

12/18/12

6/12/2

janta

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* "HCF" and "LCM" :-

→ Highest common factor
or Greatest common divisor

↓
lowest common multiple

Ex 12 → $\{1, 2, 3, 4, 6, 12\}$ factors
18 → $\{1, 2, 3, 6, 9, 18\}$

6 HCF

→ highest common divisor.

• factors → finite $\rightarrow 1, 2, 3, 4, 6, 12$

• multiple $\rightarrow 12, 24, 36, 48, 60, \dots$
↳ infinite.

Ex: 12 → 12, 24, 36, 48, 60, 72, ...
18 → 18, 36, 54, 72, 90, ...

36 LCM

↳ lowest common multiple.

o How to find HCF.

- 1) long divisor method
- 2) factor method
- 3) difference method.

52, 90

$$\begin{array}{r} 52 \\ 90 \\ \hline 38 \\ 34 \\ \hline 14 \\ 14 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 2 \\ \hline 200 \end{array} \left\{ \begin{array}{l} 2 \\ 100 \end{array} \right\} 3$$

$$40 \left| \begin{array}{l} 200 \\ 200 \end{array} \right| 5$$

$$52 \Big| 90 \Big| 1$$

$$\underline{52}$$

$$38 \Big| 52 \Big| 1$$

$$\underline{38}$$

$$14 \Big| 38 \Big| 2$$

$$\underline{28}$$

$$10 \Big| 14 \Big| 1$$

$$\underline{10}$$

$$4 \Big| 10 \Big| 2$$

$$\underline{8}$$

last divisor \leftarrow

$$\text{H.C.F.} = 2$$

$$\text{H.C.F.} = 2$$

(1)

$$12, 20 \text{ H.C.F.}$$

$$18, 90 \text{ find L.C.M.}$$

$$12 \Big| 20 \Big| 1$$

$$\underline{12}$$

$$8 \Big| 12 \Big| 1$$

$$4 \Big| 8 \Big| 2$$

$$\underline{8}$$

$$0$$

$$\text{H.C.F.} = 4$$

n

$$18 \Big| 90 \Big| 5$$

$$\underline{90}$$

$$0$$

$$\text{L.C.M.} = 180$$

$$\text{Q.P. } 44, 66, 110 \text{ find H.C.F.} = ?$$

$$\begin{array}{r} 2 \Big| 44 \\ \underline{2} \Big| 22 \\ 11 \end{array} \quad \begin{array}{r} 2 \Big| 66 \\ \underline{3} \Big| 33 \\ 11 \end{array} \quad \begin{array}{r} 2 \Big| 110 \\ \underline{5} \Big| 55 \\ 11 \end{array}$$

$$\begin{array}{r} 2 \Big| 11 \\ \underline{11} \end{array}$$

$$44 \rightarrow 2^2 \times 11'$$

$$66 \rightarrow 2 \times 3 \times 11'$$

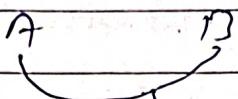
$$110 \rightarrow 2 \times 5 \times 11'$$

common

$$2 \times 11 = 22 \text{ H.C.F.}$$

(3)

method → 3 (difference method) :-



diff will be hcf
or difference factor will be hcf.

A, B, C, D 37 61 no का गुणनखंड है।
उसका विभाजन अवश्य करना हो।

Q - find H.C.F 72 890

$$\text{diff} = 18 \text{ Ans}$$

Q - 48, 90, 120 Q find H.C.F

48 90 120

42

30

$$1 \times 30 \times$$

$$2 \times 15 \times$$

$$3 \times 10 \times$$

$$5 \times 6 \checkmark$$

X

$$\text{H.C.F} = 6 \text{ Ans}$$

\therefore find the largest number which when divided by 20 & 29 give the same remainders.

$$\begin{array}{c} 20 \\ 29 \end{array}$$

$$\text{diff} = 9$$

$$\begin{array}{r} 9) 20 (2 \\ \underline{-18} \\ \times 2 \\ \hline 2 \end{array} \quad \begin{array}{r} 9) 29 (3 \\ \underline{-27} \\ \times 2 \\ \hline 2 \end{array}$$

Some

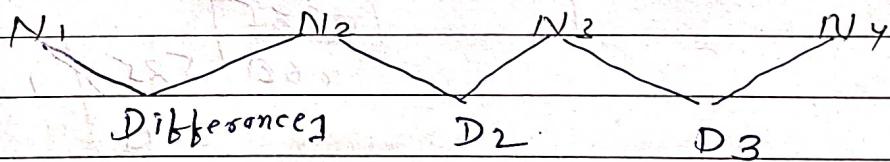
\therefore P

$$\begin{array}{c} 24, 32 \end{array}$$

$$8 \text{ Ans}$$

\therefore

no is more than 2.



