GATE

ALL BRANCHES

General Aptitude

QUANTITATIVE APTITUDE

Lecture No.- 07

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Recap of Previous Lecture

Topic Number System

Topics to be Covered

Topic-1 More on Numbers

Topic-2 Counting Theory

[MCQ]

#Q. A mixture contains milk and water in the ratio 5:1. On adding 5 liters of water, the ratio of milk to water becomes 5:2. the quantity of milk in the mixture earlier was:

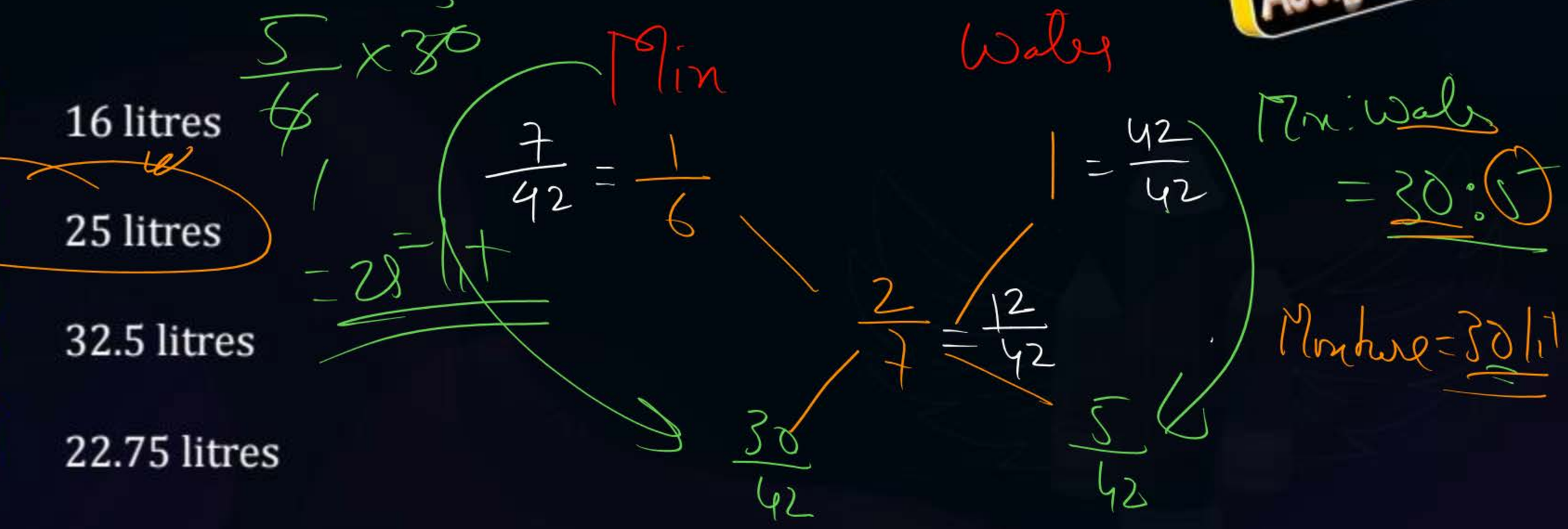
Assignment

A 16 litres

B 25 litres

C 32.5 litres

D 22.75 litres



[MCQ]

#Q. In what ratio must a grocer mix two varieties of pulses costing ₹15 and ₹20 per kg respectively so as to get a mixture worth ₹16.50 per kg?

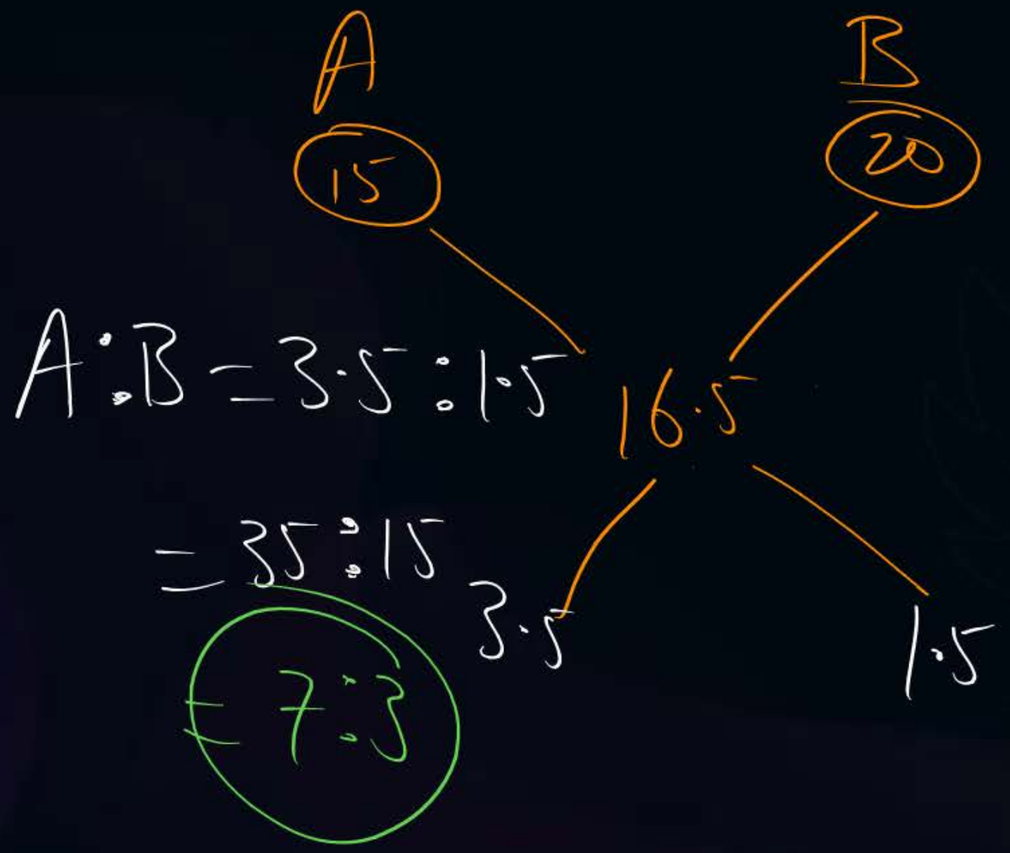
Assignment

A 3:8

B 5:3

C 7:3

D 4:5



[MCQ]

#Q. In what ratio must Ankit mix two varieties of sugar worth ₹20 per kg and ₹32 per kg so that by selling the mixture at ₹36 per kg he may gain 20%?

