

Agenda

✓* Combinatorics

✓ Permutation

- Combination

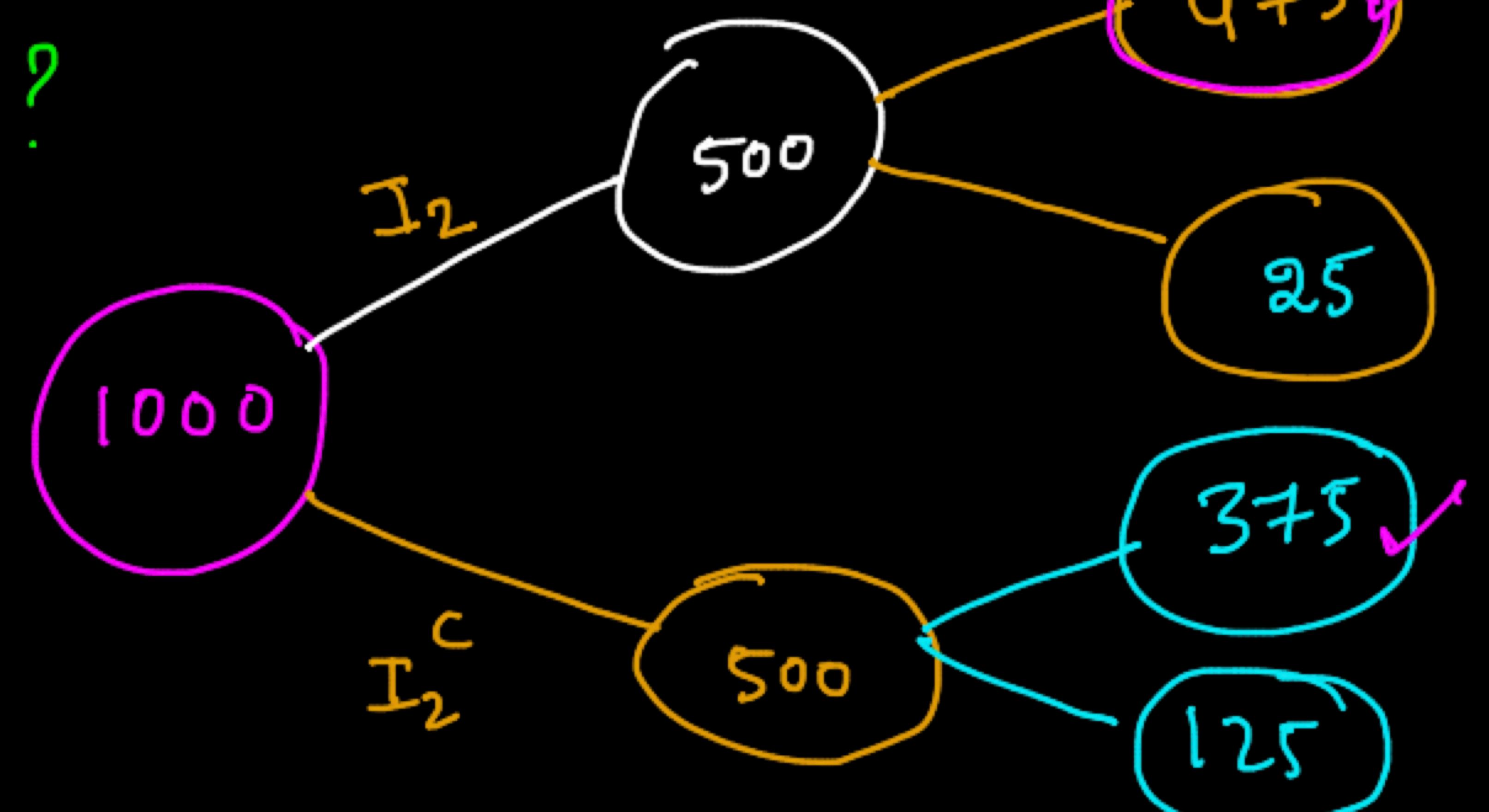
Arrangement

Assignments

Selection | choose

Interview Question

50% of the people who gave the first round were called for the second round. 95% of the people who got invited for the second round felt that they had a good first round. 75% of the people who did not get invited for the second round also felt that they had a good first round. Given that a person felt about the ^{good} first round, what is the probability that he cleared the first round?



$$P(I_2 | G) = \frac{475}{475 + 375} = \frac{475}{850}$$

0.57

=> \Rightarrow fair

flip it 3 times.

