SNS COLLEGE OF TECHNOLOGY

An Autonomous Institution

Coimbatore-35

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

23GET275 – VQAR I

II YEAR/ III SEMESTER

UNIT 1 – QUANTITATIVE ABILITY I

TOPIC 3 – **Least Common Multiple (**LCM)

What is LCM (Least Common Multiple)?

In arithmetic, the **LCM** or **least common multiple** of two numbers **a** and **b**, is denoted as **LCM (a,b)** is the smallest or least positive integer that is divisible by both **a** and **b**.

LCM is also called the **Least Common Divisor**

How to Find LCM?

LCM by Listing Method
LCM by Prime Factorization Method
LCM using Division Method

LCM by Listing Method

Step 1: List down the first few multiples of A and B.
Step 2: Mark the common multiples from the multiples of both numbers.
Step 3: Select the smallest marked common multiple. Hence, this results in the LCM(A, B)

Example: Find LCM of two positive integers 2 and 6.
Answer:
Multiples of 2: 2,4,6,8,10,12,14…
Multiples of 6: 6,12,18,24, 30…
The common multipliers of 2 and 6 are 6, 12…, So, the least common multiple is 6.
Hence, LCM(2, 6) = 6

LCM by Prime Factorization Method

- First, find the prime factors of the given numbers using the repeated division method.
- Write these numbers in the form of an exponent and find the product of only those prime factors that have the highest power.
- The product of these factors with the highest powers is the LCM of the given numbers

Example

Example: Find LCM of two positive integers 120 and 300.

Answer:

The prime factorization of 120 are: $2*2*2*3*5 = 2^3*3^1*5^1$

The prime factorization of 300 are: $2*2*3*5*5 = 2^2*3^1*5^2$

Now, find the product of only those factors that have the highest powers among these. This will be, $2^3 * 3^1 * 5^2 = 8 * 3 * 25 = 600$

Hence, LCM(120, 300) = 600

LCM by Division Method

Step 1: Find a prime number which is a factor of at least one of the given numbers. Write this prime number on the left of the given numbers.

Step 2: If the prime number in Step 1 is a factor of the number, then divide the number by the prime and write the quotient below it. If the prime number in step 1 is not a factor of the number, then write the number in the row below as it is. Continue the steps until 1 is left in the last row.

HCF

Example: Find the HCF and LCM of 1/3 , 8/7, 9/11.

Answer:

LCM of given Numbers : LCM(1,8,9)/HCF (3,7,11) = 72/1.

HCF of given Numbers : HCF(1,8,9)/LCM(3,7,11) = 1/231.

LCM

•Find the greatest number that will divide 72, 96, and 120 leaving the same remainder in each case.

Answer

To find the greatest number that will divide these numbers leaving the same remainder, we need to find the Highest Common Factor (HCF) of the differences between the numbers. The differences are as follows:

96 – 72 = 24

120 – 96 = 24

HCF(24, 24) = 24

Therefore, the greatest number that will divide 72, 96, and 120 leaving the same remainder in each case is 24.

THANK YOU