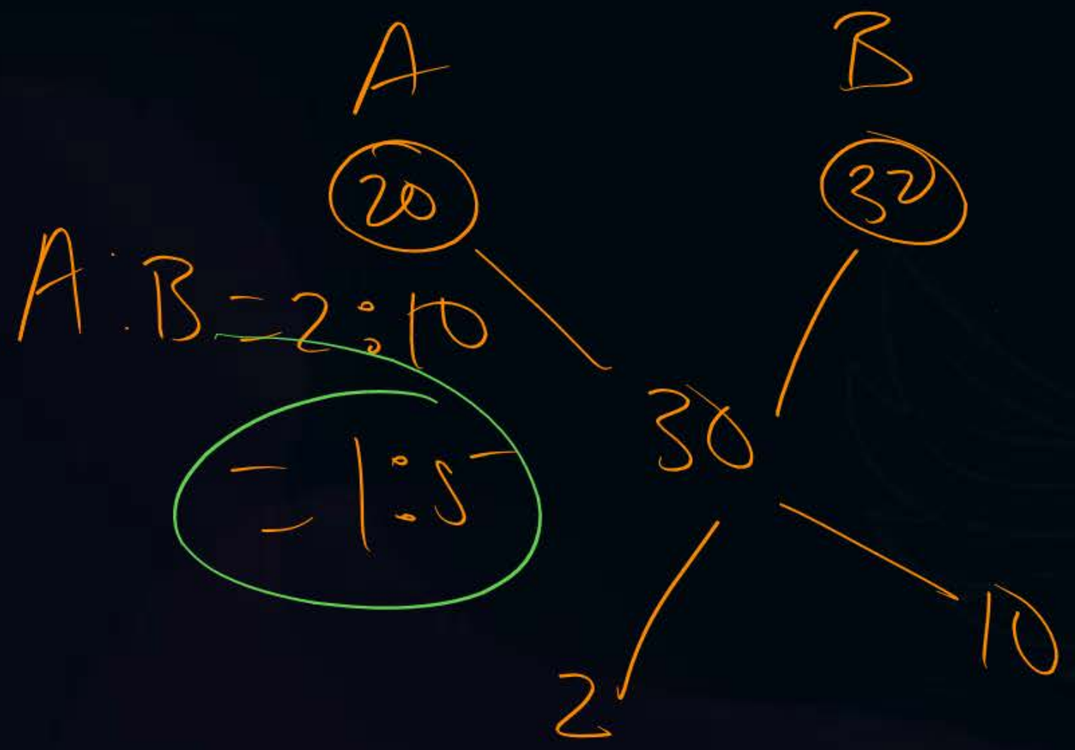
Assignment

A 1:5

B 3:5

C 2:3

D 3:2



A : B = 2 : 10

= 1 : 5

S.P. = 36

P% = 20%

$\frac{36}{C.P.} = 1.2$

$\frac{36}{C.P.} = \frac{30}{25}$

[MCQ]

#Q. What would the unit digit in the answer of given expression:

$1! + 2! + 3! + \ldots\ldots\ldots\ldots 2025!$

Assignment

120
× 6
720
× 7
5040

[MCQ]

#Q. What would the remainder when the answer of given expression is divided by 3?