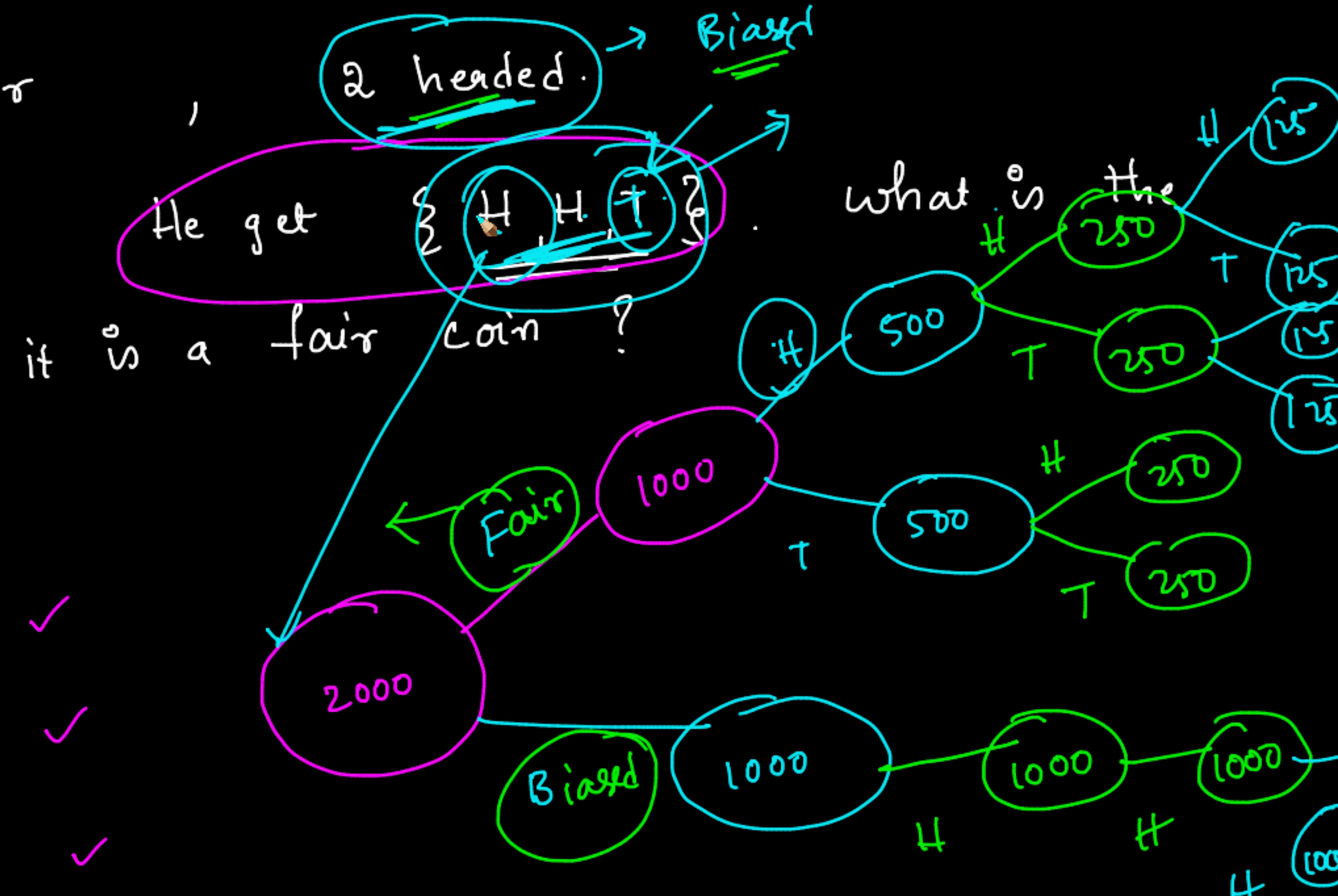
Probability that it is a fair coin?

a. $\frac{1}{2}$

b. $\frac{1}{3}$

c. $\frac{1}{5}$

d. 1

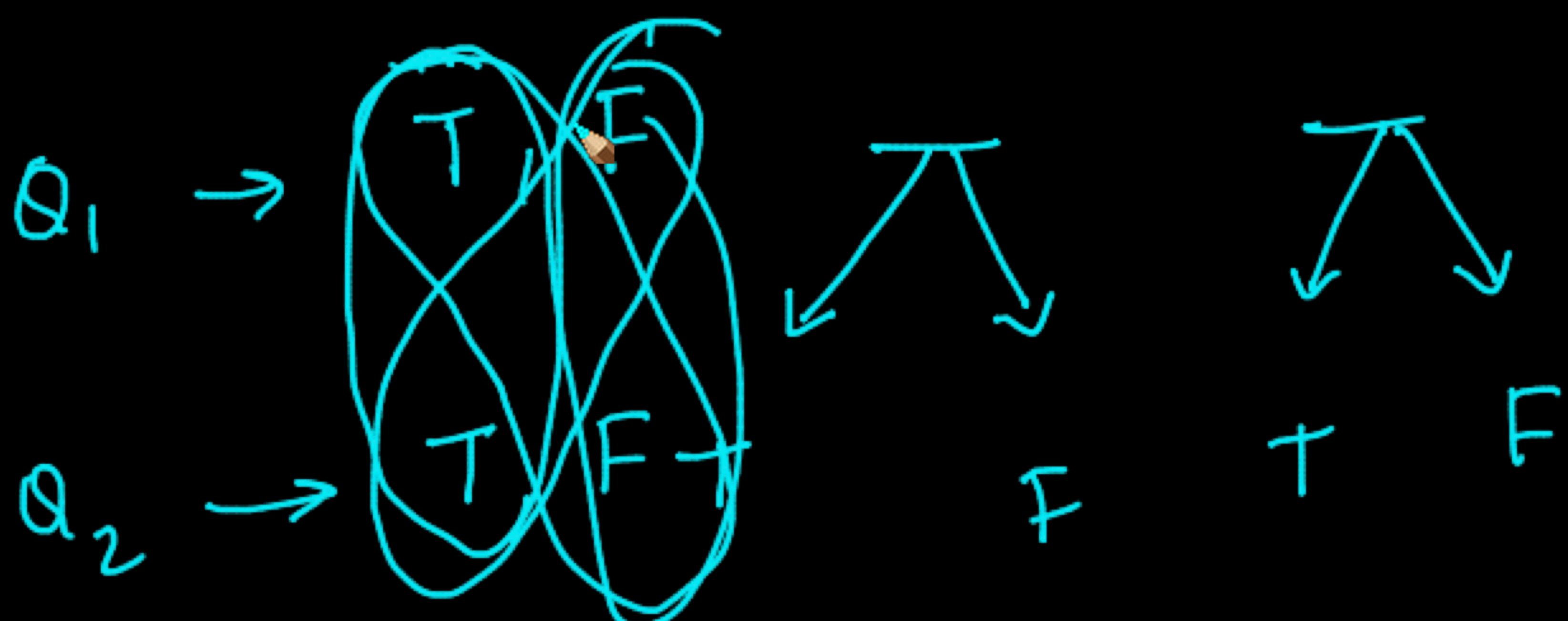


=> ②

True / False questions.

