

19/3/2024

LCM & HCFCLASS-20Type-III

* LCM & HCF of Fraction Values
भिन्नात्मक मानों का LCM & HCF

$$\left(\frac{a}{b}, \frac{c}{d}, \frac{e}{f}\right)$$

LCM

HCF

$$\frac{\text{LCM}(a, c, e)}{\text{HCF}(b, d, f)}$$

$$\frac{\text{HCF}(a, c, e)}{\text{LCM}(b, d, f)}$$

Ex:- $\frac{2}{3}, \frac{4}{9}, \frac{5}{12}$

LCM

HCF

$$\frac{\text{LCM}(2, 4, 5)}{\text{HCF}(3, 9, 12)} = \frac{20}{3}$$

③ (1, 3, 4)

$$\frac{\text{HCF}(2, 4, 5)}{\text{LCM}(3, 9, 12)} = \frac{1}{36}$$

11) LCM of $\frac{18}{5}, \frac{6}{5}$ and $\frac{18}{125}$ Find out

$\frac{18}{5}, \frac{6}{5}$ और $\frac{18}{125}$ का ल.स. ज्ञात करें।

$$\frac{\text{LCM}(18, 6, 18)}{\text{HCF}(5, 5, 125)} = \frac{18}{5} = 3.6$$

5(1, 1, 25)

$$\frac{\text{HCF}(18, 6, 18)}{\text{LCM}(5, 5, 125)} = \frac{6}{125}$$

$(a, b) \Rightarrow \text{Coprime (सहअभाज्य)}$
 $\text{HCF} = 1$ $\text{LCM} = a \times b$

(a, a)
 $\swarrow \quad \searrow$
 $HCF = a \quad LCM = a$

$(10, 10)$
HCF = 10
LCM = 10

12) LCM of $\frac{25}{7}$, $\frac{15}{28}$, $\frac{20}{21}$ Find out

$\frac{25}{7}, \frac{15}{28}, \frac{20}{21}$ का ल. स. ज्ञात कीजिए।

$$\frac{\text{LCM}}{\text{HCF}} = \frac{\text{LCM}(25, 15, 20)}{\text{HCF}(7, 28, 21)} = \frac{300}{7}$$

$$\frac{\text{HCF}(25, 15, 20)}{\text{LCM}(7, 28, 21)} = \frac{5}{84}$$

13) What is the greatest common factor of $\frac{3}{8}$, $\frac{5}{12}$ and $\frac{15}{16}$

$\frac{3}{8}, \frac{5}{12}$ और $\frac{15}{16}$ का महत्तम समापवर्तक (HCF) क्या है?

$$\frac{\text{HCF}(3, 5, 15)}{\text{LCM}(8, 12, 16)} = \frac{1}{48}$$

4×2 4×3 4×4
 6 12

$$4 \times 12 = 48$$

$$\frac{\text{LCM}(3, 5, 15)}{\text{HCF}(8, 12, 16)} = \frac{15}{4}$$

14) HCF of $\frac{9}{10}, \frac{12}{25}, \frac{18}{35}, \frac{21}{40}$ is

$$\frac{\text{HCF}(9, 12, 18, 21)}{\text{LCM}(10, 25, 35, 40)} = \frac{3}{1400}$$

$$\begin{array}{cccc} 5 \times 2 & 5 \times 5 & 5 \times 7 & 5 \times 8 \\ & \searrow & \swarrow & \swarrow \\ & & 35 & 8 \\ & \swarrow & \swarrow & \swarrow \\ & 5 \times 8 \times 35 & & \\ & 40 \times 35 = 1400 & & \end{array}$$

Type-IV

* LCM & HCF of Decimal Values

दशमलव संख्याओं का LCM & HCF

- Step 1:- दशमलव हटाकर हर में zero से replace करते हैं।
- Step 2:- हर में zero की संख्या बराबर करते हैं।
- Step 3:- भिन्न वाली संख्याओं का LCM & HCF वाली विधि लगा देंगे।