H.C.F of D_1, D_2, D_3

\therefore find the greatest number which when divided by 410, 751 and 1030 gives the same remainders.

$$\begin{array}{c} 410, 751, 1030 \\ 341, 279 \end{array}$$

H.C.F of 341 and 279 = 31

Ans

Q:- 44, apple, 66 banana, and 110 mango find minimum no of rows.

$$\begin{array}{cccc} 44 & 66 & 110 \\ \swarrow & \searrow & \searrow \\ 22 & & 44 \end{array}$$

$$\text{H.C.F.} = 22$$

$$\frac{44}{22} + \frac{66}{22} + \frac{110}{22}$$

$$2 + 3 + 5 = 10 \text{ Ans}$$

Q:- 945 cows and 2475 buffaloes. find minimum no of groups.

$$\begin{array}{c|cc|c} 945 & 2475 & 12 \\ \hline & 1890 & \\ \hline & 585 & 945 & 1 \\ & 585 & \\ \hline & 360 & 585 & 1 \\ & 360 & \\ \hline & 225 & 360 & 1 \\ & 225 & \\ \hline \end{array}$$

$$\text{H.C.F. is } 45$$

$$\begin{array}{c|cc} 45 & 945 & 21 \\ \hline & 90 & \\ & 45 & \\ \hline & 45 & \end{array}$$

$$\begin{array}{c|cc} 135 & 225 & 1 \\ \hline & 135 & \\ & 90 & 135 \\ \hline & 90 & \end{array}$$

$$\begin{array}{c|cc} 95 & 2475 & 55 \\ \hline & 225 & \\ & 225 & \\ \hline & 20 & \\ & 20 & \\ \hline & 0 & \end{array}$$

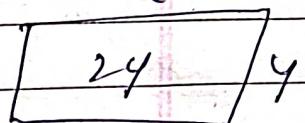
$$\begin{array}{c|cc} 45 & 90 & 2 \\ \hline & 45 & \\ & 45 & \\ \hline & 0 & \end{array}$$

$$\text{Ans} = 55 + 21 = 76 \text{ Ans}$$

Q- 288 cm^2 , 408 cm^2 and 552 cm^2
find length if width = 4.

$$288 \cdot 408 \cdot 552$$

$$\text{H.C.F.} = 24$$



6 Ans

Q find no. of tiles side are 284 m or 248 m

$$284 \text{ and } 248$$

$$\text{H.C.F.} = 4$$

$$\frac{284}{4} = 71$$

$x = 1402$ tiles

$$\frac{248}{4} = 62$$

Ans

Q find least smallest number which when divide by 5, 6, 8, and 9 gives remainder 3 in each case.

$$\begin{array}{r|cccc} 3 & 5, & 6, & 8, & 9 \\ \hline & 5, & 2, & 8, & 3 \\ \hline & & & & \end{array}$$
$$\begin{array}{r|ccc} 2 & 5, & 1, & 4, & 3 \\ \hline & & & & \end{array}$$

$$1 \cdot \text{cm} : 360 + 3 = 1$$

363 2

Q:- 20, 25, 35 and 40 gives remainders 14, 19, 29 and 34

20 25 35 40

$l.c.m = 1400 \rightarrow$ exact divide

here remainder is } by all numbers
different }

14 19 29 34
 \ \ \ \
 6 6 6 6

$$l.c.m = 1400 - 6 = 1394$$

by wife's study
with Shanti Chander

	12, 18, 24	H.C.F
2	12, 18, 24	12
3	6, 9, 12	3
	2, 3, 6	

$$H.C.F = 6$$

Q

$$\begin{array}{r} 3 | 15, 30, 45, 60, 75 \\ \hline 5 | 5, 10, 15, 20, 25 \\ \hline 1 | 1, 2, 3, 4, 5 \end{array}$$

$$\text{H.C.F} = 15$$

$$\begin{array}{r} 3 | 15, 30, 45, 60, 75 \\ \hline 5 | 5, 10, 15, 20, 25 \\ \hline 2 | 1, 2, 3, 4, 5 \\ \hline 1, 1, 3, 2, 5 \end{array}$$

$$\text{L.C.M} = 3 \times 5 \times 2 \times 3 \times 2 \times 5 = 900 \cancel{\times}$$

