Permutation & Combination

$n! = n(n - 1)(n - 2) \dots 3.2.1$

$npr = n! / (n-r)!$

$ncr = n! / (n-r)! \, r!$

If there are n subjects of which p_1 are alike of one kind; p_2 are alike of another

kind; p_3 are alike of third kind and so on and p_r are alike of rth kind,

such that $(p_1 + p_2 + \dots p_r) = n$.

Number of permutations of these n objects is $= n! / p1! \, P2! \dots pr!$