PERMUTATION AND COMBINATION

Permutations means ***ARRANGEMENT*** after selection

Combination is only ***SELECTION***

A job is done in 'm' ways and another job in 'n' ways then

BOTH the first **AND** second is done in m x n ways

EITHER the first **OR** the second is done in m+n ways

Example 1:

In how many ways a teacher has to select (i) a boy and a girl and (ii) a boy or a girl, out of 15 boys and 20 girls.

Soln: One boy out of 15 willl be selected in 15 ways and one girl out of 10 will be selected in 10 ways. Hence

(i) A boy and a girl will be selected in 15 X10 = 150 ways

(II) A boy or a girl will be selected in 15 + 20 = 35 ways

Points to remember

- N objects to be arranged in a row in n! Ways
- N objects around a circle to be arranged in (n-1)! ways
- N objects whose clockwise and anticlockwise arrangement cannot be distinguished can be arranged in (n-1!/2 ways
- N objects can be arranged in r places in n_pr ways(n_pr= n!/(n-r)!)
- N objects can be arranged in r places with repetition in n^r ways
- R objects can be selected out of n objects in n_cr ways (n_cr=n!/(n-r)!n!)
- R objects can be selected out of n identical objects in $(n+r-1)_c(r-1)$

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