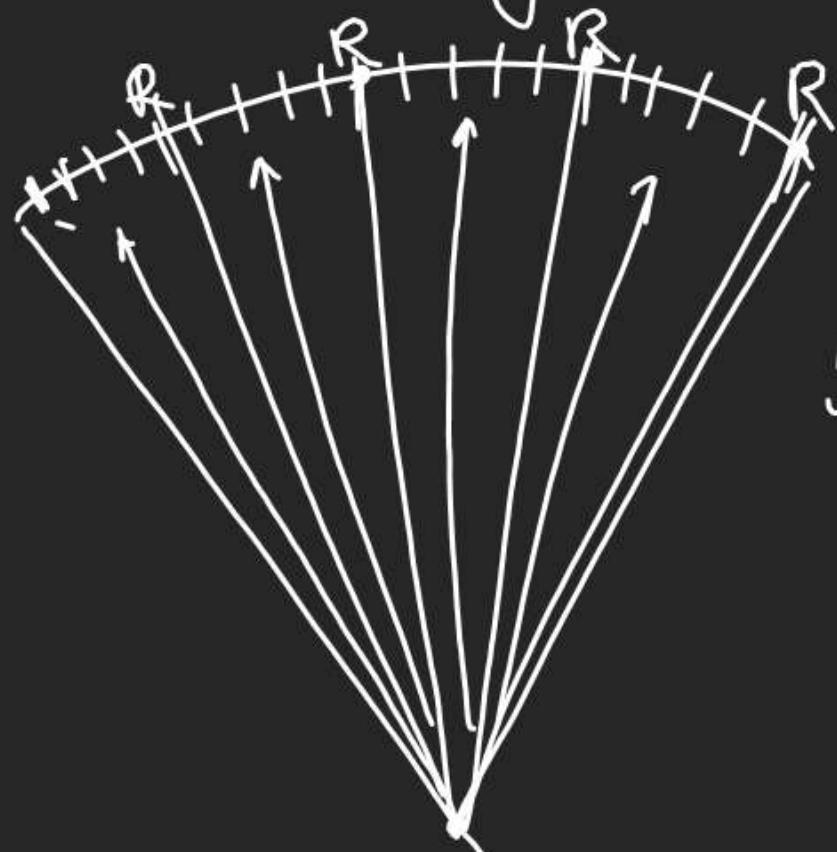


MORSE TELEGRAPH

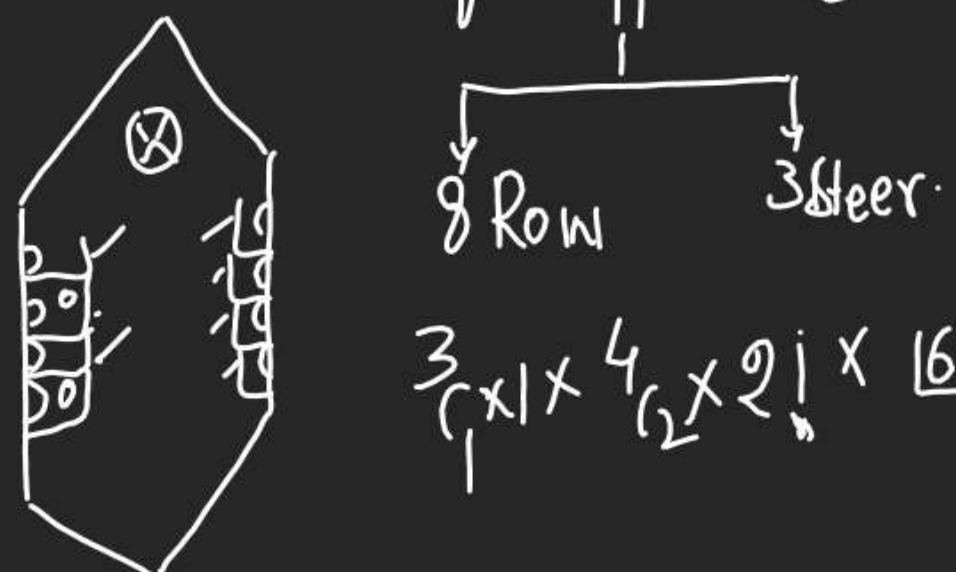
Q In a morse telegraph there are 4 arms & 5 distinct positions including position of rest. How many signals can be made using telegraph



$5 \times 5 \times 5 \times 5 - 1$
In how many
ways all
needles are
at Rest.

Boat Problem.

Q An 8 oared boat to be manned with crew of 11 members. Of whom 3 can steer only, 8 can row but can not steer. In the staff can be arranged if 2 of them can row to left side only.



$$3! \times 4! \times 2! \times 16$$

Q on a chessboard find

A) No of ways of selecting 25g

having a side in common.

