Finding LCM by Prime Factorisation

The following are the steps to find LCM by the prime factorization method.

Step 1: The prime factors of the numbers are found.

Step 2: Each number is expressed as a product of primes and they are matched vertically.

Step 3: The primes in each column are written.

Step 4: The factors collected in the above steps are multiplied together to arrive at the LCM of the numbers.

Let us understand with an Example:

Example: Find the LCM by prime factorization method of 32, 48 and 72.

Solution: 32 is obtained when 2 is multiplied 5 times.

$$32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$$

48 can be obtained when 2 is multiplied 4 times and 3 one time.

$$48 = 2 \times 2 \times 2 \times 2 \times 3 = 2^4 \times 3^1$$

72 can be obtained when 2 is multiplied 3 times and 3 twice.

$$72 = 2 \times 2 \times 2 \times 3 \times 3 = 2^3 \times 3^2$$

The least common multiples of 32, 48 and 72 = $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 288$.