

# GATE-2023 CRASH COURSE

GENERAL APTITUDE

## NUMBER SERIES

Lecture No.19

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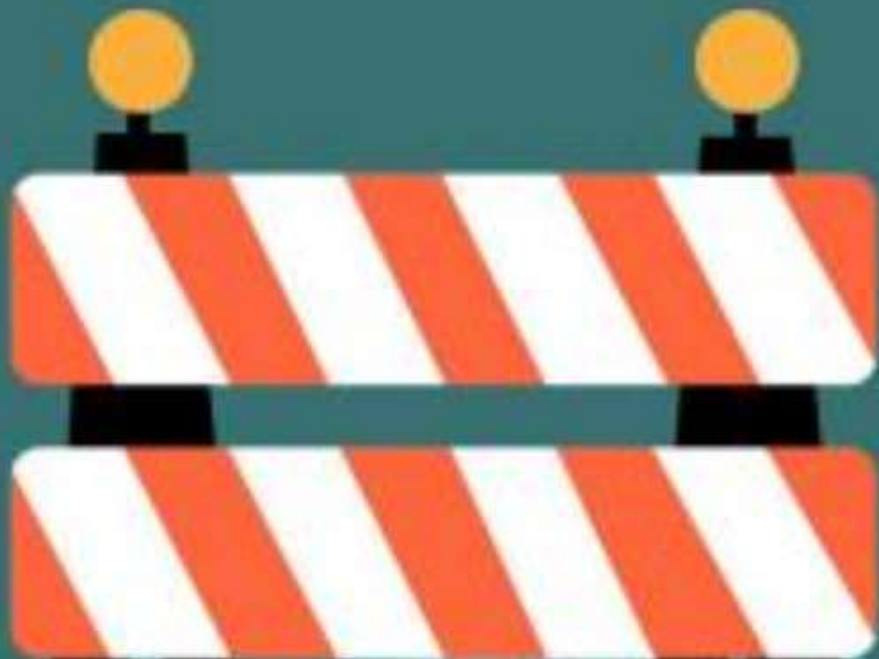




Numbers Basics



Various Series Solutions



# Basics



$$\begin{array}{r} 4 \\ 4654 \end{array} + \begin{array}{r} 8 \\ 6448 \end{array}$$

$$\begin{array}{r} 2^4 \\ 64 \\ \times 8 \\ \hline 2 \\ \times 8 \\ \hline 6 \end{array}$$

$$\begin{array}{l} 4^1 = 4 \quad R=1 \\ 4^2 = 6 \quad R=0 \\ 4^3 = 4 \end{array}$$

$$\begin{array}{l} 8^1 = 8 \quad R=1 \\ 8^2 = 4 \quad R=2 \\ 8^3 = 2 \quad R=3 \\ 8^4 = 6 \quad R=0 \\ 8^5 = 8 \end{array}$$



# Basics



$$\begin{array}{r}
 \boxed{4632} + \boxed{7463} \\
 \text{902} \quad \text{616} \\
 \hline
 4 + 1
 \end{array}$$

15

$3^1 = 3$	$R=1$	$2^1 = 2$	$R=1$
$3^2 = 9$	$R=3$	$2^2 = 4$	$R=2$
$3^3 = 7$	$R=3$	$2^3 = 8$	$R=3$
$3^4 = 1$	$R=0$	$2^4 = 6$	$R=0$
$3^5 = 3$		$2^5 = 2$	

# Basics



$$\boxed{464\underline{6}}^{219} + \boxed{743\underline{5}}^{206}$$

0, 1, 5, 6

6

+

5

2 3 7 8

11

odd 4 even 6 odd 9 even 1

$$3^{62} \div 5$$

$$\text{Remainder} = 2$$

$$3^1 = 3 \div 5 \rightarrow R = 3$$

$$3^2 = 9 \div 5 \rightarrow R = 4$$

$$3^3 = 27 \div 5 \rightarrow R = 2$$

$$3^4 = 81 \div 5 \rightarrow R = 1$$

$$3^5 = 243 \div 5 \rightarrow R = 3$$

2

3

25 = 5<sup>2</sup>

68394|17

0 OR Multiple of 5

00 OR Multiple of 25







# Brainstorming 1

2, 3, 5, 7, 11, 13, 17

**A** 9

**B** 15

**C** 13 ✓

**D** 14

# Brainstorming 2

21, 32, 45, 60, 77, 96, 117, 140

Handwritten red arcs above the numbers indicate differences: 11 (21 to 32), 13 (32 to 45), 15 (45 to 60), 17 (60 to 77), 19 (77 to 96), 21 (96 to 117), and 23 (117 to 140).

**A** 75

**B** 73

**C** 74

**D** 77

# Brainstorming 3

1, 2, 5, 10, 17, 26, 37, \_\_\_\_\_

Handwritten annotations above the sequence: 1, 3, 5, 7, 9, 11, 13 with red arcs connecting the terms to their differences.

**A** 51

**B** 50

**C** 49

**D** 65

$$\begin{array}{r} 37 \\ + 13 \\ \hline 50 \end{array}$$



# Brainstorming 4

43, 44, 48, 57, 73, \_\_\_\_

**A** 98

**B** 97

**C** 87

**D** 99

$$\begin{array}{r} 73 \\ + 25 \\ \hline 98 \end{array}$$

# Brainstorming 5

13, 17, 21, 25, \_\_\_\_\_

*Handwritten red annotations: Brackets above the numbers 13, 17, 21, and 25, each labeled with a '4'. A bracket above the blank space is labeled '+4'.*

**A** 28

**B** 31

**C** 27

**D** 29

# Brainstorming 6

$\times 1$   $\times 2$   $\times 3$   $\times 4$   $\times 5$   
 2, 2, 4, 12, 48, \_\_\_\_\_

- A** 96
- B** 250
- C** 240
- D** 230



# Brainstorming 7

1, 2, 10, 37, \_\_\_\_\_

*Handwritten red numbers above the sequence: 1, 8, 27, 64*

**A** 101

**B** 100

**C** 102

**D** 103

$$\begin{array}{r}
 37 \\
 64 \\
 \hline
 101
 \end{array}$$

# Brainstorming 8

391, 204, \_\_\_\_, 40, 15, 6

**A** 96

**B** 112

**C** 89

**D** 100

$$2 \times 3 = 6$$

$$3 \times 5 = 15$$

$$5 \times 8 = 40$$

$$8 \times 12 = 96$$

$$12 \times 17$$

$$= 204$$

$$\underline{17 \times 23}$$

# Brainstorming 9

979, 330, \_\_\_\_, 40, 15, 6

**A** 96

**B** 113

**C** 89

**D** 144

$$6 \times 3 - 3 = 15$$

$$15 \times 3 - 5 = 40$$

$$40 \times 3 - 7 = 113$$

$$113 \times 3 - 9 = 330$$

$$330 \times 3 - 11 = 979$$



# Brainstorming 10

10, 12, 16, 24, 40, 72, 136, \_\_\_\_

Handwritten red numbers above the sequence: 2, 4, 8, 16, 32, 64, 128. Brackets connect these numbers to the differences between terms: 12-10=2, 16-12=4, 24-16=8, 40-24=16, 72-40=32, 136-72=64.

**A** 272

**B** 382

**C** 264

**D** 292

Handwritten red calculation:

$$\begin{array}{r} 136 \\ + 128 \\ \hline 264 \end{array}$$

