

How to Find the HCF and LCM of 3 numbers?

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In the previous segment, we saw the **HCF and LCM of 2 numbers**. In this segment, we will see how to find the HCF and LCM of 3 numbers.

How to find the HCF and LCM of three numbers?

Q. Find the HCF and LCM of 18, 20, and 30.

Solution:

- **Reduce 18 to its Prime Factors and write them in their exponential form.**

$$\begin{array}{r|l}
 2 & 18 \\
 \hline
 3 & 9 \\
 \hline
 & 3
 \end{array}$$

Fig 1

$$18 = 2 \times 3 \times 3 = 2 \times 3^2$$

- **Reduce 20 to its Prime Factors and write them in their exponential form**

$$\begin{array}{r|l}
 2 & 20 \\
 \hline
 2 & 10 \\
 \hline
 & 5
 \end{array}$$

Fig 2

$$20 = 2 \times 2 \times 5 = 2^2 \times 5$$

- **Reduce 30 to its Prime Factors and write them in their exponential form.**

$$\begin{array}{r|l} 2 & 30 \\ \hline 3 & 15 \\ \hline & 5 \end{array}$$

Fig 3

$$30 = 2 \times 3 \times 5$$

- **Find the HCF.**

To find the HCF, multiply the smallest powers of shared factors. Shared factors are the prime factors that are present in all the numbers. Here, 2 is the only factor present in all the numbers.

The smallest power is 2^1 .

$$\therefore \text{HCF} = 2$$

- **Find the LCM.**

To find the LCM, multiply the highest powers of each factor, whether it is shared or not.

$$\therefore \text{LCM} = 2^2 \times 3^2 \times 5 = 4 \times 9 \times 5 = 180$$

Summary

LCM and HCF of 3 Numbers

- Reduce all numbers to their prime factors
- Write the factors in their exponential form
- To find the HCF, multiply the smallest powers of shared factors
- To find the LCM, multiply the highest powers of each factor

What's next?

In our next segment of **Class 10 Maths**, we will learn the **Fundamental Theorem of Arithmetic**.