$1! + 2! + 3! + \ldots\ldots\ldots\ldots 2025! = \text{Ans}$

(A) 0

(B) 1

(C) 2

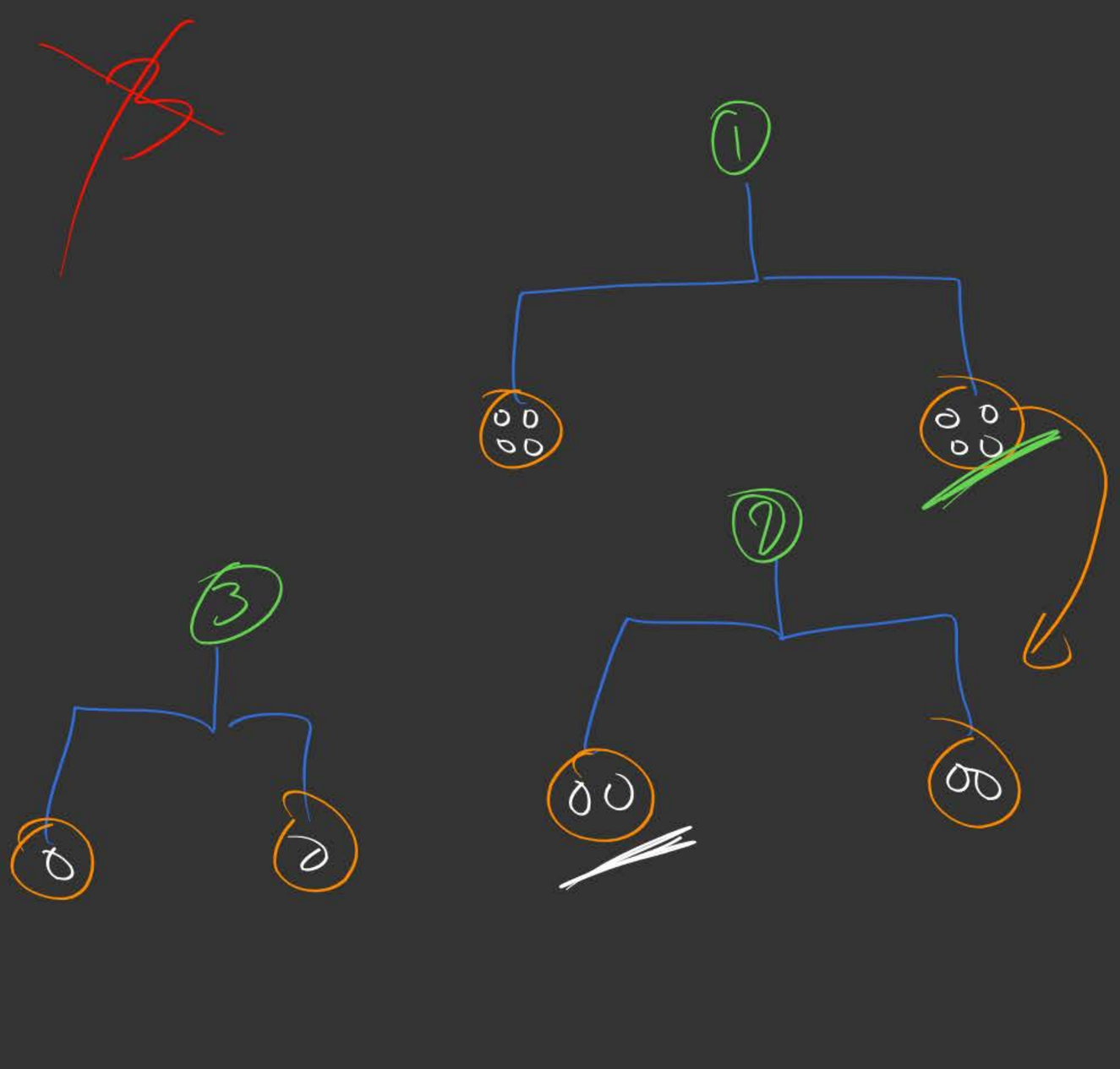
(D) Can't be determined

3) Ans ( )

R = ?

[MCQ]

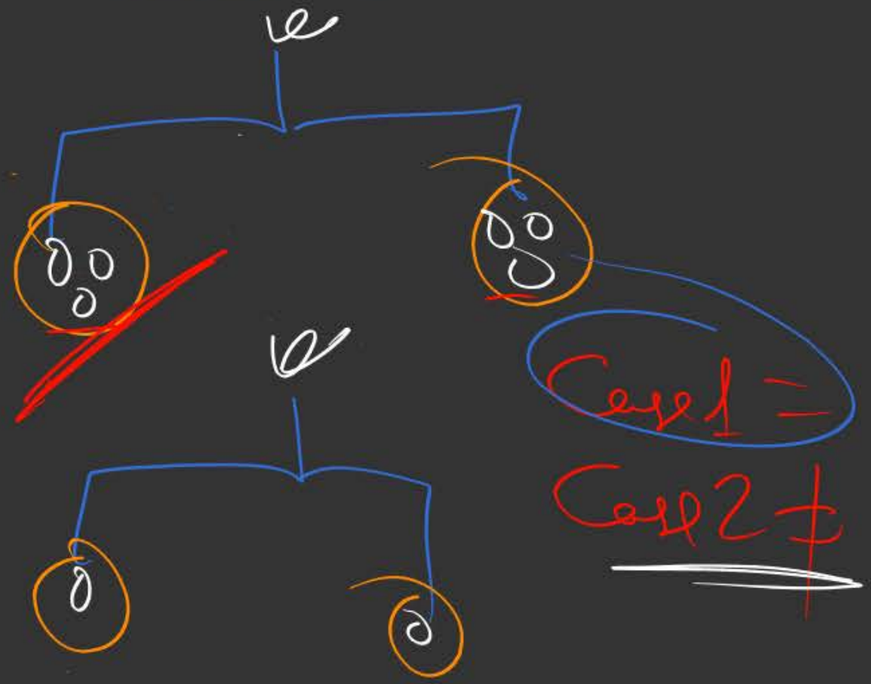
#Q. There are 8 balls of which one is defective. Given that the defective ball is of less weight and remaining are of equal weights. What are the minimum number of chances a common balance is to be used to find the defective one?



2 chance

8 balls

8 balls



[MCQ]

#Q. A bag consist of 48 red colour balls, 16 green colour balls, 12 yellow colour balls, 11 black colour balls and 11 white colour balls. How many minimum number of balls are to be taken out from the bag randomly so that we get at least two balls of same colour?

blindfold deal

6 balls

[MCQ]

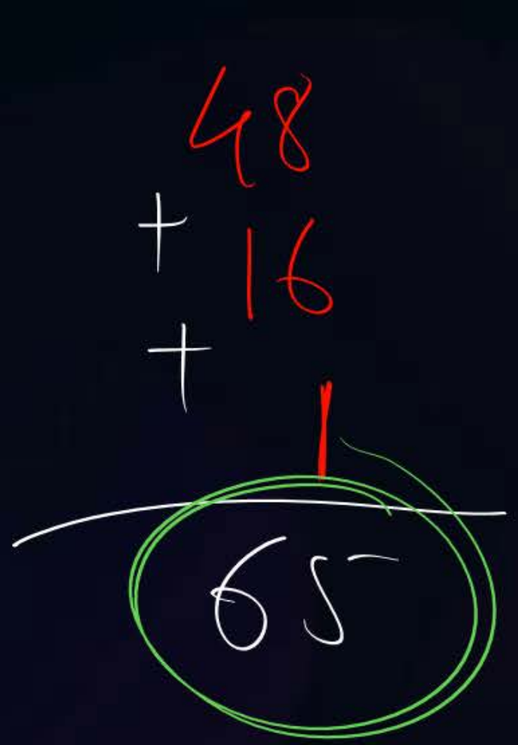
#Q. A shelf consist of 40 socks. 40% of these are black and remaining are white. How many minimum number of socks are to taken out from the shelf randomly (blindly), so that we get atleast two white socks?

