ACTIVITY 3

Q1. Find the common factors of the following numbers . Find their HCF

a.   20 and 45

20 = | 1 x 20
      | 2 x 10
      | 4 x 5

45= | 1 x 45
    | 3 x 15
    | 5 x 9

Factors of 20 :   1 , 2 , 4 , 5 , 10 , 20
Factors of 45 :   1 , 3 , 5 , 9 , 15 , 45
Common factors : 1 and 5 ,

HCF = 5

b. 16 and 56

16 = | 1 x 16
     | 2 x 8
     | 4 x 4

56 = | 1 x 56
     | 2 x 28
     | 4 x 14
     | 7 x 8

Factors of 16 = 1 , 2 , 4 , 8 , 16
Factors of 56 =   1 , 2 , 4 , 7 , 8 , 14 , 28 , 56
Common Factors: 1 , 2 , 4 and 8   ,

HCF = 8

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c. 36 and 60

$$36 = \begin{vmatrix} 1 \times 36 \\ 2 \times 18 \\ 3 \times 12 \\ 4 \times 9 \end{vmatrix}$$

$$60 = \begin{vmatrix} 1 \times 60 \\ 2 \times 30 \\ 3 \times 20 \\ 4 \times 15 \\ 5 \times 12 \\ 6 \times 10 \end{vmatrix}$$

Factors of 36 = 1 , 2 , 3, 4 , 9 , 12 , 18 , 36
Factors of 60 = 1 , 2 , 3 , 4 , 5 , 6 , 10 , 12 , 15 , 20 , 30 , 60
Common factors are : 1 , 2 , 3 , 4 and 12 ,

HCF = 12

d. 42 and 70

$$42 = \begin{vmatrix} 1 \times 42 \\ 2 \times 21 \\ 3 \times 14 \\ 6 \times 7 \end{vmatrix}$$

$$70 = \begin{vmatrix} 1 \times 70 \\ 2 \times 35 \\ 5 \times 14 \\ 7 \times 10 \end{vmatrix}$$

Factors of 42 = 1 , 2 , 3, 6 , 7 , 14 , 21 , 42
Factors of 70 = 1 , 2 , 5 , 7 , 10 , 14 , 35 , 70
Common Factors are : 1 , 2 , 7 and 14

HCF = 14

e. 30 and 50

$$30 = \begin{vmatrix} 1 \ \text{x} \ 30 \\ 2 \ \text{x} \ 15 \\ 3 \ \text{x} \ 10 \\ 5 \ \text{x} \ 6 \end{vmatrix} \qquad 50 = \begin{vmatrix} 1 \ \text{x} \ 50 \\ 2 \ \text{x} \ 25 \\ 5 \ \text{x} \ 10 \end{vmatrix}$$

Factors of 30 =   1 , 2 , 3 , 5 , 10 , 15 , 30
Factors of 50 =   1 , 2 , 5 , 10 , 25 , 50
Common factors are : 1 , 2 , 5 and 10

HCF = 10

f. 40 and 60

$$40 = \begin{vmatrix} 1 \ \ \text{x} \ \ 40 \\ 2 \ \ \text{x} \ \ 20 \\ 4 \ \ \text{x} \ \ 10 \\ 5 \ \ \text{x} \ \ 8 \end{vmatrix} \qquad 60 = \begin{vmatrix} 1 \ \text{x} \ \ 60 \\ 2 \ \text{x} \ \ 30 \\ 3 \ \text{x} \ \ 20 \\ 4 \ \text{x} \ \ 15 \\ 5 \ \text{x} \ \ 12 \\ 6 \ \text{x} \ 10 \end{vmatrix}$$

Factors of 40 = 1 , 2 , 4 , 5 , 8 , 10 , 20 , 40
Factors of 60 = 1 , 2 , 3 , 4 , 5 , 6 , 10 , 12 , 15 , 20 , 30 , 60

Common Factors are : 1 , 2 , 4 , 5 , 10 and 20 ,

HCF= 20

g. 72 and 48

$$72 = \begin{vmatrix} 1 & x & 72 \\ 2 & x & 36 \\ 3 & x & 24 \\ 4 & x & 18 \\ 6 & x & 12 \\ 8 & x & 9 \end{vmatrix} \qquad 48 = \begin{vmatrix} 1 & x & 48 \\ 2 & x & 24 \\ 3 & x & 16 \\ 4 & x & 12 \\ 6 & x & 8 \end{vmatrix}$$

Factors of 72 = 1 , 2 , 3 , 4 , 6 , 8 , 9 , 12 , 18 , 24 , 36 , 72
Factors of 48 = 1 , 2 , 3, 4 , 6 , 8 , 12 , 16 , 24 , 48
Common Factors are : 1 , 2 , 3 , 4 , 6 , 8 , 12 , 24

HCF : 24

h. 25 and 90

$$25 = \begin{vmatrix} 1 & x & 25 \\ 5 & x & 5 \end{vmatrix} \qquad 90 = \begin{vmatrix} 1 & x & 90 \\ 2 & x & 45 \\ 3 & x & 30 \\ 5 & x & 18 \\ 6 & x & 15 \\ 9 & x & 10 \end{vmatrix}$$

Factors of 25 : 1 , 5 , 25
Factors of 90 : 1 , 2 , 3 , 5 , 6 , 9 , 10 , 15 , 18 , 30 , 45 , 90
Common Factors are :   1 and 5

HCF : 5

Q2. Find HCF by Prime Factorization Method.

a. 25 and 40

5	25
5	5
	1

2	40
2	20
2	10
5	5
	1

25 = 5 x 5
40 = 2 x 2 x 2 x 5
common = 5

HCF = 5

b. 60 and 72

2	60
2	30
3	15
5	5
	1

2	72
2	36
2	18
3	9
3	3
	1

60 = 2 x 2 x 3 x 5
72 = 2 x 2 x 2 x 3 x 3
common = 2 x 2 x 3

HCF = 12

c. 81 and 117

3	81
3	27
3	9
3	3
	1

3	117
3	39
13	13
	1

81 = 3 x 3 x 3 x 3
117 = 3 x 3 x 13
common = 3 x 3

HCF = 9

d. 144 and 198

2	144
2	72
2	36
2	18
3	9
3	3
	1

2	198
3	99
3	33
11	11
	1

$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$

$198 = 2 \times 3 \times 3 \times 11$

common Factors are : $2 \times 3 \times 3$

HCF $= 18$

e. 42 , 70 , 84

2	42
3	21
7	7
	1

2	70
5	35
7	7
	1

2	84
2	42
3	21
7	7
	1

$42 = 2 \times 3 \times 7$

$70 = 2 \times 5 \times 7$

$84 = 2 \times 2 \times 3 \times 7$

Common factors $= 2 \times 7$

HCF $= 14$

f. 24 , 45 and 57

2	24
2	12
2	6
3	3
	1

3	45
3	15
5	5
	1

3	57
19	19
	1

24 = 2 x 2 x 2 x 3

45 = 3 x 3 x 5

57 = 3 x 19

Common = 3 , HCF = 3