Name:

MATH 320: In-Class 2

Answer all questions. Show your work where necessary.

1. If A and B are two sets, draw Venn diagrams to verify the distributive laws (i.e. draw one for each side of the equation and confirm they are equivalent):

   (a) $A \cup (B \cap C) =$

   (b) $A \cap (B \cup C) =$

2. An insurance agent sells two types of insurance, life and health. Of his clients, 38 have life policies, 29 have health policies and 21 have both. How many clients does he have?

3. A stockbroker has 95 clients who own either stocks or bonds. If 67 own stocks and 52 own bonds, how many own both stocks and bonds?

4. When purchasing a car, you have 4 choices of body styles, 15 color combinations and 6 accessory packages. How many ways can you select your car?

5. Suppose a password has 7 characters and is not case-sensitive.

   (a) If letters or numbers may be used, how many different passwords can be made?

   (b) If the first 4 characters must be letters and the next 3 characters must be digits, how many different passwords can be made?

6. For the 9 starting players on a baseball team, how many different batting orders are there?

7. There are seven different faculty members in a college's English department. Four members are to be selected for four different committee chairs. Find the number of ways faculty members can be assigned to chairs using:

   (a) Sampling without replacement

   (b) Sampling with replacement

8. How many 5 card (poker) hands are possible form a deck of 52 cards?

9. A class has 15 boys and 13 girls.

   (a) In how many ways can the teacher select 4 boys and 5 girls for a field trip?

   (b) In how many ways can the teacher select either 4 or 5 boys and the remaining field trip members are girls?