GATE

CRASH COURSE

ALL BRANCH

Subject

General Aptitude

Numbers (Lec 01)

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Topics *to be covered*

1. Number Calculations
2. Unit Digit
3. Divisibility Rule
4. Questionnaire

Number System

Logical

Question

Evaluate:

$$\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1-\frac{1}{2}}}}$$

$$= \cfrac{1}{1+\cfrac{1}{1+\frac{1}{2}}}$$

$$= \cfrac{1}{1+\cfrac{1}{\frac{3}{2}}}$$

$$= \cfrac{1}{1+\frac{2}{3}}$$

$$= \frac{1}{\frac{3+2}{3}}$$

$$= \frac{1}{\frac{5}{3}}$$

$$= \frac{3}{5}$$

(A) $\frac{4}{5}$

(B) $\frac{3}{4}$

(C) $\frac{3}{5}$

(D) None

$1 \div \frac{1}{2}$

$1 \times \frac{2}{1}$

Question

What would the unit digit in the answer of given expression:

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

$1! = 1$

$2! = 2$

$3! = 6$

$4! = 24$

$5! = 120$

$120 \times 6 = 720$

$720 \times 7 = 5040$

$1 + 3 = 13$

(A) 0

(B) 3

(C) 5

(D) 9

Question

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

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

A 2

B 0

C 1

D Indeterminable

R = 0

3) Ans (

4

R = 1

R = ?

Question

5 apples, 6 oranges and 7 bananas cost ₹ 250, while 6 apples, 4 oranges and 2 bananas cost ₹180. The cost (in ₹) of 4 oranges and 8 bananas is

