# Algebra 2 6.7 Permutations and Combinations Name:

**Permutation-** an arrangement of items in a particular order

*n* factorial

* *n*! can be used when you use all the items available

Ex: In how many orders can 6 people line up from left to right for a photo?

**Number of Permutations**

* When all the items are not used we can find Number of Permutations
* You will be given an amount of items “*n*” and will need to arrange only “*r*” items

=

Ex:

Ex: How many 4 letter codes can be made if no letter can be used twice?

Ex: Use your calculator to find the number of possible locker permutatins can be made using the numbers 0 through 40 if no number can be used twice.

**Combination –** a selection in which the order does not matter

Number of Combinations

=

Ex: Find the number of possible combinations of ways to pull two bills out of your wallet if you only have a $1, $5, $10, and $20 bill.

Ex:

Ex:

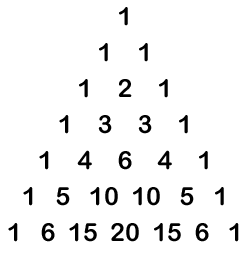
Ex: A DJ wants to select 5 songs from a new CD that contains 12 songs. How many combinations are possible?

Ex: A pizza menu allows you to select 4 toppings at no extra charge from a list of 9 possible toppings. In how many ways can you select 4 or fewer toppings?

# Algebra 2 6.8 The Binomial Theorem Name:

Ex. Expand the following

**Pascal’s Triangle**



Find the next row

Ex:

Ex:

**Binomial Theorem**

term =

Ex: Find the 4th term of

Ex: Find the 5th term of

Ex: Find the 2nd term of

**Application**

A family has 5 children. Assume the probability of a boy is 50%. Write the term in the expansion of and find the probability of exactly 3 boys.