Probability Homework #2

1. Mr. Smith has 12 shirts, eight pairs of slacks, eight ties, and four jackets. Suppose that four shirts, three pairs of slacks, two ties, and two jackets are blue. (a) What is the probability that an all-blue outfit is the result of a random selection? (b) What is the probability that he wears at least one blue item tomorrow?.

2. How many four-digit numbers can be formed by using only the digits 2, 4, 6, 8, and 9? How many of these have some digit repeated?

3. Suppose that four cards are drawn successively from an ordinary deck of 52 cards, with replacement and at random. What is the probability of drawing at least one king?

4. One of the five elevators in a building leaves the basement with eight passengers and stops at all of the remaining 11 floors. If it is equally likely that a passenger gets off at any of these 11 floors, what is the probability that no two of these eight passengers will get off at the same floor?

5. The elevator of a four-floor building leaves the first floor with six passengers and stops at all of the remaining three floors. If it is equally likely that a passenger gets off at any of these three floors, what is the probability that, at each stop of the elevator, at least one passenger departs?

6. Let A be the set of all sequences of 0's, 1's, and 2's of length 12. (a) How many elements are there in A? (b) How many elements of A have exactly six 0's and six 1's? (c) How many elements of A have exactly three 0's, four 1's, and five 2's?

7. Six fair dice are tossed. What is the probability that at least two of them show the same face?

8. A fair die is tossed eight times. What is the probability of exactly two 3's, exactly three 1's, and exactly two 6's?