IFAS CSIR NET

MISSING SERIES

Power Cycle:

What is the last digit of $(2\underline{13})^{257}$?

	Last digit	Rem
3^1	3	1
3^2	9	2
3^3	7	3
3^4	1	0

Length = 4

Cycle length = 4

$3^5 \rightarrow 3$

$3^6 \rightarrow 9$

$3^7 \rightarrow 7$

$3^8 \rightarrow 1$

$(\underline{3})^{257}$

$(10\underline{13})^{257}$

$257 = 64 \times 4 + 1$ — Rem = 1

64
4 | 257
24
17
16
1

What is the last digit of $(3)^{17}$?

$4 \overline{)17}$ (4) — 16 — 1

Remainder = 1

$(3)^{16}$

$4 \overline{)16}$ (4) — 16 — 0 — 1

$(3)^{18}$?

$4 \overline{)18}$ (4) — 16 — 2

Q. (CSIR 2019)

What is the last digit of $(2017)^{2017}$?

(a) 7 (b) 9

(c) 3 (d) 1

Cycle length = 4

$4 \overline{)2017}$ Rem = 1

2016

$7^1 \to 7$ $7^3 \to 3$ $7^5 \to 7$

$7^2 \to 9$ $7^4 \to 1$ STOP

Q (CSIR)

What is the remainder when 4^{257} is divided by 5?

$2\overline{)257}$

Rem. 1

(a) 4 (b) 6

(c) 1 (d) 7

$4^1 \rightarrow 4$

$4^2 \rightarrow 6$

$4^3 \rightarrow 4$

Cycle length: 2 Last digit: 4

$5 \overline{)16}$ (3, 15, 1)

$14, 24, 34, \ldots$

$5 \overline{)14}$ (2, 10, 4)

$36, 16, 26, \ldots$

15

4^{258} divided by 5

what should be the remainder?

(1) 4 (2) 6 (3) 1 (4) 7

Cycle Length = 2

Last digit

$4^1 \rightarrow 4$

$4^2 \rightarrow 6$

$4^3 \rightarrow 4$

Q (Gate 2017) (IIT Roorkee)

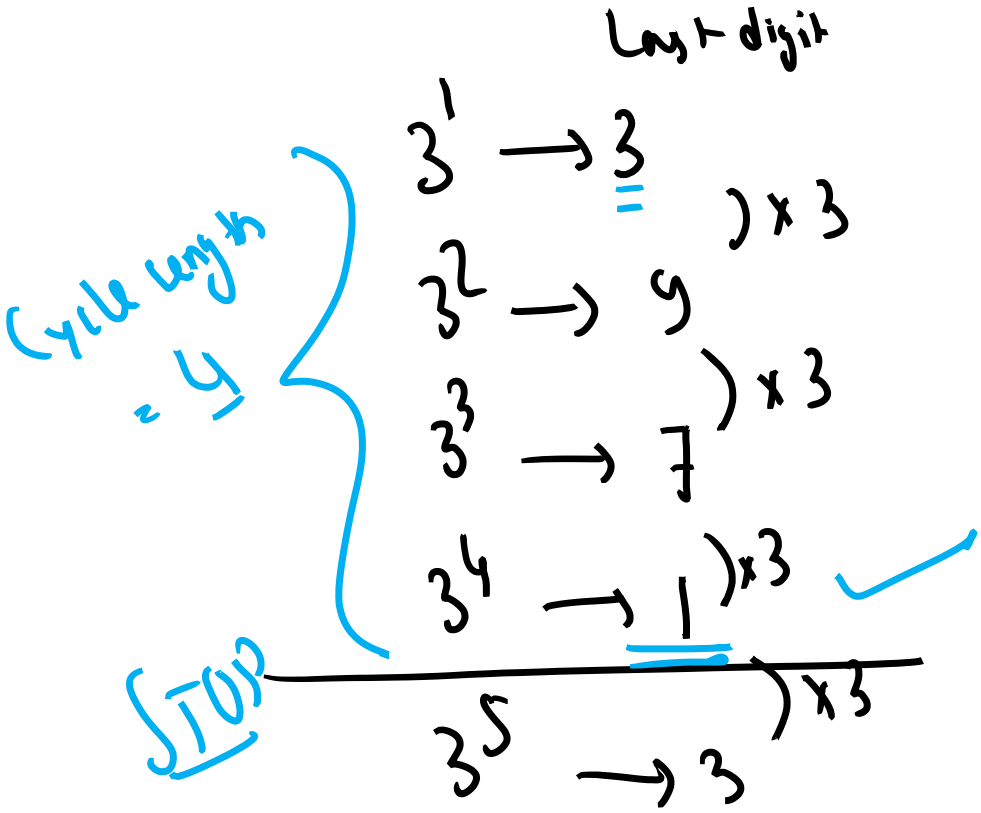
The numerals in the unit position of $211^{870} + 146^{127} \times 3^{424}$ is

