

HCF &amp;

GCD

$$6 \rightarrow 1 \times 6$$

$$2 \times 3$$

$$3 \times 2$$

$$\textcircled{6} \times 1 \quad \text{GCD/HCF}$$

find HCF 42 54 36

$$2 \mid 42 \quad 54 \quad 36 \quad \text{Start from 1}$$

$$3 \mid 21 \quad 27 \quad 18$$

$$7 \quad 6 \quad 9 \quad \text{They cannot be further divided}$$

$$\text{GCD} = 2 \times 3 = 6 //$$

LCM

$$2 - 2, 4, \textcircled{6}, 8, 10, 12, 14, 16, 18, 20, 22, 24, \dots$$

$$3 - 3, \textcircled{6}, 9, 12, 15, 18, 21, 24, \dots$$

$$\text{LCM}(2, 3) = 6 //$$

least multiple

5	250	100	125
5	50	20	25
5	10	4	5
2	2	2	1
2	1	1	1
	1	1	1

$$\text{LCM} = 5 \times 5 \times 5 \times 2 \times 2 = 500 //$$



Tips

18, 24, 30 - 6 - Just through observation

LCM

12, 24, 36, 72, 144

if they are multiples the consider  
Greatest as the LCM

144  
24, 36, 72 - 72

pls note every thing should be a  
multiple

12 36 48 not a multiple

12 36 48  
12 | 12 36 48  
3 | 1 3 4  
3 | 1 1 0  
3 144

$$48 \times 2 = 96$$

$$48 \times 3 = 144 \text{ — now both are multiples}$$

Classic method

$$\frac{1}{30} - \frac{1}{45} = \frac{45-30}{80 \times 45} = \frac{1}{90}$$



1.) what is LCM of  $\frac{36}{225}, \frac{48}{150}, \frac{72}{65}$

\*\*  
 LCM fraction =  $\frac{\text{LCM Numerator}}{\text{HCF Denom}}$

$$\begin{array}{r} 36 \quad 48 \quad 72 \\ \hline \end{array}$$

LCM = 144

$$\frac{144}{5}$$

HCF: 5 | 225, 150, 65  
 45 30 13

2.) what is HCF of  $\frac{36}{75}, \frac{48}{150}, \frac{72}{135}$

HCF fraction =  $\frac{\text{HCF Num}}{\text{LCM Denominator}}$

HCF = 12

LCM = 4350

$$\frac{12}{4350}$$

If greatest = hcf  
 If sum / least = LCM



- 3.) what is the greatest number that divides 17, 41 and 93 and leaves 4, 3 and 3

$$\frac{17}{x} = 4 - \textcircled{1}$$

$$\frac{41}{x} = 3 - \textcircled{2}$$

$$\frac{93}{x} = 15$$

$$17 - 4 = \frac{13}{x} - \textcircled{4}$$

$$\frac{39}{x} - \textcircled{5}$$

$$\frac{70}{x} - \textcircled{6}$$

GCD of 4, 5, 6

$$\frac{17}{13} = R: 4$$

So on

13	39	78
1	3	6

cur if its 1  
don't go  
further

- 4.) what least number when divided by 36, 24, 16 leaves 11 remainder in each case

first take LCM

1	36	24	16
3	9	6	4
2	3	2	4
	③	1	②

LCM = 144 but 144 divides perfectly

$$144 + 11 = 155$$



- 5.) what least numbers when divided by 20, 48 & 36 leaves remainder 13, 41, 29

Take LCM

$$\begin{array}{r|l} 4 & 20, 48, 36 \\ 3 & 5, 12, 9 \\ & 5, 4, 3 \end{array}$$

$$20 - 13 = 7 \quad 48 - 41 = 7$$

$$36 - 29 = 7$$

LCM

$$\text{LCM} - 7 = 713$$

- 6.) what least possible 4-digit number when divided by 12, 16, 18, 20 leaves 21 as remainder

$$\begin{array}{r|l} 2 & 12, 16, 18, 20 \\ 2 & 6, 8, 9, 10 \\ 3 & 3, 4, 6, 5 \\ & 4, 3 \end{array}$$