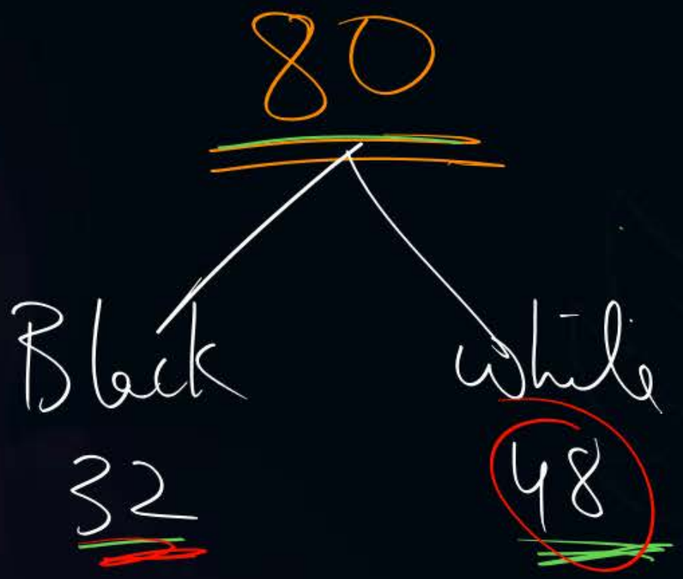
16 + 2 = 18

40 socks

[MCQ]

#Q. A box consist of 40 pairs of shoes of equal size. 40% of these are black and remaining are white. How many minimum number of shoes are to taken out from the box randomly, so that we get at least a pair of black shoes?





[MCQ]

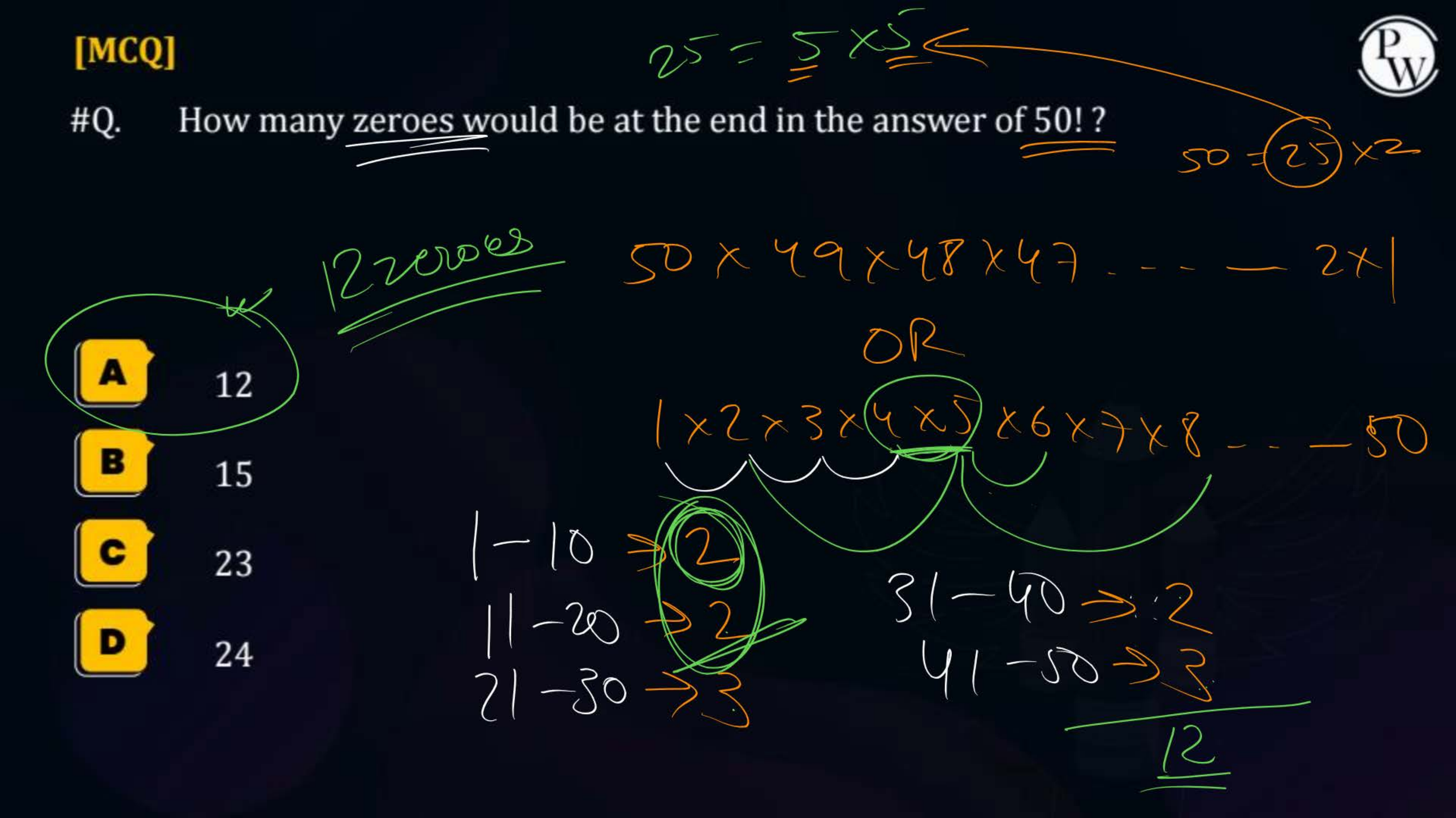
#Q. How many zeroes would be at the end in the answer of 50! ?

A 12

B 15

C 23

D 24



$\frac{50}{5} \rightarrow 10$

$\frac{10}{5} \rightarrow 2$

$\frac{2}{5} \rightarrow 0$

12

[MCQ]

#Q. If 50! can be denoted maximum 7^x, then the value of x is?

