CW
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Revision Exercise (Chapter 8)

1. Find the HCF of:

i) 108, 288 and 420

Ans. Using division method we get

HCF of 108 and 288

$$
\begin{array}{r|l|l}
108 & 288 & 2 \\
 & -216 & \\
\hline
72 & 108 & 1 \\
 & -72 & \\
\hline
36 & 72 & 2 \\
 & -72 & \\
\hline
 & 0 &
\end{array}
$$

Here the last divisor is 36

∴ HCF of 108 and 288 is 36

HCF of 108, 288 and 420 = HCF of 36 and 420

$$
\begin{array}{r|l|l}
36 & 420 & 11 \\
 & -36 & \\
\hline
 & 60 & \\
 & -36 & \\
\hline
24 & 36 & 1 \\
 & -24 & \\
\hline
12 & 24 & 2 \\
 & -24 & \\
\hline
 & 0 &
\end{array}
$$

Here the last divisor is 12

So, the HCF of 36 and 420 is 12

∴ The HCF of 108, 288 and 420 is 12.

ii) 36, 54 and 138

Ans- By using division method we get,
HCF of 36 and 54

```
36 | 54 | 1
   -36
   ---
   18 | 36 | 2
      -36
      ---
       0
```

Here the last divisor is 18.
∴ The HCF of 36 and 54 is 18.
HCF of 36, 54 and 138 = HCF of 18 and 138

```
18 | 138 | 7
   -126
   ----
   12 | 18 | 1
      -12
      ---
      6 | 12 | 2
        -12
        ---
         0
```

Here the last divisor is 6
So, the HCF of 18 and 138 is 6
∴ The HCF of 36, 54 and 138 is 6

2. Find the LCM of:

i) 72, 80 and 252

Ans- By using Common division method the LCM of 72, 80 and 252 is

2	72, 80, 252
2	36, 40, 126
2	18, 20, 63
2	9, 10, 63
3	9, 5, 63
3	3, 5, 21
	1, 5, 7

LCM of 72, 80 and 252 = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 7$

$= 5040$

ii) 48, 66 and 120

Ans- By using Common divison method the LCM of 48, 66 and 120 is

2	48, 66, 120
2	24, 33, 60
2	12, 33, 30
3	6, 33, 15
	2, 11, 5

LCM of 48, 66, 120 is $= 2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 11$

$= 2640$

3. State true or false (Give an example in support of your answer in each case):

i) HCF of two prime numbers is 1

Ans- The Statement is True.

Example: The two prime numbers are 2 and 3.

HCF of 2 and 3 =

By using division method we get

$$\begin{array}{r|l|l} 2 & 3 & 1 \\ & -2 & \\ \hline 1 & 2 & 2 \\ & -2 & \\ \hline & 0 & \end{array}$$

Here the last divisor is 1.

So, the HCF of 2 and 3 is 1.

So, The prime numbers have no common factor except 1.

∴ The above statement is True.

ii) HCF of two co-prime numbers is 1

Ans) The Statement is True

Example: Two co-prime numbers are 4 and 9

HCF of 4 and 9 =

Using Division method we get

$$\begin{array}{r|l|l} 4 & 9 & 2 \\ & -8 & \\ \hline 1 & 4 & 4 \\ & -4 & \\ \hline & 0 & \end{array}$$

Here the last divisor is 1

So, the HCF of 4 and 9 is 1

∴ The above Statment is True.

iii) LCM of two prime numbers is equal to their product.

Ans- The statement is True

Example: The two prime numbers are - 5 and 11

Using Common division Method LCM of 5 and 11 is

5	5, 11
11	1, 11
	1, 1

LCM = 5 × 11 = 55

The product of 5 and 11 = 5 × 11

= 55

So, the two prime numbers is equal to their product.

∴ The above statement is True.

iv) LCM of two Co-prime numbers is equal to their product.

Ans- The statement is True

Example: The two co-prime numbers are 4 and 9

Using Common division method LCM of 4 and 9 is

2	4, 9
3	2, 9
	2, 3

LCM = 2 × 2 × 3 × 3 = 36

The product of 4 and 9 is = 4 × 9

= 36

So, The LCM of two Co-prime numbers is equal to their product.

∴ The above statement is True.

4. The product of two numbers is 12096 and their HCF is 36. Find their LCM.

Ans- Product of two numbers = 12096
HCF of the two numbers = 36
Relationship between HCF and LCM is
Product of two numbers = Product of their HCF and LCM
Product of two numbers = 12096
So as the relation,
HCF × LCM = 12096
36 × LCM = 12096
LCM = 12096/36
= 336
∴ The LCM of the two numbers is 336.

5. The product of the HCF and LCM of two numbers is 1152. If one number is 48, find the other one.

Ans- Product of the HCF and LCM = 1152
One number = 48
Relationship between HCF and LCM =
Product of HCF and LCM = Product of the two numbers
Product of the HCF and LCM = 1152
So as per the relation,
Product of the two numbers = 1152
48 × other number = 1152
Other number = 1152/48
= 24
∴ The other number is 24.

6.i) Find the smallest number that is completely divisible by 28 and 42.

Ans- We know that the least number which is divisible by 28 and 42 is their LCM.

LCM of 28 and 42 :

2	28, 42
7	14, 21
	2, 3

LCM of 28 and 42 = $2 \times 2 \times 3 \times 7 = 84$

∴ The smallest number that is completely divisible by 28 and 42 is 84.

ii) Find the largest number that can divide 28 and 42 completely.

Ans- We know that the largest number which can divide 28 and 42 completely will be their HCF.

HCF of 28 and 42 =

28	42	1
	28	
14	28	2
	28	
	0	

Here the last divisor is 14

∴ The HCF of 28 and 42 is 14

∴ The largest number that can divide 28 and 42 completely is 14.

7. Find the LCM of 140 and 168. Use the LCM obtained to find the HCF of given numbers.

Ans- Numbers are 140 and 168

LCM of 140 and 168 =

2	140, 168
2	70, 84
7	35, 42
	5, 6

LCM of 140, 168 = $2 \times 2 \times 7 \times 5 \times 6 = 840$

$$\text{HCF} = \frac{1^{st} \text{ number} \times 2^{nd} \text{ number}}{\text{L.C.M}}$$

$$= \frac{140 \times 168}{840} = \frac{23,520}{840}$$

$$= 28$$

∴ The LCM of 140 and 168 is 840 and The HCF of 140 and 168 is 28.

8. Find the HCF of 108 and 450 and use the HCF obtained to find the LCM of the given numbers.

Ans- Numbers are given = 108 and 450

HCF of 108 and 450 =

108	450	4
	432	
18	108	6
	108	
	0	

Here the last divisor is 18

∴ HCF of 108 and 450 is 18.

$$\text{LCM} = \frac{1^{st} \text{ number} \times 2^{nd} \text{ number}}{\text{H.C.F}} = \frac{108 \times 450}{18} = 2700$$

∴ The HCF of 108 and 450 is 18 & LCM of 108 and 450 is 2700.