

# TURBO

*Created by students, for students*

## PERMUTATIONS AND COMBINATIONS

Class 11 Mathematics • Complete Formula Sheet

Sr.	Concept	Formulas	Other Information
<b>FUNDAMENTALS</b>			
1	Factorial	$n! = 1 \times 2 \times 3 \times \cdots \times n$	$0! = 1$ . Product of first $n$ natural numbers.
2	Permutation (Distinct)	No Rep: ${}^n P_r = \frac{n!}{(n-r)!}$ Rep: $n^r$	Arrangement of objects. $0 \leq r \leq n$ .
3	Permutation (Not Distinct)	$\frac{n!}{p_1!p_2!\dots p_k!}$	$p_1, p_2, \dots$ are objects of different kinds.
4	Combination	${}^n C_r = \frac{n!}{r!(n-r)!}$	Selection of things. $0 \leq r \leq n$ .
<b>PROPERTIES OF <math>{}^n C_r</math></b>			
5	Symmetry	${}^n C_{n-r} = {}^n C_r$	—
6	Equality	${}^n C_a = {}^n C_b \Rightarrow a = b \text{ or } a + b = n$	—
7	Pascal's Identity	${}^n C_{r-1} + {}^n C_r = {}^{n+1} C_r$	—

**TURBO** Your complete JEE/NEET formula companion