HW: 7.1 Probability-Counting Techniques Algebra 2 Kitt

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period:\_\_\_\_\_\_

**Fundamental Counting Principle**

**Directions:** Answer the following word problems using the fundamental counting principle.

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 an 8 question multiple choice test. Each of these questions have 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. Evaluate each of the following:

a) 5! b)  c) 

**Directions**:

1) Determine whether each situation represents a permutation or combination.

2) Determine the probability.

1. Dylan, Andrew, Hailey, and Jordan ran in a race. In how many different orders can they finish the race in 1st and 2nd place?
2. There are 6 things in a hat. How many ways can you pick 2 things from the hat at once?
3. There are 7 things in a hat. How many ways can you pick 3 things from the hat at once?
4. How many combinations of four letters are possible from the letters V, D, R, I, and B?
5. How many ways are there to choose 2 sides from a menu with 12 options?
6. There are twelve players on the basketball team. How many ways can a starting lineup of five players be chosen?
7. How many 4 person committees could be created from a selection of 14 people?
8. How many three letter permutations can you make from the letters K, C, M, J, and O?
9. If 12 horses are entered in a race, how many ways can the first 3 places be awarded?
10. 3 boys and 4 girls are to form a line. How many arrangements can there be if the boys stand together and the girls stand together?
11. How many games will be played in a 10-team league if each team plays every other team exactly once?
12. How many different combinations of 6 numbers are there from a lottery ticket of 26 numbers?