Q Two numbers ratio 4:5 and
 $\text{H.C.F} = 16$ then find L.C.M

$$4:5$$

$$I = 4 \times 16 = 80$$

$$II = 5 \times 16 = 80$$

$$\begin{array}{r} 2 | 8, 0, 64 \\ \hline 2 | 4, 0, 32 \\ \hline 2 | 2, 0, 16 \\ \hline 2 | 1, 0, 8 \\ \hline 1 | 1, 0, 4 \\ \hline \end{array}$$

$$\text{L.C.M} = 320 \cancel{\times}$$

$$\text{O.T} = 4 \times 5 \times 16 = 320 \cancel{\times}$$

26
 8
2248

$\theta:$ Ration $4: 3$ $H.C.F = 8$

$$1.c.m. = 4 \times 3 \times 8 = 96$$



H.C.F and 1 cm of fraction :-

~~numerator~~ $\frac{p}{q}, \frac{x}{y}, \frac{g}{b}$ find H.C.F and 1 cm
denominator

$H.C.F = \frac{H.C.F = p \times q}{1.c.m. = 4 \times 8}$	$1.c.m = \frac{1.c.m (p, q)}{H.C.F (q, y, b)}$
--	--

θ $\left[\frac{18}{5}, \frac{3}{5}, \frac{7}{10} \right]$ 1 cm ?
H.C.F ?

~~18 3 7~~
~~5 5 10~~
~~3 7 8~~

$$H.C.F = \frac{H.C.F (18, 3, 7)}{1.c.m (5, 5, 10)} = \frac{1}{10}$$

$$1.c.m = \frac{1.c.m (18, 3, 7)}{H.C.F (5, 5, 10)} = \frac{126}{5}$$

θ $\frac{5}{6}, \frac{7}{9}, \frac{11}{12}$ $H.C.F = \frac{1}{24}$

$$1.c.m = \frac{385}{3}$$

~~4483~~
23

~~2 | 4110~~
~~2 | 215~~

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Q $6, 3\frac{3}{4}, \frac{18}{20}$ H.C.F

$$6, \frac{15}{7}, \frac{28}{20}, 9$$

(A) way simplify then write

H.C.F = 3

Q $8, \frac{16}{20}, 4, \frac{10}{7}$ find LCM?

first of all simplify in case of LCM

LCM = $\frac{40}{1} = 40$ → got correct answer.

$2^3 \times 5 \times 7 \times 11 \times 13$

multiple then find LCM?

then get overtron & LCM found start

(X) H.C.F. of Big number

144 192 H.C.F = 2

diff = 48 Ans

Q $239, 519, 786$

$$\begin{array}{r} 285x \\ 5x(957x) \\ x \end{array}$$

$x^{19} 85 \checkmark$

H.C.F = 31

Concept Hcf of two consecutive numbers

Ans $(2, 3), (4, 5), (6, 7) = 1$ Ans

Q $\frac{2}{2} \text{ अंगूठी}$ even no of Hcf

Ans $(2, 4) = \text{diff} = 2$

$(6, 8) = " = 2$

$(20, 22) = " = 2$

Q $\frac{2}{2} \text{ अंगूठी}$ odd numbers of Hcf

Ans $(1, 3) = 1$

$(3, 5) = 1$ Ans

$(5, 7) = 1$ Ans

Q 540 L and 720 L maximum

capacity \rightarrow वाला एक बरात्रि जिससे

2 vessels \rightarrow दो बरात्रि वessel को पाया जा सकता है

सबसे

Ans ऐसे Overtron में Hcf नेपा है जिससे

540 720

$Hcf = 180 \text{ L}$ तो यहाँ \times

180 L के बरात्रि से किसी भी बरात्रि

$$\frac{540}{180} + \frac{720}{180} - 3 + 4 = 7 \Delta$$

(X)

HCF and LCM of decimal :-

Ex 1. 7, 0.51, 0.153 find HCF?