A 9

B 8

C 7

D None of these

$\frac{50}{7} \Rightarrow 7$

$\frac{7}{7} \Rightarrow 1$

$\frac{1}{7} \Rightarrow 0$

8

$50 \rightarrow 7^8$

$1 - 10 \Rightarrow 1$

$11 - 20 \Rightarrow 1$

$21 - 30 \Rightarrow 2$

$31 - 40 \Rightarrow 1$

$41 - 50 \Rightarrow 3$

8

[MCQ]

#Q. Find the number of zeroes in following multiplication:

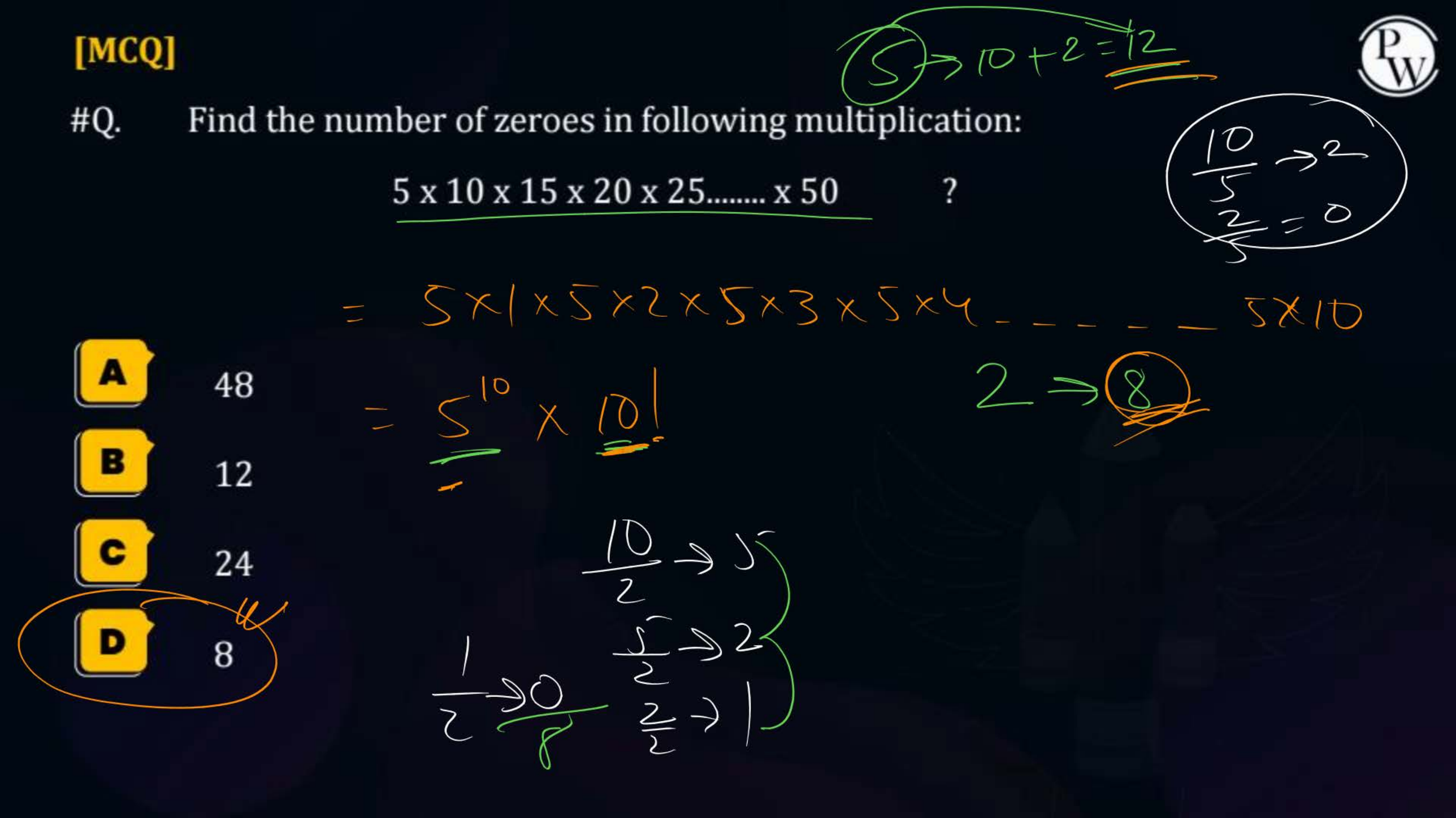
$5 \times 10 \times 15 \times 20 \times 25 \ldots\ldots \times 50$?