Ex:- (0.6, 1.8, 0.36)

$$\frac{6}{10}, \frac{18}{10}, \frac{36}{100}$$

$$\text{LCM} = \frac{\text{LCM}(6, 18, 36)}{\text{HCF}(10, 10, 100)} = \frac{36}{10} = 3.6 \times$$

$$\frac{60}{100}, \frac{180}{100}, \frac{36}{100}$$

$$\frac{\text{LCM}(60, 180, 36)}{\text{HCF}(100, 100, 100)} = \frac{180}{100} = 1.8 \checkmark$$

↓
LCM.

- 17) 0.9, 1.2 and 0.15 of LCM... is
0.9, 1.2 और 0.15 का ल.स. ... है।

$$\frac{0.90}{100}, \frac{1.20}{100}, \frac{0.15}{100}$$

$$\frac{90}{100}, \frac{120}{100}, \frac{15}{100}$$

$$\frac{LCM(90, 120, 15)}{HCF(100, 100, 100)} = \frac{360}{100} = 3.6$$

- 18) Find the LCM of 3.2, 2.72, 1.28 and 1.44.
3.2, 2.72, 1.28 और 1.44 का LCM ज्ञात कीजिए

$$\frac{320}{100}, \frac{272}{100}, \frac{128}{100}, \frac{144}{100}$$

$$\frac{LCM(320, 272, 128, 144)}{HCF(100, 100, 100, 100)}$$

$$\frac{16 \times 17 \times 360}{100} = \frac{272 \times 36}{10} = \frac{9792}{10} = 979.2$$

- 19) LCM of 0.126, 0.36 and 0.96. Find (LCM)
0.126, 0.36 और 0.96 का ल.स.प. (LCM) ज्ञात करें।

$$\frac{126}{1000}, \frac{360}{1000}, \frac{960}{1000}$$

$$\frac{LCM(126, 360, 960)}{HCF(1000, 1000, 1000)}$$

$$\frac{18 \times 7 \times 20 \times 8}{1000}$$

$$\frac{18 \times 112}{100} = \frac{2016}{100} = 20.16$$

2	126, 360, 960
3	63, 180, 480
3	21, 60, 160
7	7, 20, 160
20	1, 20, 160
8	1, 1, 8
	1, 1, 1

20) Find the HCF of 1.43, 1.87 and 20.9
1.43, 1.87 और 20.9 का HCF ज्ञात कीजिये

$$\frac{143}{100}, \frac{187}{100}, \frac{2090}{100}$$

$$\frac{\text{HCF}(143, 187, 2090)}{\text{LCM}(100, 100, 100)}$$

$$\frac{11}{100} \mid \frac{143, 187, 2090}{13, 17, 190}$$

$$\frac{11}{100} = 0.11$$

Type-V

* LCM & HCF of Power Numbers
घात वाली संख्याओं का LCM & HCF

Ex:- $2^1, 4^2$

$$\text{LCM} = 4 = 2^2$$

$2^1, 2^2, 2^3, 2^4$
• 2, 4, 8, 16

$$\text{LCM} = 16 = 2^4$$

• $2^1, 2^2, 2^3$
 $\text{HCF} = 2^1$

Ex:- $2^3 \times 3^2 \times 5^1, 2^4 \times 3^3 \times 5^2 \times 7^1$

LCM

$$2^4 \times 3^3 \times 5^2 \times 7^1$$

HCF

$$2^3 \times 3^2 \times 5^1$$

Ex:- $2^3 \times 3^2 \times 5^1, 7^1 \times 11^2 \times 13^3$

LCM

$$2^3 \times 3^2 \times 5^1 \times 7^1 \times 11^2 \times 13^3$$

HCF

$$1$$

HCF

संख्या Common
होनी चाहिए और
Power होती होनी
चाहिए

LCM

जो संख्या Same
है उसमें से बड़ी
Power को लेना है।
और जो संख्याएं
बच जाएं वो भी
LCM में आएंगी

