

PERMUTATION & COMBINATION

क्रमचय
↓
Arrangement

संचय
↓
Selection

Ex:-



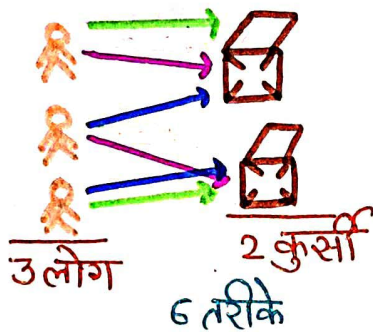
1 तरीका



2 तरीके



3 तरीके



$$= {}^3P_2 = \frac{3!}{(3-2)!}$$

$$\frac{3 \times 2 \times 1}{1} = 6$$

n संख्याओं को r क्रम में
arrange करने के तरीके

$${}_nP_r = \frac{n!}{(n-r)!}$$

7 लोग 3 कुर्सी



$$7 \times 6 \times 5 = 210$$

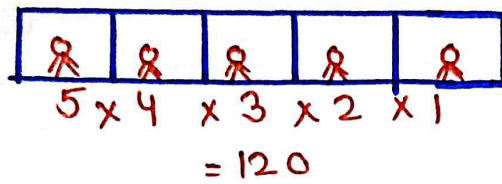
$${}_7P_3$$

$$\frac{7!}{(7-3)!}$$

$$\frac{7!}{4!} = \frac{7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{4 \times 3 \times 2 \times 1}$$

210 तरीके

5 कुर्सी 5 लोग



5P_5

$$\frac{5!}{(5-5)!} = \frac{5!}{0!}$$

$$0! = 1$$

$$= 5! = 5 \times 4 \times 3 \times 2 \times 1$$

$$= 120$$

n लोग n कुर्सी

बैठाने के तरीके $\rightarrow n!$

COMBINATION (संचय) $\rightarrow$ Selection

20 लोग $\rightarrow$ 5 लोगो को select करना है

$${}^{20}C_5 = \frac{20!}{5! \times (20-5)!}$$

$$\frac{20 \times 19 \times 18 \times 17 \times 16 \times 15!}{120 \times 15!}$$

$$\frac{57 \times 17 \times 16}{8}$$

$${}^nC_r = \frac{n!}{r! (n-r)!}$$

$$\frac{n!}{r! (n-r)!} \times r! = \frac{n!}{(n-r)!}$$

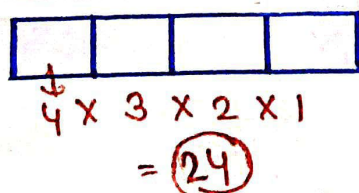
Permutation

$$\text{Combination} \times r! = \text{Permutation}$$

$$\text{संचय} \times r! = \text{क्रमचय}$$

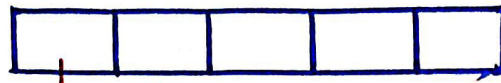
1, 2, 3, 4

4 अंको की संख्याएँ



5, 6, 7, 8, 9

How many 5 digit numbers?

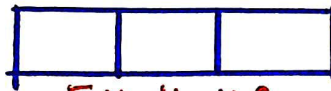


$$5 \times 4 \times 3 \times 2 \times 1$$

$$= 120 \text{ Numbers}$$

1, 2, 3, 4, 5

How many 3 digit numbers?



$$5 \times 4 \times 3$$

$$= 60$$

0, 1, 2, 3, 4

How many 5 digit Numbers?



तरीके $\rightarrow$ $4 \times 4 \times 3 \times 2 \times 1$

$$= 96$$

1, 2, 3, 4, 5

five digit odd Number



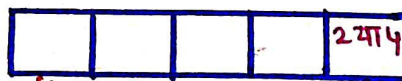
odd(1,3,5)

$$4 \times 3 \times 2 \times 1 \times 3$$

$$= 72$$

1, 2, 3, 4, 5

How many 5 digits even Numbers?



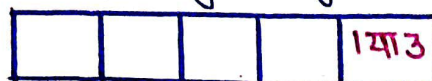
even(2,4)

$$4 \times 3 \times 2 \times 1 \times 2$$

$$= 48$$

0, 1, 2, 3, 4,

How many 5 digit odd Numbers



odd(1,3)

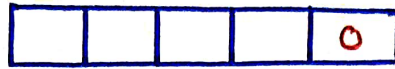
$$3 \times 3 \times 2 \times 1 \times 2$$

$$= 36$$

0, 1, 2, 3, 4

How many 5 digit even Numbers

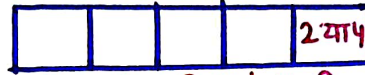
Case 1:-



$$4 \times 3 \times 2 \times 1 \times 1$$

$$= 24$$

Case 2:-



$$3 \times 3 \times 2 \times 1 \times 2$$

$$= 36$$

Even(2,4)

$$24 + 36 = 60$$