

Number Theory

Smart

$$(35)^2$$

Last digit

$$\begin{array}{r} 35 \\ 35 \\ \hline 1225 \end{array}$$

$$\begin{array}{r} 35 \\ 35 \\ \hline 5 \end{array}$$

$$\begin{array}{r} \boxed{35} \\ \times \boxed{35} \\ \hline 1225 \end{array}$$

$$\begin{array}{r} 15 \\ 15 \\ \hline 30 \end{array}$$

$$\begin{array}{r} 35 \\ 35 \\ \hline 1225 \end{array} \text{ (5)}$$

$$(375)^{25} \rightarrow \text{Last digit} \rightarrow 5$$

Last digit 5 \rightarrow So,

Any number ends with 5

$$(13775)^5 \rightarrow \text{(5)}$$

0, 1, 5, (6) \rightarrow Same rule

$$4571 \times 4571 \rightarrow \text{(1)}$$

Q9

$$6^1 = 6 \quad \checkmark$$

$$6^2 = 36 \quad \checkmark$$

$$6^3 = 216 \quad \checkmark$$

$$6^4 = 1296 \quad \checkmark$$

$$6^5 = 7776$$

$$\begin{array}{r} 36 \\ \underline{6} \end{array} \quad \begin{array}{r} 216 \\ \underline{6} \end{array}$$

$$\begin{array}{r} 1296 \\ \underline{6} \\ \hline \checkmark \end{array}$$

GORT
7 15 20

JOBS
10 15 2 19

Letter value?

- a) x 6970
- b) 10250
- c) x 8370
- d) x 18678

10	3	2	✓
13	4	6	✓
15	3	3	✓
16	2	2	✓
17	3	8	✓
17	0	7	✓
18	5	6	✓

80

7000 x 15
10500

Addition from Ri

Left to Right

63 64 65 66 67 68 69 70 71 72 73 74

10 11 9 → 11.5

$$\frac{68 + 69}{2} \rightarrow \underline{68.5}$$

(12)

3, 6, 9, 12, 15, 18, 21

4, 8, 12, 16, 18

10, 15, 20, 25, 30,

$(16)^5 \rightarrow$ Kent dist (6)
 $(25)^{40} \rightarrow$ (5)
 $(121)^{500} \rightarrow$ (1)
 $(100)^{100} \rightarrow$ (0)

X
X

order of error
 2nd
 Anjuman
 Suh as

$$(2)^2 = \begin{matrix} 2^1 = 2 \\ 2^2 = 4 \\ 2^3 = 8 \\ 1 \\ 1 \end{matrix}$$

$$\begin{array}{r} 1234 \\ \hline 2 \textcircled{4} 86 \\ \hline \end{array}$$

$$2^{22}$$

$$2^{31} = 8$$

$$2^3 = 8$$

$$2^4 = 16$$

$$2^5 = 32$$

$$2^6 = 64$$

$$2^7 = 128$$

$$2^8 = 256$$

$$2^9 = 512$$

$$2^{10} = 1024$$

$$2^{11} = 2048$$

$$(2)^{47}$$

$$2^{17} \rightarrow 2 \textcircled{16}$$

Another digit \rightarrow (12)

$$3^1 = 3$$

$$3^2 = 9$$

$$3^3 = 27$$

$$3^4 = 81$$

$$\begin{array}{r} \checkmark 3^5 = 243 \\ \checkmark 3^6 = 729 \\ \checkmark 3^7 = 2187 \\ \checkmark 3^8 = 6561 \\ \hline 3^9 = 19683 \\ 3^{10} = 59049 \end{array}$$

$$\frac{82}{4} = \textcircled{2}$$

$$3^{82} \rightarrow 3^2 \rightarrow 9$$

Another digit

$$3^5 = 3$$

$$3^{11} \rightarrow 7$$

$$3^7 = 7$$

$$3^{21}$$

$$3^1 \rightarrow 3 \checkmark$$

$$2 \rightarrow 9 \checkmark$$

$$3^3 = 27$$

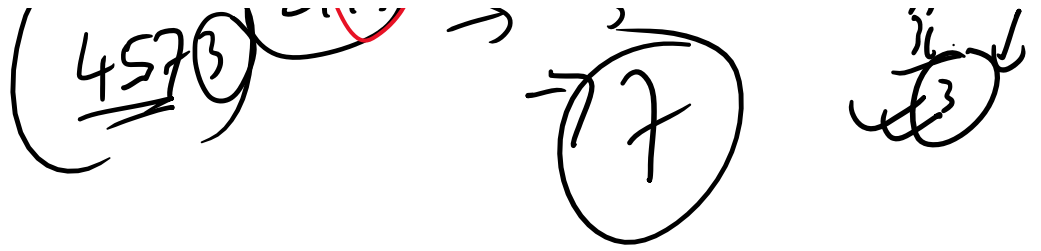
$$3^4 = 81$$

$$\begin{array}{r} 21 \\ 4 \overline{) 21} \mid 5 \\ \underline{20} \\ \textcircled{1} \checkmark \end{array}$$

$$4 \overline{) 2199} \textcircled{539}$$

$$(4573) \textcircled{299} \rightarrow 3 \rightarrow 3 \rightarrow 3$$

$$\begin{array}{r} 7 \\ 3 \overline{) 21} \\ \underline{21} \\ 0 \end{array}$$



(1233) 613745216314321431563000773216906789832163211143245

$$\frac{1}{3} \rightarrow \underline{3}$$

$$\frac{45}{4} \rightarrow \textcircled{1} \rightarrow \text{remainder}$$

अभाज

$$\underline{9062395123}$$