- 22) What is the least common multiple of 64, 125 and 108
64, 125 और 108 का लघुत्तम समापवर्तक कितना है?

$$64, 125, 108$$

$$4 \times 27$$

$$2^6, 5^3, 2^2 \times 3^3$$

$$LCM = 2^6 \times 5^3 \times 3^3$$

- 23) $(2^2 \times 3^2 \times 5 \times 7)$, $(2^2 \times 3 \times 5^2 \times 7)$ and $(2 \times 3 \times 5 \times 7)$
Find (LCM)

$(2^2 \times 3^2 \times 5 \times 7)$, $(2^2 \times 3 \times 5^2 \times 7)$ और $(2 \times 3 \times 5 \times 7)$ का ल.स. (LCM) ज्ञात कीजिए।

$$LCM = 2^2 \times 3^2 \times 5^2 \times 7$$

$$4 \times 9 \times 25 \times 7 = 6300$$

- 24) The LCM of $2^2 \times 3^3 \times 5 \times 7^2$, $2^3 \times 3^2 \times 5^2 \times 7^4$ and $2 \times 3 \times 5^3 \times 7 \times 11$. Find (LCM)

$2^2 \times 3^3 \times 5 \times 7^2$, $2^3 \times 3^2 \times 5^2 \times 7^4$ और $2 \times 3 \times 5^3 \times 7 \times 11$ का ल.स.प. (LCM) ज्ञात कीजिए।

$$LCM = 2^3 \times 3^3 \times 5^3 \times 7^4 \times 11$$

$$HCF = 2^1 \times 3^1 \times 5^1 \times 7$$

- 25) What is the HCF of $2^3 \times 3^4$ and $2^5 \times 3^2$?
 $2^3 \times 3^4$ और $2^5 \times 3^2$ का HCF क्या है?

$$HCF = 2^3 \times 3^2$$

- 26) $(5^3 \times 4^3)$, $(3^5 \times 5^2 \times 4^4)$ and $(3^2 \times 5 \times 4^3)$ Find the greatest common multiple of?

$(5^3 \times 4^3)$, $(3^5 \times 5^2 \times 4^4)$ और $(3^2 \times 5 \times 4^3)$ का महत्तम समापवर्तक ज्ञात करें?

$$(5^3 \times 4^3)$$

$$5^3 \times (2^2)^3 = \boxed{5^3 \times 2^6}$$

$$(3^5 \times 5^2 \times 4^4)$$

$$3^5 \times 5^2 \times (2^2)^4$$

$$\boxed{3^5 \times 5^2 \times 2^8}$$

$$(3^2 \times 5 \times 4^3)$$

$$3^2 \times 5^1 \times (2^2)^3$$

$$\boxed{3^2 \times 5^1 \times 2^6}$$

$$HCF = 2^6 \times 5^1$$

$$64 \times 5$$

$$320$$

1. Find the least common multiple (L.C.M.) of $\frac{4}{5}$, $\frac{3}{8}$ and $\frac{9}{8}$.

$\frac{4}{5}$, $\frac{3}{8}$ और $\frac{9}{8}$ लघुत्तम समापवर्त्य (L.C.M.) ज्ञात कीजिए।

(1) 36

(2) 9

(3) 8

(4) 28

2. What will be the least common multiple (LCM) of $\frac{6}{25}$, $\frac{4}{45}$ and $\frac{3}{35}$?

$\frac{6}{25}$, $\frac{4}{45}$ और $\frac{3}{35}$ का लघुत्तम समापवर्त्य (LCM) कितना होगा?

