

Foundation Batch

MATHS

LCM & HCF

LIVE **18-03-2024** 07:00PM



HCF

Highest Common

↓
सबसे बड़ा

↓
समान

Factor

↓
गुणखंड

(महत्तम समापवर्तक)

LCM
↓

Least Common

↓
सबसे छोटा

↓
समान

Multiple

↓
गुणज

(लघुत्तम समापवर्त्य)

≡ Multiple → a के गुणज
गुणज 4 वे सभी संख्याएँ जो 'a' से पूर्णतः
विभाजित हो जाएँ।

ex 6 के गुणज

= 6, 12, 18, 24, 30, $6n$

8 → 8, 16, 24, 32, 40 $8n$

13 → 13, 26, 39, 52 $13n$

Factors $\rightarrow$ a के गुणखंड
(गुणखंड) 4 के सभी संख्या जो 'a' को
पूर्णांक विभाजित करे है।

6 $\rightarrow$ 1, 2, 3, 6

21 $\rightarrow$ 1, 3, 7, 21

**

21 के कितने multiple होंगे = ∞

LCM → Least Common Multiple.

(4, 6)

4 → 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, ...

6 → 6, 12, 18, 24, 30, 36, 42, ...

12 = LCM

8 $\rightarrow$ 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96, 104, 112
12 $\rightarrow$ 12, 24, 36, 48, 60, 72, 84, 96, 108, 120 | 120 - - -
20 $\rightarrow$ 20, 40, 60, 80, 100, 120 - -

$$\boxed{LCM = 120}$$

2	36, 45, 90
3	18, 45, 45
3	6, 15, 15
2	2, 5, 5
5	1, 5, 5
	1, 1, 1

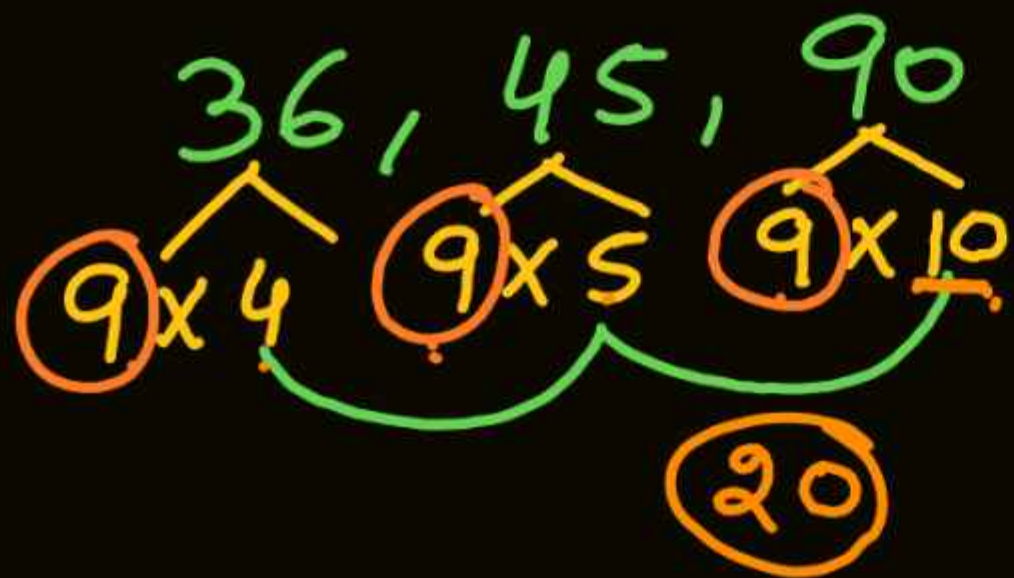
$$\text{LCM} = 2 \times 3 \times 3 \times 2 \times 5$$

$$= \underline{\underline{180}}$$

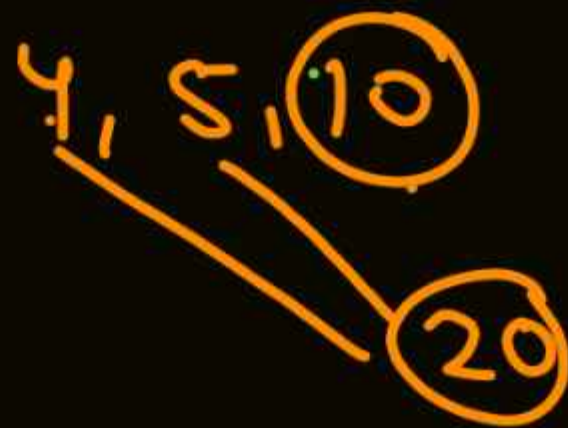
2	8, 12, 20
2	4, 6, 10
2	2, 3, 5
3	1, 3, 5
5	1, 1, 5
	1, 1, 1

