



Finding HCF by Prime Factorisation

Understanding HCF by Prime Factorisation

- HCF (Highest Common Factor) is the greatest number that divides two or more numbers exactly.
- We can find HCF by using the prime factorisation method.
- In this method, we break each number into prime factors.
- Then we take only the common prime factors.
- Multiply those common factors to get the HCF.

Steps to Find HCF by Prime Factorisation

- **Step 1:** Find the prime factors of each number
- **Step 2:** Identify the common prime factors
- **Step 3:** Multiply the common factors to get the HCF

Examples with Solutions

Example: Find HCF of 12 and 18

$$12 = 2 \times 2 \times 3$$

$$18 = 2 \times 3 \times 3$$

$$\text{Common prime factors} = 2 \times 3$$

$$\text{HCF} = 6$$

Example: Find HCF of 20 and 30

$$20 = 2 \times 2 \times 5$$

$$30 = 2 \times 3 \times 5$$

$$\text{Common prime factors} = 2 \times 5$$

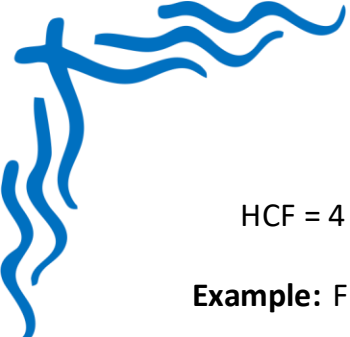
$$\text{HCF} = 10$$

Example: Find HCF of 8 and 12

$$8 = 2 \times 2 \times 2$$

$$12 = 2 \times 2 \times 3$$

$$\text{Common prime factors} = 2 \times 2$$


$$\text{HCF} = 4$$

Example: Find HCF of 9 and 15

$$9 = 3 \times 3$$

$$15 = 3 \times 5$$

Common prime factor = 3

$$\text{HCF} = 3$$

Example: Find HCF of 14 and 21

$$14 = 2 \times 7$$

$$21 = 3 \times 7$$

Common prime factor = 7

$$\text{HCF} = 7$$

Summary Points

- HCF is the greatest number that divides all given numbers without a remainder .
- Prime factorisation helps break numbers into their prime building blocks.
- Take only common prime factors to find HCF.
- Multiply the common prime factors to get the final HCF.
- This method is accurate and useful for larger numbers.