| | |
|---|---|
| **SESSION** | **: 12** |
| **CLASS** | **: IV** |
| **SUBJECT** | **: MATHEMATICS** |
| **CHAPTER NUMBER** | **: 10** |
| **CHAPTER NAME** | **: FACTORS AND MULTIPLES** |
| **SUBTOPIC** | **: HCF BY PRIME FACTORIZATION METHOD AND EXAMPLES** |

# LEARNING OBJECTIVE

- **Enable the students to understand how to find the HCF by using the prime factorization method.**

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# HIGHEST COMMON FACTOR

## HCF by Prime Factorization Method

**Example : 1** Find the HCF of 12 and 24 by prime factorization method.

**Solution :**

| | |
|---|---|
| 2 | 12 |
| 2 | 6 |
| | 3 |

| | |
|---|---|
| 2 | 24 |
| 2 | 12 |
| 2 | 6 |
| | 3 |

$12 = 2 \times 2 \times 3$

$24 = 2 \times 2 \times 2 \times 3$

**HCF** = 2 × 2 × 3 = 12

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# HIGHEST COMMON FACTOR

## HCF by Prime Factorization Method

**Example : 2** Find the HCF of 24 and 36 by prime factorization method.

**Solution :**

| | |
|---|---|
| **2** | 24 |
| **2** | 12 |
| **2** | 6 |
| | **3** |

| | |
|---|---|
| **2** | 36 |
| **2** | 18 |
| **3** | 9 |
| | **3** |

$24 = \mathbf{2} \times \mathbf{2} \times \mathbf{2} \times \mathbf{3}$

$36 = \mathbf{2} \times \mathbf{2} \times \mathbf{3} \times \mathbf{3}$

**HCF** = **2** × **2** × **3** = **12**

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# HIGHEST COMMON FACTOR

## HCF by Prime Factorization Method

**Example : 3** Find the HCF of 5 and 10 by prime factorization method.

**Solution :**

| 5 | 5 |
|---|---|
| | 1 |

| 5 | 10 |
|---|---|
| | 2 |

$5 = 5 \times 1$

$10 = 5 \times 2$

**HCF** = **5**

# HIGHEST COMMON FACTOR

## HCF by Prime Factorization Method

**Example : 4** Find the HCF of 40, 50 and 60 by prime factorization method.

**Solution :**

| | |
|---|---|
| 2 | 40 |
| 2 | 20 |
| 5 | 10 |
| | 2 |

| | |
|---|---|
| 2 | 50 |
| 5 | 25 |
| | 5 |

| | |
|---|---|
| 2 | 60 |
| 2 | 30 |
| 5 | 15 |
| | 3 |

$40 = 2 \times 2 \times 5 \times 2$

$50 = 2 \times 5 \times 5$

$60 = 2 \times 2 \times 5 \times 3$

**HCF** = 2 × 5 = 10

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# HIGHEST COMMON FACTOR

## HCF by Prime Factorization Method

**Example : 5** Find the HCF of 8, 16 and 32 by prime factorization method.

**Solution :**

| | |
|---|---|
| 2 | 8 |
| 2 | 4 |
| | 2 |

| | |
|---|---|
| 2 | 16 |
| 2 | 8 |
| 2 | 4 |
| | 2 |

| | |
|---|---|
| 2 | 32 |
| 2 | 16 |
| 2 | 8 |
| 2 | 4 |
| | 2 |

$24 = 2 \times 2 \times 2$

$36 = 2 \times 2 \times 2 \times 2$

$36 = 2 \times 2 \times 2 \times 2 \times 2$

**HCF** $= 2 \times 2 \times 2 = 8$

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# LEARNING OUTCOME:

**Students are  able to understand how to find out the HCF by using the prime factorization method.**

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# THANKING YOU

# ODM EDUCATIONAL GROUP