How many ways

Can they be solved ?



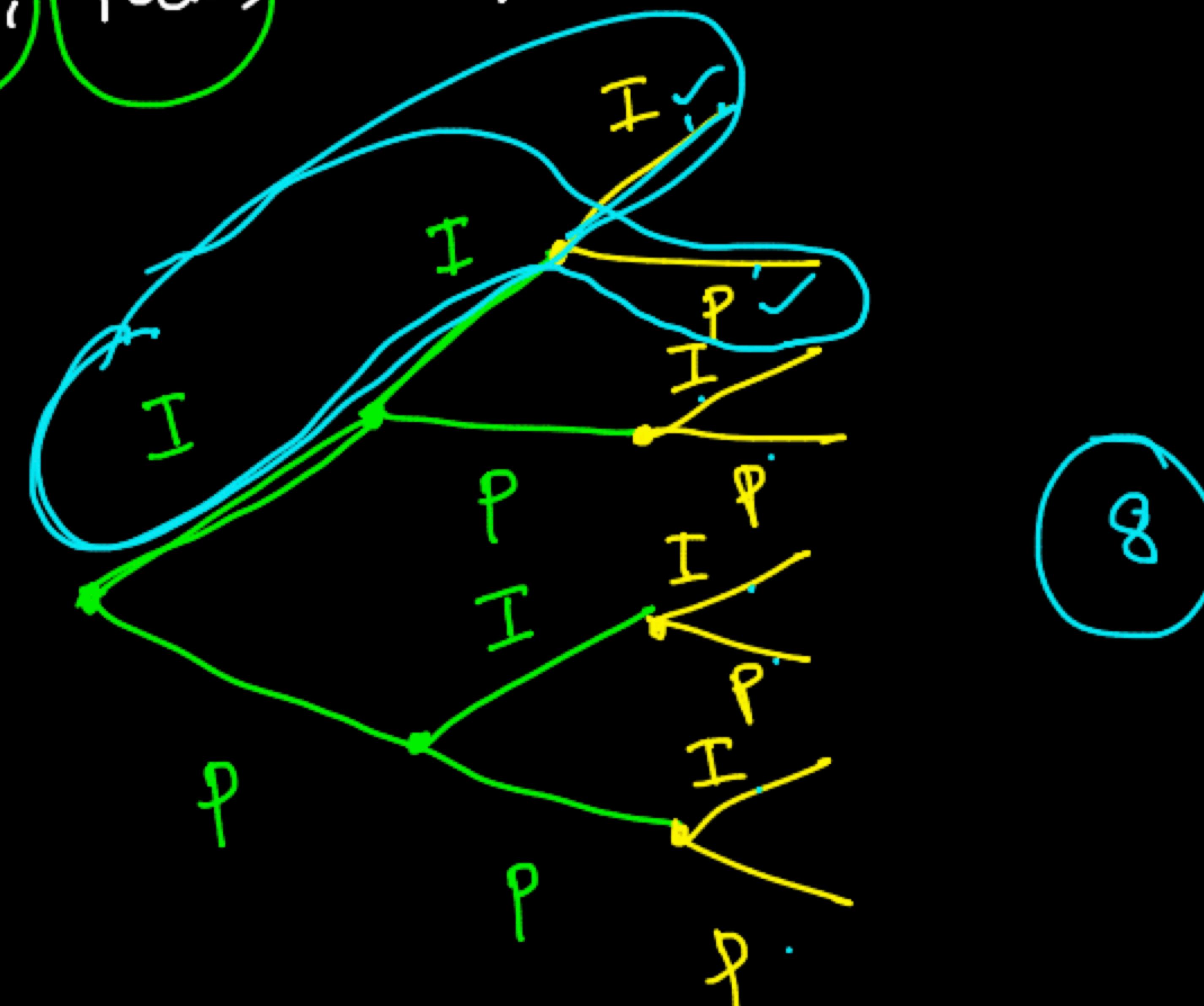
✓	T	T	④
✓	T	F	
F	T	T	
F	F	F	

- a. 2
- b. 4
- c. 16
- d. 8

Quiz #1

India and Pakistan play 3-match series. How many results are possible (total no of outcomes)?
we consider (Ind, Ind, Pak)

different from (Ind, Pak, Ind) etc.



