

PERMUTATION AND COMBINATION

⇒ For arrangement of things we use

Permutation

⇒ For Selection of things we use

combination → PROBABILITY

Eg: 1) In How many ^{all ways} letters of the word

"MATHS" ⇒ 5 letters $5! = 5 \times 4 \times 3 \times 2 \times 1 =$

⇒ AMTHS ⇒ $120 \times 5 = 600$

Permutation order will be important

combination order will be not important

$$\begin{bmatrix} 8B \\ 4R \end{bmatrix}$$

↓
combination

Permutation formula.

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

${}^n P_r$ = Arrangement of r thing items out of n items

$$n! = n \times (n-1) \times (n-2) \times \dots \times 1$$

$$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$$

PRBLMS:

01) In how many ways the letters of the word "MONEY" can be arranged.

- a) 24 b) 120 c) 240 d) 480

Solu:

1. ABC

2. ACB

3. BAC

4. BCA

5. CAB

6. CBA

6 ways.

MONEY $\Rightarrow$ 5 letters.

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

$$= 120$$

ABC = 3 letters.

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

$$= 6$$

n distinct letters.

$$n!$$

Ans: 120

02) In How many ways the letters of word "RAINBOW" can be arranged.

Solu:

RAINBOW $\Rightarrow$ 7 letters

all the letters are different.

7! letters are distinct

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

$$= 720 \times 7$$

$$= 5040$$

Ans: 5040

03) In how many ways letters of the word "Look" be arranged

Solu: Look $\Rightarrow$ 4 letter.

$$= \frac{4!}{2!}$$

$$= \frac{4 \times 3 \times 2 \times 1}{2}$$

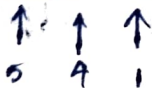
$$= 12$$

Ans: 12

04) How many 3-digit numbers can be formed using the digits 2, 3, 5, 6, 7, 9 which are divisible by 5 and none of the digits are repeated.

Solu: 2, 3, 5, 6, 7, 9

$\div 5$ none digit are repeating



$$\text{total no} = 5 \times 4 \times 1$$

$$= 20$$

Ans: 20

05) How many 4 digit numbers can be formed using the digits 0, 2, 3, 5, 6, 7 and 9 which are divisible by 5 and none of the digits are repeated?

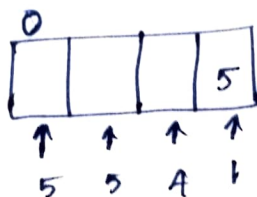
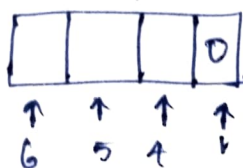
Solve:

0, 2, 3, 5, 6, 7, 9

1) 4 digit number.

2) divisible by 5 [0 or 5]

3) digit should be not repeated.



$$= 6 \times 5 \times 4 \times 1 + 5 \times 5 \times 4 \times 1$$

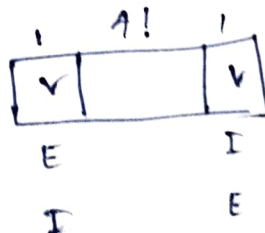
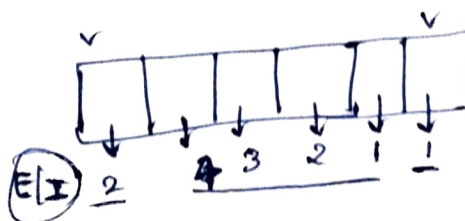
$$= 120 + 100$$

Ans $\Rightarrow 220$

06) In How many different ways can be letters of the word 'DESIGN' be arranged so that the vowels are out of two ends?

Solve:

^CD ^CE ^CS ^CG ^CN



$$\text{total no} = 4 \times 3 \times 2 \times 2$$

Ans $\Rightarrow 48$

07) In How many different ways can be letters of the word "BANKING" be arranged in such a way that the vowel always come together?

Solu:

BANKING

BNKG
A

AI
1

AI
IA

NO. of ways arranging n diff letters!

$$= 5! \times 2!$$

$$= 120 \times 2$$

$$= 240$$

Ans: 240