(A) 210

(B) 150

(C) 180

(D) Indeterminable

$(5A + 6O + 7B = 250) \times 6$

$(6A + 4O + 2B = 180) \times 5$

$30A + 360 + 42B = 1500$

$-30A - 200 - 10B = -900$

$160 + 32B = 600$ $\div 4$

$40 + 8B = 150$

Question

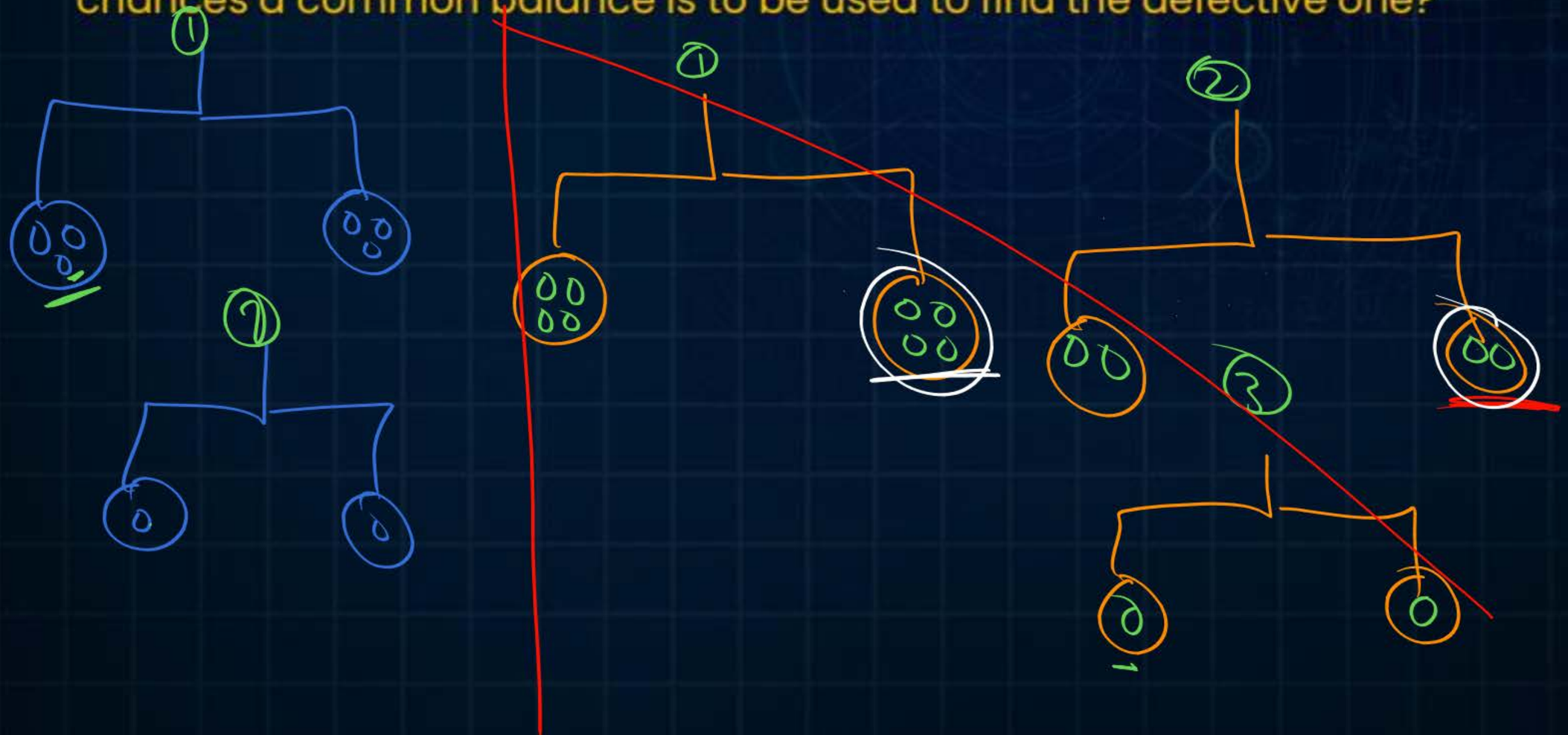
Case 1 =
Case 2 ≠

2 chance

8

6 balls

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?



Question

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?

(blindfolded)

6 balls

Question

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 at least two white socks?

Question

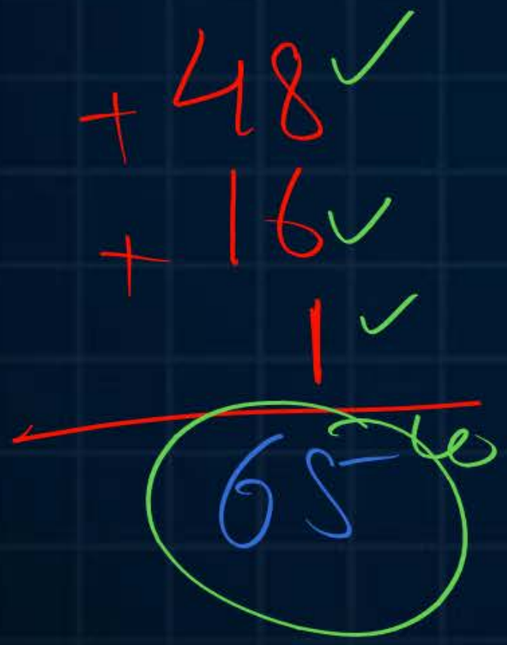
A box consist of 40 pairs of shoes of equal size. 40% of these are black and remaining are white. How many