Concept :- ~~Every decimal has a denominator (either 10 or 100 or 1000 etc.)~~ over which it is equal to $\frac{7}{10}, \frac{51}{100}, \frac{153}{1000}$

$$\text{Ans} \quad \frac{1700}{1000}, \frac{510}{1000}, \frac{153}{1000} = \frac{17}{1000} = 0.017 \text{ Ans}$$

Q HCF (4.2, 5.4, 0.06) \rightarrow 0.06 Ans

Q (11.52, 12.96, 14.4, 15.84, 17.28) find HCF

$$\left(\frac{1152}{100}, \frac{1296}{100}, \frac{1440}{100}, \frac{1584}{100}, \frac{1728}{100} \right)$$

$$= \frac{144}{100} = 1.44 \text{ Ans}$$

Q [0.25, 0.1, 0.125] find LCM

$$1\text{cm} \left[\frac{250}{1000}, \frac{100}{1000}, \frac{125}{1000} \right] = \frac{500}{1000} = (0.5) \text{ Ans}$$

Q The product of two co-prime numbers is 117. find their HCF

$$IXII = 117$$

$$= 13 \times 9$$

$$\text{HCF} = 1 \text{ Ans}$$

Concept

Q $2^4, 2^2, 2^3, 2^8$ find LCM and HCF.

$$\text{LCM} = 2^8$$

$$\text{HCF} = 2^2 \quad \cancel{A}$$

- # 8
- I $\rightarrow 2^{-3} \times 3^{-4} \times 5^{-2}$ LCM ?
- II $\rightarrow 2^{-2} \times 3^{-2} \times 5^{-1}$ HCF ?
- III $\rightarrow 2^{-4} \times 3^{-5} \times 5^0$

$$\text{HCF} = 2^{-4} \times 3^{-5}$$

$$\text{LCM} = 2^{-2} \times 3^{-2} \times 5^{-1}$$

(-ve) $\frac{1}{2}$ care $\frac{1}{2}$ LCM $\frac{1}{2}$
 सबसे - छोटी power लेने हैं

(-ve) $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ power लेने हैं

Q I $-2^{-7} \times 3^{-5} \times 5^{-2} \times 7^{-3}$

II $-2^{-9} \times 2^{-3} \times 5^{-3} \times 7^{-4}$

III $-2^{-5} \times 3^{-2} \times 5^{-1} \times 7^{-2}$

$$\text{HCF} = 2^{-9} \times 3^{-5} \times 5^{-3} \times 7^{-4}$$

$$\text{LCM} = 2^{-5} \times 3^{-2} \times 5^{-1} \times 7^{-2} \quad \cancel{A}$$

HCF and LCM \Rightarrow Proof of \Rightarrow number relation \Rightarrow ?

$$\{ I \times II = HCF \times LCM \}$$

I numbers II second numbers.

PROVE = $12, 16$ $22 = LCM = 48$
 $I \quad II$ $HCF = 4$

$$12 \times 16 = 48 \times 4$$

HCF and LCM \Rightarrow $I \times II = L \times H$

$$9H \times bH = 1 \times H$$

$$\{ L = abH \}$$

Ratio of numbers

Q. $LCM = 132$, $HCF = 11$ How many numbers are possible.

$$L = abH$$

$$ab = \frac{L}{H} = \frac{132}{11} = 12$$

$$ab = 12$$

$$1 \times 12$$

$$3 \times 4$$

12×1 12×1 LCM and HCF of
 4×3 9×1 Repeated value not
 allow.

$$12 \times 1 = 12 - \text{possible total 8}$$

Q sum of two numbers = 55

$$\text{HCF} = 5$$

Now no many possible pair.

$$I + II = 55$$

$$(aH + bH) = 55$$

$$5(a+b) = 55$$

$$a+b = 11$$

$$(1, 10)$$

$$(2, 9)$$

$$(3, 8)$$

$$(4, 7)$$

$$(5, 6)$$

(6, 5) - composite length hai

5 pairs Ans

Q ratio of lcm and HCF number

99 and 15

पहले ही multiply

परी करते हैं

$$\text{lcm} = \frac{3 \times 35 \times 5}{1} = 165 : 1$$

$$\text{HCF} = 3$$

Q what will be the lcm of $x^2 - 4x + 3$
and $x^2 - 5x + 6$

$$\begin{array}{c} x^2 - 4x + 3 \\ \text{strg change} \\ \text{multiply} \\ \text{Kyr d.o} \\ +3 \ 0 \ +1 \end{array}$$

