

NUMBER SYSTEM

(Remainder Theorem)

NO. OF QUESTIONS	MAXIMUM DAYS	CLASS DURATION
10 Questions	1 DAY	2 HOURS

factor Concept

Remainder
Theorem

[शेषफल प्रमेय]

CLASS EXERCISE

Remainder Theorem:

- **Concept of Negative remainder**

$$\begin{array}{r} 12 \\ 3 \overline{) 35} \\ \underline{3} \\ 5 \end{array}$$

Negative
remainder

$$\begin{array}{r} 1 \\ 1 \overline{) 1} \\ \underline{1} \\ 0 \end{array}$$

$$\begin{array}{r} 7 \\ 7 \overline{) 76} \\ \underline{7} \\ 0 \end{array}$$

10

$$\begin{array}{r} 76 \\ 7 \overline{) 76} \\ \underline{76} \\ 0 \end{array}$$

$$\begin{array}{r} 6 \\ 6 \overline{) 914} \\ \underline{6} \\ 3 \end{array}$$

remainder

$$\begin{array}{r} 3 \\ 3 \overline{) 35} \\ \underline{3} \\ 5 \end{array}$$

$$\begin{array}{r} 11 \\ 11 \overline{) 35} \\ \underline{11} \\ 24 \end{array}$$

$$\begin{array}{r} 10 \\ 10 \overline{) 35} \\ \underline{10} \\ 25 \end{array}$$

remainder

$$\begin{array}{r} 11 \\ 7 \overline{) 76} \\ \underline{7} \\ 6 \end{array}$$

$$\begin{array}{r} 6 \\ 7 \overline{) 6} \\ \underline{7} \\ -1 \end{array}$$

Negative
remainder

1. $R^{+} + R^{-} = D$

2. $\textcircled{R}$ Can not be equal or greater than

Divisor.

①

①①

84321 × 96231

17 ✓

$R = \underline{1} \times \underline{11} = \underline{11}$

⇒ $\frac{102}{5}$ $R=2$

② $R=0$

① ⇒ $\frac{90 + 12}{5}$ $R=2$

④ ②

⇒ $\frac{124 - 22}{5}$ $R=2$

② ①

⇒ $\frac{17 \times 6}{5}$ $R=2$



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$$\underline{879643} \times 9622 \times 8929$$

15

$$R = 13 \times 28 = \frac{364}{15} \quad \boxed{R=4}$$

OR

$$R = (-2) \times 28 = \frac{-56}{15} = \boxed{-11} \quad \boxed{+44} \quad \text{Ans}$$

$$\frac{19}{12}$$

⑦

⑧✓

⑤

①

$$-40-1$$

$$\frac{-41}{12}$$

⑨

$$\frac{89432 \times 9643 + 119}{12} =$$

⑤ +7
Ans

⑩



⑪

$$\frac{2743 \times 8923 \times 2498 - 1214}{13}$$

⑤

$$P = -5 \text{ or } +8$$

CLASS EXERCISE

Find the remainder of-

I)
$$\frac{1753 \times 1754 \times 1755}{17}$$

$$\frac{24}{17}$$

(SSC MTS 2016)

II)
$$\frac{1523 \times 1524 \times 1525 \times 1526}{16}$$

$$\frac{360}{16}$$

(SSC CHSL 2017, 2018)

III)
$$\frac{126 \times 127 \times 87 \times 12653 \times 79}{5}$$

$$R = \frac{-12}{5}$$

(UPSI)

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

IV)
$$\frac{1750 \times 1748 \times 1753}{7}$$

$$R = 0$$

(H SI, CHSL 2016)

$2! = 2$ factorial

$$2!_0 = 1 \times 2$$

$$3!_0 = 1 \times 2 \times 3$$

$$4!_0 = 1 \times 2 \times 3 \times 4$$

$$5!_0 = 1 \times 2 \times 3 \times 4 \times 5$$

find remainder of $\frac{1! + 2! + 3!}{4}$

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$$\frac{1! + 2! + 3!}{4}$$

$$R = 1 + 2 + 2 = \frac{5}{4}$$

$$R = +1$$

① ② ① ✓ ④ ✓

①! + ②! + 3! + ④! $\underbrace{1 \times 2 \times 3 \times 4}_{\text{blue underline}}$

