Exploring the World of Math

Name: _____ Date: _____

1. Wendy has three pairs of high heels for formal occasions, 3 pairs of tennis shoes, five formal dresses, five pairs of jeans, 4 t-shirts and 3 nice blouses she is bringing on vacation. If she will never wear the high heels with the jeans unless she is wearing a nice blouse, or if she will not wear tennis shoes with the formal dresses, how many unique outfits does she have?

2. Barry is going to a restaurant the serves 6 appetizers, 3 soups and 3 salads, 8 main entrées and 4 desserts.
    a. How many combinations of the meals can we have if we choose from the appetizer, entrees and the desserts?

    b. How many combinations of the meals can we have if we choose from the appetizer, soup or salad, entrees and the desserts?

3. You have a 6-character password that has your pet's name and you use only lower case letters. How many tries can the hacker use to break your secret password?

4. We have a group of five men and five women.
    a. How many ways can they be arranged in a line?

    b. If the first person is a woman, what is the number of ways we can arrange the line?

    c. If we alternate the line with one woman then one man, how many ways can we arrange the line?

5. At our nonprofit organization, we have 12 members.
    a. How many different ways can we choose a President, VP, a Treasurer and a Secretary?

    b. How many unique groups can be chosen to go to the conference without just rotating members in positions?

6. There are 12 swimmers competing. How many different outcomes can we have for winning the gold, silver and bronze medal?

7. Our favorite singer is performing in a concert we will attend. The singer has 25 popular songs they chose to sing. She will only perform 12 songs at the concert. How many different set lists can be made for the concert?

8. A person orders a triple dip ice cream from a dairy farm that serves 40 different flavors. How many days can we visit the dairy farm before repeating any combination?

9. You are playing the lottery that has 6 balls drawn and the numbers on the 50 balls are 1 through 50. What is the probability that you can win with one ticket? With ten tickets?