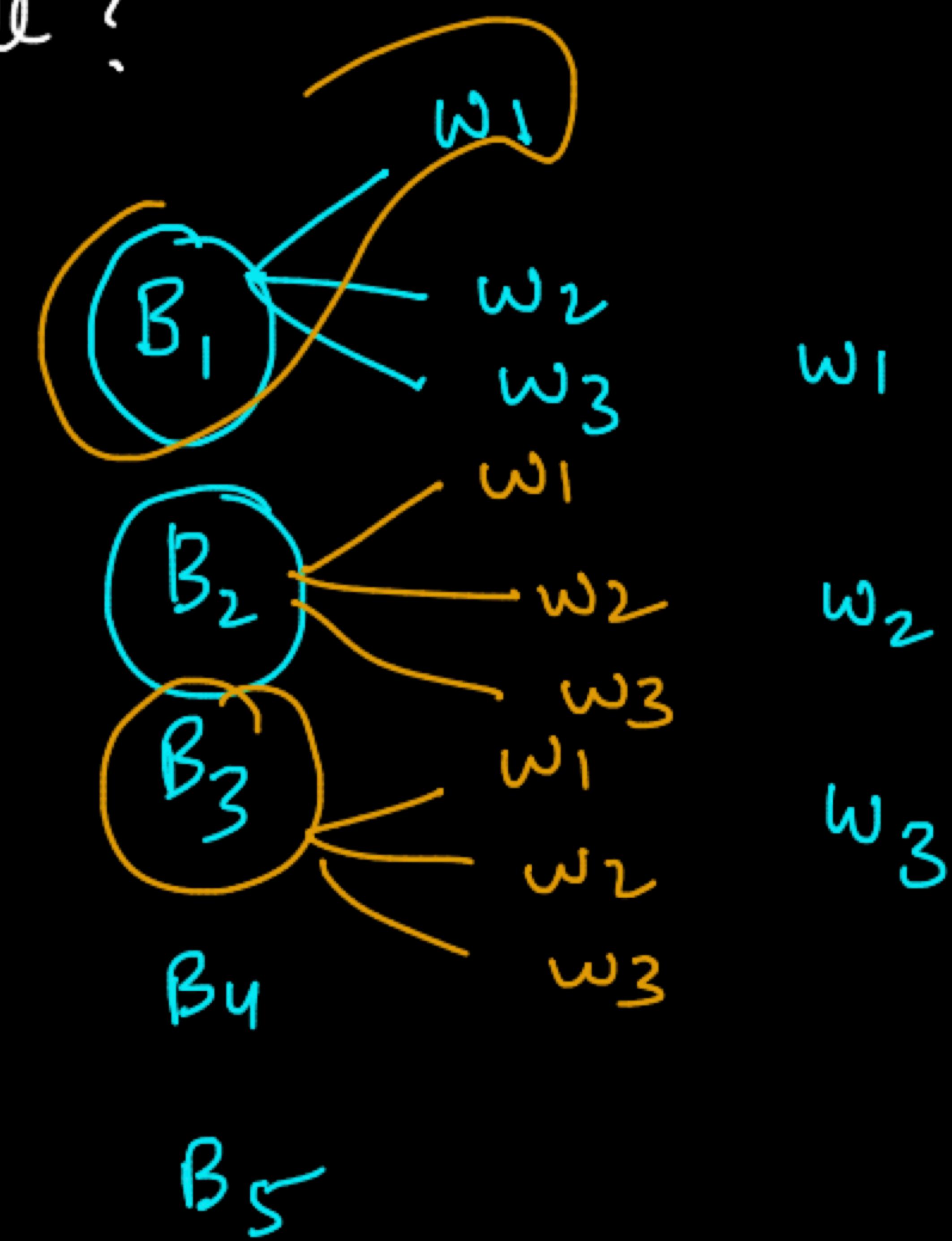
8

I I I
I I P
I P I

$$2 \times 2 \times 2 = 8$$

Quiz #2

In a bowl-out, for a specific ball you have to choose a bowler and a wicket keeper. Suppose you have 5 bowlers and 3 wicket keepers. How many ways can you select for a ball?

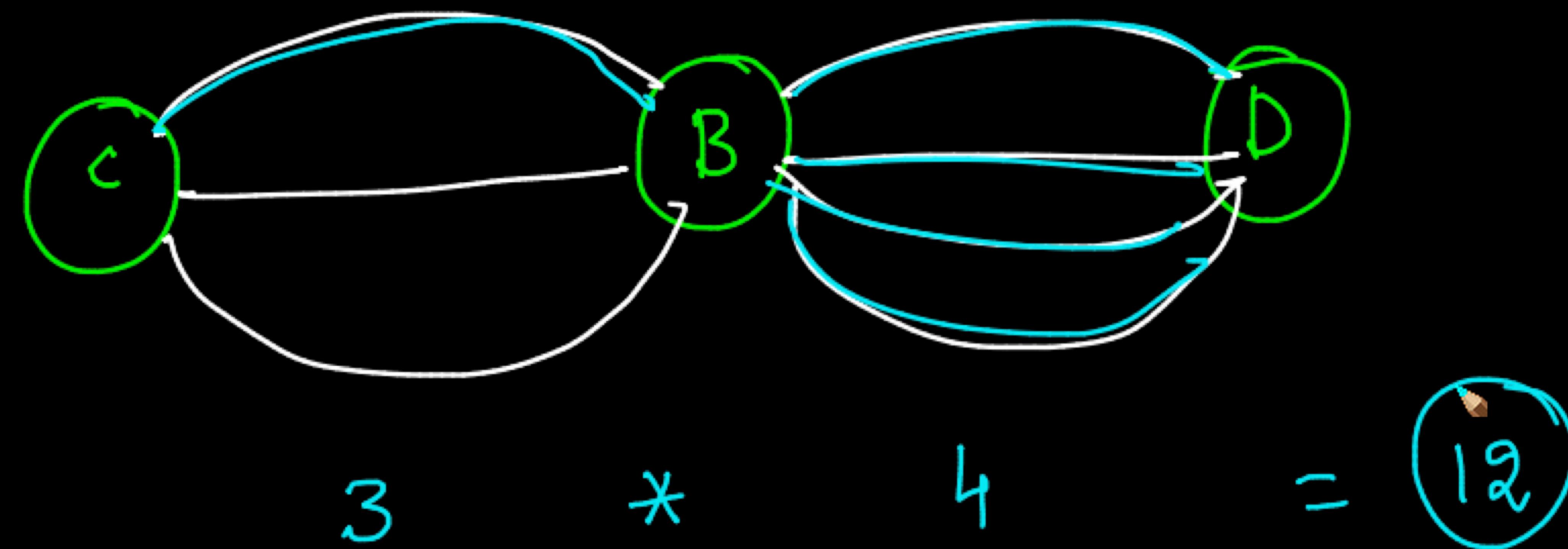


$$5 * 3$$

$$= 15$$

Quiz #3

3 ways to move from Chennai to Bangalore.
4 ways to move " Bangalore to Delhi.
How many ways can one reach from Chennai to Delhi via BIR?



