

LCM &

HCF

Highest common factor

Greatest common Divisor

GCD

म०स०

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Least common multiple
(म०स०)

वह छोटी से छोटी सं० जो कि गई सभी संख्याओं से पूर्णतः विभाजित होती है।

वह बड़ी-से-बड़ी सं० जो कि गई सभी संख्याओं को पूर्णतः विभाजित करती है।

① 4, 5, 6 $\xrightarrow{\text{Lcm}}$ 60 Ans.

$$\begin{array}{l|l} 2 & 4, 5, 6 \\ \hline & 2, 5, 3 \end{array}$$

$$\text{Lcm} \rightarrow 2 \times 2 \times 5 \times 3 \\ 60$$

② 9, 10, 12 $\xrightarrow{\text{Lcm}}$ 180 Ans.

$$\begin{array}{l|l} 2 & 9, 10, 12 \\ \hline 3 & 9, 5, 6 \\ \hline & 3, 5, 2 \end{array}$$

$$\text{Lcm} \rightarrow 2 \times 3 \times 3 \times 5 \times 2 \\ = 180$$

③ 8, 12, 6 $\xrightarrow{\text{HCF}}$ 2 Ans.

$\underbrace{\quad\quad\quad}_{(-)}$
2

④ 12, 18, 24, 27 $\xrightarrow{\text{H.C.F}}$ 3 ✓✓

$\underbrace{\quad\quad\quad}_{(-)}$
3

या ली HCF अंतर होगा या ली
इसी अंतर के कोई ना कोई
गुणखण्ड होगा

power का LCM और HCF

① $3^{19}, 3^{15}, 3^{12}, 3^{17}$

① LCM \rightarrow Highest power = 3^{19}

② HCF \rightarrow Lowest power = 3^{12}

② $2^{-7}, 2^{-13}, 2^{-10}, 2^{-17}$

① LCM \rightarrow Highest power = 2^{-7}

② HCF \rightarrow Lowest power = 2^{-17}

1. Find the LCM & HCF of $2^{10} \times 3^{11} \times 5^6, 3^4 \times 7^9 \times 11^{14}, 2^9 \times 5^8 \times 7^{12} \times 3^2$

$2^{10} \times 3^{11} \times 5^6, 3^4 \times 7^9 \times 11^{14}, 2^9 \times 5^8 \times 7^{12} \times 3^2$ का ल० स० तथा म० स० निकालें?

- ~~(A)~~ $(2^{10} \times 3^{11} \times 5^8 \times 7^{12} \times 11^{14}), 9$ (B) $(3^{11} \times 11^{14} \times 7^{12}), 27$
 (C) $(2^{10} \times 3^{11} \times 7^{11} \times 14^{11}), 3$ (D) None of these

$$(2^{10} \times \boxed{3^{11}} \times 5^6), (\boxed{3^4} \times 7^9 \times 11^{14}), (2^9 \times 5^8 \times 7^{12} \times \boxed{3^2})$$

① LCM $\rightarrow 2^{10} \times 3^{11} \times 5^8 \times 7^{12} \times 11^{14}$

② HCF $\rightarrow 3^2 = 9$

2. Find the LCM and HCF of $12^{16} \times 15^9, 6^{18} \times 18^{27}, 25^6 \times 36^9 \times 24^7$

$2^{16} \times 15^9, 6^{18} \times 18^{27}, 25^6 \times 36^9 \times 24^7$ का ल. स. और म. स. निकालें?

- (A) $(2^{45} \times 3^{72} \times 5^{12}), (2^{32} \times 3^{25})$ (B) $(6^{18} \times 18^{27}), (3^5 \times 2^{32})$
 (C) $(36^9 \times 24^7), (18^{27} \times 12^{16})$ ~~(D) None of these~~

$$\textcircled{i} \quad 12^6 \times 15^9 \rightarrow (2^2 \times 3)^6 \times (3 \times 5)^9 = 2^{12} \times 3^6 \times 3^9 \times 5^9 = 2^{12} \times 3^{12} \times 5^9$$

$$\textcircled{ii} \quad 6^{18} \times 18^{27} \rightarrow (2 \times 3)^{18} \times (2 \times 3^2)^{27} = 2^{18} \times 3^{18} \times 2^{54} \times 3^{27} = 2^{45} \times 3^{72}$$

$$\textcircled{iii} \quad 25^6 \times 36^9 \times 24^7 \rightarrow (5^2)^6 \times (2^2 \times 3^2)^9 \times (2^3 \times 3)^7 = 5^{12} \times 2^{18} \times 3^{18} \times 2^{21} \times 3^7 = 2^{39} \times 3^{25} \times 5^{12}$$

$$\boxed{2^{12} \times 3^{12} \times 5^9}, \quad \boxed{2^{45} \times 3^{72}}, \quad \boxed{2^{39} \times 3^{25} \times 5^{12}}$$

$$\textcircled{i} \text{ LCM} \rightarrow 2^{45} \times 3^{72} \times 5^{12}$$

$$\textcircled{ii} \text{ HCF} \rightarrow 2^{12} \times 3^{12}$$

2. Find the LCM and HCF of $12^{16} \times 15^9, 6^{18} \times 18^{27}, 25^6 \times 36^9 \times 24^7$

$2^{16} \times 15^9, 6^{18} \times 18^{27}, 25^6 \times 36^9 \times 24^7$ का ल. स. और म. स. निकालें?

