COUNTING PRINCIPLES

1. A person buying a personal computer system is offered a choice of three models of the basic unit, two models of keyboard, and two models of printer. How many distinct systems can be purchased?

2. Suppose that a code consists of five characters, two letters followed by three digits. Find the number of: a) codes; b) codes with distinct letters.

3. Consider all positive integers with three digits. (Note that zero cannot be the first digit.) Find the number of them which are: a) greater than 700; b) odd.

4. A typical PIN (personal identification number) is a sequence of any four symbols chosen from the 26 letters in the alphabet and the ten digits, with repetition allowed. How many different PINs are possible?

5. The letters ABCDE are to be used to form strings of length 3. How many strings: a) begin with A, allowing repetitions b) begin with A, repetitions are not allowed?

6. Hexadecimal numbers are made using the sixteen digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F. They are denoted by the subscript 16. a) How many hexadecimal numbers begin with one of the digits 3 through B, end with one of the digits 5 through F and are 5 digits long? b) How many strings of hexadecimal digits consist of from one through three digits?

7. A group of eight people are going to watch a movie together. Two of the eight must sit side-by-side. In how many ways can the eight be seated together in a row?