$$\begin{array}{c} x^2 - 5x + 6 \\ +2 \ +3 \\ (x-2)(x-3) \end{array}$$

factors

$$(x-3)(x-1)$$

$$\text{lcm} = (x-1)(x-2)(x-3)$$

$$\text{HCF} = (x-3) x$$

Q:- distance = 11

speed = 4, $5\frac{1}{2}$, 8 after how long will they meet at the starting point

$$\text{time} = \frac{\text{distance}}{\text{speed}}$$

$$1 \text{ cm } \left\{ \frac{11}{4}, \frac{11 \times 2}{11 \times 2}, \frac{11}{8} \right\}$$

$$1 \text{ cm } \left\{ \frac{11}{4}, 2, \frac{11}{8} \right\} = \frac{22}{1} \text{ hrs } \text{Ans}$$

Q ratio 7:9 Hcf and lcm 100 16 and 100 8 find larger number

$$9 \times 16 = 144 \text{ larger number}$$

$$7 \times 16 = 112 \text{ smaller number}$$

Q ratio 5:7 lcms 595 and smaller number is 85 find Hcf

$$\frac{85}{5} = 17 \text{ Ans}$$

Q The difference of two numbers is 22. If their ratio is 9:7 then find their LCM.

$$9H : 7H$$

$$9H - 7H = 22$$

$$2H = 1$$

$$H = 11$$

$$\text{LCM} = 11 \times 9 \times 7 = 693$$

Q The sum of two numbers is 560 if their ratio is 6:1 then find HCF.

$$6H + 1H = 560$$

$$7H = 560$$

$$H = 80 \quad \underline{\text{Ans}}$$

Q The sum of two numbers is 104 and the difference is 26 if their LCM and HCF are x and y respectively then find the value of x/y .

$$I + II = 104 \quad y = \text{HCF} = 13$$

$$\begin{array}{r} I - II = 26 \\ \hline -I + II = 28 \end{array}$$

$$x = \text{LCM} = 13 \times 5 \times 3$$

$$II = 39$$

$$I = 65$$

$$\begin{array}{r} 135 \\ \hline 9 \quad 18 \\ \hline 15 \end{array}$$

Q. The product of two numbers is 3192. Their LCM is 1856. Then find HCF.

$$I \times II = \text{LCM} \times \text{HCF}$$

$$\frac{3192}{56} = \text{HCF}$$

$$\text{HCF} = 57 \rightarrow$$

Q. LCM of two numbers is 20 times of their HCF. The sum of LCM and HCF is 2520. If one of those numbers is 480, then the other number will be.

$$\frac{L}{H} = \frac{20}{1}$$

$$21 \rightarrow 2520$$

$$\frac{L}{H} = 20$$

$$\text{HCF} = 120$$

$$120 \times 5 = 4 \times 120$$

$$600 \quad 480$$

$$\text{Ans} = 600$$

51

32.0 ml

Q. The sum of two numbers is 236. Their LCM and HCF are 3 and 105 respectively. What will be the sum of the inverse of those two numbers?

$$I + \overline{I} = 36$$

$$H(a) + H(b) = 36$$

$$a+b = \frac{36}{3} = 12$$

$$a \times b = \frac{105}{3}$$

$$\left\{ \begin{array}{l} 08 \\ \frac{1}{I} + \frac{1}{\overline{I}} \end{array} \right.$$

$$\left\{ \begin{array}{l} I \times \overline{I} = \frac{36}{4} \\ I \times \overline{I} = \frac{3 \times 105}{35} \\ = \frac{4}{35} \end{array} \right.$$

Q - HCF and LCM of two numbers is 44 and 264 respectively. If the first number is divided by 8 then quotient is 44, which of the following will be the second number?

$$\frac{I}{2} = 44$$

$$I = 88$$

$$I \times \overline{I} = HCF \times LCM$$

$$88 \times \overline{I} = 44 \times 264$$

$$\overline{I} = 132$$

Q The sum of two numbers is 384. Their highest common factor is 48 then difference in numbers.

$$48a + 48b = 384$$

$$a+b = \frac{384}{48} = 8$$

$$a+b = 8$$

$$(1, 7) \quad \text{Ans} = 7-1 = 6 \quad 6 \times 8 = 48 \times 6 = 288$$

$$(3, 5) \quad \text{Ans} = 5-3 = 2 \times 1 = 48 \times 2 = 96$$

Q The LCM and the product of two numbers is 15 and 6200 respectively what would be the number of possible pair of such numbers.