Quiz #4

3 ways

4 ways

2 ways

3 ways

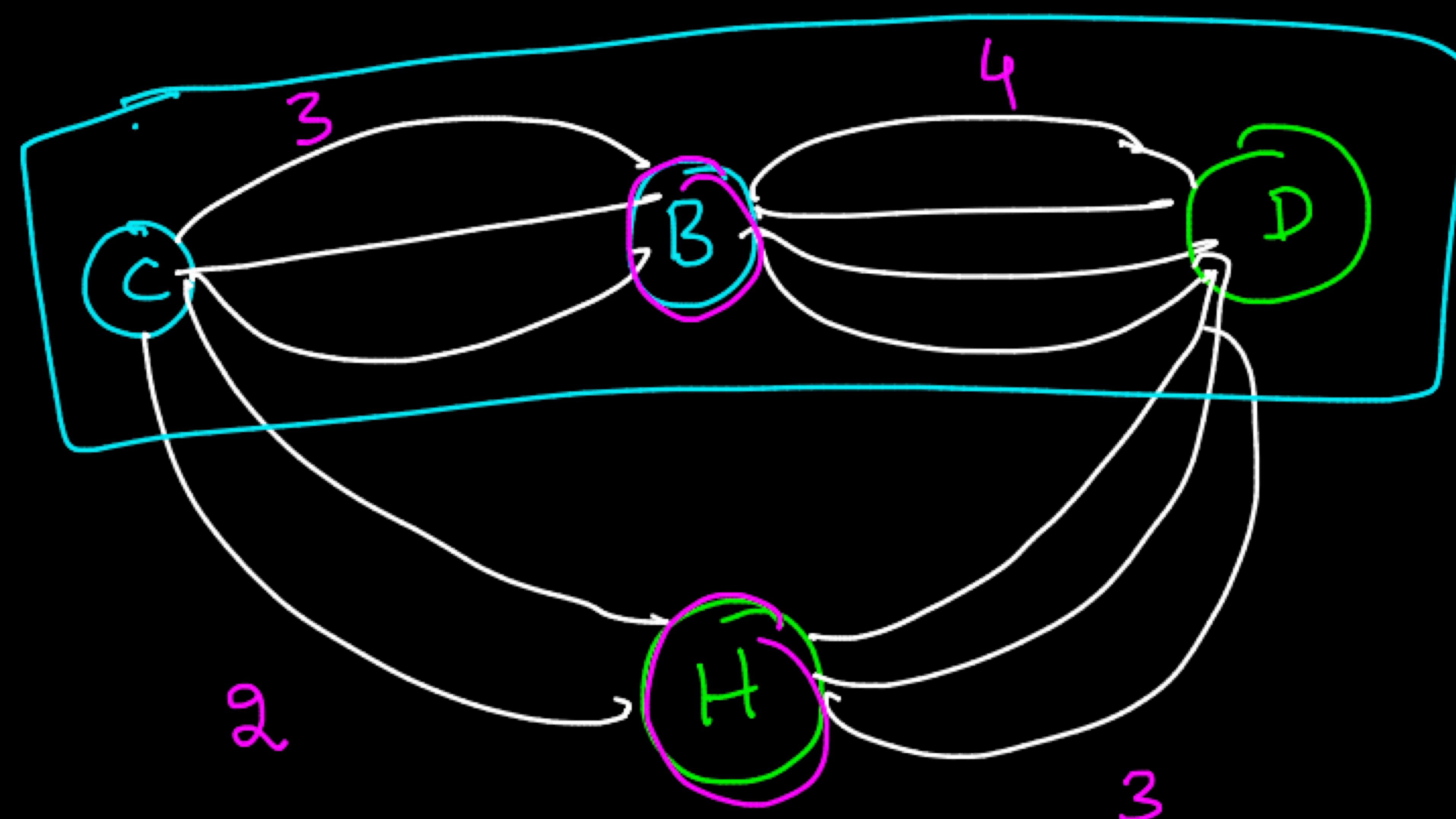
C to B

B to D

C to H

H to D

How many
ways can we
move from
Chennai to Delhi



$$\begin{array}{r} 12 \\ + 6 \\ \hline 18 \end{array}$$

~~Quiz~~

A fast food outlet has the following types of items in their menu