(1) $\frac{1}{5}$

(2) $\frac{12}{5}$

(3) $\frac{210}{12}$

(4) $\frac{12}{210}$

3. What will be the least common multiple (LCM) of the fractions $(\frac{2}{3})$, $(\frac{8}{15})$ and $(\frac{4}{27})$?

भिन्नो $(\frac{2}{3})$, $(\frac{8}{15})$ और $(\frac{4}{27})$ का लघुत्तम समापवर्त्य (LCM) क्या होगा?

(a) $\frac{8}{3}$
(c) $\frac{3}{8}$

(b) $\frac{12}{5}$
(d) $\frac{24}{7}$

4. Calculate the Highest Common Factor (HCF) of $\frac{12}{5}$, $\frac{14}{15}$ and $\frac{16}{17}$.

$\frac{12}{5}$, $\frac{14}{15}$ और $\frac{16}{17}$ के महत्तम समापवर्तक (HCF) की गणना करें।

(a) $\frac{4}{255}$

(b) $\frac{3}{255}$

(c) $\frac{2}{255}$

(d) $\frac{1}{255}$

5. The greatest common multiple (HCF) of $\frac{3}{4}$, $\frac{15}{16}$ and $\frac{18}{5}$ is:

$\frac{3}{4}$, $\frac{15}{16}$ और $\frac{18}{5}$ का महत्तम समापवर्तक (HCF) है:

(a) $\frac{3}{80}$

(b) $\frac{18}{5}$

(c) $\frac{5}{16}$

(d) $\frac{15}{16}$

6. Find the Highest Common Factor (H.C.F.) of $\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{6}$ and $\frac{7}{8}$.

$\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{6}$ और $\frac{7}{8}$ का महत्तम समापवर्तक (H.C.F.) ज्ञात करें।

(a) $\frac{105}{2}$

(b) $\frac{1}{24}$

(c) $\frac{7}{24}$

(d) $\frac{1}{48}$

7. What is the HCF of $\frac{3}{5}$, $\frac{9}{10}$ and $\frac{6}{25}$?

$\frac{3}{5}, \frac{9}{10}$ और $\frac{6}{25}$ का म.स क्या है?

- (a) $3/5$ (b) 18
(c) $18/50$ (d) $3/50$

8. What is the greatest common multiple (HCF) of 1.05 and 6.23?

1.05 और 6.23 का महत्तम समापवर्तक (HCF) क्या है?

- (a) 0.89 (b) 0.21
(c) 0.07 (d) 0.35

9. If $P = 2^8 \times 3^5$, $Q = 2^3 \times 3^4$, and $R = 3^5 \times 2^7$, then what is the greatest common multiple of P, Q, and R?

यदि $P = 2^8 \times 3^5$, $Q = 2^3 \times 3^4$, और $R = 3^5 \times 2^7$ है, तो P, Q और R का महत्तम समापवर्तक क्या है ?

- (a) $2^4 \times 3^5$ (b) $2^2 \times 3^2$
(c) $2^8 \times 3^5$ (d) $2^3 \times 3^4$

10. The L.C.M. of $2^3 \times 3^2 \times 5 \times 11$, $2^4 \times 3^4 \times 5^2 \times 7$ and $2^5 \times 3^3 \times 5^3 \times 7^2 \times 11$ is

$2^3 \times 3^2 \times 5 \times 11$, $2^4 \times 3^4 \times 5^2 \times 7$ और $2^5 \times 3^3 \times 5^3 \times 7^2 \times 11$ का लघुत्तम समापवर्तक क्या है ?

