Homework 1

DUE TUESDAY OCTOBER 2 BEFORE THE END OF THE LECTURE (5:15pm)

1. Find the number of ways in which 5 large books, 4 medium-size books and 3 small books can be placed on a shelf so that all books of the same size are together. Please provide two solutions, one using the rule of product, and one using the rule of sum.

2. A class contains 9 boys and 3 girls.
   a. In how many ways can the teacher choose a committee of 4?
   b. How many of them will contain at least one girl?
   c. How many of them will contain exactly one girl?

3. Consider all positive integers with 3 different digits. Note that 0 cannot be the first digit.
   a. How many are odd?
   b. How many are even?
   c. How many are greater than 700 or divisible by 5? (Hint: avoid repetitions)

4. A student is to answer 10 out of 13 questions on an exam.
   a. How many choices does he have?
   b. How many if he must answer the first two questions?
   c. How many if he must answer the first or second question but not both?
   d. How many if he must answer exactly 3 of the first 5 questions?
   e. How many if he must answer at least 3 of the first 5 questions?