Burgers : 3 ✓

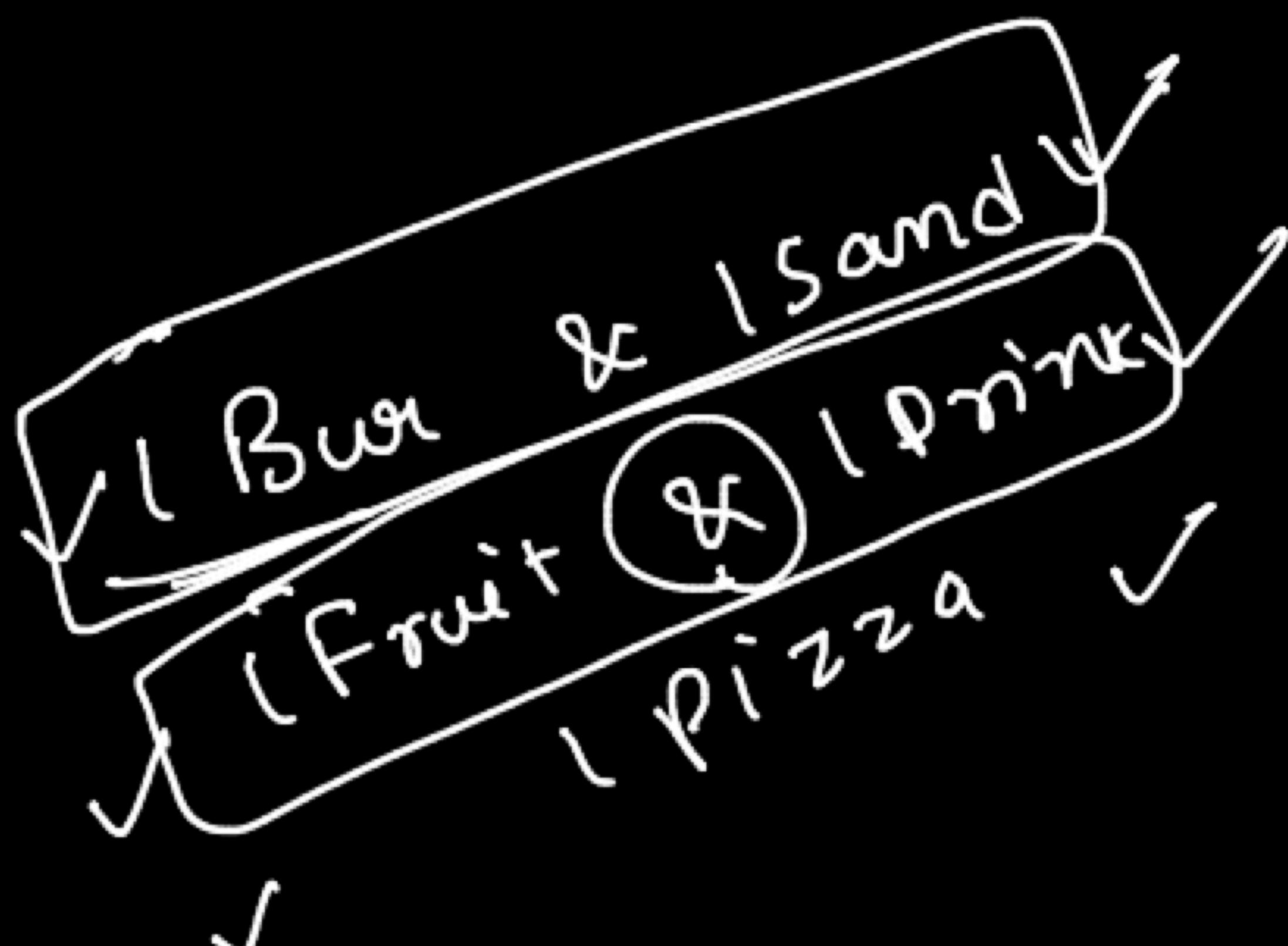
Pizzas : 3

Drinks : 3

Sandwiches : 5

Fruits : 7

How many
different combos can you order



$$3 * 5$$

$$1 * 3$$

$$3$$

$$\Rightarrow$$

$$15$$

$$+$$

$$21$$

$$+$$

$$3$$

$$= \textcircled{39}$$

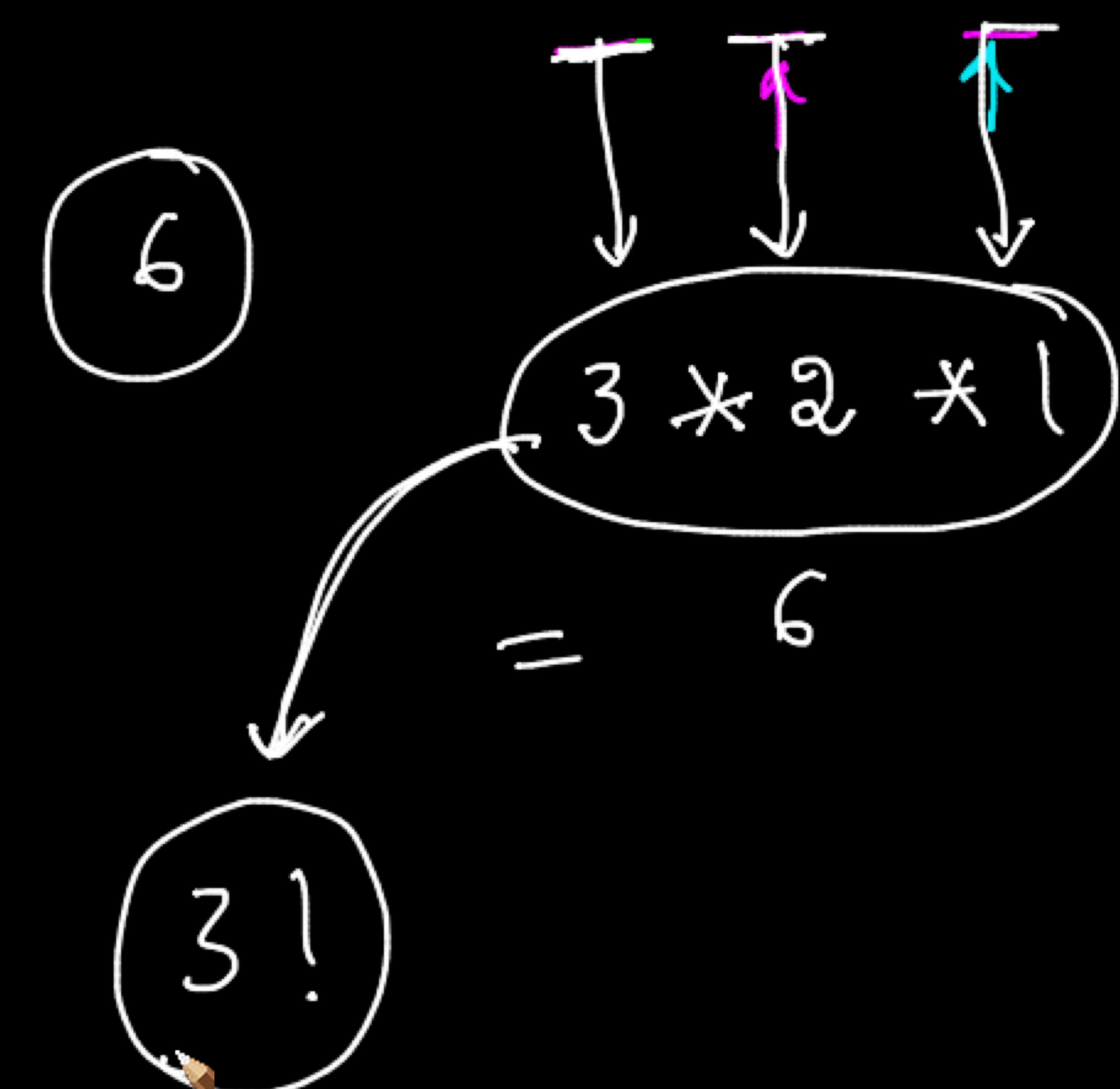