- (a) $2^3 \times 3^2 \times 5$
(b) $2^5 \times 3^4 \times 5^3$
(c) $2^3 \times 3^2 \times 5 \times 7 \times 11$
(d) $2^5 \times 3^4 \times 5^3 \times 7^2 \times 11$

ANSWER SHEET

1	2	3	4	5	6	7	8	9	10
A	B	A	C	A	B	D	C	D	D

Sol. 1 $\frac{4}{5}, \frac{3}{8}, \frac{9}{8}$ L.C.M = ?

$$\frac{4}{5}, \frac{3}{8}, \frac{9}{8} \begin{matrix} \text{(L.C.M)} \\ \text{(H.C.F)} \end{matrix} = \frac{36}{1}$$

$$\Rightarrow 36$$

Sol. 2 $\frac{6}{25}, \frac{4}{95}, \frac{3}{35}$ L.C.M = ?

$$\frac{6}{25}, \frac{4}{95}, \frac{3}{35} \begin{matrix} \text{(L.C.M)} \\ \text{(H.C.F)} \end{matrix}$$

$$\frac{\text{L.C.M}}{\text{H.C.M}} = \frac{12}{5} \Rightarrow \frac{12}{5}$$

Sol. 3 $\frac{2}{3}, \frac{8}{15}, \frac{4}{27}$ L.C.M = ?

$$\frac{2}{3}, \frac{8}{15}, \frac{4}{27} \begin{matrix} \text{(L.C.M)} \\ \text{(H.C.M)} \end{matrix}$$

$$\frac{8}{3} \begin{matrix} \text{(L.C.M)} \\ \text{(H.C.F)} \end{matrix} \Rightarrow \frac{\text{L.C.M} = 8}{3}$$

Sol. 4 $\frac{12}{5}, \frac{14}{15}, \frac{16}{17}$ H.C.F = ?

$$\frac{12}{5}, \frac{14}{15}, \frac{16}{17} \begin{matrix} \text{(H.C.F)} \\ \text{(L.C.M)} \end{matrix}$$

$$\Rightarrow \frac{2}{255}$$

$$5, 15, 17 \text{ (L.C.M)} = 255$$

Sol. 5

$$\frac{3}{4}, \frac{15}{16}, \frac{18}{5} \begin{matrix} \text{(H.C.F)} \\ \text{(L.C.M)} \end{matrix} \text{H.C.F} = ?$$

$$4, 16, 5 \text{ (L.C.M)} = 80$$

$$\Rightarrow \frac{3}{80}$$

Sol. 6

$$\frac{1}{2}, \frac{3}{4}, \frac{5}{6}, \frac{7}{8} \text{ H.C.F} = ?$$

$$\frac{1}{2}, \frac{3}{4}, \frac{5}{6}, \frac{7}{8} \begin{matrix} \text{(H.C.F)} \\ \text{(L.C.M)} \end{matrix}$$

$$2, 4, 6, 8 \text{ (L.C.M)} \Rightarrow 24$$

$$\Rightarrow \frac{1}{24}$$

Sol. 7 $\frac{3}{5}, \frac{9}{10}, \frac{6}{25}$ H.C.F

$$\frac{3}{5}, \frac{9}{10}, \frac{6}{25} \begin{matrix} \text{(H.C.F)} \\ \text{(L.C.M)} \end{matrix}$$

$$3, 9, 6 \text{ (H.C.F)} \Rightarrow 3$$

$$5, 10, 25 \text{ (L.C.M)} \Rightarrow 50$$

$$\Rightarrow \frac{3}{50}$$

Sol. 8 $1.05, 6.23$ H.C.F. = ?

$$\frac{105}{100}, \frac{623}{100} \text{ (H.C.F.)}$$

$$105, 623 \text{ (H.C.F.)} \Rightarrow 7$$

$$L.C.M. \Rightarrow 100$$

$$\Rightarrow \frac{7}{100} \Rightarrow .07$$

Sol. 10

$$L.C.M. = ?$$

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

$$2^4 \times 3^4 \times 5^2 \times 7$$

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

$$\Rightarrow 2^5 \times 3^4 \times 5^3 \times 7^2 \times 11$$

Sol. 9 $P = 2^8 \times 3^5$

$$Q \Rightarrow 2^3 \times 3^4$$

$$R \Rightarrow 3^5 \times 2^7$$

$$H.C.F. = ?$$

$$\Rightarrow 2^3 \times 3^4$$