

Exercise 5.1

A) Find the HCF of the following numbers by inspection method.

1) 12 and 8

Ans- We find both 12 and 8 in table of 4

Therefore, HCF of 12 and 8 is 4.

2) 20 and 30

Ans- We find both 20 and 30 in table of 10

Therefore, HCF of 20 and 30 is 10

3) 24 and 16

Ans- We find both 24 and 16 in Table of 8

Therefore, HCF of 24 and 16 is 8

4) 13 and 27

Ans- We do not find 13 and 27 together in any table

Therefore, HCF of 13 and 27 is 1.

(B) Find the HCF by finding factors

(1) 18, 24

2	18
3	9
3	3
1	

2	24
2	12
2	6
3	3
1	

Grouping

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

$$= 6 \times 3$$

$$= 2 \times 9$$

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

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

Factors of 18 = 1, 2, 3, 6, 9, 18

24 = 1, 2, 3, 4, 6, 8, 12, 24

18 = ①, ②, ③, ⑥, 9, 18

24 = ①, ②, ③, 4, ⑥, 8, 12, 24

Common factors = 1, 2, 3, 6

HCF = 6

(2) 16, 20

2	16
2	8
2	4
2	2
1	

2	20
2	10
5	5
1	

Grouping

$$16 = 2 \times 2 \times 2 \times 2$$

$$= 4 \times 4$$

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

Grouping

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

$$= 4 \times 5$$

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

factors of 16 = ①, ②, ④, 8, 16

factors of 20 = ①, ②, 5, ④, 10, 20

Common factors = 1, 2, 4

HCF = 4

3) 36, 40

$$\begin{array}{r|l} 2 & 36 \\ \hline 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 40 \\ \hline 2 & 20 \\ \hline 2 & 10 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

grouping

$$36 = \underbrace{2 \times 2 \times 3 \times 3}_4 \times \underbrace{3}_9$$

$$\underbrace{2 \times 2 \times 3 \times 3}_{12}$$

$$40 = \underbrace{2 \times 2 \times 2}_4 \times \underbrace{5}_{10}$$

$$= \underbrace{2 \times 2 \times 2}_8 \times 5$$

factors = 1, 2, 3, 4, 9, 12,

factors = 1, 2, 4, 5, 8, 10, 40

$$36 = (1)(2)3(4)9, 12$$

$$40 = (1)(2)(4)5, 8, 10, 40$$

Common factors = 1, 2, 4

$$\text{HCF} = \underline{4}$$

4) 15, 25

$$\begin{array}{r|l} 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

Factors

$$15 = 1, 3, (5), 15$$

$$25 = 1, (5), 25$$

$$\text{HCF} = \underline{5}$$

(C) Find the HCF of the following by prime factorisation

1) 63 and 36

$$\begin{array}{r|l} 3 & 63 \\ \hline 3 & 21 \\ \hline 7 & 7 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 36 \\ \hline 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$63 = (3) \times (3) \times 7$$

$$36 = 2 \times 2 \times (3) \times (3)$$

Common factor = 3×3

$$\text{HCF} = \underline{9}$$

2) 56 and 59

$$\begin{array}{r|l} 2 & 56 \\ \hline 2 & 28 \\ \hline 2 & 14 \\ \hline 7 & 7 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 59 & 59 \\ \hline & 1 \end{array}$$

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

$$59 = 59$$

Common factor = 1

$$\text{HCF} = \underline{1}$$

3) 50 and 25

$$\begin{array}{r|l} 2 & 50 \\ \hline 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$50 = 2 \times (5 \times 5)$$

$$25 = (5 \times 5)$$

Common factor = 5×5

$$\text{HCF} = \underline{25}$$

4) 72 and 18

$$\begin{array}{r|l} 2 & 72 \\ \hline 2 & 36 \\ \hline 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$72 = (2) \times 2 \times 2 \times (3 \times 3)$$

$$18 = (2) \times (3 \times 3)$$

Common factor = $2 \times 3 \times 3$

$$\text{HCF} = \underline{18}$$

Exercise 5.2

A) Find the LCM of the numbers by Inspection Method.

