

Worksheet

Complete the division drill :

100 ÷ 10 = 10 500 ÷ 10 = 50 800 ÷ 10 = 80

558 ÷ 80 = 6.975 5689 ÷ 2 = 2844.5 485 ÷ 18 = 26.75

6000 ÷ 6 = 1111.1111

789 ÷ 30 = 26.3

505 ÷ 505 = 1

258 ÷ 425 = 0.61

1250 ÷ 50 = 25

2542 ÷ 25 = 101.68

54 ÷ 14 = 3.86

1000 ÷ 100 = 10

1040 × 40 = 26

5000 ÷ 10 = 500

6000 ÷ 500 = 12

148 ÷ 2 = 74

400 × 20 = 20

1950 ÷ 25 = 78

Finish

7

Factors and Multiples

Exercise-13

1. Answer the following questions :

- Ans. (a)
$$\begin{array}{r} 8 \overline{)120} 15 \\ \underline{-8} \\ 40 \\ \underline{-40} \\ \times \\ \hline \end{array}$$
- ∴ Remainder = 0
∴ Yes, it is a factor.
- (b)
$$\begin{array}{r} 9 \overline{)180} 20 \\ \underline{-18} \\ 0 \\ \underline{-0} \\ \times \\ \hline \end{array}$$
- ∴ Remainder = 0
∴ Yes, it is a factor.
- (c)
$$\begin{array}{r} 16 \overline{)144} 9 \\ \underline{-144} \\ \times \\ \hline \end{array}$$
- ∴ Remainder = 0
∴ Yes, it is a factor.
- (d)
$$\begin{array}{r} 15 \overline{)225} 15 \\ \underline{-15} \\ 75 \\ \underline{-75} \\ \times \\ \hline \end{array}$$
- ∴ Remainder = 0
∴ Yes, it is a factor.

- (e)
$$\begin{array}{r} 18 \overline{)149} 8 \\ \underline{-144} \\ 5 \\ \hline \end{array}$$
- ∴ Remainder ≠ 0
∴ 8 is not a factor of 149.
- (f)
$$\begin{array}{r} 19 \overline{)250} 13 \\ \underline{-19} \\ 60 \\ \underline{-57} \\ 3 \\ \hline \end{array}$$
- ∴ Remainder ≠ 0
∴ 19 is not a factor of 250.
- (g)
$$\begin{array}{r} 17 \overline{)130} 7 \\ \underline{-119} \\ 11 \\ \hline \end{array}$$
- ∴ Remainder ≠ 0
∴ 17 is not a factor of 130.
- (h)
$$\begin{array}{r} 14 \overline{)150} 10 \\ \underline{-140} \\ 10 \\ \hline \end{array}$$
- ∴ Remainder ≠ 0
∴ 14 is not a factor of 150.

2. Fill in the blanks :

- Ans. (a) $4 \times 7 = 28$, so, 4 and 7 are the factors of **28**
- (b) $8 \times 5 = 40$, so, 8 and 5 are the factors of **40**

(c) $15 \times 9 = 135$, so, **15** and **9** are the factors of **135**

(d) $21 \times 5 = 105$, so, **21** and **5** are the factors of **105**.

3. What is the smallest factor of a number?

Ans. 1

4. What is the greatest factor of a number?

Ans. Number itself.

5. Write all the factors of 90. Also write its smallest and greatest factors.

Ans. Factors of 90 =

$$\therefore 90 = 1 \times 90, 90 = 2 \times 45, 90 = 5 \times 18, \\ 90 = 10 \times 15$$

$$\therefore \text{Factors} = 1, 2, 3, 5, 10, 15, 18, 30, \\ 45, 90$$

Smallest factor = 1
and greatest factor = 90.

6. Write all the factors of 150. Also write its smallest and greatest factors.

Ans. Factors of 150 =

$$\therefore 150 = 1 \times 150; 150 = 2 \times 75; \\ 150 = 3 \times 50, 150 = 5 \times 30; 150 = 6 \times 25; \\ 150 = 10 \times 15$$

$$\therefore \text{Factors} = 1, 2, 3, 5, 6, 10, 15, 25, 30, \\ 50, 75, 150$$

Smallest factor = 1
and greatest factor = 150

7. Write 'True' for the correct statements and 'False' for the wrong statements in the boxes :

- Ans.** (a) 1 is a factor of every number. **True**
(b) A factor does not divide the number exactly. **False**
(c) Every counting number is a factor of zero. **True**
(d) No factor is greater than the number. **True**
(e) 0 is the smallest factor of every number. **False**

Exercise - 14

1. Write the next four multiples :

- Ans.** (a) 5, 10, 15, **20, 25, 30, 35**,
(b) 9, 18, 27, **36, 45, 54, 63**,
(c) 13, 26, 39, **52, 65, 78, 91**

2. Write the first three multiples of :

- Ans.** (a) 8
 $\Rightarrow \therefore 8 \times 1 = 8; 8 \times 2 = 16; 8 \times 3 = 24;$
 $\therefore 8, 16, 24$
(b) 11

$$\Rightarrow \therefore 11 \times 1 = 11; 11 \times 2 = 22; 11 \times 3 = 33$$

$$\therefore 11, 22, 33$$

(c) 15

$$\Rightarrow \therefore 15 \times 1 = 15; 15 \times 2 = 30;$$

$$15 \times 3 = 45; \therefore 15, 30, 45$$

(d) 19

$$\Rightarrow \therefore 19 \times 1 = 19; 19 \times 2 = 38;$$

$$19 \times 3 = 57 \therefore 19, 38, 57$$

3. Answer the following :

Ans. (a)

$$\begin{array}{r} 3 \overline{)27} 9 \\ -27 \\ \hline \end{array}$$

$$\therefore 27 \div 3 \text{ gives remainder } 0$$

$$\therefore 27 \text{ is a multiple of } 3.$$

(b)