B) Number of selecting 3 squares such that 2 corners are common



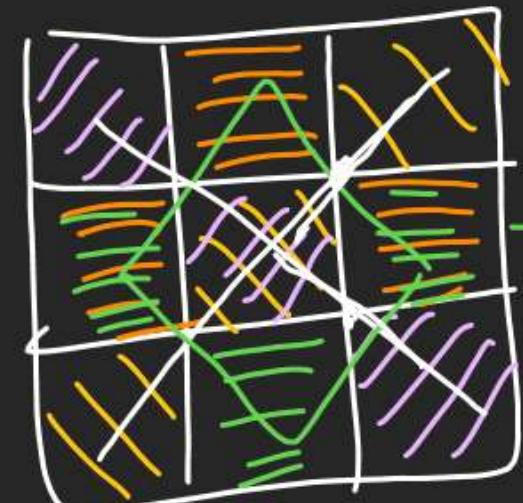
1 Row \rightarrow 7 Set

$$\begin{aligned} \text{No of ways: } & 7 \times 8 + 7 \times 8 \\ & 56 + 56 \\ & = 112 \end{aligned}$$

(B) Diagram illustrating the merge operation in a skip list. It shows two separate skip lists, A_1 and A_2 , merging into a single skip list A .

The diagram shows the following components:

- Skip List A_1 :** Represented by white squares. It has three levels of nodes. The top level has 2 nodes, the middle level has 3 nodes, and the bottom level has 3 nodes. The nodes are connected by horizontal edges.
- Skip List A_2 :** Represented by green squares. It has three levels of nodes. The top level has 2 nodes, the middle level has 2 nodes, and the bottom level has 2 nodes. The nodes are connected by horizontal edges.
- Merge:** Indicated by a bracket labeled "Merge" connecting the two skip lists.
- Skip List A :** The resulting merged skip list, represented by a combination of white and green squares. It has three levels of nodes. The top level has 3 nodes (2 white, 1 green), the middle level has 5 nodes (3 white, 2 green), and the bottom level has 5 nodes (3 white, 2 green). The nodes are connected by horizontal edges.



$3 \times 3 \text{ Sq}^n$
 μ_{10}
Case 7

8 such 3×3 we have 6×6
(as B)

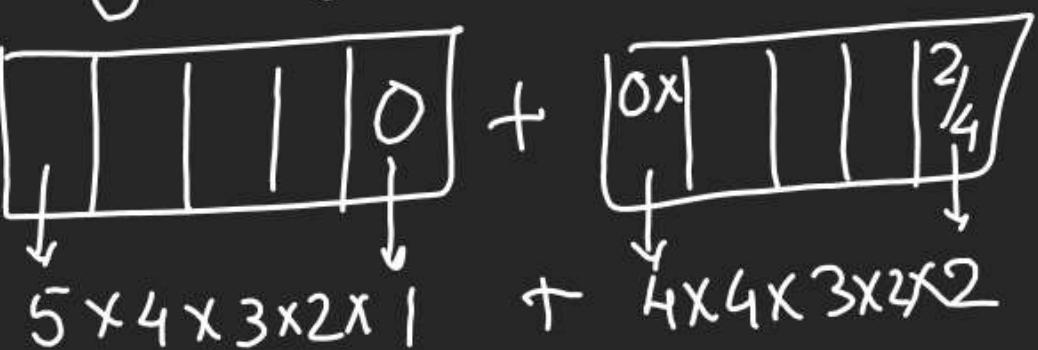
$$\text{So No of ways} = \frac{6 \times 6}{3 \times 3 \text{ का ले से}} \times 10$$

Divisibility Prob.

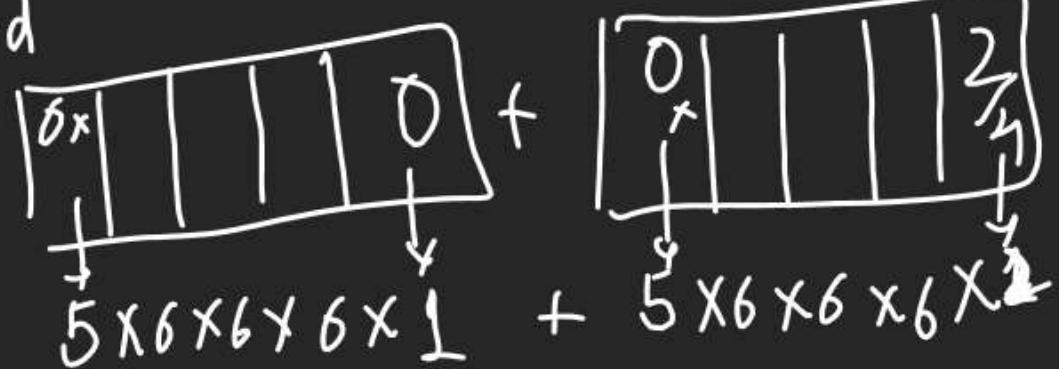
Divisible by 2	Ends with 0, 2, 4, 6, 8
— by 3	<u>Sum of digit $\div 3$</u>
— 4	<u>Last 2 digit div. by 4</u>
— 5	<u>Last digit = 0/5</u>
— 6	<u>div. by 2 & 3</u>
— 8	<u>Last 3 digit $\div 8$</u>
— 9	<u>Sum div. by 9</u>
— 10	<u>Last digit 0</u>

Q By 0, 1, 2, 3, 4, 5
How many 5 digit no's can be made \div by 2.