5 ✓

$\frac{120}{5} = 5! = \boxed{1 \times 2 \times 3 \times 4 \times 5}$

$\textcircled{R=20}$

$\textcircled{4!}$

$\textcircled{R=4}$ $\textcircled{20}$

$4! = \frac{1 \times 2 \times 3 \times 4}{\text{blue circle}}$

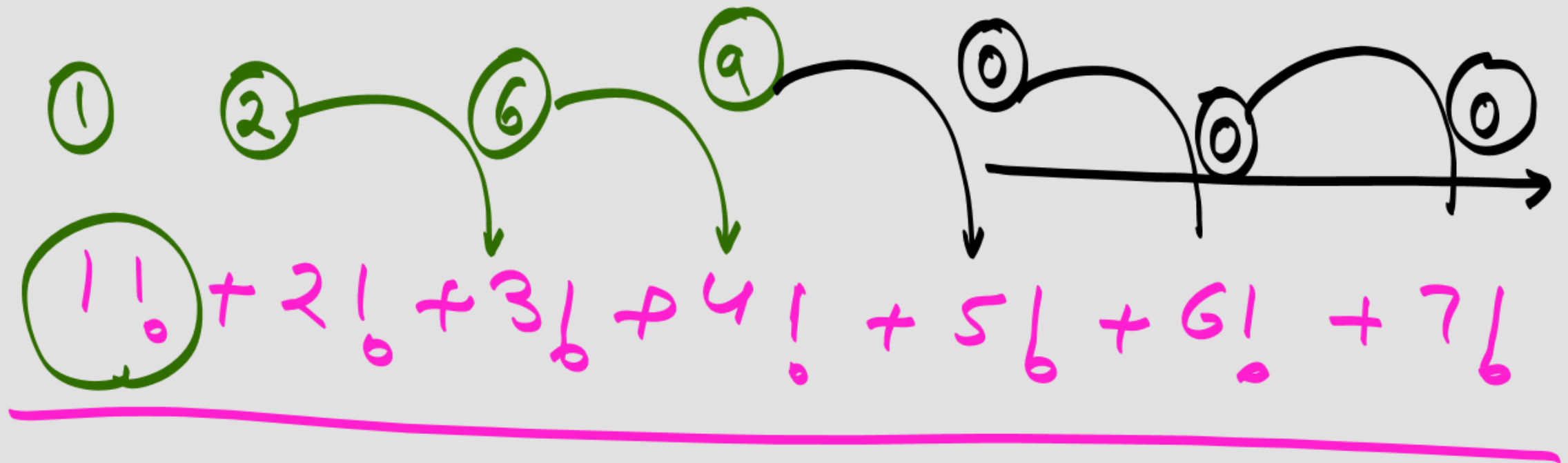
$\downarrow$

$3!$

$\downarrow$

$\textcircled{R=1}$

$\textcircled{4}$



15

$$R = 1 + 2 + \cancel{6} + \cancel{9}$$

$R = 3$ Ans

Note:- In factorial

once $(R) = 0$
 then (R) की आगे का
 factorial का $2 \times \infty$ होगा

CLASS EXERCISE

Find the Remainder of –

① ~~2~~ ~~2~~ 0 →

I)
$$\frac{1! + 2! + 3! + 4! + \dots + 1000!}{8}$$

$R = +1$

Ans

(SSC CGL Pre 2015)

II)
$$\frac{1! + 2! + 3! + 4! + \dots + 500!}{9}$$

(SSC CHSL 2014 , 2018)

III)
$$\frac{1! + 2! + 3! + 4! + \dots + 800!}{12}$$

HW
(SSC Pre 2016 , 2017 , 2018)

IV)
$$\frac{1! + 2! + 3! + 4! + \dots + 1500!}{18}$$

(SSC CGL Mains 2016)