HOMEWORK 10 - MATH 111
DUE DATE: Wednesday, December 4
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. In Canada, postal codes are made up of two triples: the first consist of a letter followed by a number followed by a letter, and the second triple by a number followed by a letter followed by a number. For instance H3A 2T5 is a valid Canadian postal code.

   (a) How many Canadian codes are possible if the beginning number of the second triple is arbitrary?

   (b) How many are possible if the beginning number of the second triple cannot be 0?

2. How many different "words" may formed by using all the letters in the word "COMMITTEE"?

3. The U.S. senate has 51 republican and 49 democratic senators. A committee of 9 members is to be formed consisting of 5 republicans and 4 democratic senators. In how many ways is it possible to form such a committee?

4. A bridge hand consists of 13 cards out of a normal deck of 52 cards. Find the probability that a bridge hand contains

   (a) 7 face cards.

   (b) 5 cards of one suit and 7 of another.

5. Suppose that a government agency has a board consisting of 6 Caucasian, 5 Hispanic and 4 African American members. A committee of 3 members of this board is to be formed to deal with issues concerning Hispanics. In how many ways can such a committee be formed so that at least one of the Hispanic board members is also a member of the committee?

6. Given 4 balls, of which some are blue, pick 2 at random. The probability that both are blue is $\frac{1}{2}$. Determine how many of the 4 were blue.

7. A coin is tossed 7 times. What is the probability of obtaining at least 6 heads? What is the probability of no more than 2 tails?

8. A certain machine produces a defective item with probability 0.05. What is the probability that out of 100 items manufactured by this machine at least one defective item is produced?