Section 5.2: Permutations

The number of r permutations from a set of n elements is given by:

Where there are ways to permute r items.

******ORDER IS IMPORTANT**********

Examples:

1. How many ways are possible to set a 4-digit bike lock (digits 0-9).

Counting Principle (with repetition allowed):

Counting Principle (with no repetition allowed):

Permutation Formula:

2. How many ways are possible to pick three students from the class to speak to a group of high school seniors at RU?

Counting Principle:

Permutation Formula:

Combinations

A combination is a distinct group of objects without regard for arrangement. The number of r combinations from n elements is:

******ORDER IS NOT IMPORTANT**********

Examples:

1. How many doubles combinations can a tennis coach choose from 5 players?

2. How many ways can a coach choose 3 captains from a roster of 12 players?

3. The play the Virginia Cash 5 Lottery (to win $100,000) a player must choose 5 numbers from a list of 34. How many possible ways can a player choose their numbers?