minimum number of shoes are to taken out from the box randomly, so that we get at least a pair of black shoes?

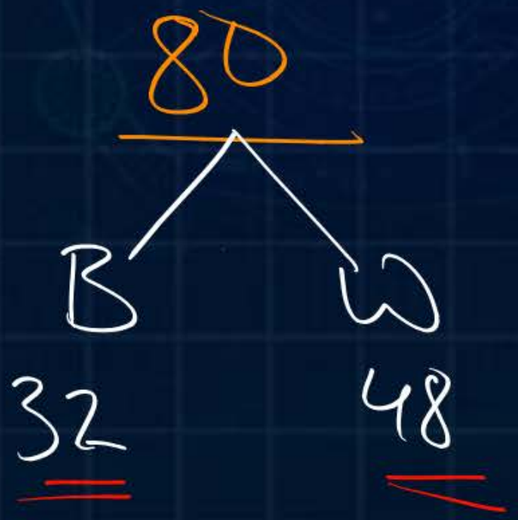
A. 50

B. 65

C. 52

D. 34





Question

12 zeroes

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

$1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \ldots\ldots 50$

$50 \times 49 \times 48 \ldots\ldots 1$

A 12

B 15

C 23

D 24

1 – 10 → 2

11 – 20 → 2

21 – 30 → 3

31 – 40 → 2

41 – 50 → 3

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

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

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

12

Question

If 123! can be denoted maximum 7^x, then the value of x is?

