

LCM And HCF

 Time Spent :
 00 Hours
 02 Minutes
 27 Seconds

</> Basic Formulas:

> Problems On H.C.F And L.C.M - Important Formulas

1. Factors and Multiples:

- ✓ If any number a can divide another number b without leaving a remainder, we say that a is a factor of b .
- ✓ In this case, b is called a multiple of a .

2. Highest Common Factor (H.C.F.) or Greatest Common Measure (G.C.M.) or

- ✓ Greatest Common Divisor (G.C.D.):
- ✓ The H.C.F. of two or more than two numbers is the greatest number that divides each of
- ✓ them without leaving a remainder.

There are two methods of finding the H.C.F. of a given set of numbers:

- ✓ Factorization Method: Express each one of the given numbers as a product of prime factors. The product of least powers of common prime factors gives the H.C.F.
- ✓ Division Method: Suppose we have to find the H.C.F. of two given numbers, divide the larger number by the smaller one. Now, divide the divisor by the remainder. Repeat the process of dividing the preceding number by the remainder until the last obtained number is zero. The last divisor is the required H.C.F.
- ✓ Finding the H.C.F. of more than two numbers: Suppose we have to find the H.C.F. of three numbers, then firstly, find the H.C.F. of any two of the given numbers. Then, find the H.C.F. of the third number and the H.C.F. obtained from the first two number, using any of the procedures mentioned above. The required H.C.F. is obtained. Similarly, the H.C.F. of more than three numbers may be obtained.

3. Least Common Multiple (L.C.M.):

- ✓ The least number which is exactly divisible by each one of the given numbers is called their
- ✓ L.C.M.
- ✓ There are two methods of finding the L.C.M. of a given set of numbers:
- ✓ Factorization Method: Resolve each one of the given numbers into a product of prime factors. Then, L.C.M. is the product of highest powers of all the factors.
- ✓ Division Method (short-cut): Arrange the given numbers in a row of any order. Divide them by a number which divides at least two of the given numbers without leaving a remainder and carry forward the numbers which are not divisible. Repeat the above process till no two of the numbers are divisible by the same number.



- ✓ except The product of the divisors and the undivided numbers is the
- ✓ required L.C.M. of the given numbers.
- ✓ Product of two numbers = Product of their H.C.F. and L.C.M.
- ✓ Co-primes: Two numbers are said to be co-primes if their H.C.F. is 1.
- ✓ H.C.F. and L.C.M. of Fractions:
- ✓ $\text{H.C.F.} = \text{H.C.F. of Numerators (divided by) L.C.M. of Denominators}$
- ✓ $\text{L.C.M.} = \text{L.C.M. of Numerators (divided by) H.C.F. of Denominators}$
- ✓ H.C.F. and L.C.M. of Decimal Fractions:
- ✓ In a set of given numbers, make the same number of decimal places by annexing zeros in somennumbers, if necessary.
Considering these numbers without decimal point, find H.C.F. or
- ✓ L.C.M. as the case may be. Now, in the result, mark off as many decimal places as are there in each of the given numbers.
- ✓ Comparison of Fractions:
- ✓ Find the L.C.M. of the denominators of the given fractions. Convert each of the fractions into an equivalent fraction with L.C.M as the denominator, by multiplying both the numerator and denominator by the same number. The resultant fraction with the greatest numerator is the greatest.

</> Introduction

- ✓ The Lowest Common Multiple of two or more given numbers is the least or smallest number which is exactly divisible by each of them.
- ✓ The H.C.F of two or more numbers is the greatest number which divides each of them exactly.It also known as Greatest Common Divisor (G.C.D) or Greatest Common Measure (G.C.M)

</> Lowest Common Multiple

</> Shortcut For LCM

</> Remembered Points



- ✓ **FACTORS:** The numbers which exactly divide a given number are called factors.
- ✓ Example: factors of 15 are 1, 3, 5 and 15 itself.
- ✓ **MULTIPLES:** When a number is completely divisible by another number, then the former number is called the multiple of the latter. Obviously, the former number contains the latter number.
- ✓ Example: 24 is a multiple of 1, 2, 3, 4, 6, 8, 12 and 24 itself.
- ✓ **PRIME NUMBER:** A number is said to be a prime number if its factors are 1 and the number itself only.
- ✓ 2, 3, 5, 7, 11, 13, 17, 19, 23, 29..... are Prime Numbers.
- ✓ **Co-Prime:** Two numbers are said to be Co-Prime i.e, Prime to each other if there is no common factor except 1 in between them.
- ✓ Example: 5 and 7 are Co-Prime.
- ✓ **Common Factor:** When a unique number divides exactly two or more given numbers then that number is called the common factor of the given numbers.
- ✓ Example: 5 is a common factor of 15 and 25.
- ✓ **Common Multiple:** It is defined as a number which is exactly divisible by each of the numbers under consideration.
Example : 60 is a common multiple of 2, 3, 4, 5, 6, 10, 12, 15, 20, 30.

</> Highest Common Factor

</> Shortcut For HCF

</> L.C.M And H.C.F Important Formula

- ✓ H.C.F of fractions = H.C.F of Numerators/ L.C.M of Denominators
- ✓ L.C.M of fractions = L.C.M of Numerators/ H.C.F of Denominators
- ✓ Note: Product of two numbers= LCM of two numbers*HCF of two numbers.

MARK AS COMPLETED

