Remainder theorem

$$\frac{(17-1)^{19}}{18} = (-1)^{19} = -1$$

Rem $\rightarrow$ 18 − 1

= 17 Ans.

$(-)^{odd} \rightarrow$ -ve

$(-)^{Even} \rightarrow$ +ve

$\frac{-16}{7}$ Rem =

$\frac{-16}{7}$ Rem → -2

Rem → 7 - 2
= 5 Ans.

$\frac{\ominus 29}{8}$ Rem → -5

R → 8 - 5 = 3 Ans.

$\frac{-25}{5}$ R = 0

$\frac{24}{18}$ R → 6

6 $\frac{\cancel{24}}{\cancel{18}} = \frac{4}{3}$ R → 1

Rem → 1 × 6 = 6 Ans.

Simplified Remainder theorem

$\frac{90}{60}$ R→30

$\frac{90}{60}$ $\frac{3}{2}$ R→1

30 | 90 | 3
60 | 2

Rem → 1×30 = 30

-ve Simpli

1. product ~
2. series ~
3. factorial ~
4. ±1 के रूप में ~
5. Totient (दुहराव)

$$\frac{63 \times 65 \times 73 \times 79}{4}$$

(+3) × (+1) × (+1) × (+3)

Rem = 9

$\frac{9}{4}$ (R = 1)

$$\frac{\overset{-1}{63} \times \overset{-3}{65} \times \overset{-3}{73} \times \overset{-1}{79}}{4} = \frac{9}{4}$$ R → 1

$$\frac{63 \times 65 \times 73 \times 79}{4}$$

+3 −3 −3 +3

$$\frac{63 \times 65 \times 73 \times 79}{4}$$

−1 +1 +1 −1

$$= +1$$

Rem = 1

− × − = +

+ × + = +

− × + = −

+ × − = −

$$\frac{126^{(+1)} \times 1176^{(+1)} \times 1928^{(-2)} \times 3542^{(+2)} \times 3753^{(-2)}}{5} \quad R \to +8$$

$\frac{8}{5}$ Rem = 3

125

$$\# \quad \frac{2449^{(-1)} \times 1876^{(+1)} \times \cancel{375}\,3 \times 123^{(-2)}}{\cancel{625}\,5} \quad R \to +6$$

$\frac{6}{5}$ $R \to 1$

Rem → 1 × 125

125 Ans.

Series

$2^n | 5^n$

$125 \rightarrow 5^3$

Last → 3

① 1 2 3 4 5 6 7 8 . . . . . 8 7 8 8 → R

125

125) 788 (6
750
38

② 1 3 5 7 9 11 13 . . . . . 7 3 7 5 → Rem

8

375 / 8 (R = 7)

$$\frac{2\,3\,5\,7\,11\,13\,17\,19\cdots\cdots 8\,\boxed{9\,97}}{125}$$

$125 \to 5^{3}$

$$\frac{997}{125} \quad R \to -3$$

$Rem \to 125 - 3 = 122$

$$\# \quad \frac{5\;10\;15\;20\;25\cdots\cdots 8\,\boxed{5\,90}}{8}$$

$$\frac{590}{8} \quad \boxed{R \to 6}$$

1 to 9 → 9N × 1D = 9D

10 to 99 → 90N × 2D = 180D

100 to 999 → 900N × 3D = 2700D

1 to 99 = 189D

1 to 999 = 2889D

1 to 9999 = 38889D

1 to 99999 = 488889D

73 - 10 + 1

1 to 73N तक कुल कितने अंक होंगे।

1 to 9 → 9N × 1D = 9D

10 to 73 → 64N × 2D = 128D

137D

1 से 237 तक कुल कितने अंक होंगे।

1 to 237

1 to 9 → 9N x 1D = 9D

10 to 99 → 90N x 2D = 180D

100 to 237 → 138N x 3D = 414D

603D

1 to 99 → 189D

100 to 237 → 138N x 3D = 414D

603

1 to 149 तक कुल कितने अंक

1 to 9 = 9N x 1D = 9D

10 to 99 = 90N x 2D = 180D

100 to 149 = 50N x 3D = 150D

$\frac{12345\ldots\ldots\ldots 89\text{Digit}}{4}$ Rem =

9N

$89D-9D=\frac{80D}{8D}=40N$

49N

$\frac{1234\ldots\ldots 49}{4}$ Rem = 1

$\frac{1234\ldots\ldots\ldots 55D}{8}$ R =

$55D-9D=\frac{46D}{8D}=23N$

9N

32N

$\frac{1234\ldots\ldots 303132}{8}$

$\frac{132}{8}$ R → 4

4 pm to 5 pm

2 to 3
3 to 4
4 to 5