$\frac{123}{7} \Rightarrow 17$

$\frac{17}{7} \Rightarrow 2$

$\frac{2}{7} \Rightarrow 0$

19

$123! \Rightarrow 7^{19}$

A 17

B 16

C 22

D 19

Question

Find the number of zeroes in following multiplication: 5 x 10 x 15 x 20 x 25..... x 50

A 12

B 8

C 48

D 24

Question

Which of the following correspond to x, y and z, respectively in the following square where sum of elements in each column, row, and diagonal is the same?

16	11	x
17	y	13
z	19	14

A (17, 15, 13)

B (18, 15, 12)

C (12, 15, 17)

D (17, 16, 14)

Question

4 6

If the difference between the two-digit numbers made from digits a and b is 27, the difference between a and b is ?

'a' 'b'

$[10a+b]-[10b+a]=27$

A 2

B 4

C 1

D 3

$\Rightarrow 10a+b-10b-a=27$

$\Rightarrow 9a-9b=27$

$9(a-b)=27$

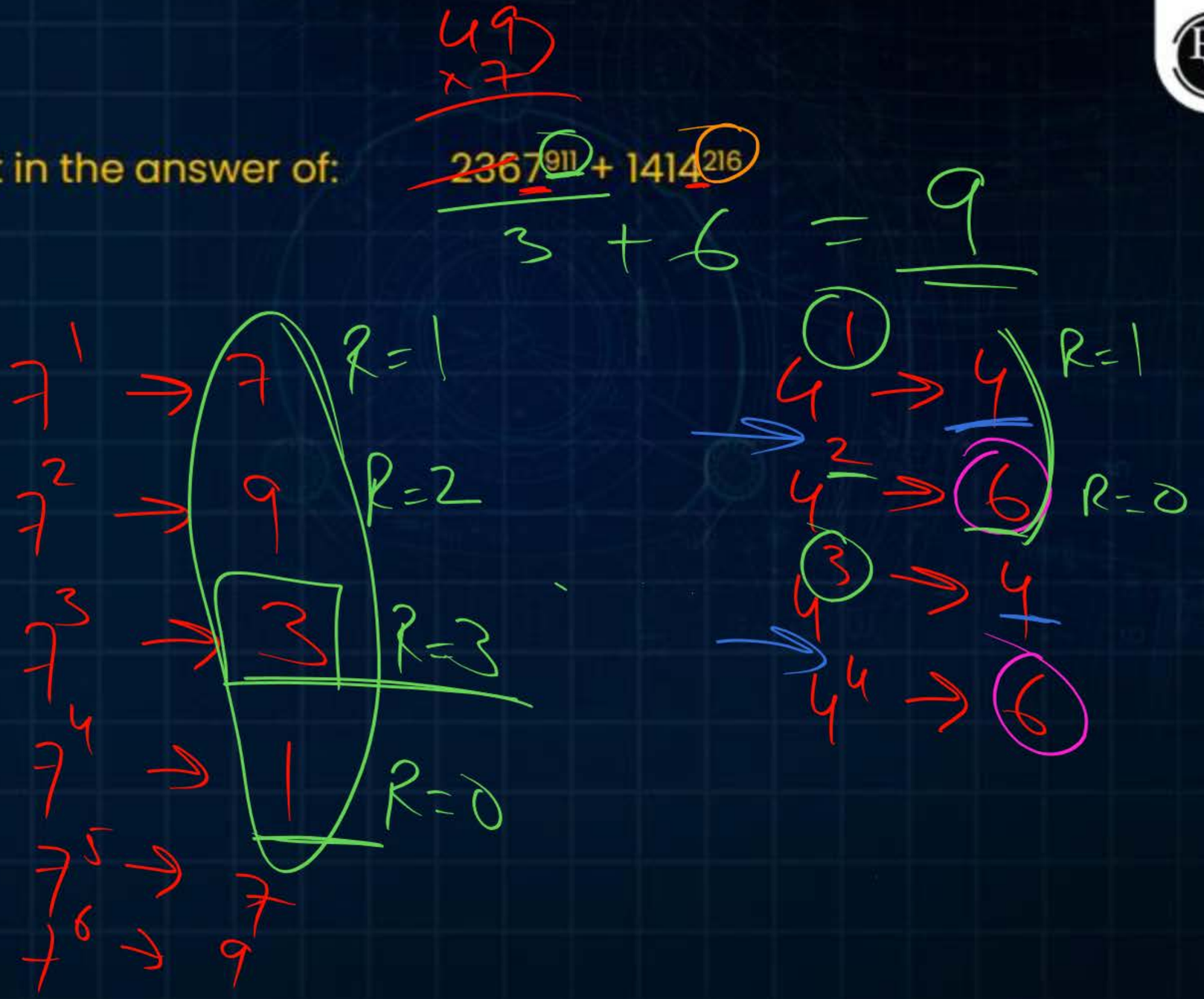
$\therefore a-b=\frac{27}{9}=3$

46

$4\times10+6+1=46$

Question

What would be the unit digit in the answer of: $2367^{911} + 1414^{216}$



Question

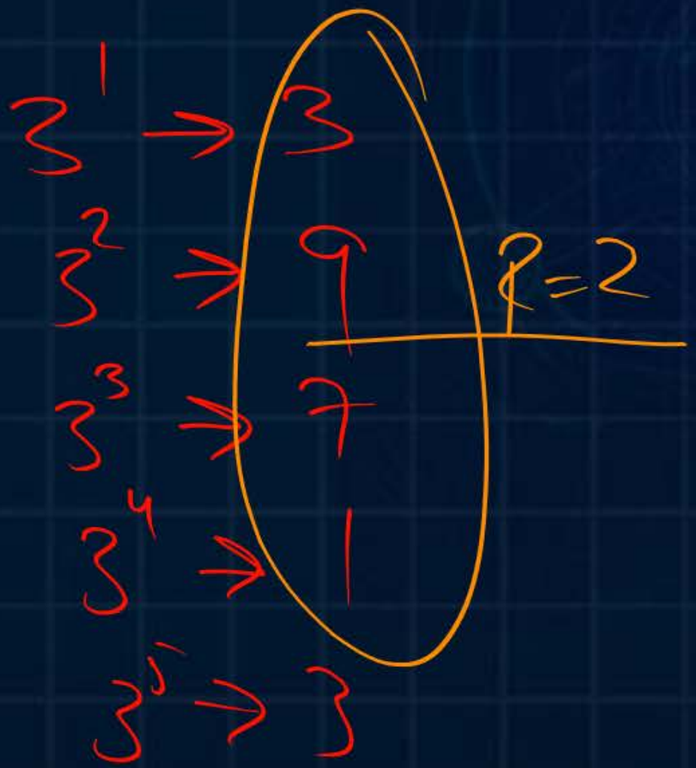
What would be the unit digit in the answer of: $2913^{1902} + 1647^{460}$?