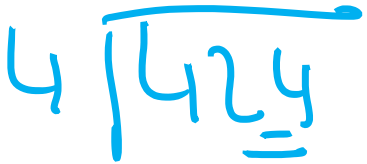
$6^1 \to 6$
$6^2 \to 6$
$6^3 \to 6$]×6

$1^1 \to 1$
$1^2 \to 1$

(a) 9 (b) 7
(c) 6 (d) 0

Last digit → $1 + 6 \times 1 = 7$


Last digit
$3^1 \rightarrow 3$
$3^2 \rightarrow 9$
$3^3 \rightarrow 7$
$3^4 \rightarrow 1$
$3^5 \rightarrow 3$
x3
Cycle length = 4
STOP


4 | 424
rem = 0

Q. (CSLR NET Dec 2019)

Which of the following 7-digit numbers can't be a perfect square:

A = 45xyz26, B = 2xyz175, C = xyz3310

(1) Only A (2) Only B

(3) Only C (4) All three

$21 \times 21 = 1$

$22 \times 22 = 4$

$22^2 =$

$6^2 = 36$

Perfect Square:

Unit's digit:	1	4	9	6	5	0
Ten's digit:	even	even	even	odd	2	0

$9^2 = 81$

$8^2 = 64$

$13^2 = 169$

$5^2 = 25$

Which is not a perfect square?

(1) 81

(2) 1032

(2) 256

(3) 100

$31 = \underline{30} + 1$

$5 \overline{)31}\ (6$, 30, 1

$0, 5$

$5 \overline{)37}\ (7$, 35, 2

$37 \cdot \underline{35} + 2$

Missing Series

CSIR NET + GATE + SET

* Number Series

* Letter Series

* Symbol Series

3, 8, 13, 18, ___

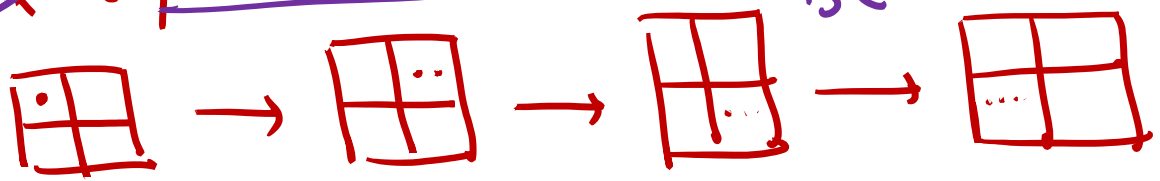
+5 +5 +5

15 23

Ex. A, D, G, ___

BC EF HI

J



Number Series

Arithmetic Series:

2, 4, 6, ___, 10

+2 +2 +2 +2

Common difference = 2

Q 6, 4, 2, 0, -2, -4

-2 -2 -2 -2 -2

Common difference $4-6=-2$

Q 1, $\frac{3}{2}$, 2, $\frac{5}{2}$, 3

+1/2 +1/2 +1/2 +1/2

What is the missing term?