A 48

B 12

C 24

D 8



$70! \Rightarrow 4^{\times 33}$

2×2

$\frac{70}{2} \rightarrow 35$

$\frac{35}{2} \rightarrow 17$

$\frac{17}{2} \rightarrow 8$

$\frac{8}{2} \rightarrow 4$

$\frac{4}{2} \rightarrow 2$

$\frac{2}{2} \rightarrow 1$

$\frac{1}{2} \rightarrow 0$

67

$2\overline{)67}\ 33$

66

1

$70! \Rightarrow 32$

$\frac{2 \times 2 \times 3}{33} \quad \frac{}{32}$

$\frac{70}{3} \Rightarrow 23$

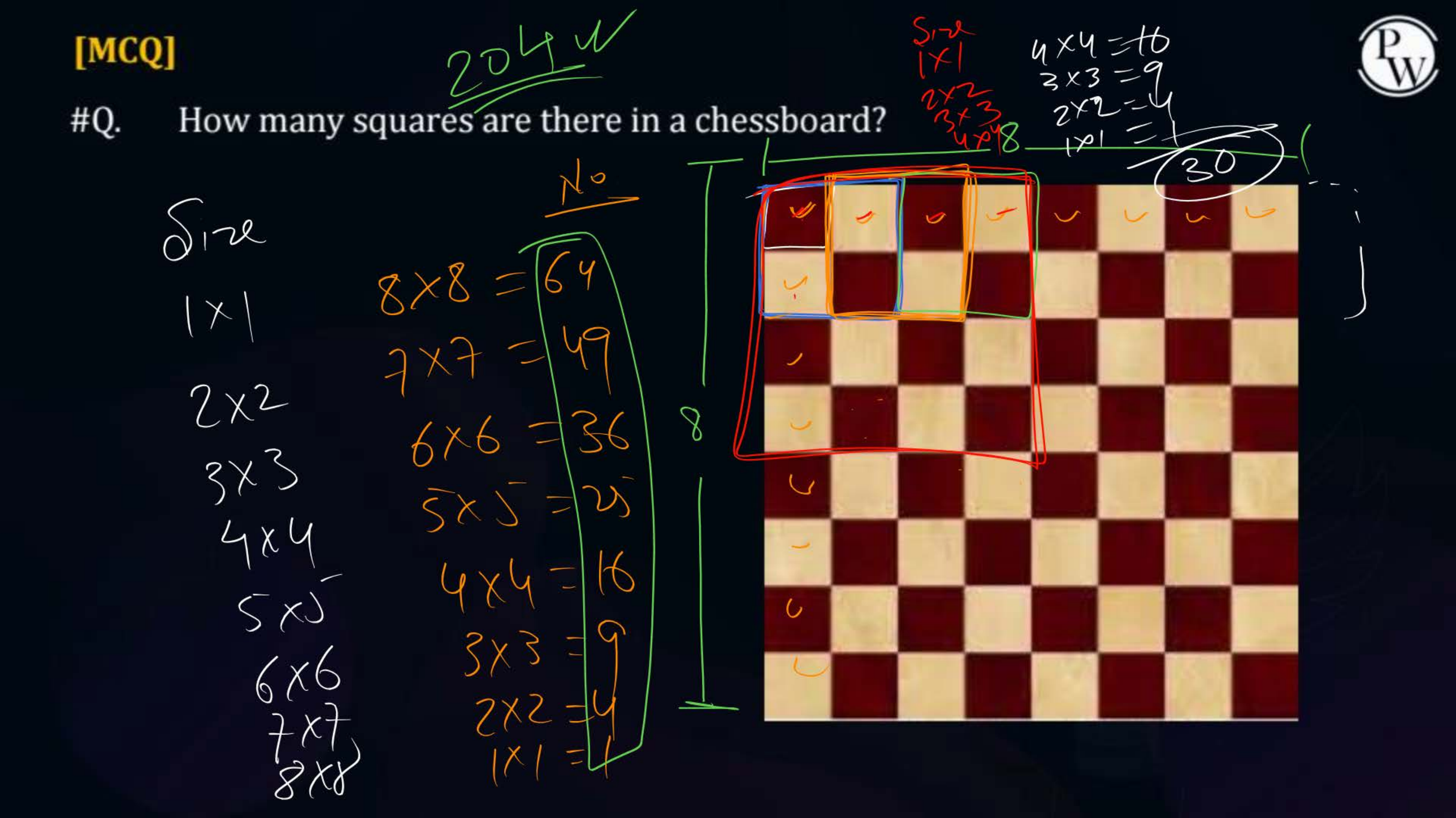
$\frac{23}{3} \Rightarrow 7$

$\frac{7}{3} \Rightarrow 2$

$\frac{2}{3} \Rightarrow 0$

[MCQ]

#Q. How many squares are there in a chessboard?



[MCQ]

#Q. What would be the unit digit in the answer of: $2362^{911} + 1418^{216}$

$8 + 6$

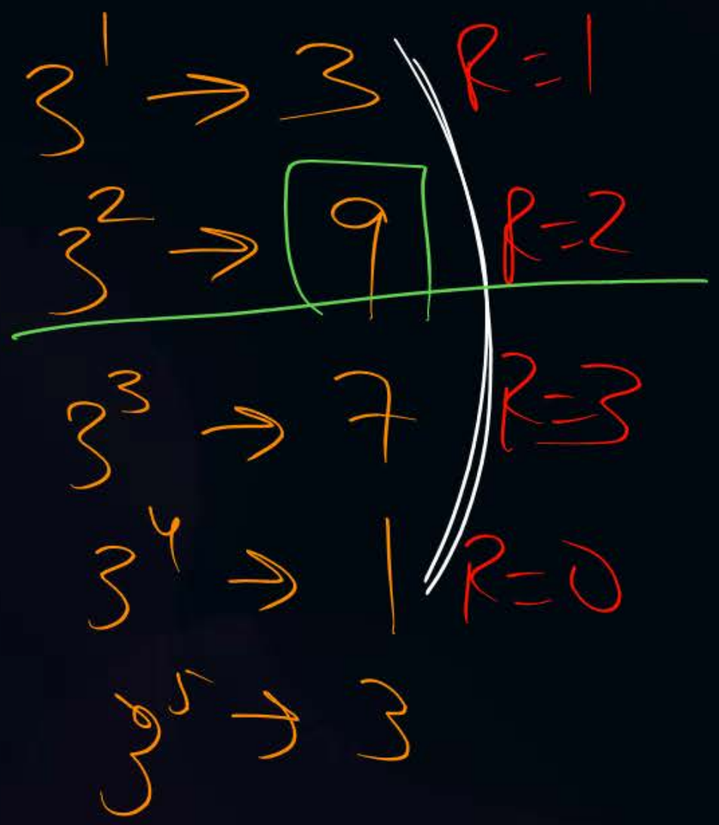
$= 14$

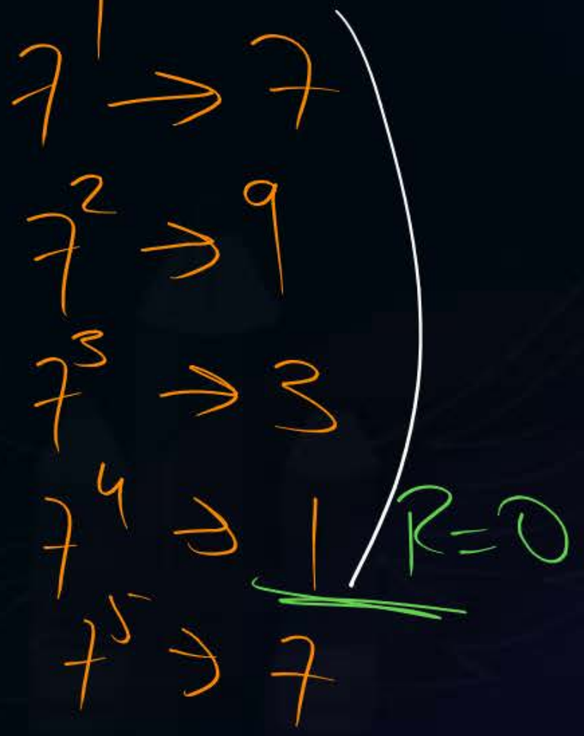
[MCQ]

#Q. What would be the unit digit in the answer of: $2913^{1902} + 1647^{460}$?