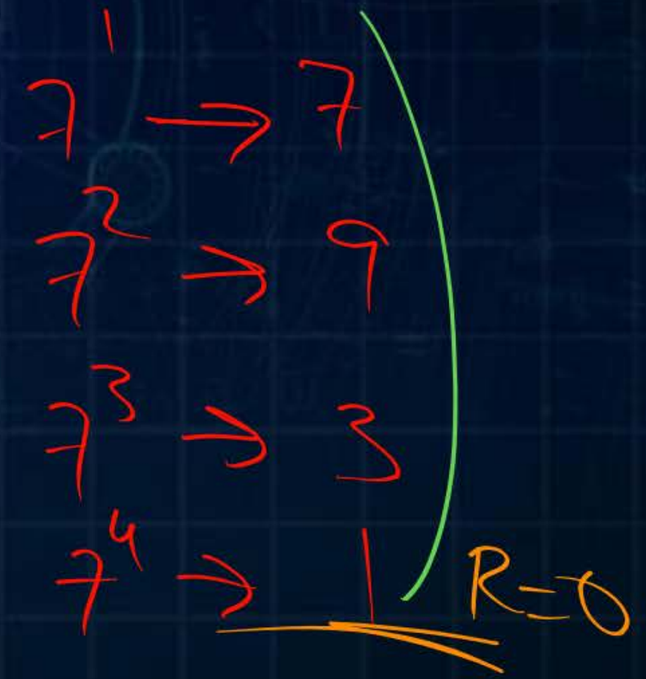
A 0

B 2

C 3

D 5



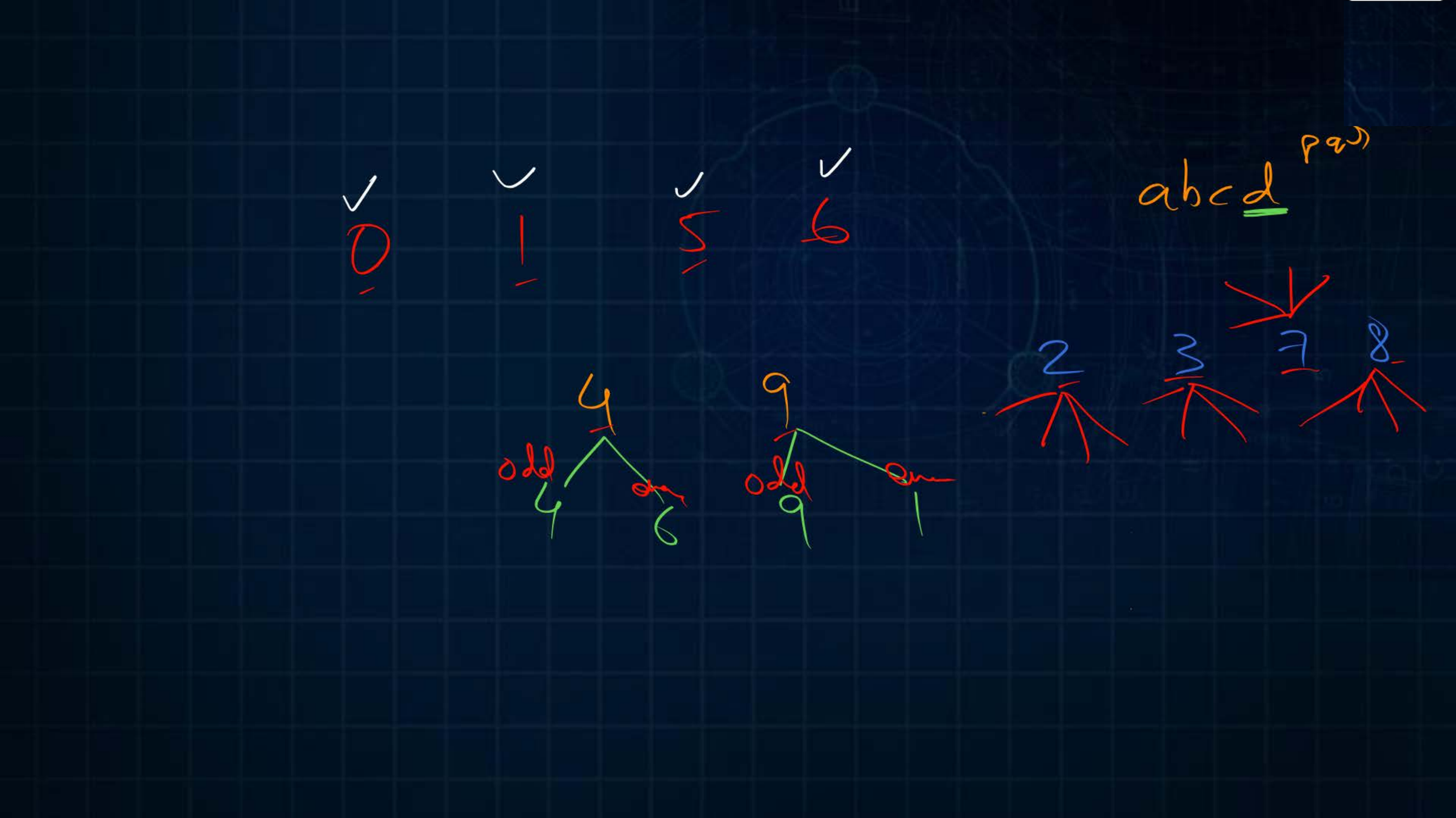


Question

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

$6 + 5$

$= 11$


0
1
5
6
abcd
pqj
4
odd
4
6
9
odd
9
1
2
3
7
8

Divisibility Rule:

× 6 8 2 9 1 = 26

A 2

0 OR Multiple of 2

2, 4, 6, 8

B 3

Sum of digits should be divisible by 3.