1) 3 and 6

Sol- 6 is the smallest multiple that comes in table of 3 and 6

Therefore, LCM of 3 and 6 is 6

2) 9 and 12

Sol- 36 is the smallest multiple that that comes in table of 9 and 12

Therefore, LCM of 9 and 12 is 36.

3) 9, 18, 24

Sol- 72 is the smallest multiple that comes in the table of 9,18,24

Therefore ,LCM of 9,18 and 24 is 72.

B) Find the LCM of given numbers.

1) 4,12,18

sol- 4- 4, 8, 12, 16, 20, 24, 28, 32, **36**, 40

12- 12, 24, **36**, 48, 60, 72, 84, 96, 108, 120

18- 18, **36**, 54, 72, 90, 108, 126, 144, 162

Common multiple=36

Therefore LCM = 36

2) 12, 16

Sol- 12 – 12, 24, 36, **48**, 60, 72, 84, **96**, 108

16 - 16, 32, **48**, 64, 80, **96**, 112, 128, 144

Common multiple- 48, 96....

Therefore LCM = 48.

3) 35, 75

Sol- 35 – 35, 70, 105, 140, 175, 210, 245, 280, 315, 350, 385, 420, 455, 490, **525**

75 – 75, 150, 225, 300, 375, 450, **525**

Common multiple = 525

Therefore LCM – 525.

(c) Find the LCM of the following by prime factorisation method,

1) 90 and 142

$$\begin{array}{r|l} 2 & 90 \\ \hline 3 & 45 \\ 3 & 15 \\ 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 142 \\ \hline 71 & 71 \\ \hline & 1 \end{array}$$

$$90 = 2 \times 3 \times 3 \times 5$$

$$142 = 2 \times 71$$

$$= 2 \times 3 \times 3 \times 5 \times 71$$

$$\text{LCM} = \underline{\underline{6390}}$$

2) 36, 60, 48

$$\begin{array}{r|l} 2 & 36 \\ \hline 2 & 18 \\ 3 & 9 \\ 3 & 3 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 60 \\ \hline 2 & 30 \\ 3 & 15 \\ 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 48 \\ \hline 2 & 24 \\ 2 & 12 \\ 2 & 6 \\ 3 & 3 \\ \hline & 1 \end{array}$$

$$36 = 2 \times 2 \times 3 \times 3$$

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

$$48 = 2 \times 2 \times 2 \times 2 \times 3$$

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

$$\text{LCM} = \underline{\underline{720}}$$

3) 308 and 232

$$\begin{array}{r|l} 2 & 308 \\ \hline 2 & 154 \\ 7 & 77 \\ 11 & 11 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 232 \\ \hline 2 & 116 \\ 2 & 58 \\ 29 & 29 \\ \hline & 1 \end{array}$$

$$308 = 2 \times 2 \times 7 \times 11$$

$$232 = 2 \times 2 \times 2 \times 29$$

$$= 2 \times 2 \times 2 \times 7 \times 11 \times 29$$

$$\text{LCM} = \underline{\underline{17,864}}$$

D) Solve..

1) The product of two numbers is 756. If HCF is 12, find the LCM

Sol- Product of two no- 756

$$\text{HCF} = 12$$

$$\text{LCM} = ?$$

$$\text{LCM} = \frac{\text{Product of two numbers}}{\text{HCF}}$$

$$= \frac{756}{12}$$

$$= 63$$

LCM is 63

2) The LCM and HCF of two numbers is 10 and 12 respectively. If one number is 20, what is the other number ?

Sol- LCM = 10

HCF = 12

One no = 20

Other no = ?

$$\begin{aligned}\text{Other number} &= \frac{HCF \times LCM}{\text{One number}} \\ &= \frac{12 \times 10}{20} \\ &= \frac{120}{20} \\ &= 6\end{aligned}$$

The other number is 6