LCM = 720

Since they want a digit  
take multiple

$$1440 + 21$$

1461



7.) The ratio of two number is 5:6 and LCM is 480  
then HCF

$$AB = \text{HCF} \times \text{LCM}$$

$$5 \times 6K = 480 \times K$$

$$30K = 480$$

$$K = 16 \quad \Rightarrow \quad \text{HCF}$$

$$15 \times 10 = 300 = \text{An}$$

$$\text{HCF} = 5$$

$$\text{LCM} = 60$$

$$\text{LCM} \times \text{HCF} = 300$$

8.) HCF and LCM of two numbers is 8 and 96.  
sum of those numbers is 56. Then what is  
reciprocal

$$AB = \text{HCF} \times \text{LCM}$$

$$A = 8 \quad B = 96$$

$$\frac{1}{8} + \frac{1}{96} = \frac{56}{8 \times 96} = \frac{7}{96}$$

9.) what largest num be. will divide 47, 35 & 27  
leaving remainder in each case what will be  
common remainder

$$47, 35, 27$$

1st Subtract

$$47 - 35 = 12$$

$$35 - 27 = 8$$

$$27 - 47 = 20 \quad \text{gcd} = 4$$

$$\begin{array}{r} 4 \overline{) 12 \ 8 \ 20} \\ \underline{3 \ 2 \ 16} \end{array}$$

Now divide in

$$\frac{47}{4} = 11 \dots 3 \quad \text{So on}$$



- 10.) There are 3 equilateral triangles with sides 114 cm, 76 cm and 152 cm. what maximum size can measure them

$$\begin{array}{r|rrrr} 2 & 152 & 114 & 76 \\ 19 & 8 & 6 & 4 \\ 3 & 2 & 4 \end{array}$$

$$\text{GCD} = 39$$

Now it can be placed perfectly

- 11.) If  $(x-a)$  is the HCF of  $x^2 - 8x + 15$  &  $x^2 - Kx - 1$  then what is  $K$

It says when  $x=a$  answer is zero

$$x = a$$

$$x^2 - 8x + 15 = 0$$

$$x^2 - Kx - 1 = 0$$

$$x^2 - 8x + 15 = x^2 - Kx - 1 = 0$$

$$x^2 = 16 \quad x = 4$$

Sub  $x=4$  in eqn

$$x^2 - 8x + 15 = x^2 - Kx - 1$$

$$K = 4$$



future can be only found using LCM

It shows future occurrence

- 12.) 5 clocks ring automatically at intervals of 12 minutes, 8 minutes, 3 minutes, 4 minutes and 10 minutes. In 8 hours from moment they start, how many times will they ring?

$$\begin{array}{r|rrrrrr} 2 & 12 & 8 & 3 & 4 & 10 \\ & 6 & 4 & & & 5 \\ & 3 & 2 & & & 5 \end{array}$$

$$\text{LCM} = 120 \text{ min} = 2 \text{ hrs}$$

$$\frac{8}{2} = 4 \text{ sections}$$

- 13.) 3 cyclists along the circumference of a jungle. They complete one round in 27 minutes, 45 minutes and 63. Since they start together, when will they meet?

$$\begin{array}{r|rrrr} 9 & 27 & 45 & 63 \\ & 3 & 5 & 7 \end{array}$$

$$\text{LCM} = 9 \times 3 \times 5 \times 7 = 945 \text{ min}$$



- 14.) Many wants to paste wallpaper on wall. The wall is 4 metres and 50 cm in length 3 metres and 50 cm in height. wall needs to be covered completely by square pieces of wallpaper having same size. what is the number of maximum sized wallpaper

$$\begin{array}{r|rr} 50 & 450 & 350 \\ & 90 & 7 \end{array}$$

$$\begin{array}{l} 480 \text{ cm} \\ \xrightarrow{\quad} 350 \text{ cm} \end{array}$$

$$\text{HCF} = 50$$

So In order to find total wallpaper

$$\frac{450 \times 350}{50 \times 50} = 63$$

- 15.) The sum of 2 numbers is 156 and HCF is 13. The number of such number pairs is

If it has 13 as HCF it needs to be 13 multiple

13 26 39 52 65 78 91 104 117 130 143 156

$$\text{HCF}(13, 156) = 13$$

$$\text{HCF}(26, 130) = 26$$

$$\text{HCF}(39, 117) = 39$$

$$\text{HCF}(65, 91) = 13$$

So only 2



16) What is the least number when divided by 3, 5, 6, 10, 12 leaves remainder. 2 and when divided by 13 remainder 0

$$a) 312 \quad b) 962 \quad x) 1562 \quad y) 1581$$

$$x) 13$$

$$1566 - 2 = 1564$$

$$312 - 310 = 2$$

So

$$962 //$$