$9 + 1 = 10$

- A 0
- B 2
- C 3
- D 5



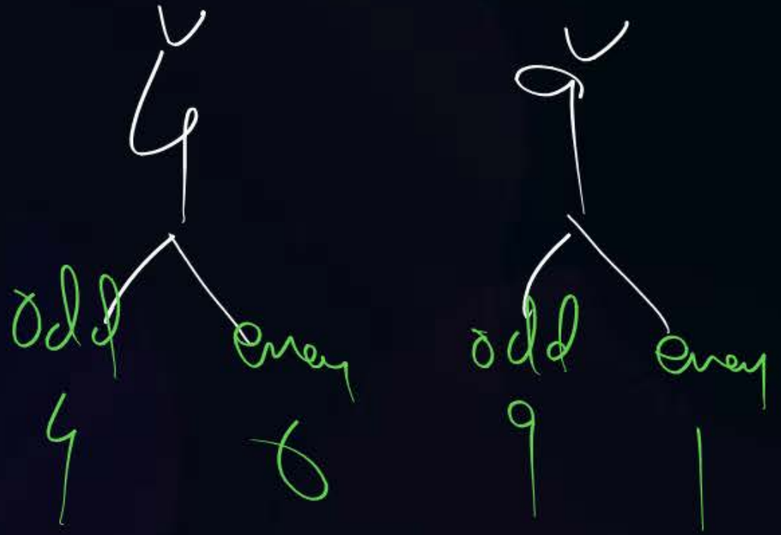


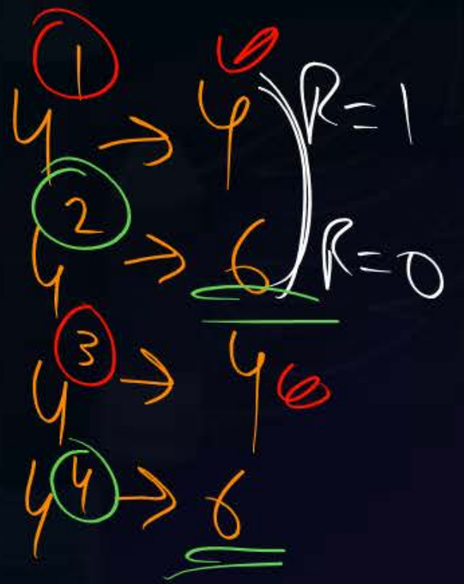
[MCQ]

#Q. What would be the unit digit in the answer of: $9326^{397} + 1475^{363}$

$6 + 5$

$\Rightarrow$ Same $= 11$





[MCQ]

#Q. What is the greatest number of 4 digits that when divided by any of the numbers 6, 9, 12, 17 leaves a remainder of 1 ?