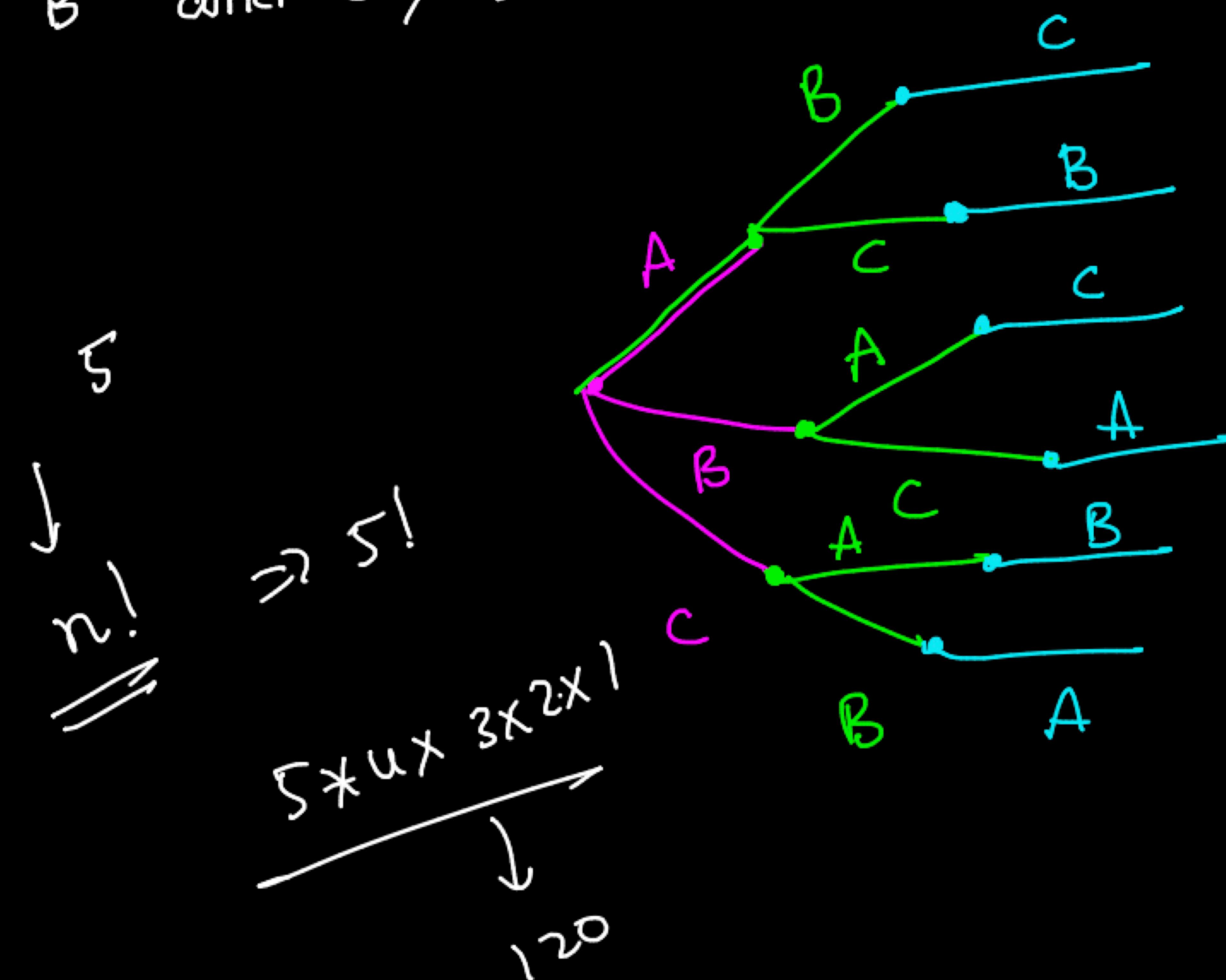
Permutation → arrangement

order is matter ?

⇒ Permutation is an arrangement of items (or) elements in a specific order, where the order of arrangement matters.

Quiz #6

what are the no of ways of Arranging 3 characters
A, B and C, such that there is no repetition?



