EngineeringRise

Arrangements with conditions and simple applications

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Together (block)	k objects together among n: (n - k + 1)! x k! Valid when: n distinct objects, k specified ones kept together	dimensionless
Not together	n! minus the together count Valid when: n distinct objects; subtract the together count from n!	dimensionless
Gap method	m others make m + 1 gaps; k different objects apart: m! x P(m + 1, k) Valid when: m others placed first; k different objects in separate gaps	dimensionless
Fixed order of two objects	half of all arrangements: n!/2 Valid when: two distinct objects in a set order, no other condition on them	dimensionless
Select then arrange	C(n, r) x r! = P(n, r) Valid when: r objects chosen from n distinct and then arranged	dimensionless
Identical letters	n!/(p! q!) for p and q copies of two letters Valid when: p and q identical copies; all other letters different	dimensionless
Pairs, handshakes, matches	C(n, 2) = n(n - 1)/2 Valid when: unordered pairs from n distinct people or teams	dimensionless
Ordered pairs of people	P(n, 2) = n(n - 1) Valid when: ordered pairs from n distinct people (order matters)	dimensionless
Block of identical letters	no internal factor (OO together in SCHOOL: 5!) Valid when: two identical letters glued as one block	dimensionless

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/mathematics/permutations-and-combinations/arrangements-with-conditions-and

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