$$\frac{6200}{15} = 1 \text{ cm} \quad a \times b = \frac{420}{15}$$

$$1 \text{ cm} = 420 \quad a \times b = 28$$

$$(1 \times 28) \quad \{ \quad 2 \quad \text{Ans} \\ (4, 7) \quad \} \quad \underline{4}$$

Q The higher common multiple of two numbers is 12 and the least common multiple is 720. How many possible pairs of

$$a \times b = \frac{720}{12} = 60$$

$$\begin{array}{l} [1, 60] \\ [3, 20] \\ [4, 15] \\ [5, 12] \end{array} \quad \left\{ \quad 4 \text{ A} \right.$$

~~(*)~~

LCM :- (Recognition)

↳ कठीन Question की यहाँ परीक्षा

language में अनेक "बड़े होनी से होना".
सर्वप्रथा " " or smallest number

- only digit largest no / smallest
- 3 अंकों के बड़े से बड़े संख्या (3 digit largest No)
- 5 digit smallest No
- बड़े संख्या को जिसे उभयं विभाग
के completely divide किया जा सकता है।
- अनेक बड़े ring (bell) एवं diff - diff
time Interval वाले अंतरों के
- बड़े circular motion के बीच दूरी.

② Remainder based LCM :-

- बड़े होनी से बड़े होनी सर्वप्रथा नहीं होती है।
- 4, 8, 12, 15 एवं completely divisible होते हैं।

$$\begin{array}{r} 4 | 4, 8, 12, 15 \\ \hline 1, 2, 3, 5 \end{array}$$

$$1\text{ cm} = 120 \text{ ft}$$

↳ multiple .

~~3421~~ overthan 3 digit smallest number
~~521~~ एवं

$$120k \quad k=1$$

$$N = 120 \underline{\text{any}}$$

2) 3 digit largest

$$N = 120k$$

$$\frac{1}{8} = 960 \text{ Ans}$$

3) 4 digit smallest no?

$$N = 120k$$

$$120 \times 9 = 1080 \text{ Ans}$$

4) 4 digit largest number

$$N = 120k$$

$$k = 83$$

$$\frac{9999}{120} = \\ 1k = 833$$

$$N = 120 \times 83 = 9960$$

5) 5 digit smallest

$$N = 120k$$

$$k = 84$$

$$N = 10080 \text{ Ans}$$

6) 5 digit largest

$$N = 120k$$

$$N = 120 \times 833$$

$$N = 99960 \text{ Ans}$$

$$\frac{99999}{120} = \\ 1k = 833$$

7) 4 digit largest number $\overline{8, 5, 3, 4}$

get all divisible by 7

Approach

$$1cm = 280k$$

$$1cm = \frac{9999}{280}$$

$$1cm = 280 \times 35$$

$$= 35 \cdot 5$$

$$= 9800 \text{ Ans}$$

(*) Remainder based question

- Remainder अलग रूप से समान है
- remainder diff - diff

जब कोई से कोई नंबर द्वारा 4, 3, 5 से

D) द्वारा divide करें तो Rem = 1 always

$$\text{format} = 1 \text{cmk} + \text{Rem}$$

$$1 \text{cm} = \underline{\underline{60}}$$

Here 60 जब 212021

से completely
divisible

$$1 \text{cm} = 60k + 7$$

$$N = 61 \cancel{x} \quad k=1$$

(**) remainder different

a, b, c को 212021 से divide करें

$$45 \quad 27945 \quad x, y, z \quad 371 \quad \text{etc.}$$

$$\text{Format} = ((\text{cm}))k - \text{Diff}$$

$$\text{diff} = \underbrace{xoyz}_{\text{some some}}$$

Q:- smallest no जो 12, 18, 20, 27 से
divided करके प्राप्त रिमाईंडर 10, 16

$$99 \quad 25 \quad 87 \quad 7701 \quad \text{and}$$

fact of all find 1cm

$$\begin{array}{r}
 2 \Big| 12, 18, 29, 27 \\
 \underline{-} \\
 3 \Big| 6, 9, 12, 27 \\
 \underline{-} \\
 2 \Big| 2, 3, 4, 9 \\
 \underline{-} \\
 3 \Big| 1, 3, 2, 9 \\
 \underline{-} \\
 1, 1, 2, 3
 \end{array}$$