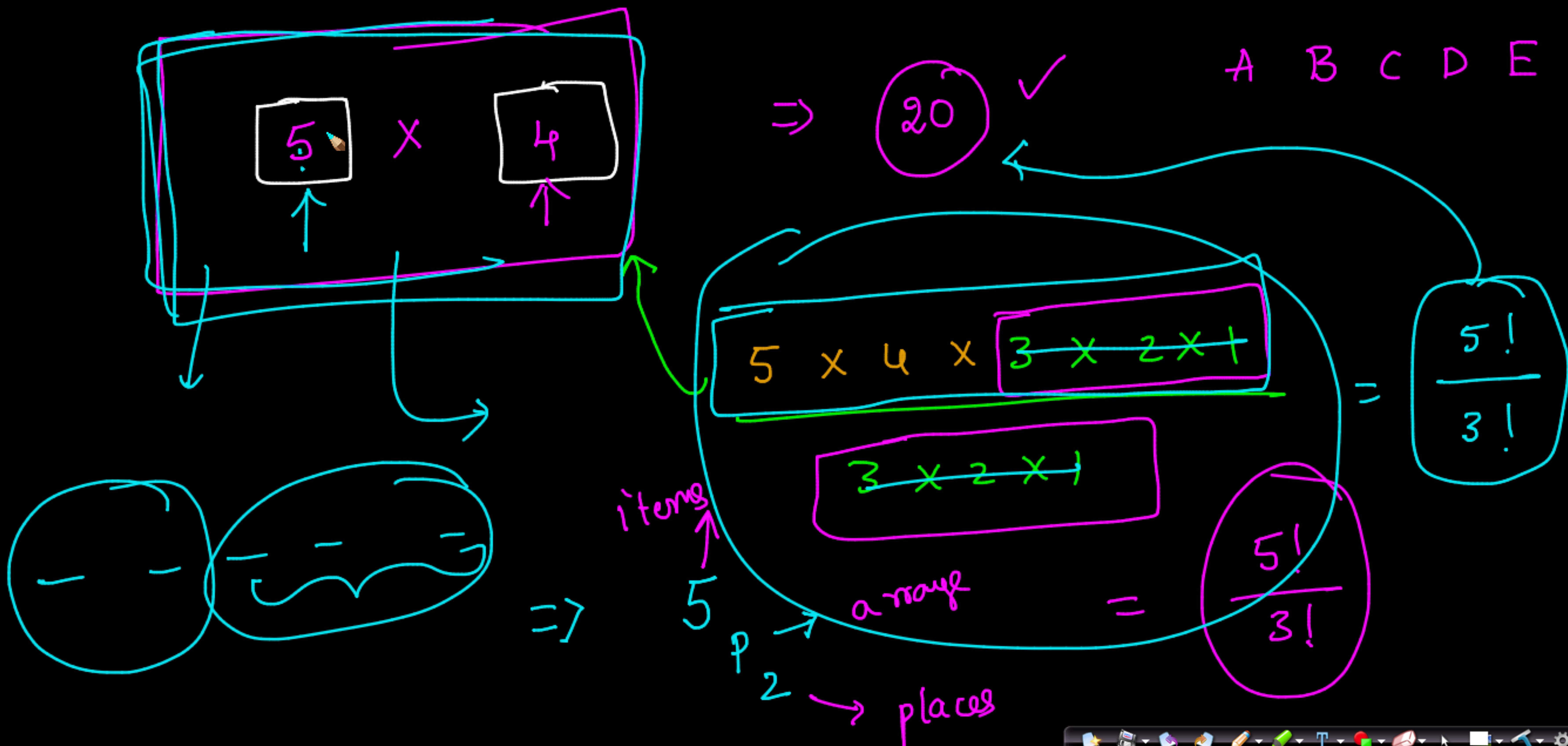
Quiz

Arranging characters A, B, C and D
without repetition?

$$\begin{array}{cccc} \text{J} & \text{J} & \text{J} & \text{J} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 4 \times 3 \times 2 \times 1 & = & 24 \\ & \downarrow & \\ & u! & \end{array}$$



⇒ 5 different characters, in How many ways can we arrange them in 2 places, without repetition?



$\Rightarrow n$ items \rightarrow arranging in 3 slots

$n \times n-1 \times n-2$ (3-1) slots

$\Rightarrow n$ items \Rightarrow $n \times n-1 \times n-2 \times n-3$ 4-1 slots

$\Rightarrow n$ items \rightarrow arranging in k slots

$$n_p_k = n \times n-1 \times n-2 \times \dots \times \underline{n-(k-1)} = n-k+1$$

$$n * (n-1) * (n-2) * \dots * \underbrace{(n-k+1)}_{x \dots} * (n-k) * (n-k-1)$$

$$(n-k) * (n-k-1) * \dots * 1$$

$$\frac{n!}{(n-k)!}$$

$$\frac{1000!}{(1000-50)!}$$

$$1000 \times 999 \times 998 \dots$$

50

100

Selection | choose
Combination →
Top order in cricket
⇒

Dhoni 4 players , who are good at top order

sachin

schwag

24

\Rightarrow

Selection community

How many

ways selection

community

choose 3 players
out of 4.

$$\frac{24}{6} \rightarrow$$

$$\textcircled{U}_C \quad 3$$

$$= \frac{4! P_3}{3!}$$

$$n_C = \frac{n_P k}{k!}$$

$$= \frac{n!}{(n-k)! k!}$$

**

$$n_C = \frac{n!}{(n-k)! * k!}$$

Permutation

$$n_P = \frac{n!}{(n-k)!}$$

Quiz

A maruti showroom has 3 colors in their "Baleno" model and 3 diff color in "swift" model. In How many ways can they place these 6 cars, such that Baleno and swift are kept in alternate slots?