$\frac{3}{2}-1=\frac{1}{2}$, $2-\frac{3}{2}=\frac{1}{2}$

$2+\frac{1}{2}=\frac{5}{2}$

$\frac{5}{2}+\frac{1}{2}=\frac{6}{2}=3$

Geometric series

2, 4, 8, 16, 32

×2 ×2 ×2

Common ratio = 2 = $\frac{\text{second term}}{\text{1st term}}$

Q.1 $6, 3, \frac{3}{2}, \frac{3}{4}, \frac{3}{8}, \frac{3}{16}$

$\div 2$ $\div 2$ $\div 2$ $\div 2$ $\div 2$

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

$180 \times 6 = 1080$

Q.2 $\frac{1}{5}, \frac{1}{30}, \frac{1}{180}, \frac{1}{1080}$

$\times \frac{1}{6}$ $\times \frac{1}{6}$ $\times \frac{1}{6}$

$\frac{\frac{1}{30}}{\frac{1}{5}} = \frac{1}{30} \times \frac{5}{1} = \frac{1}{6}$

Q. What is the next term?

4050, 2700, 1800, 1200, ____

×2/3 ×2/3

(a) 1600

(b) 800

(c) 1000

(d) 1050

2700 / 4050 = 2/3

30 2

45 3

= Common ratio

1800 / 2700 = 2/3

2 3

1200 × 2/3 = 800

400

(3) Arithmetico - Geometric Series:

First add/subtract then multiply/divide.

Q 50, 540, 5440, 54440

$(50 + 4) \times 10 = 540$

$(540 + 4) \times 10 = 5440$

$(5440 + 4) \times 10 = 54440$

(4) ~~Geometric~~ Arithmetic Series.

First multiply / divide and then add / subtract.

Q. 2, 5, 14, ___, 122

What is the missing term?

$(2 \times 3) - 1 = 5$ $(14 \times 3) - 1 = 41$

$(5 \times 3) - 1 = 14$ $(41 \times 3) - 1 = 122$

(5) Prime Series:

Q. 5, 7, 11, 13

Q. 13, 17, 19, 23, 29

(6) Power Series:

Q $\frac{16}{4^2}, \frac{25}{5^2}, \frac{36}{6^2}, \frac{49}{7^2}$

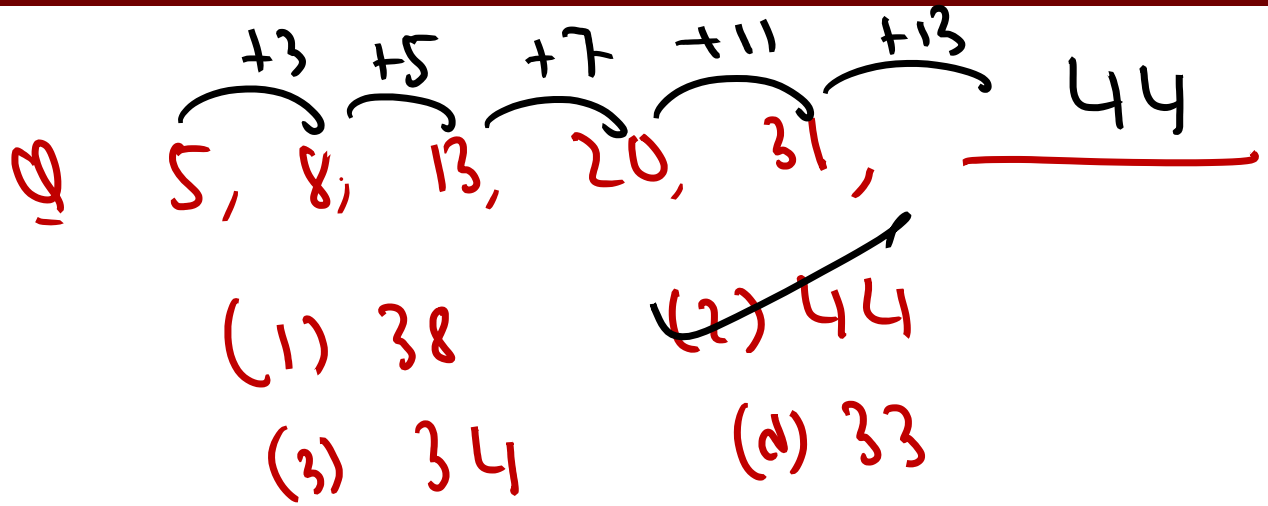
Q $\frac{27}{3^3}, \frac{64}{4^3}, \frac{125}{5^3}, \frac{216}{6^3}$

(7) Two tier Series:

Q. 2, 5, 11, ___, 32

gap → +3 +6 +9 +12

Series


+3 +5 +7 +11 +13
Q. 5, 8, 13, 20, 31, 44
(1) 38
(2) 44
(3) 34
(4) 33

8 Reversal Series:

46, 18, 001, 121, 441

64 81 100 121 144

8^2 9^2 10^2 11^2 12^2

Q 72, 46, 521, 612

what is the missing term?