$1\text{cm} = 216 k$ for smaller $k=1$

$$\begin{array}{r}
 N = 216 - D \\
 12 \quad 18 \quad 24 \quad 27 \\
 10 \quad 16 \quad 22 \quad 25 \\
 \cancel{ex} \quad \cancel{ex}
 \end{array}$$

$$N = 216 - 2$$

$$N = 214$$

प्राप्ति की संख्या 16, 15, 8 है। अतः $N = 214$

$$\begin{array}{r}
 8 \Big| 16 \quad 15 \quad 8 \\
 \underline{-} \\
 2 \quad 15, 1
 \end{array}
 \quad \left. \begin{array}{l} \text{3 digit largest} \\ N + 5 = 240 \quad k=1 \end{array} \right\}$$

$$1\text{cm} = 210$$

$$= 960 - 15$$

$$N + 5 = 240 \quad k=1$$

$$N = 955$$

$$N = 235 \quad \text{Ans}$$

4 digit smaller no
 $+ 5 = (16, 8, 15) \Rightarrow$ ans

$$\begin{array}{r}
 N + 5 = 240 \quad k=5 \\
 = 1200 - 5
 \end{array}$$

$$N = 1195 \quad \text{Ans}$$

Q find the smallest no ~~which~~

10 67217 ~~45~~ are 12, 18, 24, 30, 15

is completely divisible by

$$\begin{array}{r} N-10 = 3 | 12, 18, 24, 30, 15 \\ \hline 5 | 4, 6, 8, 10, 5 \\ \hline 2 | 4, 6, 8, 2, 1 \\ \hline 2 | 2, 3, 4, 1 \\ \hline 1, 3, 2 \end{array}$$

$$N-10 = 360k$$

$$N = 370 \text{ Ans}$$

Q 2 digit largest

$$N-10 = (360)k \quad k=9$$

$$N = 730$$

to 4 digit smaller

$$N-10 = (360)k \quad k=3$$

$$N = 1080$$

$$N = 1090$$

Q 4 digit largest number is 9999

$$N-10 = (360)k \quad k = \frac{9999}{360}$$

$$= (360)27 + 10 = 7+K = 27$$

$$N = 9730$$

$$\text{sum of digits} = 9+7+3+0$$

$$= 19$$

$\textcircled{4}$ 3 digit largest no which 23, 5151 & 45
 $12, 15, 18 \& 21$ completely divide it
 $\&$ (perfect sq) of it

$$\begin{array}{r}
 & 3 \\
 \hline
 & 12, 15, 18 \\
 \hline
 & 3 \\
 & 4, 5, 6 \\
 \hline
 & 2, 1, 5, 3
 \end{array}$$

$$N + 23 = (cm)k$$

$$N+13 = 180 \times \frac{1}{5} \quad |k=5$$

~~412-1186~~ 412-900-23

$$n = 877 \quad \underline{A08}$$

θ 4-digit largest no जिसमें 15 6127 45
में 12, 18, 24, 27 से विभाग्य होना प्रयत्न में 5 रिसाउड रहे।

<u>3</u>	<u>12, 18, 24, 22</u>
<u>2</u>	<u>4, 6, 8, 9</u>
<u>2</u>	<u>2, 3, 4, 9</u>
<u>3</u>	<u>1, 3, 2, 9</u>

$$1\text{ cm} = 216 \text{ t}$$

$$K = \frac{9999}{216}$$

4-digit largest = 216×46

$$N - 15 = 9936 + 5$$

$$N = 9957 \text{ A}$$

(★)

HCF Question का 4E21-2

1 दिन से 31 दिन 21 दिन

largest number

Type-I
Remainder same
(not given)Type-II
Remainder same
(given)Type-III
Remainder
(31-31) - 1

Q find the largest no: 43, 97, 183

जो विभाजन करने के लिए उपयोग किया जाता है

Type-I: remainder same (but not given)

Ans :-

Note: \rightarrow remainder तो 43, 97, 3147 हैं
 \rightarrow \Rightarrow 21 द्वारा 43, 97, 3147 $(97-43), (183-97), (183-43)$