① RNA



(2) R Allowed

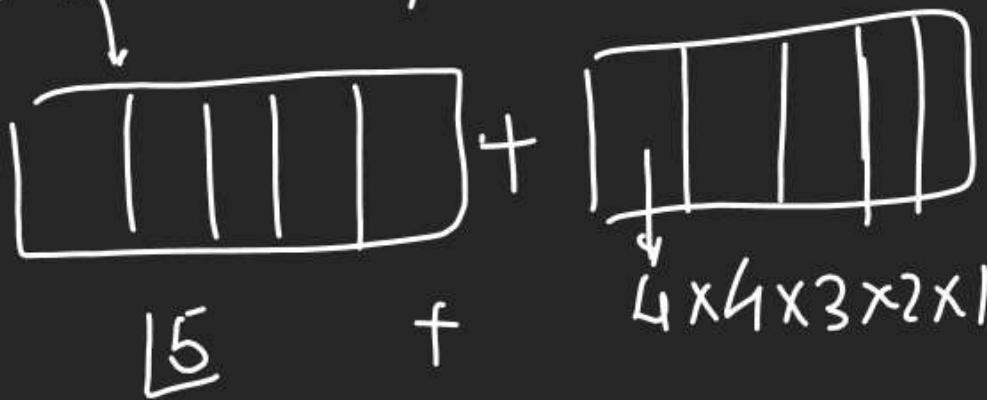


Q By 0, 1, 2, 3, 4, 5 forming 5 digit

No. div. by 3.

\rightarrow digits search करें पड़ते हैं।

2 Sets
only \rightarrow 1, 2, 3, 4, 5 व 0, 1, 2, 4, 5



5

f

$$\underbrace{120 + 96}$$

Q By 0, 1, 2, 3, 4, 5 forming 5 digit No div by 6.

- ① Search digits ② Arrang them acc.

$\cancel{1, 2, 3, 4, 5} \Rightarrow 0, 1, 2, 4, 5$ \div by 3 to divisibility of 2

$\begin{array}{|c|c|c|c|} \hline & & & 2 \\ \hline & & & 4 \\ \hline \end{array} + \begin{array}{|c|c|c|c|} \hline & & & 0 \\ \hline & & & 0 \\ \hline \end{array}$

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

$\begin{array}{|c|c|c|c|} \hline & & & 2 \\ \hline & & & 4 \\ \hline \end{array} + \begin{array}{|c|c|c|c|} \hline & & & 0 \\ \hline & & & 0 \\ \hline \end{array}$

Q By digits 0, 1, 2, 3, 4, 5

forming 5 digits No. by 4.

first makes set of last 2 digits.

$\div 4$

01x	10x	20v	30x	40v	50x
02x	12v	21x	31x	41x	51x
03x	13x	22x	32v	42x	52v
04v	14x	23x	33x	43x	53v
05x	15x	24v	34x	44v	54x
00v	11x	25x	35x	45x	55x

10x	20v	30x	40v	50x
21x	31x	41x	51x	
22x	32v	42x	52v	
23x	33x	43x	53v	
24v	34x	44v	54x	
25x	35x	45x	55x	

(B) R A

1	0	4
2	2	0
0	0	0

$5 \times 6 \times 6 \times 4$

2	4	52
1	2	12
3	2	24

$5 \times 6 \times 6 \times 5$

04 40
12 44
20 52
24 00
32

RNA

1	0	4
2	2	0
0	0	0

$4 \times 3 \times 9 \times 3$

1	2	52
2	4	12
3	2	24

$3 \times 3 \times 9 \times 4$

Q With Alphabets of DAUGHTER
find Now when Relative place
of vowel & consonants are Unchanged



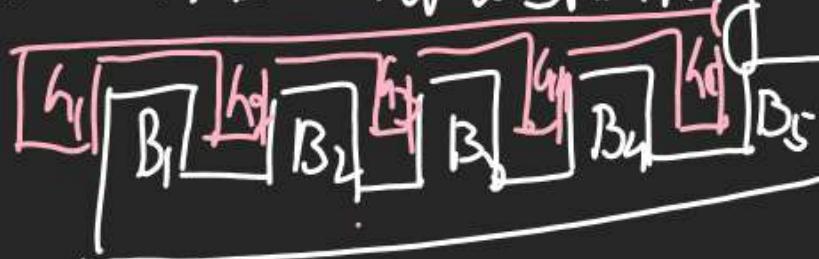
$$= 5 \times 13$$

Q 5 boys can be seated in H M W
A) If ~~2 girls~~ are sitting together.
Gap Method

Boys then अमे
Bethenye 6 gaps
 5 g.

$$5 \times 6 \times 15$$

(B) When Boys are sitting Alternate?



$$5 \times 15 \times 2$$