$$\begin{array}{r} 27 \overline{)81} 3 \\ -81 \\ \hline \end{array}$$

$$\therefore 81 \div 27 \text{ gives remainder } 0$$

$$\therefore 81 \text{ is a multiple of } 27.$$

(c)

$$\begin{array}{r} 4 \overline{)124} 31 \\ -124 \\ \hline \end{array}$$

$$\therefore 124 \div 4 \text{ gives remainder } 0$$

$$\therefore 124 \text{ is a multiple of } 4.$$

(d)

$$\begin{array}{r} 5 \overline{)53} 10 \\ -50 \\ \hline \end{array}$$

$$\therefore 53 \div 5 \text{ does not give remainder } 0$$

$$\therefore 53 \text{ is not a multiple of } 5.$$

(e)

$$\begin{array}{r} 7 \overline{)63} 9 \\ -63 \\ \hline \end{array}$$

$$\therefore 63 \div 7 \text{ gives remainder } 0$$

$$\therefore 63 \text{ is a multiple of } 7.$$

(f)

$$\begin{array}{r} 9 \overline{)71} 7 \\ -63 \\ \hline \end{array}$$

$$\therefore 71 \div 9 \text{ does not give remainder } 0$$

$$\therefore 71 \text{ is not a multiple of } 9.$$

$$(g) 0 \text{ is a multiple of every number.}$$

$$(h) \therefore \text{No number other than } 0 \text{ is a multiple of } 0.$$

$$\therefore 9 \text{ is not a multiple of } 0.$$

4. Fill in the blanks :

- Ans.** (a) $4 \times 7 = 28$, 28 is a multiple of 4 and 7.

- (b) $7 \times 8 = 56$, 56 is a multiple of 7 and 8.
 (c) $2 \times 3 \times 5 = 30$, 30 is a multiple of 2, 3 and 5.
 (d) $3 \times 5 \times 8 = 120$, 120 is a multiple of 3, 5 and 8.
 (e) $15 \times 6 = 90$, 90 is a multiple of 15 and 6.

5. Is the first number a multiple of the second number :

Ans. (a) $41, 3$
$$\begin{array}{r} 3 \overline{)41} \underline{13} \\ -3 \downarrow \\ 11 \\ -9 \\ \hline 2 \end{array}$$

\therefore Remainder $\neq 0$ \therefore No

(b) $45, 5$
$$\begin{array}{r} 5 \overline{)45} \underline{9} \\ -45 \\ \hline \times \end{array}$$

\therefore Remainder = 0 \therefore Yes

(c) $37, 6$
$$\begin{array}{r} 6 \overline{)37} \underline{6} \\ -36 \\ \hline 1 \end{array}$$

\therefore Remainder $\neq 0$ \therefore No

(d) $50, 10$
$$\begin{array}{r} 10 \overline{)50} \underline{5} \\ -50 \\ \hline \times \end{array}$$

\therefore Remainder = 0 \therefore Yes

6. Answer the following question :

Ans. (a) $17 \overline{)631} \underline{37}$
$$\begin{array}{r} 17 \overline{)631} \underline{37} \\ -51 \downarrow \\ 121 \\ -119 \\ \hline 2 \end{array}$$

\therefore Remainder $\neq 0$
 \therefore 17 is a factor of 631

(b) $25 \overline{)225} \underline{9}$
$$\begin{array}{r} 25 \overline{)225} \underline{9} \\ -225 \\ \hline \times \end{array}$$

\therefore Remainder = 0
 \therefore 25 is a factor of 225

(c) $73 \overline{)9417} \underline{129}$
$$\begin{array}{r} 73 \overline{)9417} \underline{129} \\ -73 \\ \hline 211 \\ -146 \\ \hline 657 \\ -657 \\ \hline \times \end{array}$$

\therefore Remainder = 0
 \therefore 73 is a factor of 9417

- (d) $\therefore 0 \div 7$ is not possible.
 $\therefore 0$ is not a factor of 7.

(e)
$$\begin{array}{r} 8 \overline{)07} \\ -0 \\ \hline \times \end{array}$$

\therefore Remainder = 0
 \therefore 8 is a factor of 0.

(f) $86 \overline{)17812} \underline{207}$
$$\begin{array}{r} 86 \overline{)17812} \underline{207} \\ -172 \\ \hline 612 \\ -602 \\ \hline 10 \end{array}$$

\therefore Remainder $\neq 0$
 \therefore 86 is not a factor of 17812.

7. Write all the odd numbers between 70 to 100.

Ans. 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99

8. Write all the even numbers between 41 to 71.

Ans. 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

9. What is the smallest number which when subtracted from an even number gives an odd number?

Ans. Smallest even number = 2; Smallest odd number = 1

$\therefore 2 - 1 = 1$

\therefore 1 when subtracted from an even number gives an odd number.

10. What is the smallest number which when added to an even number makes the sum an odd number?

Ans. \therefore Odd number + even number = odd number

$\therefore 1 + 2 = 3;$

\therefore 1 is the smallest number which when added to an even number makes the sum an odd number.

11. Encircle the even numbers : 5, 9, 10, 11, 13, 14, 16, 17, 31, 34, 42, 90

Ans. 10, 14, 16, 34, 42, 90

12. Encircle the odd numbers : 5, 9, 10, 11, 13, 14, 16, 17, 31, 34, 42, 90

Ans. 5, 9, 11, 13, 17, 31

13. Fill in the blanks :

(a) $5 \times 7 = 35$: 5 and 7 are factors of 35.

(b) $4 \times 9 = 36$: 4 and 9 are factors of 36.