$8 = 2^3$

C 4

$= 2^2$

00 OR Multiple of 4

000 OR Multiple of 8

D 5

0 OR Multiple of 5

Divisibility Rule:

A 6 = 2 × 3

B 7

C 8 → 2^3

D 9 → Sum of digit.

$125 = 5^3$

48965

000
OR
Multiple of 125

000 OR Multiple of 8

① Any two consecutive

② Any two ~~distinct~~ Prime No.

Co-prime

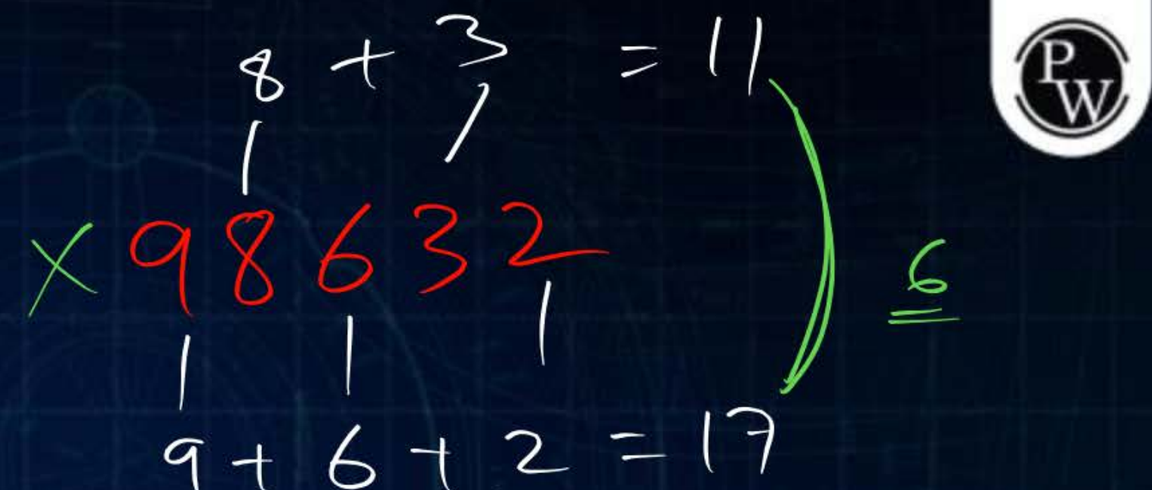
27 → 1, 3, 9, 27

4 → 1, 2, 4

16 → 1, 2, 4, 8, 16

28 → 1, 2, 4, 7, 14, 28

Divisibility Rule:



A 10

B 11

C 12

D 14

difference between Sum of odd place digits & even place digits should be 0 or Multiple of 11

$= 4 \times 3$

$= 7 \times 2$

Divisibility Rule:

A 15 → 3×5

B 16 → 2^4 → 0000 OR Multiple of 16

C 18 → 2×9

D 20, → 4×5 40, → 5×8 80, → 16×5 etc....

Question

Which largest number of 5 digits is divisible by 99 ?

A 99990

B 99981

C 99909

D 99999

Question

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

A 216

B 512

C 1728

D 360

Question (PYQ GATE Exam 2024 CE/CH)

In the 4 × 4 array shown below, each cell of the first three columns has either a cross (X) or a number, as per the given rule.

Rule: The number in a cell represents the count of crosses around its immediate neighboring cells (left, right, top, bottom, diagonals).

As per this rule, the maximum number of crosses possible in the empty column is

1	1	2	X
2	X	3	
2	X	4	
1	2	X	X

A 3

B 1

C 0

D 2

Question (PYQ GATE Exam 2019 CS)

Ten friends planned to share equally the cost of buying a gift for their teacher. When two of them decided not to contribute, each of the other friends had to pay Rs. 150 more. The cost of the gift was Rs_____

$T = x \Rightarrow 6000$

$\frac{x}{8} - \frac{x}{10} = 150$

A 12000

B 666

C 6000

D 3000

$\frac{x}{10}$ $\frac{x}{8}$

Summary

Numbers


Thank
THANK
Keep Hustling!