

9. HCF-LCM

- The **highest common factor** (HCF) of two or more given numbers is the highest of their common factors.
- The **lowest common multiple** (LCM) of two or more given numbers is the least of their common multiples.
- We can find the HCF and LCM of given numbers by any of the following methods-

1. **Prime factorisation method**

2. **Common division method**

Example 1:

Find the HCF of numbers 90, 120 and 150.

Solution:

First of all we need to prime factorise the given numbers.

For example, the HCF of 90, 120, 150 can be found as:

2	90
3	45
3	15
5	5
	1

2	120
2	60
2	30
3	15
5	5
	1

2	150
3	75
5	25
5	5
	1

$$\begin{aligned}
 90 &= 2 \times 3 \times 3 \times 5 \\
 120 &= 2 \times 2 \times 2 \times 3 \times 5 \\
 150 &= 2 \times 3 \times 5 \times 5
 \end{aligned}$$

$$\therefore \text{HCF of } 90, 120 \text{ and } 150 = 2 \times 3 \times 5 = 30$$

Example 2:

Find the LCM of 90, 120 and 150.

Solution:

To find the LCM of 90, 120 and 150, we may proceed as follows:

2	90, 120, 150
2	45, 60, 75
2	45, 30, 75
3	45, 15, 75
3	15, 5, 25
5	5, 5, 25
5	1, 1, 5
	1, 1, 1

$$\therefore \text{LCM of } 60 \text{ and } 120 = 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5 = 1800$$

- Note: Product of LCM and HCF of two numbers = Product of the two numbers