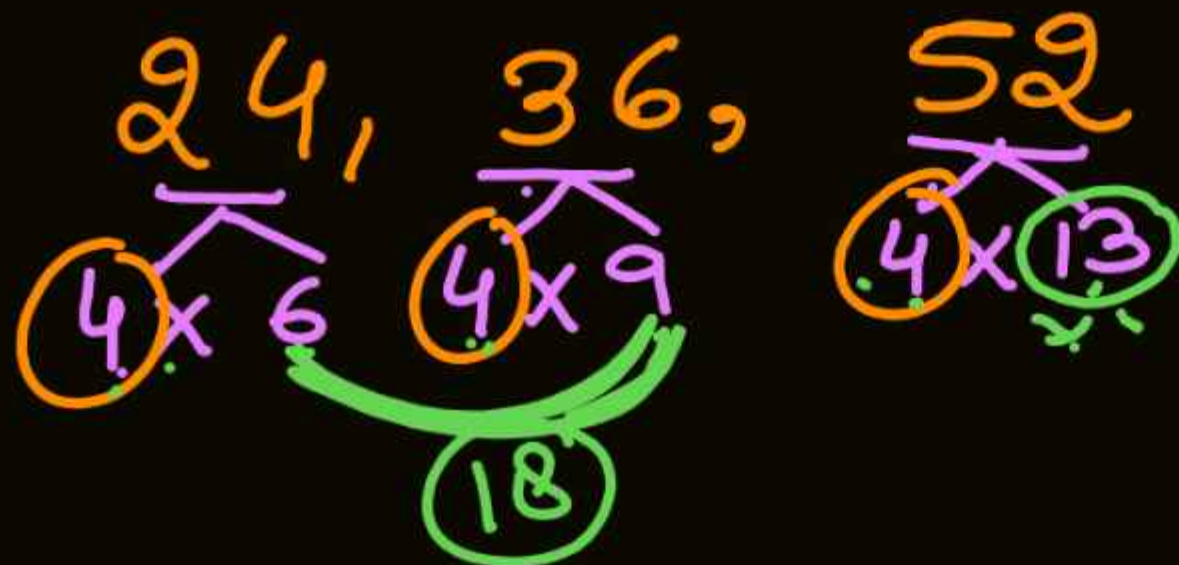
$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 5$$

$$= \underline{\underline{120}}$$



$$9 \times 20 = 180$$





$$4 \times 13 \times 18$$



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TYPE – I



2, 3, 7
6

$$7 \times 6 = \textcircled{42}$$

1. What will be the least common multiple of 2, 3 and 7?

2, 3, 7 का लघुत्तम समापवर्त्य क्या होगा?

(1) 42

(2) 21

(3) 14

(4) 6

$$\begin{array}{r|l} 2 & 2, 3, 7 \\ \hline 3 & 1, 3, 7 \\ \hline 7 & 1, 1, 7 \\ \hline & 1, 1, 1 \end{array}$$
$$2 \times 3 \times 7 = 42$$



2	16, 24, 36, 52, 54
2	8, 12, 18, 26, 27
2	4, 6, 9, 13, 27
2	2, 3, 9, 13, 27
3	1, 3, 9, 13, 27
3	1, 1, 3, 13, 9
3	1, 1, 1, 13, 3
13	1, 1, 1, 13, 1
	1, 1, 1, 1, 1

2. LCM of 16, 24, 36, 52 and 54. Is:

16, 24, 36, 52 और 54 का ल.स. है:

(1) 5216

(2) 5616

(3) 432

(4) 5618

$$16 \times 27 \times 13$$

$$432 \times 13$$

$$\underline{5616}$$



2. LCM of 16, 24, 36, 52 and 54. Is:

16, 24, 36, 52 और 54 का ल.स. है:

- 4 ←
- ~~(1) 5216~~
 - ~~(2) 5616~~
 - ~~(3) 432~~
 - ~~(4) 5618~~
- $\textcircled{13} \times 4$



$$\begin{array}{l|l} 2 & 94, 188, 235 \\ \hline 47 & 47, 94, 235 \\ \hline 2 & 1, 2, 5 \\ \hline 5 & 1, 1, 5 \\ \hline & 1, 1, 1 \end{array}$$

$$47 \times 20$$

$$\underline{\underline{940}}$$

3. What is the least common multiple of 94, 188 and 235?

94, 188 और 235 का लघुतम समापवर्तक कितना है?