- (c) $3 \times 8 = 24$: **3** and **8** are factors of **24**.
 (d) $9 \times 11 = 99$: **9** and **11** are factors of **99**.
 (e) $2 \times 10 = 20$: **2** and **10** are factors of **20**.
 (f) $4 \times 8 = 32$: **4** and **8** are **factors** of **32**.
 (g) $3 \times 7 = 21$: **3** and **7** are **factors** of **21**.
 (h) $8 \times 7 = 56$: **8** and **7** are **factors** of **56**.
 (i) $7 \times 5 = 35$: **7** and **5** are factors of **35**.
 (j) $6 \times 8 = 48$: **6** and **8** are factors of **48**.

14. Write three factors of each of the following numbers :

- Ans.** (a) $\therefore 80 = 2 \times 40; 80 = 5 \times 8$
 $\therefore 2, 5, 8$ are the factors of **80**.
 (b) $\therefore 30 = 2 \times 15; 30 = 3 \times 10;$
 $30 = 5 \times 6$
 $\therefore 2, 3, 5$ are the factors of **30**.
 (c) $\therefore 102 = 2 \times 51; 102 = 3 \times 34;$
 $102 = 6 \times 17$
 $\therefore 2, 3, 17$ are the factors of **102**.
 (d) $\therefore 72 = 2 \times 36; 72 = 3 \times 24;$
 $72 = 6 \times 12$
 $\therefore 2, 3, 12$ are the factors of **72**.

15. List all the factors of the following :

- Ans.** (a) 136
 $\Rightarrow \therefore 136 = 1 \times 136, 136 = 2 \times 68,$
 $136 = 4 \times 34, 136 = 8 \times 17$
 \therefore factors = **1, 2, 4, 8, 17, 34, 68, 136**
 (b) 108
 $\Rightarrow \therefore 108 = 1 \times 108, 108 = 2 \times 54,$
 $108 = 3 \times 36, 108 = 4 \times 72,$

$$108 = 6 \times 18, 108 = 9 \times 12$$

\therefore factors = **1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108**

- (c) 96
 $\Rightarrow \therefore 96 = 1 \times 96, 96 = 2 \times 48,$
 $96 = 3 \times 32, 96 = 4 \times 24,$
 $96 = 6 \times 16, 96 = 8 \times 12$
 \therefore factors = **1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96**
 (d) 72
 $\Rightarrow \therefore 72 = 1 \times 72, 2 \times 36, 72 = 3 \times 24,$
 $72 = 4 \times 18, 72 = 6 \times 12, 72 = 8 \times 9$
 \therefore factors = **1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72**

16. Find :

- Ans.** (a) $\therefore 10 \times 17 = 170$
 \therefore 10th multiple of **17 = 170**
 (b) $\therefore 11 \times 15 = 165$
 \therefore 11th multiple of **15 = 165**
 (c) $\therefore 7 \times 27 = 189$
 \therefore 7th multiple of **27 = 189**
 (d) $\therefore 4 \times 29 = 116$
 \therefore 4th multiple of **29 = 116**

Worksheet

Answer the following :

- Ahmedabad, Kolkata, Bengaluru, New Delhi
- Chennai, Hyderabad, Ahmedabad
- Bengaluru
- Mumbai
- Bengaluru
- Chandigarh, Mumbai, Ahmedabad

8

Exercise - 15

1. Find the H.C.F. of the following numbers by using Multiplication Table :

- Ans.** (a)

3	3
	1

3	6
2	2
	1

 $3 = 3 \times 1$ $6 = 3 \times 2 \times 1$
 H.C.F = $3 \times 1 = 3$
- (b)

2	4
2	2
	1

2	10
5	5
	1

 $4 = 2 \times 2 \times 1$ $10 = 2 \times 5 \times 1$
 H.C.F = **2**

Highest Common Factor

(c)

3	15
5	5
	1

5	25
5	5
	1

$15 = 3 \times 5$ $25 = 5 \times 5$
 H.C.F = **5**

(d)

13	13
	1

2	16
2	8
2	4
2	2
	1

$13 = 13 \times 1$ $16 = 2 \times 2 \times 2 \times 2 \times 1$
 H.C.F = **1**

(e)

2	50
5	25
5	5
	1

2	60
2	30
3	15
5	5
	1

 $50 = 2 \times 5 \times 5$ $60 = 2 \times 2 \times 3 \times 5$
H.C.F. = $2 \times 5 = 10$

(f)

2	18
3	9
3	3
	1

3	27
3	9
3	3
	1

 $18 = 2 \times 3 \times 3$ $27 = 3 \times 3 \times 3$
H.C.F. = $3 \times 3 = 9$

(g)

3	9
3	3
	1

2	54
3	27
3	9
3	3
	1

 $9 = 3 \times 3$ $54 = 2 \times 3 \times 3 \times 3$
H.C.F. = $3 \times 3 = 9$

(h)

2	12
2	6
3	3
	1

2	30
3	15
5	5
	1

 $12 = 2 \times 2 \times 3$ $30 = 2 \times 3 \times 5$
H.C.F. = $2 \times 3 = 6$

2. Find the H.C.F. of the following numbers by finding factors :

Ans.

- (a) $4 = 1 \times 4, 4 = 2 \times 2$
 \therefore factors = 1, 2, 4
 $6 = 1 \times 6, 6 = 2 \times 3$
 \therefore factors = 1, 2, 3, 6
 \therefore H.C.F. = 2
- (b) $9 = 1 \times 9, 9 = 3 \times 3$
 \therefore factors = 1, 3, 9
 $21 = 1 \times 21, 21 = 3 \times 7$
 \therefore factors = 1, 3, 7, 21
 \therefore H.C.F. = 3
- (c) $20 = 1 \times 20, 20 = 2 \times 10, 20 = 4 \times 5$
 \therefore factors = 1, 2, 4, 5, 10, 20
 $25 = 1 \times 25, 25 = 5 \times 5$
 \therefore factors = 1, 5, 25
 \therefore H.C.F. = 5
- (d) $35 = 1 \times 35, 35 = 5 \times 7$
 \therefore factors = 1, 5, 7, 35
 $49 = 1 \times 49, 49 = 7 \times 7$
 \therefore factors = 1, 7, 49
 \therefore H.C.F. = 7