27, 64, 125, 216

3^3 4^3 5^3 6^3

9 Twin Series:

Ex. 1, 3, 2, 5, 3, 7, 4, 9, ——, ——

5 11

Find the missing term?

Q What are the next two terms?

2, 4, 8, 16, 32, 64, 128

×4 ×4

2^1 2^3 2^5 2^7

$2^5 \times 2^2$

32×4

$= 128$

Q1 (SSR)

Find the missing number in the sequence:

61, 52, 63, 94, 46, 18, 81, 121

7^2 8^2 81 10^2 11^2

(1) 46 (2) 70

(3) 64 (4) 44

Q.7 (CSIR) The next number of the sequence 1, 5, 14, 30, 55, - - 91 is

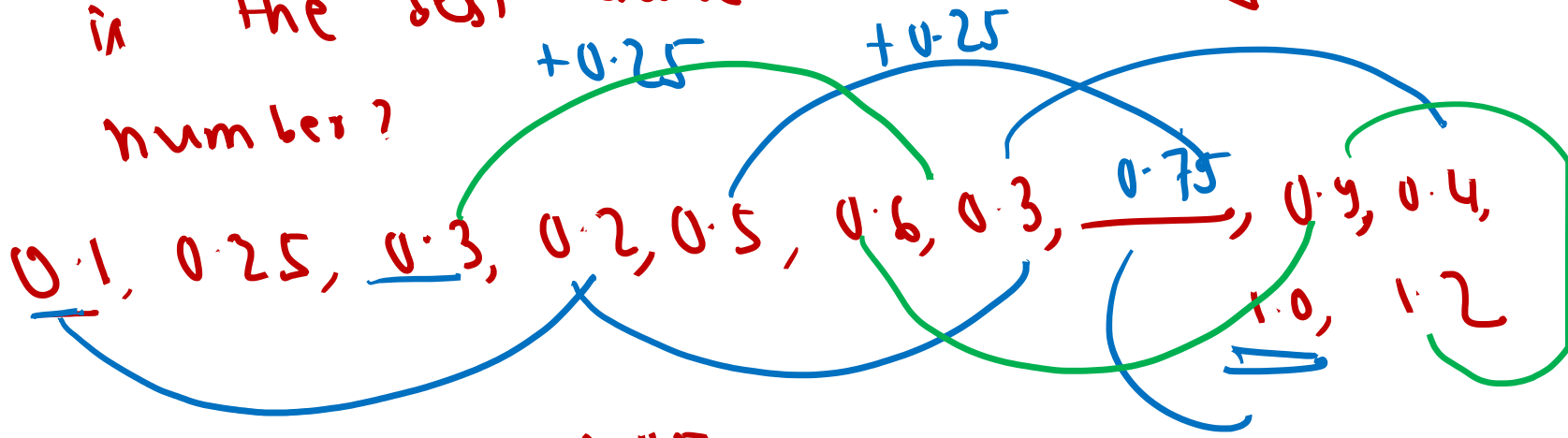
2^2 3^2 4^2 5^2 6^2

+4 +9 +16 +25 +36

(a) 85 (b) 90

(c) 91 (d) 95

Q3 (CSIR) Which of the following options is the best choice for the missing number?



(1) 1.05 (2) 0.85

(3) 0.75 (4) 0.65

Q.4 (CSIR) Every month, the price of a particular commodity falls in this order:

1024, 640, 400, 250, ×5/8 ×5/8 ×5/8 ×5/8 ——

What is the next value?

(1) 156.25

(2) approx 39

(3) 64

(4) 40

80 20 5

640

1024

128

32 8

$= \frac{5}{8}$

$250 \times \frac{5}{8}$

$= \frac{1250}{8}$

$= 156.25$

$\frac{400\ 5}{640\ 8} = \frac{5}{8}$

MISSING SERIES

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HAPPY LEARNING

THANKS