



## Formulae On Permutations & Combinations

### PERMUTATIONS *(Order of objects matter i.e. AB and BA are two separate objects)*

1. When out of  $n$  objects,  $r$  objects are chosen, without repetition, then total arrangements is given by

$$P(n, r) = n_{P_r} = \frac{n!}{(n-r)!}$$

2. When out of  $n$  objects,  $r$  objects are chosen, with repetition, then total arrangements is given by

$$P(n, r) = n^r$$

3. When out of  $n$  objects, few similar objects are present for  $p, q, r, \dots$  etc times, then total arrangements is given by

$$\frac{n!}{p! q! r! \dots \dots}$$

4. When out of  $n$  objects, all objects are chosen, then total arrangements is given by  $n!$

#### POINTS To Remember

a)  $0! = 1$

b)  $1! = 1$

c)  $n_{P_n} = n!$

### COMBINATIONS *(Order of objects do not matter i.e. AB and BA are same objects)*

When out of  $n$  objects,  $r$  objects are chosen, then total arrangements is given by

$$C(n, r) = n_{C_r} = \frac{n!}{r!(n-r)!}$$

#### POINTS To Remember

a)  $n_{C_0} = 1$

b)  $n_{C_r} = n_{C_{n-r}}$

c)  $n_{C_n} = 1$

d) If  $n_{C_p} = n_{C_q}$  then  
either  $p = q$  or  $n = p + q$

e)  $n_{C_r} + n_{C_{r-1}} = n + 1_{C_r}$

g)  $r \cdot n_{C_r} = n \cdot n - 1_{C_{r-1}}$

h)  $n_{C_0} + n_{C_1} + n_{C_2} + \dots + n_{C_n} = 2^n$

i)  $n_{C_1} + n_{C_2} + n_{C_3} + \dots + n_{C_n} = 2^n - 1$

j) The number of diagonals of a polygon with  $n$  sides is given by

$$n_{C_2} - n$$

➤ **Relation between Permutations and Combinations:**

$$n_{P_r} = r! \times n_{C_r}$$



# BROAD ROOT SCHOLARS ACADEMY

FROM BASICS TO ADVANCE.....

COMPLETE GUIDANCE FOR BOARD + NEET/JEE

[ OLYMPIAD | CUET-UG | IPMAT | JIPMAT | IISC | IISER | NISER | NDA ]

## FOUNDATION PROGRAMME

[Class VIII-X]

-  GENERAL MATHEMATICS
-  ADVANCED MATHEMATICS
-  GENERAL SCIENCE
-  Extended/Core MATHEMATICS  
[Cambridge IGCSE]

## INTEGRATED PROGRAMME

[Class XI-XII]

-  PHYSICS
-  CHEMISTRY
-  MATHEMATICS [Core/Applied]
-  BIOLOGY

## HOW LEARNING HAPPENS HERE

-  **CONCEPT CLARITY** FIRST
-  **REGULAR TESTS + FEEDBACK**
-  **DOUBT CLEARING** SESSIONS
-  **PERSONAL ATTENTION** TO EVERY STUDENT
-  **NO ROTE** LEARNING METHODS

**RESULTS** ARE A BY-PRODUCT OF THE PROCESS

## IS THIS COACHING CENTRE RIGHT FOR YOUR CHILD?

### DOES YOUR CHILD

-  **STRUGGLE** WITH CONCEPT?
-  **NEED PERSONAL ATTENTION?**
-  **AFRAID** OF MATHS & SCIENCE?
-  **WANT STRONG FUNDAMENTALS?**
-  **HATE ROTE** LEARNING?

IF **YES**, THEN YOU'RE IN THE RIGHT PLACE.

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SLOT NOW**

 **SCAN FOR OUR  
LOCATION**



 **BOOK YOUR  
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