- (e) $57 = 1 \times 57, 57 = 3 \times 19$
 \therefore factors = 1, 3, 19, 57
 $95 = 1 \times 95, 95 = 5 \times 19$
 \therefore factors = 1, 5, 19, 95
 \therefore H.C.F. = 19
- (f) $12 = 1 \times 12, 12 = 2 \times 6, 12 = 3 \times 4$
 \therefore factors = 1, 2, 3, 4, 6, 12
 $84 = 1 \times 84, 84 = 2 \times 42,$
 $84 = 3 \times 28, 84 = 4 \times 21,$
 $84 = 6 \times 14, 84 = 7 \times 12$
 \therefore factors = 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84
 \therefore H.C.F. = 12
- (g) $16 = 1 \times 16, 16 = 2 \times 8, 16 = 4 \times 4$
 \therefore factors = 1, 2, 4, 8, 16
 $47 = 1 \times 47$ factors = 1, 47
 \therefore H.C.F. = 1
- (h) $48 = 1 \times 48, 48 = 2 \times 24,$
 $48 = 3 \times 16, 48 = 4 \times 12, 48 = 6 \times 8$
factors = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
 \therefore H.C.F. = 12
- (i) $64 = 1 \times 64, 64 = 2 \times 32,$
 $64 = 4 \times 16, 64 = 8 \times 8$
factors = 1, 2, 4, 8, 16, 32, 64
 $120 = 1 \times 120, 120 = 2 \times 60,$
 $120 = 3 \times 40, 4 \times 30, 120 = 5 \times 24,$
 $120 = 6 \times 20, 120 = 8 \times 15,$
 $120 = 10 \times 12$
factors = 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120
 \therefore H.C.F. = 8
- (j) $9 = 1 \times 9, 9 = 3 \times 3$
factors = 1, 3, 9
 $13 = 1 \times 13$
factors = 1, 13
 $17 = 1 \times 17$
factors = 1, 17
 \therefore H.C.F. = 1
- (k) $3 = 1 \times 3$
factors = 1, 3,
 $6 = 1 \times 6, 6 = 2 \times 3$
factors = 1, 2, 3, 6
 $9 = 1 \times 9, 9 = 3 \times 3$
factors = 1, 3, 9
 \therefore H.C.F. = 3
- (l) $2 = 1 \times 2$ factors = 1, 2
 $8 = 1 \times 8, 8 = 2 \times 4$
factors = 1, 2, 4, 8
 $12 = 1 \times 12, 12 = 2 \times 6, 12 = 3 \times 4$
factors = 1, 2, 3, 4, 6, 12

∴ H.C.F. = 2
 (m) $18 = 1 \times 18, 18 = 2 \times 9, 18 = 3 \times 6$
 factors = 1, 2, 3, 6, 9, 18
 $24 = 1 \times 24, 24 = 2 \times 12, 24 = 3 \times 8,$
 $24 = 3 \times 8, 24 = 4 \times 6$
 factors = 1, 2, 3, 4, 6, 8, 12, 24
 $32 = 1 \times 32, 32 = 2 \times 16, 32 = 4 \times 8$
 factors = 1, 2, 4, 8, 16, 32

∴ H.C.F. = 2
 (n) $12 = 1 \times 12, 12 = 2 \times 6, 12 = 3 \times 4$
 factors = 1, 2, 3, 4, 6, 12
 $36 = 1 \times 36, 36 = 2 \times 18,$
 $36 = 3 \times 12, 36 = 4 \times 9, 36 = 6 \times 6$
 factors = 1, 2, 3, 4, 6, 8, 9, 12, 18, 36
 $72 = 1 \times 72, 72 = 2 \times 36,$
 $72 = 3 \times 24, 72 = 4 \times 18,$
 $72 = 6 \times 12, 72 = 8 \times 9$
 factors = 1, 2, 3, 4, 6, 9, 12, 18, 24, 26, 72

∴ H.C.F. = 12
 (o) $20 = 1 \times 20, 20 = 2 \times 10, 20 = 4 \times 5$
 factors = 1, 2, 4, 5, 10, 20
 $30 = 1 \times 30, 30 = 2 \times 15,$
 $30 = 3 \times 10, 30 = 5 \times 6$
 factors = 1, 2, 3, 5, 6, 10, 15, 30
 $40 = 1 \times 40, 40 = 2 \times 20,$
 $40 = 4 \times 10 = 5 \times 8$
 factors = 1, 2, 4, 5, 8, 10, 20, 40

∴ H.C.F. = 10
 (p) $16 = 1 \times 16, 16 = 2 \times 8, 16 = 4 \times 4$
 factors = 1, 2, 4, 8, 16
 $48 = 1 \times 48, 48 = 2 \times 24,$
 $48 = 3 \times 16, 48 = 4 \times 12, 48 = 6 \times 8$
 factors = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
 $76 = 1 \times 76, 76 = 2 \times 38, 76 = 4 \times 19$
 factors = 1, 2, 4, 19, 38, 76

∴ H.C.F. = 4

3. Find the H.C.F. of the following numbers by using Prime Factorisation Method :

Ans.

