1. Compute: a. $\frac{9!}{7!}$ b. $3! + 5!$ c. $P(4, 4)$ d. $\frac{C(5, 3)}{C(5, 2)}$

2. a. Two cards are drawn in succession and without replacement from a standard deck of 52 cards. How many different sets of two cards are possible?

b. Three spades are picked from the 13 spades in a standard deck of 52 cards. How many different sets of three spades are possible?

3. How many distinct arrangements (in a row) can be made with the letters in the word:

a. BOXING b. SPINELESS

4. a. A restaurant offers a choice of 2 soups, 6 entrees, and 3 desserts. How many different meals consisting of a soup, an entrée, and a dessert are possible?

b. An airline has 3 flights from city A to city B and 6 flights from city B to city C. In how many ways could you fly from city A to city C, using this airline?

5. a. How many different ways can six people be arranged in a row for a group picture?

b. How many counting numbers less than 46 are divisible by 3 or 5?

6. Two fair dice are rolled. Find the probability that:

a. They show a sum of 10. b. The first die turns up an odd number.

7. A certain prescription drug produces side effects in 3% of the patients. Three patients that have taken this drug are selected at random. Find the probability that:

a. All three had side effects b. None of the three had side effects.

8. A single fair die is rolled. Find the probability of obtaining:

a. A number different from both 1 and 2. b. A number greater than or equal to 4

9. A card is drawn at random from a standard deck of 52 cards and is then replaced. A second card is then drawn. Find the probability that:

a. Both cards are red. b. Neither card is a King or a Queen.

10. An urn contains 3 white, 3 black, and 2 red balls. Find the probability of obtaining in a single random draw:

a. A white ball or a red ball. b. A ball that is not white.

Extra Credit. A student wants a sandwich and a drink for lunch. At the snack bar, three kinds of sandwiches are available: chicken (C), ham (H), and tuna (T). The available drinks are ginger ale (G), milk (M), and root beer (R). Make a tree diagram to show all the possible lunches for this student?