- (1) 940
- (2) 705
- (3) 470
- (4) 1880

$$\begin{array}{ccc} 94 & , & 188 & , & 235 \\ \swarrow & & \swarrow & & \swarrow \\ 47 \times 2 & & 47 \times 4 & & 47 \times 5 \end{array}$$

20

$$47 \times 20 = 940$$



3. What is the least common multiple of 94, 188 and 235?

94, 188 और 235 का लघुतम समापवर्तक कितना है?

$$4 \times 47$$

✓ (1) 940

~~(2) 705~~

~~(3) 470~~

(4) $1880 = 940 \times 2$



9	108, 135, 162
3	12, 15, 18
2	4, 5, 6
2	2, 5, 3
3	1, 5, 3
5	1, 5, 1
	1, 1, 1, 1

$$9 \times 180 = \underline{\underline{1620}}$$

4. LCM of numbers 108, 135 and 162 is p, then find the value of $p \div 4$?

संख्याओ 108, 135 और 162 का ल.स.प p है, तो $p \div 4$ का मान ज्ञात कीजिए?

(1) 1620

(2) 400

(3) 405

(4) 602

$$\frac{p}{4} = \frac{1620}{4} = 405$$

$$108, 135, 162$$

27×4 27×5 27×6

$$27 \times 60 = \underline{\underline{1620}}$$



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TYPE – II

HCF $\rightarrow$ Highest Common factor.

(6, 12)

6 $\rightarrow$ 1, 2, 3, 6
12, 1, 2, 3, 4, 6, 12

HCF = 6

ex $(24, 32, 52) \rightarrow \text{HCF}$

24 $\rightarrow$ 1, 2, 3, 4, 6, 8, 12, 24
32 $\rightarrow$ 1, 2, 4, 8, 16, 32
52 $\rightarrow$ 1, 2, 4, 13, 26, 52

