The Fundamental Counting Principal (Assignment 44)

1. A car model comes with the following choices: 9 colors, with or without air conditioning, with or without sunroof, with or without automatic transmission, with or without a spoiler, and with or without antilock brakes. In how many ways can the car be ordered?

2. You are about to take a 8 question multiple choice test. Each of these questions has 4 answers (A, B, C, or D). How many ways can you answer the test if you leave an answer for each question?

3. A social security number contains nine digits, such as 000-00-0000. How many different social security numbers can be formed using any numerals from 0 to 9?

4. How many different four digit alarm codes can be formed for a house alarm? The first digit must be a 2, 4 or 9 and all the other digits can be any number and numbers can be repeated.

5. How many 5 character license plates can be made if the first 3 characters are letters and last 2 characters are numbers? Repetition of characters is allowed, but the first letter must be a P, W, Q, E, L, or K.

6. Telephone numbers is the United States begin with 3 digit area codes followed by 7 digit local telephone numbers. Area codes and local telephone numbers cannon begin with 0 or 1. How many telephone numbers are possible?

7. Shoppers in a large shopping mall are categorized as: male or female, over 30 or 30 and under, and cash or credit card shoppers. In how many ways can a shopper be categorized?

8. There are 8 horses in race. How many ways can they finish first, second and third?

9. A menu has 6 different sandwiches, with 3 choices of potato, 3 types of salad, and 5 different beverages. How many different lunches can be ordered consisting of a sandwich, potato, salad and beverage?

10. Assume a postal coded consists of 6 characters. Each character can be any letter from A to Z or any numeral from 0 to 9. How many postal codes are possible in this situation?

11. A lock uses the letters A through H on the first dial and the digits 0 through 9 on the second and third dials.

a) How many possible codes are there for this lock?

b) How many possible codes are there if the same number is not used twice?

12. Draw a tree diagram of all the possible outcomes there are when a coin is flipped in the air and dice is rolled at the same time.