(a)

2	24
2	12
2	6
3	3
	1

2	36
2	18
3	9
3	3
	1

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

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

∴ H.C.F. = $2 \times 2 \times 3 = 12$

(b)

2	90
5	45
3	9
3	3
	1

2	60
2	30
3	15
5	5
	1

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

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

∴ H.C.F. = $2 \times 3 \times 5 = 30$

(c)

2	64
2	32
2	16
2	8
2	4
2	2
	1

2	80
2	40
2	20
2	10
5	5
	1

$$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$80 = 2 \times 2 \times 2 \times 2 \times 5$$

∴ H.C.F. = $2 \times 2 \times 2 \times 2 = 16$

(d)

2	140
2	70
5	35
7	7
	1

2	240
2	120
2	60
2	30
3	15
5	5
	1

$$140 = 2 \times 2 \times 5 \times 7$$

$$240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$$

∴ H.C.F. = $2 \times 2 \times 5 = 20$

(e)

3	165
5	55
11	11
	1

5	275
5	55
11	11
	1

$$165 = 3 \times 5 \times 11$$

$$275 = 5 \times 5 \times 11$$

∴ H.C.F. = $5 \times 11 = 55$

(f)

2	58
29	29
	1

2	174
3	87
29	29
	1

$$58 = 2 \times 29$$

$$174 = 2 \times 3 \times 29$$

∴ H.C.F. = $2 \times 29 = 58$

(g)

2	102
3	51
17	17
	1

2	136
2	68
2	34
17	17
	1

$$102 = 2 \times 3 \times 17$$

$$136 = 2 \times 2 \times 2 \times 17$$

∴ H.C.F. = $2 \times 17 = 34$

2	56
2	28
2	14
7	7
	1

2	70
5	35
7	7
	1

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

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

$$\therefore \text{H.C.F.} = 2 \times 7 = 14$$

2	108
2	54
3	27
3	9
3	3
	1

2	144
2	72
2	36
3	18
3	6
2	2
	1

$$108 = 2 \times 2 \times 3 \times 3 \times 3$$

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

$$\therefore \text{H.C.F.} = 2 \times 2 \times 3 \times 3 = 36$$

2	70
5	35
7	7
	1

2	48
2	24
2	12
2	6
3	3
	1

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

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

$$\therefore \text{H.F.C.} = 2$$

4. Find the H.C.F. of the following :

Ans.

2	12
2	6
3	3
	1

2	32
2	16
2	8
2	4
2	2
	1

2	44
2	22
11	11
	1

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

$$32 = 2 \times 2 \times 2 \times 2 \times 2$$

$$44 = 2 \times 2 \times 11$$

$$\therefore \text{H.C.F.} = 2 \times 2 = 4$$

2	56
2	28
2	14
7	7
	1

2	48
2	24
2	12
2	6
3	3
	1

2	16
2	8
2	4
2	2
	1

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

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

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

$$\therefore \text{H.C.F.} = 2 \times 2 \times 2 = 8$$

2	40
2	20
2	10
5	5
	1

2	120
2	60
2	30
3	15
5	5
	1

2	130
5	65
13	13
	1

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

$$120 = 2 \times 2 \times 2 \times 3 \times 5$$

$$130 = 2 \times 5 \times 13$$

$$\therefore \text{H.C.F.} = 2 \times 5 = 10$$

2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

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

2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

$$128 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

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

$$256 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$\therefore \text{H.C.F.} = 2 \times 2 \times 2 \times 2 = 16$$

2	44
2	22
11	11
	1

11	121
11	11
	1

2	132
3	66
3	33
11	11
	1

$$44 = 2 \times 2 \times 11$$

$$121 = 11 \times 11$$

$$132 = 2 \times 2 \times 3 \times 11$$

$$\therefore \text{H.C.F.} = 11$$

2	150
3	75
5	25
5	5
	1

2	160
2	80
2	40
2	20
2	10
5	5
	1

2	210
3	105
5	35
7	7
	1

$$150 = 2 \times 3 \times 5 \times 5$$

$$160 = 2 \times 2 \times 2 \times 2 \times 2 \times 5$$

$$210 = 2 \times 3 \times 5 \times 7$$

$$\therefore \text{H.C.F.} = 2 \times 5 = 10$$

Exercise - 16

1. Find the H.C.F. of following numbers of any method :

Ans. (a)

2	84
2	42
3	21
7	7
	1

2	90
3	45
3	15
5	5
	1

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

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

$$\therefore \text{H.C.F.} = 2 \times 3 = 6$$

(b)

2	140
2	70
5	35
7	7
	1

2	196
2	98
7	49
7	7
	1

$$140 = 2 \times 2 \times 5 \times 7$$

$$196 = 2 \times 2 \times 7 \times 7$$

$$\therefore \text{H.C.F.} = 2 \times 2 \times 7 = 28$$

(c)

2	80
2	40
2	20
2	10
5	5
	1

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

$$80 = 2 \times 2 \times 2 \times 2 \times 5$$

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

$$\therefore \text{H.C.F.} = 2 \times 2 \times 2 \times 2 = 16$$

(d)

3	63
3	21
7	7
	1

2	70
5	35
7	7
	1

2	98
7	49
7	7
	1

$$63 = 3 \times 3 \times 7$$

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

$$98 = 2 \times 7 \times 7$$

$$\therefore \text{H.C.F.} = 7$$

(e)

2	66
3	33
11	11
	1

2	132
2	66
3	33
11	11
	1

2	242
11	121
11	11
	1

$$66 = 2 \times 3 \times 11$$

$$132 = 2 \times 2 \times 3 \times 11$$

$$242 = 2 \times 11 \times 11$$

$$\therefore \text{H.C.F.} = 2 \times 11 = 22$$

(f)

2	216
2	108
2	54
3	27
3	9
3	3
	1

2	324
2	162
2	81
3	27
3	9
3	3
	1

2	1350
3	675
3	225
3	75
5	25
5	5
	1

$$216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

$$324 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

$$1350 = 2 \times 3 \times 3 \times 3 \times 5 \times 5$$

$$\therefore \text{H.C.F.} = 2 \times 3 \times 3 \times 3 = 54$$

(g)

2	102
3	51
17	17
	1

2	170
5	85
17	17
	1

2	136
2	68
2	34
17	17
	1

$$102 = 2 \times 3 \times 17$$

$$170 = 2 \times 5 \times 17$$

$$136 = 2 \times 2 \times 2 \times 17$$

$$\therefore \text{H.C.F.} = 2 \times 17 = 34$$

(h)

2	112
2	56
2	28
2	14
7	7
	1

2	210
3	105
5	35
7	7
	1

2	252
2	126
3	63
3	21
7	7
	1

$$112 = 2 \times 2 \times 2 \times 2 \times 7$$

$$210 = 2 \times 3 \times 5 \times 7$$

$$252 = 2 \times 2 \times 3 \times 3 \times 7$$

$$\therefore \text{H.C.F.} = 2 \times 7 = 14$$

2. Find the HCF of the following numbers by the division method :

Ans.

