# Counting Principle

Factorial – n! = n(n - 1 )(n - 2)(n - 3)…(2)(1)

3! = 3 x 2 x 1 = 6

5! = 5 x 4 x 3 x 2 x 1 = 120

Permutations - $_nP_r = \frac{n!}{(n-1)!}$

4 letters for a password

- n=26 r=4
- $\frac{26!}{26-4}$

Combinations - $_nC_r = \frac{n!}{r!(n-r)!}$