$\uparrow$
HCF = 4

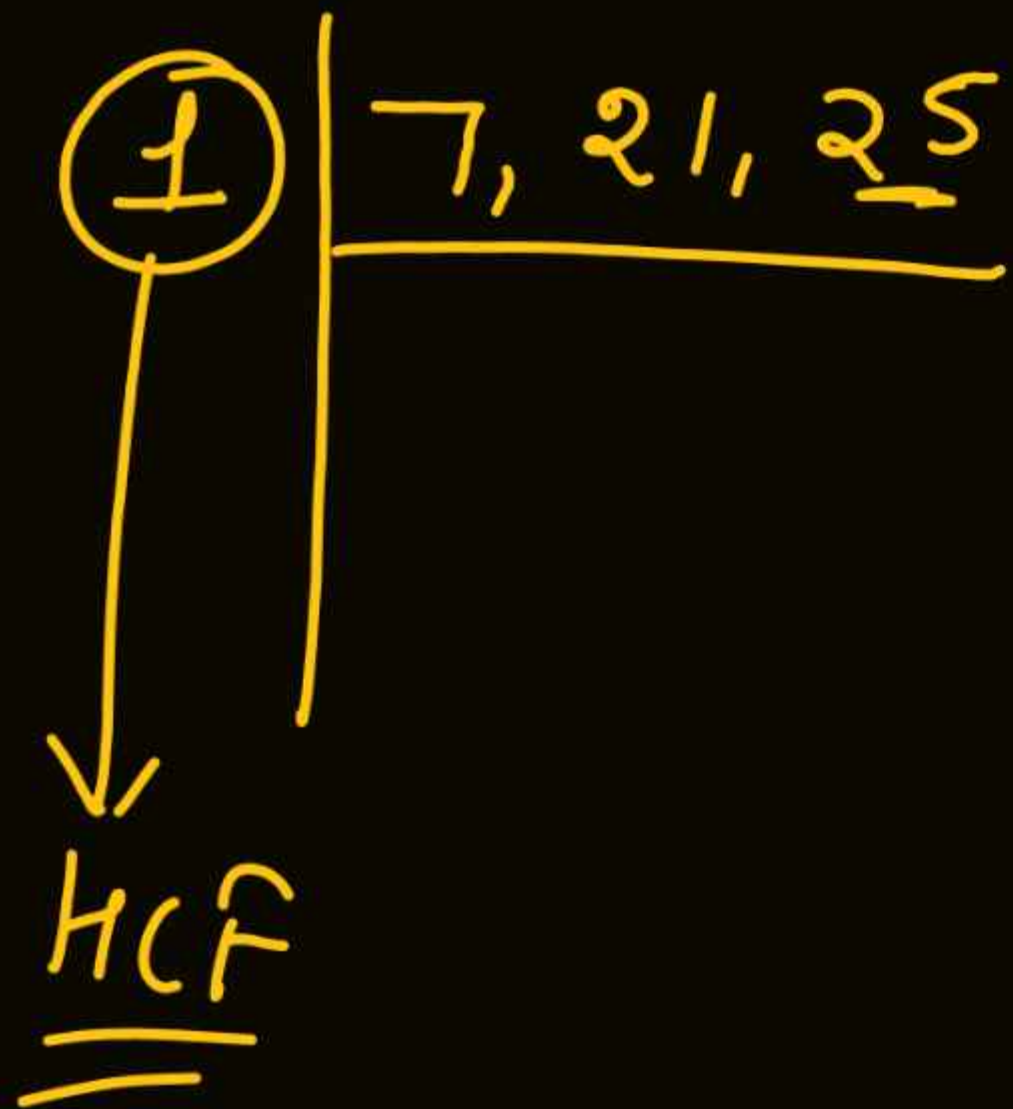
2	36, 54, 72
3	18, 27, 36
3	6, 9, 12
	2, 3, 4

$$\text{HCF} = 2 \times 3 \times 3 = 18$$

2	24, 32, 52
2	12, 16, 26
2	6, 8, <u>13</u>
	3, 4

$$\text{HCF} = 2 \times 2 = 4$$

$(7, 21, 25)$ HCF





4	4, 8, 12
<u>HCF</u>	1, 2, 3

6. What will be the highest common multiple of 4, 8 and 12?

4, 8 और 12 का महत्तम समापवर्तक क्या होगा ?

(1) 1

(2) 4

(3) 8

(4) 2

4, 8, 12
diff = 4

क्योंकि diff. HCF होगा और
diff. का कोई factor
HCF होगा

²24, ³36, ⁴54

12

2 x 6

HCF



7. Find the HCF of 144, 288 and 396.

144, 288 और 396 का म.स ज्ञात करें।

2	144, 288, 396
2	72, 144, 198
3	36, 72, 99
3	12, 24, 33
	4, 8, 11

$$\text{HCF} = 2 \times 2 \times 3 \times 3$$

$$\underline{\underline{36}}$$

(1) 18

(2) 72

~~(3) 36~~

(4) 48

$$\begin{array}{r} 11 \\ 396 \\ \hline 36 \end{array}$$

40 80 110

144, 288, 396

144

2 x 72 x

3 x 48 x

4 x 36 x

$$72 \times 5 = 360$$



H.C.F

8. The greatest common multiple of (608, 544) (638, 783) and (425, 476) will be respectively-

(608, 544) (638, 783) तथा (425, 476) का महत्तम समावर्तक क्रमशः होगा-

- (1) 32, 29, 17
- (2) 17, 32, 29
- (3) 29, 32, 17
- (4) 32, 17, 29



81, 91, 101, 111
↑
Prime

HCF = 1

9. What will be the highest common multiple (HCF) of 81, 91, 101 and 111?

81, 91, 101 और 111 का महत्तम समापवर्तक (HCF) कितना होगा?

- (1) 3
- (2) 7
- (3) 1
- (4) 13

12, 24, 36, 48, 59

HCF = 1

P



10. HCF of 513, 1107 and 783. Find (HCF).

513, 1107, 783.

513, 1107 और 783 का म.स. (HCF) ज्ञात कीजिए।

270

27 x 10

(1) 27

(2) 21

(3) 22

(4) 19

High