(a) $108 \overline{) 297} \begin{array}{r} 2 \\ -216 \\ \hline 81 \\ -81 \\ \hline 0 \end{array}$

$81 \overline{) 216} \begin{array}{r} 2 \\ -162 \\ \hline 54 \\ -54 \\ \hline 0 \end{array}$

$54 \overline{) 81} \begin{array}{r} 1 \\ -54 \\ \hline 27 \\ -27 \\ \hline 0 \end{array}$

$27 \overline{) 54} \begin{array}{r} 2 \\ -54 \\ \hline 0 \end{array}$

$\therefore \text{H.C.F. of } 108 \text{ and } 297 \text{ is } 27.$

(b) $856 \overline{) 936} \begin{array}{r} 1 \\ -856 \\ \hline 80 \\ -80 \\ \hline 0 \end{array}$

$80 \overline{) 856} \begin{array}{r} 10 \\ -800 \\ \hline 56 \\ -56 \\ \hline 0 \end{array}$

$56 \overline{) 80} \begin{array}{r} 1 \\ -56 \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$

$24 \overline{) 56} \begin{array}{r} 2 \\ -48 \\ \hline 8 \\ -8 \\ \hline 0 \end{array}$

$8 \overline{) 24} \begin{array}{r} 3 \\ -24 \\ \hline 0 \end{array}$

$\therefore \text{H.C.F. of } 856 \text{ and } 936 \text{ is } 8.$

$$\begin{array}{r}
 (c) \ 780 \overline{)1001} (1 \\
 \underline{-780} \\
 221 \overline{)780} (3 \\
 \underline{-663} \\
 117 \overline{)221} (1 \\
 \underline{-117} \\
 104 \overline{)117} (1 \\
 \underline{-104} \\
 13 \overline{)104} (8 \\
 \underline{-104} \\
 \times
 \end{array}$$

∴ H.C.F. of 780 and 1001 is 13.

$$\begin{array}{r}
 (d) \ 462 \overline{)3575} (7 \\
 \underline{-3234} \\
 341 \overline{)462} (1 \\
 \underline{-341} \\
 121 \overline{)341} (2 \\
 \underline{-242} \\
 99 \overline{)121} (1 \\
 \underline{-99} \\
 22 \overline{)99} (4 \\
 \underline{-88} \\
 11 \overline{)22} (2 \\
 \underline{-22} \\
 \times
 \end{array}$$

∴ H.C.F. of 462 and 3575 is 11.

$$\begin{array}{r}
 (e) \ 912 \overline{)1425} (1 \\
 \underline{-912} \\
 513 \overline{)912} (1 \\
 \underline{-513} \\
 399 \overline{)513} (1 \\
 \underline{-399} \\
 114 \overline{)399} (3 \\
 \underline{-342} \\
 57 \overline{)114} (2 \\
 \underline{-114} \\
 \times
 \end{array}$$

∴ H.C.F. of 912 and 1425 is 57.

$$\begin{array}{r}
 (f) \ 1701 \overline{)2592} (1 \\
 \underline{-1701} \\
 891 \overline{)1701} (1 \\
 \underline{-891} \\
 810 \overline{)891} (1 \\
 \underline{-810} \\
 81 \overline{)810} (10 \\
 \underline{-81} \\
 0 \\
 \underline{0} \\
 \times
 \end{array}$$

∴ H.C.F. of 1701 and 2592 is 81.

$$\begin{array}{r}
 (g) \ 504 \overline{)5292} (10 \\
 \underline{-5040} \\
 252 \overline{)504} (2 \\
 \underline{-504} \\
 \times
 \end{array}$$

∴ H.C.F. of 504 and 5292 is 252.

$$\begin{array}{r}
 (h) \ 3810 \overline{)18161} (4 \\
 \underline{-15240} \\
 2921 \overline{)3810} (1 \\
 \underline{-2921} \\
 889 \overline{)2921} (3 \\
 \underline{-2667} \\
 254 \overline{)889} (3 \\
 \underline{-762} \\
 127 \overline{)254} (2 \\
 \underline{-254} \\
 \times
 \end{array}$$

∴ H.C.F. of 3810 and 18161 is 127.

$$\begin{array}{r}
 (i) \\
 9262 \overline{)24750} (2 \\
 \underline{-18524} \\
 6226 \overline{)9262} (1 \\
 \underline{-6226} \\
 3036 \overline{)6226} (2 \\
 \underline{-6072} \\
 154 \overline{)3036} (19 \\
 \underline{-154} \\
 1496 \\
 \underline{-1386} \\
 110 \overline{)154} (1 \\
 \underline{-110} \\
 44 \overline{)110} (2 \\
 \underline{-88} \\
 22 \overline{)44} (2 \\
 \underline{-44} \\
 \times
 \end{array}$$

∴ H.C.F. of 24750 and 9262 is 22.