- ~~(A)~~ $(2^{45} \times 3^{72} \times 5^{12}), (2^{32} \times 3^{25})$ (B) $(6^{18} \times 18^{27}), (3^5 \times 2^{32})$
 (C) $(36^9 \times 24^7), (18^{27} \times 12^{16})$ (D) None of these

$$\textcircled{i} \quad 12^{16} \times 15^9 \rightarrow (2^2 \times 3)^{16} \times (3 \times 5)^9 = 2^{32} \times 3^{16} \times 3^9 \times 5^9 = 2^{32} \times 3^{25} \times 5^9$$

$$\textcircled{ii} \quad 6^{18} \times 18^{27} \rightarrow (2 \times 3)^{18} \times (2 \times 3^2)^{27} = 2^{18} \times 3^{18} \times 2^{54} \times 3^{54} = 2^{72} \times 3^{72}$$

$$\textcircled{iii} \quad 25^6 \times 36^9 \times 24^7 \rightarrow (5^2)^6 \times (2^2 \times 3^2)^9 \times (2^3 \times 3)^7 = 5^{12} \times 2^{18} \times 3^{18} \times 2^{21} \times 3^7 = 2^{39} \times 3^{25} \times 5^{12}$$

$$\textcircled{i} \text{ LCM} \rightarrow 2^{45} \times 3^{72} \times 5^{12}$$

$$\textcircled{ii} \text{ HCF} \rightarrow 2^{32} \times 3^{25}$$

3. Find the LCM and HCF of $5^{-11}, 5^{-9}, 5^{-16}, 5^{-10}$?

$5^{-11}, 5^{-9}, 5^{-16}, 5^{-10}$ का L.C.M तथा H.C.F क्रमशः ज्ञात करें?

(A) $5^{-16}, 5^{-9}$

(B) $5^{-11}, 5^{-16}$

(C) $5^{-9}, 5^{-16}$

(D) $5^{-16}, 5^{-11}$

① LCM $\rightarrow 5^{-9}$

② HCF $\rightarrow 5^{-16}$

Fraction का Lcm and HCF

$$\frac{x}{y}$$

$x \rightarrow$ अंश
 $y \rightarrow$ हर

$$\textcircled{\text{I}} \text{ LCM} = \frac{\text{अंश का LCM}}{\text{हर का HCF}}$$

$$\textcircled{\text{II}} \text{ HCF} = \frac{\text{अंश का HCF}}{\text{हर का LCM}}$$

4.

Find the LCM and HCF of $\frac{4}{5}, \frac{8}{15}, \frac{12}{20}, \frac{16}{25}$ $\frac{x}{y} \rightarrow \text{HCF} = 1$ $\frac{4}{5}, \frac{8}{15}, \frac{12}{20}, \frac{16}{25}$ का ल. स. तथा म. स. निकालें?

(A) $\frac{48}{5}, \frac{4}{300}$

(B) $\frac{64}{15}, \frac{2}{75}$

(C) $\frac{48}{5}, \frac{3}{100}$

 (D) None of these

$\frac{4}{5}, \frac{8}{15}, \frac{3}{5}, \frac{16}{25}$

ii) $\text{HCF} = \frac{(4, 8, 3, 16) \text{ का HCF}}{(15, 5, 25) \text{ का LCM}} = \frac{1}{75}$

① $\text{LCM} = \frac{(4, 8, 3, 16) \text{ का LCM}}{(15, 5, 25) \text{ का HCF}} = \frac{48}{5}$

5. Find the LCM and HCF of 0.05, 0.10 and 0.025.

0.05, 0.10 तथा 0.025 का ल.सं. तथा म.सं. निकालें?

(A) 0.1, 0.5

~~(B) 0.200, 0.025~~

(C) 0.1, 0.10

✓ (D) 0.1, 0.025

अ
य
→ HCF = 1

$$\frac{5}{100}, \frac{10}{100}, \frac{25}{1000}$$

$$\frac{1}{20}, \frac{1}{10}, \frac{1}{40}$$

$$\textcircled{1} \text{ LCM} = \frac{(1, 1, 1) \text{ का LCM}}{(20, 10, 40) \text{ का HCF}} = \frac{1}{10} = 0.1$$

$$\textcircled{ii} \text{ HCF} = \frac{(1, 1, 2) \text{ का HCF}}{(20, 10, 40) \text{ का LCM}} = \frac{1}{40} = 0.025$$

6. Find the LCM and HCF of 0.08, 0.006, 0.4

0.08, 0.006, 0.4 का ल०स० तथा म०स० ज्ञात करें?

(A) 0.2, 0.08

(B) 0.4, 0.08

(C) 2.1, 0.002

(D) 1.2, 0.002

H.W/R.W