Math 624 10-6 Counting Principles, Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Permutations and Combinations

Exploration: How many different outcomes can you get if your flip a coin

1 time? (list them)

2 times?

3 times?

K times?

Fundamental Counting Principle:

1. How many license plates are possible with 4 letters from A to Z followed by 2 digits from 0 through 9?

2. Amy must choose a password for her facebook account. She cannot use letters A and Z or the digits 9 and 0. Each letter or number may be used more than once. How many possible passwords are there if the password is three letters followed by three digits?

3. How many different ways can 7 horses finish a race? \*\* Look out\*\*

4. An executive council is to be formed from a pool of 10 qualified candidates. The council will be composed of a Chairman, Vice-Chairman, Secretary and Treasurer. All 10 candidates could be appointed for any position. How many possible councils could there be?

A **permutation** is:

nPr =

5. Chrysolite is stuck at home with a migraine so the only thing she wants to help alleviate the pain is some Ben and Jerry’s ice cream. Her friend Melanee offered to bring her a triple scoop cone. If the local Ben and Jerry’s has 18 flavors and since Chrysolite is very picky about the order of her scoops, how many different cones could Melanee buy, if she didn’t already know Chrysolite’s preference (Mint Chocolate Chip on top, then Phish Food and Cherry Garcia on the bottom).

A **combination** is:

nCr=

6. At a restaurant you can order a pizza with any of 9 different toppings. How many different pizzas are possible with 3 of those toppings?

7. In 5 card draw poker, each player is dealt 5 cards from a 52 card deck. How many different 5 card hands are possible?