$$\begin{array}{r}
 (j) \\
 204092 \overline{)750834} (3 \\
 \underline{-612276} \\
 138558 \overline{)204092} (1 \\
 \underline{-138558} \\
 65534 \overline{)138558} (2 \\
 \underline{-131068} \\
 7490 \overline{)65534} (8 \\
 \underline{-59920} \\
 5614 \overline{)7490} (1 \\
 \underline{-5614} \\
 1876 \overline{)5614} (2 \\
 \underline{-3752} \\
 1862 \overline{)1876} (1 \\
 \underline{-1862} \\
 14 \overline{)1862} (144 \\
 \underline{14} \\
 46 \\
 \underline{42} \\
 42 \\
 \underline{42} \\
 \times
 \end{array}$$

∴ H.C.F. of 204092 and 750834 is 14

$$\begin{array}{r}
 (k) \ 11832 \overline{)1827290} \underline{1}54 \\
 \underline{-11832} \\
 64409 \\
 \underline{-59160} \\
 52490 \\
 \underline{-47328} \\
 5162 \overline{)11832} \underline{2} \\
 \underline{-10324} \\
 1508 \overline{)5162} \underline{3} \\
 \underline{-4524} \\
 638 \overline{)1508} \underline{2} \\
 \underline{-1276} \\
 232 \\
 \begin{array}{l}
 232 \overline{)638} \underline{2} \\
 \underline{-464} \\
 174 \overline{)232} \underline{1} \\
 \underline{-174} \\
 58 \overline{)174} \underline{3} \\
 \underline{-174} \\
 \times
 \end{array}
 \end{array}$$

∴ H.C.F. of 11832 and 1827290 is 58.

$$\begin{array}{r}
 (l) \ 9247 \overline{)10568} \underline{1} \\
 \underline{-9247} \\
 1321 \overline{)9247} \underline{7} \\
 \underline{-9247} \\
 \times
 \end{array}$$

∴ H.C.F. of 9247 and 10568 is 1321.

3. Find the H.C.F. of the following numbers by using division method :

Ans.

$$\begin{array}{r}
 (a) \ 64 \overline{)320} \underline{5} \qquad \qquad \qquad 64 \overline{)528} \underline{8} \\
 \underline{-320} \qquad \qquad \qquad \Rightarrow \qquad \underline{-512} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{16} \overline{)64} \underline{4} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-64} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \times
 \end{array}$$

∴ H.C.F. of 64, 320 and 528 is 16.

$$\begin{array}{r}
 (b) \ 85 \overline{)204} \underline{2} \qquad \qquad \qquad 17 \overline{)374} \underline{22} \\
 \underline{-170} \qquad \qquad \qquad \Rightarrow \qquad \underline{-34} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{34} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{68} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{17} \overline{)34} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-34} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \times
 \end{array}$$

∴ H.C.F. of 204, 85 and 374 is 17.

$$\begin{array}{r}
 (c) \ 639 \overline{)873} \underline{1} \qquad \qquad \qquad 9 \overline{)74} \underline{8} \\
 \underline{-639} \qquad \qquad \qquad \Rightarrow \qquad \underline{-72} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{2} \overline{)9} \underline{4} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-468} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{171} \overline{)234} \underline{1} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-171} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{63} \overline{)171} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-126} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{45} \overline{)63} \underline{1} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-45} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{18} \overline{)45} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-36} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{9} \overline{)18} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-18} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \times
 \end{array}$$

∴ H.C.F. of 639, 873 and 74 is 1.

$$\begin{array}{r}
 (d) \ 360 \overline{)405} \underline{1} \qquad \qquad \qquad 45 \overline{)495} \underline{11} \\
 \underline{-360} \qquad \qquad \qquad \Rightarrow \qquad \underline{-45} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{45} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-360} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \times
 \end{array}$$

∴ H.C.F. of 360, 405 and 495 is 45.

$$\begin{array}{r}
 (e) \ 252 \overline{)420} \underline{1} \qquad \qquad \qquad 84 \overline{)1134} \underline{13} \\
 \underline{-252} \qquad \qquad \qquad \Rightarrow \qquad \underline{-84} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{294} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{168} \overline{)252} \underline{1} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-168} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{84} \overline{)168} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-168} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \times
 \end{array}$$

∴ H.C.F. of 252, 420 and 1134 is 42.

$$\begin{array}{r}
 (f) \ 972 \overline{)1278} \underline{1} \qquad \qquad \qquad 18 \overline{)5040} \underline{180} \\
 \underline{-972} \qquad \qquad \qquad \Rightarrow \qquad \underline{-36} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{306} \overline{)972} \underline{3} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-918} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{54} \overline{)306} \underline{5} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-270} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{36} \overline{)54} \underline{1} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-36} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{18} \overline{)36} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-36} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \times
 \end{array}$$

∴ H.C.F. of 972, 1278 and 5040 is

$$\begin{array}{r}
 (g) \ 568 \overline{)808} \underline{1} \qquad \qquad \qquad 8 \overline{)1112} \underline{139} \\
 \underline{-568} \qquad \qquad \qquad \Rightarrow \qquad \underline{-8} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{240} \overline{)568} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-480} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{88} \overline{)240} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-176} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{64} \overline{)88} \underline{1} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-64} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{24} \overline{)64} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-48} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{16} \overline{)24} \underline{1} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-16} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{8} \overline{)16} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-16} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \times
 \end{array}$$

∴ H.C.F. of 1112, 808 and 568 is 8.

$$\begin{array}{r}
 (h) \ 288 \overline{)366} \underline{1} \qquad \qquad \qquad 6 \overline{)720} \underline{120} \\
 \underline{-288} \qquad \qquad \qquad \Rightarrow \qquad \underline{-6} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{78} \overline{)288} \underline{3} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-234} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{54} \overline{)78} \underline{1} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-54} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{24} \overline{)54} \underline{2} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-48} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{6} \overline{)24} \underline{4} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \underline{-24} \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \times
 \end{array}$$

∴ H.C.F. of 720, 288 and 366 is 6.

