

**ZAMANI COLLEGE KADUNA**  
**JS2 Mathematics**  
**Holiday Assignment.**

**FACTORS**

**DEFN!** A factor is a number that can divide a given number without a remainder.

<b>Example: No.</b>	<b>Factors</b>
10	1, 2, 5, and 10
20	1, 2, 4, 5, 10 and 20
13	1 and 13

Note that 1 can divide every number and is called a universal factor.

**COMMON FACTOR:** List all the factors of the two or more numbers given, then pick the factor(s) that is/are common to the given numbers.

**Example:** Find the common factor (c.f) of:

- 40 and 54

**Solution:**

66  $\Rightarrow$  2, 3, 6, 11, 22, 33 and 66

90  $\Rightarrow$  2, 3, 5, 6, 9, 10, 15, 18, 30, 45 and 90

C.Fs. = 2, 3, and 6

Now, find the common factors of 56 and 82.

**PRIME NUMBER: (ON FACTOR)**

A prime number is a number that has only two factors. (1 and itself) 2, 3, 5, 7, 11, 13, ...

**HIGHEST COMMON FACTORS (H.C.F).**

In a given problem, among the common factors of two or more given numbers, the factor of highest value is the HCF.

**Example I:**

Find the HCF of 66 and 90:

Solution:

66  $\Rightarrow$  2, 3, 6, 11, 22, 33 and 66

90  $\Rightarrow$  2, 3, 5, 6, 9, 10, 15, 18, 30, 45 and 90

HCF = 6.

**Example II:** Find the HCF of 48 and 120

Solution:

$48 \Rightarrow 2, 3, 4, 6, 8, 12, 16, 24$  and  $48$

$120 \Rightarrow 2, 3, 4, 5, 6, 8, 10, 12, 15, 24, 30, 40, 60$  and  $120$

CFs =  $2, 3, 4, 6, 8, 12$  and  $24$

HCF =  $24$

The HCF of two or more given numbers can also be obtained by factorisation method.

FACTORISATION: It means to express a number as product of its prime factors Example

Find by factorisation the HCF of:

1.  $42, 70$  and  $56$ :

Solution:

$$42 = 2 \times 3 \times 7$$

$$70 = 2 \times 5 \times 7$$

$$56 = 2 \times 2 \times 2 \times 7$$

$$\text{HCF} = 2 \times 7$$

$$= 14$$

Not that the HCF is the product of the common prime factors in the factorisation.

Now: Find the HCF of the following:

1.  $55, 150$  and  $225$

2.  $115$  and  $120$

3.  $144, 216$  and  $360$

Express each of the following as product of its prime factors.

a.  $36$

b.  $102$

c.  $238$

d.  $216$