawyers
    b. None are lawyers

6. A parent-teacher committee consisting of four people is to be selected from fifteen parents and five teachers. Find the probability of selecting two parents and two teachers?

Exercises 7-9 involve a deck of 52 cards.

7. A poker hand consists of five cards.
    a. Find the total number of possible five-card poker hands.
    b. Find the number of ways in which four aces can be selected.
    c. Find the number of ways in which one king can be selected.
    d. Use Fundamental Counting Principal and your answers from parts (b) and (c) to find the number of ways of getting four aces and one king.
    e. Find the probability of getting a poker hand consisting of four aces and one king.

8. If you are dealt 4 cards from a shuffled deck of 52 cards, find the probability that all 4 are hearts.

9. If you are dealt 4 cards from a shuffled deck of 52 cards, find the probability of getting three jacks and one queen.