Prime Factorigation

Understanding Prime Factorisation

- Prime factorisation means breaking a number into a product of prime numbers.
- A prime number has only two factors: 1 and itself.
- We use division or factor tree method to do prime factorization.
- Prime factorisation helps in finding LCM, HCF, and solving higher problems easily.
- All the factors in the final answer must be prime numbers only.

Ways to Do Prime Factorisation

- Use division method: Divide by the smallest prime number again and again
- Use factor tree method: Break numbers step by step into smaller factors until all are prime

Examples with Solutions

Example: Prime factorisation of 12

Step 1: $12 \div 2 = 6$ Step 2: $6 \div 2 = 3$ Step 3: 3 is a prime number Prime factorisation: $2 \times 2 \times 3$ Example: Prime factorisation of 18 Step 1: $18 \div 2 = 9$ Step 2: $9 \div 3 = 3$

Step 3: 3 is a prime number

Prime factorisation: $2 \times 3 \times 3$

Example: Prime factorisation of 20

Step 1: 20 ÷ 2 = 10

Step 2: 10 ÷ 2 = 5

Step 3: 5 is a prime number

Prime factorisation: $2 \times 2 \times 5$ **Example:** Prime factorisation of 30 **Step 1:** $30 \div 2 = 15$ **Step 2:** $15 \div 3 = 5$ **Step 3:** 5 is a prime number Prime factorisation: $2 \times 3 \times 5$ **Example:** Prime factorisation of 36 **Step 1:** $26 \div 2 = 18$

Step 1: 36 ÷ 2 = 18
Step 2: 18 ÷ 2 = 9
Step 3: 9 ÷ 3 = 3
Step 4: 3 is a prime number
Prime factorisation: 2 × 2 × 3 × 3

Summary Points

- Prime factorisation means writing a number as a product of prime numbers.
- Use division or factor tree method to break down the number.
- All final factors must be prime numbers.
- It is useful in finding LCM and HCF.
- Practice helps in quick and accurate factorization.