

Counting Principles

Fundamental Counting Principle: If event A can occur in m ways and after A occurs event B can occur in n ways, then the number of ways both events A and B can occur is $m \times n$.

Permutations: The number of ways k objects can be selected from n objects and arranged in order is

$${}_n P_k = \frac{n!}{(n-k)!}$$

Combinations: The number of ways k objects can be selected from n objects without regard to order is

$${}_n C_k = \binom{n}{k} = \frac{n!}{k!(n-k)!}$$