6, 9, 12, 17 ⇒ LCM 612

A 9997

B 9793

C 9895

D 9487

612 × 15 = 9180

612 × 16 = 9792

9792 + 1 = 9793

612 | 612 × 1

1224 | 612 × 2

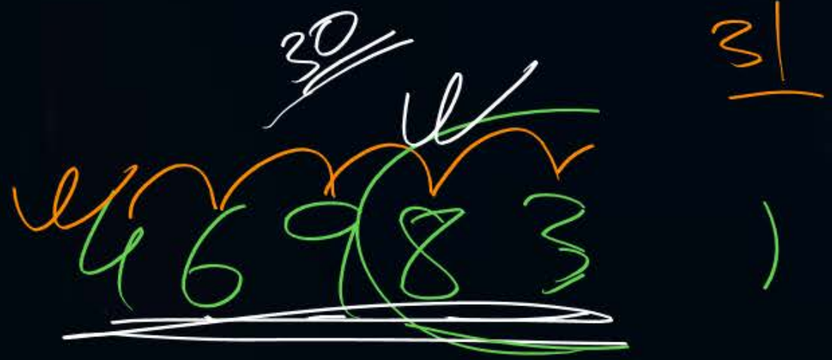
1836 | 612 × 3

2 | 6, 9, 12, 17

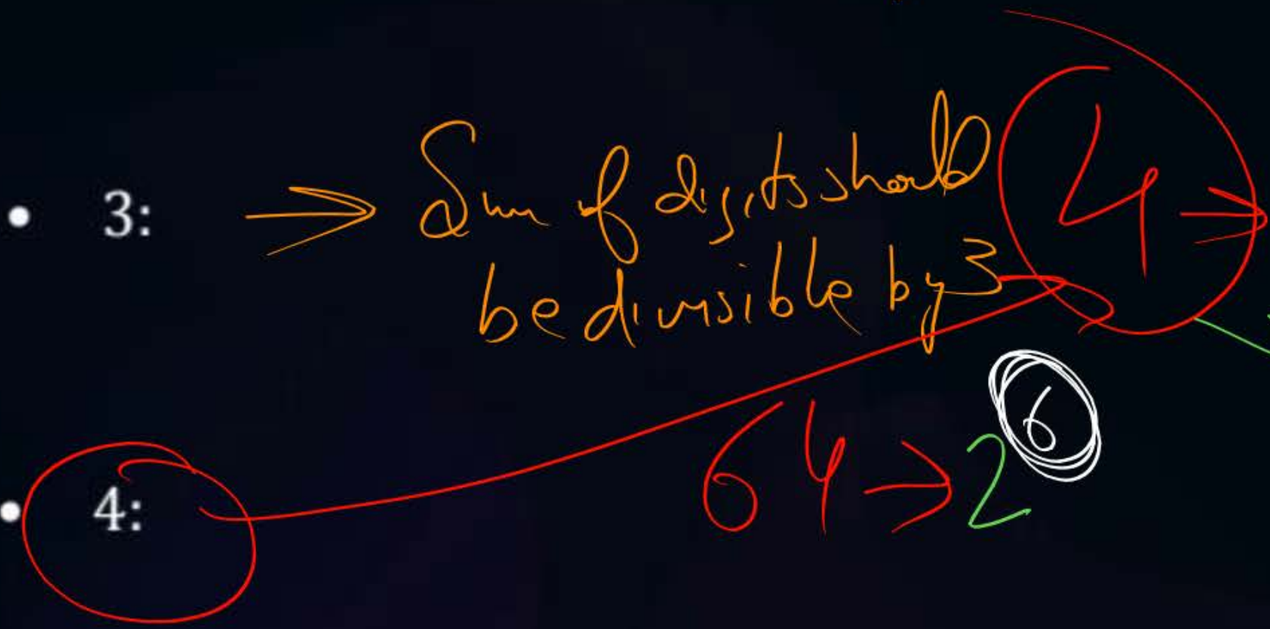
3 | 3, 9, 6, 17

1, 3, 2, 17

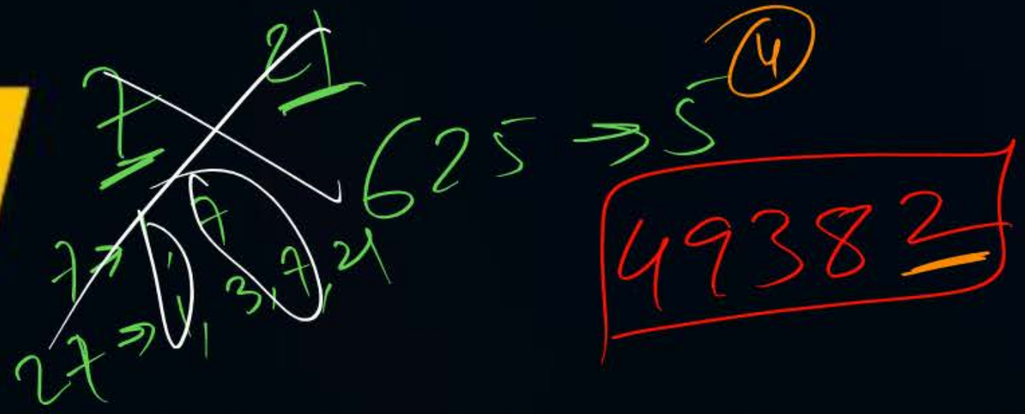
Divisibility Rules:



- 2: → Unit digit should be 0 OR Multiple of 2
- 3: → Sum of digits should be divisible by 3
- 4: → last two digit of a given no. should be 00 OR Multiple of 4



Divisibility Rules:



- 5: last digit should be 0 OR multiples of 5
- 6: ⇒ 2 × 3
- 7:

25 ⇒ ②

last two digit 00 OR multiples of 25

48637 9

48637 ~ 18

= 48619

484 ~ 6

= 478

47 ~ 16

= 3 (1) 3~2 = 1

4861 ~ 18

= 4843

Twin Prime & Co-Prime Numbers:

9

3, 5 ✓

5, 7

17, 19

11, 13

7

9 → 1, 3, 9

32 → 1, 2, 4, 8, 16, 32

(1) Any two consecutive Numbers

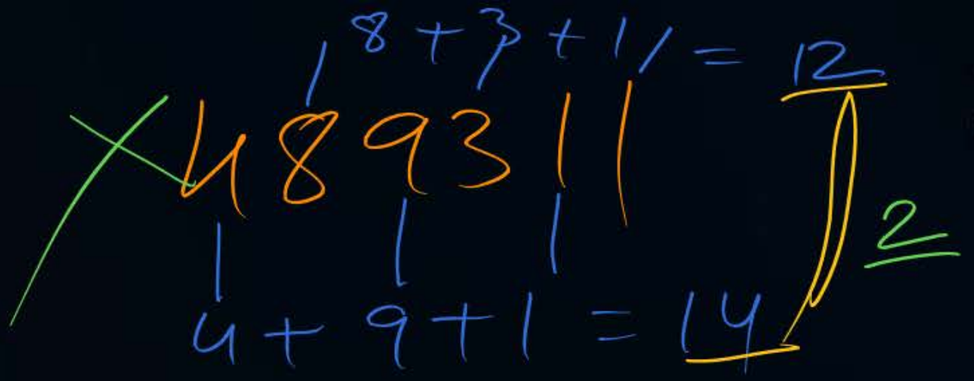
(2) Any two distinct prime Numbers

Divisibility Rules:

- 8: → 000 or Multiple of 8
- 9: → Sum of digits should be divisible by 9
- 10: → last digit 0

100 → 10 (2)

Divisibility Rules:



- 11: Difference between Sum of odd place digits and even place digit should be 0 or divisible by 11.
- 12: = 4×3
- 14: = 2×7

Divisibility Rules:

- 15: → 3×5
- 16: → 2^4 0000 or divisible by 16
- 18: → 2×9

Divisibility Rules:

- 20: → 4×5
- 40: → 8×5
- 80: → 5×16

[MCQ]

#Q. Which largest number of 5 digits is divisible by 99 ?

Assignment

A. 99999

B. 99981

C. 99909

D. 99990

[MCQ]

#Q. Find the least perfect cube divisible by 2, 3, 4 and 6.

Assignment

A 216

B 1728

C 512

D 360

[MCQ]

#Q. How many natural numbers up to 100 are divisible by both 2 and 3?

Assignment

A 13

B 14

C 17

D 16

[MCQ]

#Q. Find the largest four digit number that is exactly divisible by 88.

Assignment

A 9844

B 9768

C 8894

D 9944

Numbers

Counting Theory?

2 mins Summary

Topic ~~Counting Theory~~ Numbers

THANK - YOU