DAY 4

In last section we have discussed about HCF and LCM of two, three numbers by Fundamental Theorem of Arithmetic. In this section, we will discuss some more applications based on this theorem.

1. If HCF(306,657)=9 then find LCM(306,657). (NCERT Ex.1.2 Q4)

Sol:- Given HCF $= 9$.

Prime factorization of $306 = 2 \times 3^2 \times 17$ and of $657 = 3^2 \times 73$

Since LCM×HCF = product of two integers

$\text{LCM} \times 9 = 306 \times 657$

$\text{LCM} = \frac{306 \times 657}{9} = 22338$

2. Explain why $4 \times 7 \times 9 \times 11 + 11$ is composite number.

Sol:- $4 \times 7 \times 9 \times 11 + 11 = 11(4 \times 7 \times 9 + 1)$

$= 11 \times 253 = 11 \times 11 \times 23$

Since Given number can be factorised into prime numbers.

So It is composite number.

3. Explain why $7 \times 11 \times 13 + 13$ is composite number. (NCERT Ex1.2, Q6)

Sol:- $7 \times 11 \times \mathbf{13} + \mathbf{13} = 13(7 \times 11 + 1) = 13(77 + 1) = 13 \times 78$

$= 13 \times 2 \times 3 \times 13$

Since Given number can be factorised into prime numbers.

So It is composite number.

4. Check whether 6^n can end with the digit 0 for any $n \in N$. (NCERT Ex1.2, Q5)

Sol:- Suppose 6^n can end with the digit 0 for any n∈N

$\therefore 6^n$ is divisible by 5 So 5 is a prime factor of 6^n

But $6^n = (2 \times 3)^n$, it does not contain 5

Our supposition that 5 is a prime factor of 6^n is wrong.

6^n does not end with 0.

5. Check whether 4^n can end with the digit 0 for any $n \in N$. (NCERT Example 5)

Sol:- Suppose 4^n can end with the digit 0 for any n∈N

$\therefore 4^n$ is divisible by 5 So 5 is a prime factor of 4^n

But $4^n = (2 \times 2)^n$, it does not contain 5

Our supposition that 5 is a prime factor of 4^n is wrong.

4^n does not end with 0.

EXERCISE

1. If HCF(44,72)=4 then find LCM(44,72).
2. If HCF(196,343)=49 then find LCM(196,343).
3. If LCM(120,144)=720 then find HCF(120,144).
4. Explain why $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ is composite number.
5. Explain why $1 \times 3 \times 5 \times 7 \times 9 + 9$ is composite number.
6. Explain why $1 \times 2 \times 3 \times 4 \times 5 + 1$ is composite number.
7. Check whether 12^n can end with the digit 0 for any $n \in N$.
8. Check whether 8^n can end with the digit 0 for any $n \in N$.