Problems on HCF and LCM

The Highest Common Factor (HCF) of two or more numbers is the largest number that divides all the given numbers exactly, without leaving a remainder. It is the greatest number that is a factor of each number.

What is LCM (Lowest Common Multiple)?

The Lowest Common Multiple (LCM) of two or more numbers is the smallest number that is a multiple of all the given numbers. It is the smallest number that both numbers divide evenly into.

Solving Problems Involving HCF and LCM

HCF Problems: To find the HCF, list the factors of the numbers and find the largest common factor.

LCM Problems: To find the LCM, list the multiples of the numbers and find the smallest common multiple.

Properties of HCF and LCM

- The HCF of two numbers is the largest number that divides both numbers evenly.
- The LCM of two numbers is the smallest number that is divisible by both numbers.
- HCF × LCM = Product of the two numbers: For any two numbers, the product of the HCF and LCM is equal to the product of the two numbers.

Example 1: HCF Problem

Question: Find the HCF of 36 and 60.

Solution:

Step 1: List the factors of 36:

1, 2, 3, 4, 6, 9, 12, 18, 36

Step 2: List the factors of 60:

1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60

Step 3: Identify the common factors:

Common factors: 1, 2, 3, 4, 6, 12

Step 4: The highest common factor is 12.
Answer: The HCF of 36 and 60 is 12.
Example 2: LCM Problem
Question: Find the LCM of 8 and 12.
Solution:
Step 1: List the multiples of 8:
8, 16, 24, 32, 40, 48, 56, 64, ...
Step 2: List the multiples of 12:
12, 24, 36, 48, 60, 72, ...
Step 3: Identify the common multiples:
Common multiples: 24, 48, 72, ...
Step 4: The smallest common multiple is 24.

Answer: The LCM of 8 and 12 is 24.

Summary Points

- HCF is the largest number that divides two or more numbers exactly.
- LCM is the smallest number that is divisible by two or more numbers.
- The product of HCF and LCM of two numbers is equal to the product of the two numbers.
- To solve problems on HCF and LCM, list the factors or multiples, then find the common one.