43, 97, 183

HCF = 4 Ans

Q T-2

जो विभाजन करने के लिए 55, 127, 125 हैं

जो विभाजन करने के लिए 43, 97, 3147 हैं

जो विभाजन करने के लिए 43, 97, 3147 हैं

Note

Remainder 43, 97, 3147

लिये गए अंकों का HCF एवं answer

43

$$\begin{array}{r}
 55610127 \\
 -7 \quad -7 \quad -7 \\
 \hline
 48 \quad 008120 \quad 175
 \end{array}$$

$$9166 = 48$$

$$1+cf = 24 \quad ? 4$$

Q I-III \rightarrow अंकों का योग नहीं आया, 24, 2061
 1054 से 2111 हटा पर रम 63, 4 54

Note :- digit number १८ से ४८६ तक

$$\begin{array}{r}
 2274 \quad 2061 \quad 1054 \\
 -6 \quad -3 \quad -4 \\
 \hline
 2268 \quad 2058 \quad 1050
 \end{array}$$

$$Hcf [2268, 2058, 1050]$$

$$210$$

$$21 \times 1024 \times 5$$

$$1+cf = 42$$

Q:- The least multiple of 13 which on
 13 के अंकों का योग जून, जिसे 4, 5, 6, 7
 3778 से 1011 हटा पर उत्तर दो 894

formula :-

$$N = (1+cf)k + R_{\text{rem}}$$

$$\boxed{4, 5, 6, 7, 8}$$

$$1\text{cm} = 840 \text{K}$$

$$N = 840k + 2$$

$$k=1, \frac{842}{13} X$$

$$k=2, \frac{1682}{13} X$$

$$k=3, \frac{2522}{13} \checkmark$$

$$N = 2522 - 1$$

ଓ সবসী কোর্টি কোর্টি কেন্দ্ৰীয় কানুন
 1936 সী ১৯৩৬ এ পৰিপৰা সংক্ষেপ কো ১, ১০
 তথা ১৫ মি সী কিমু কো অভি ২১৭১ ২৩ এ
 ১১/১ ২ ১৬/১

format

$$1936 - N = (1\text{cm})k + \text{rem}$$

$$1\text{cm} = 9.10, 1.15$$

$$1936 - N = 90k + 7$$

$$1936 - N = 90x1 + 7$$

$$1\text{cm} = 90$$

$$N = 39 \quad 1$$

$$\frac{1936 - 1}{90}$$

Q

100 - 200 3 वीय (2) 3117 9 वीं 30
 201189 जी 9 तथा 6 4949 से 16 अप्रैल
 9 6

$$1 \text{ CM} = 18$$

$$\begin{array}{r} 100 \\ 18 \end{array} \quad \begin{array}{r} 200 \\ 18 \end{array}$$

X 5

16 ✓

(11)

$$No = 11 - 6 + 1 = 6 \Delta$$

Q 10000 के लिए 11 से संख्या 3, 4, 5, 6, 7, 8, 9
 8 के से संख्या 1 के लिए 1, 2, 3, 4, 5, 6, 7, 8

$$\begin{array}{r} 6 - 10000 + 7 \\ \hline 10009 \\ = 840 \end{array}$$

$$\begin{array}{r} 2 | 3, 4, 5, 6, 7, 8 \\ 2 | 3, 2, 5, 3, 7, 8 \\ 3 | 3, 4, 5, 3, 7, 2 \\ \hline 1, 1, 1, 5, 1, 2 \end{array}$$

$$K = 11$$

$$1 \text{ CM} = 840 K$$

$$\begin{array}{r} 840 \times 11 } \\ 9240 \\ \hline 840 \times 12 } \\ 10080 \quad \checkmark \end{array}$$

$$Ans = 10080 Z$$

Q :- find Hcf $(8^{17}-1)$ and $(8^{15}-1)$

$$(8^{17}-1) \quad (8^{15}-1)$$

$$8^1-1 = 7 \quad \text{or}$$

Q find Hcf (3^7-1) and 3^9-1

$$3^1-1 = 2 \quad \text{or}$$

Q find Hcf of (2^8-1) and (2^6-1)

$$2^2-1 = 3 \quad \text{or}$$

$$\begin{array}{cccccc} 2176 & 65 & 317 & 117 & 51 & \text{Hcf}(65-117) \\ 67 & 17 & 11 & 37 & 13 & \text{or} \end{array}$$

$$13 = 65 - 117$$

$$m = 2 \quad \text{or}$$