$$(i) \begin{array}{r} 690 \overline{)966} \begin{array}{l} 1 \\ 8 \end{array} \\ \underline{-690} \\ 76 \overline{)690} \begin{array}{l} 2 \\ 2 \end{array} \Rightarrow \\ \underline{-552} \\ 138 \overline{)276} \begin{array}{l} 2 \\ 2 \end{array} \\ \underline{-276} \\ \times \end{array} \quad \begin{array}{r} 138 \overline{)1150} \begin{array}{l} 8 \\ 3 \end{array} \\ \underline{-1104} \\ 46 \overline{)138} \begin{array}{l} 3 \\ 3 \end{array} \\ \underline{-138} \\ \times \end{array}$$

∴ H.C.F. of 690, 966 and 115 is 46.

$$(j) \begin{array}{r} 738 \overline{)1332} \begin{array}{l} 1 \\ 1 \end{array} \\ \underline{-738} \\ 594 \overline{)738} \begin{array}{l} 1 \\ 1 \end{array} \Rightarrow \\ \underline{-594} \\ 144 \overline{)594} \begin{array}{l} 4 \\ 4 \end{array} \\ \underline{-576} \\ 18 \overline{)144} \begin{array}{l} 8 \\ 8 \end{array} \\ \underline{-144} \\ \times \end{array} \quad \begin{array}{r} 18 \overline{)1080} \begin{array}{l} 60 \\ 60 \end{array} \\ \underline{-108} \\ 0 \\ \underline{0} \\ \times \end{array}$$

∴ H.C.F. of 738, 1332 and 1080 is 18.

$$(k) \begin{array}{r} 1978 \overline{)8050} \begin{array}{l} 4 \\ 4 \end{array} \\ \underline{-7912} \\ 138 \overline{)1978} \begin{array}{l} 14 \\ 14 \end{array} \\ \underline{-138} \\ 598 \Rightarrow \\ \underline{-552} \\ 46 \overline{)138} \begin{array}{l} 3 \\ 3 \end{array} \\ \underline{-138} \\ \times \end{array} \quad \begin{array}{r} 46 \overline{)13110} \begin{array}{l} 285 \\ 285 \end{array} \\ \underline{-92} \\ 391 \\ \underline{-368} \\ 230 \\ \underline{-230} \\ \times \end{array}$$

∴ H.C.F. of 1978, 8050 and 13110 is

$$(l) \begin{array}{r} 1350 \overline{)1650} \begin{array}{l} 1 \\ 1 \end{array} \\ \underline{-1350} \\ 300 \overline{)1350} \begin{array}{l} 4 \\ 4 \end{array} \\ \underline{-1200} \\ 150 \overline{)300} \begin{array}{l} 2 \\ 2 \end{array} \\ \underline{-300} \\ \times \end{array} \quad \begin{array}{r} 150 \overline{)1530} \begin{array}{l} 10 \\ 10 \end{array} \\ \underline{-1500} \\ 30 \overline{)150} \begin{array}{l} 5 \\ 5 \end{array} \\ \underline{-150} \\ \times \end{array}$$

∴ H.C.F. of 1350, 1650 and 1530 is 150.

∴ H.C.F. of 1350, 1650 and 1530 is

$$(m) \begin{array}{r} 30 \overline{)108} \begin{array}{l} 1 \\ 1 \end{array} \\ \underline{-72} \\ 36 \overline{)72} \begin{array}{l} 2 \\ 2 \end{array} \Rightarrow \\ \underline{-72} \\ \times \end{array} \quad \begin{array}{r} 36 \overline{)144} \begin{array}{l} 4 \\ 4 \end{array} \\ \underline{-144} \\ \times \end{array}$$

$$\Rightarrow \begin{array}{r} 36 \overline{)192} \begin{array}{l} 5 \\ 5 \end{array} \\ \underline{-180} \\ 12 \overline{)36} \begin{array}{l} 3 \\ 3 \end{array} \\ \underline{-36} \\ \times \end{array}$$

∴ H.C.F. of 72, 180, 144 and 192 is

$$(n) \begin{array}{r} 105 \overline{)135} \begin{array}{l} 1 \\ 1 \end{array} \\ \underline{-105} \\ 30 \overline{)105} \begin{array}{l} 3 \\ 3 \end{array} \Rightarrow \\ \underline{-90} \\ 15 \overline{)30} \begin{array}{l} 2 \\ 2 \end{array} \\ \underline{-30} \\ \times \end{array} \quad \begin{array}{r} 15 \overline{)330} \begin{array}{l} 22 \\ 22 \end{array} \\ \underline{-30} \\ \times \end{array}$$

$$\Rightarrow \begin{array}{r} 15 \overline{)1363} \begin{array}{l} 9 \\ 9 \end{array} \\ \underline{-135} \\ 13 \overline{)15} \begin{array}{l} 1 \\ 1 \end{array} \\ \underline{-13} \\ 2 \overline{)13} \begin{array}{l} 6 \\ 6 \end{array} \\ \underline{-12} \\ 1 \overline{)2} \begin{array}{l} 2 \\ 2 \end{array} \\ \underline{-2} \\ \times \end{array}$$

∴ H.C.F. of 105, 135, 330 and 1363 is 1

9

Exercise - 17

1. Find the L.C.M. by Prime factors :

Ans. (a)

2	36
2	18
3	9
3	3
	1

3	63
3	21
7	7
	1

$$36 = 2 \times 2 \times 3 \times 3 \quad 63 = 3 \times 3 \times 7$$

$$\therefore \text{L.C.M.} = 2 \times 2 \times 3 \times 3 \times 7 = 252.$$

(b)

2	24
2	12
2	6
3	3
	1

2	14
7	7
	1

7	91
13	13
	1

$$14 = 2 \times 7 \quad 91 = 7 \times 13$$

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

Lowest Common Multiple

$$\therefore \text{L.C.M.} = 2 \times 2 \times 2 \times 3 \times 7 \times 13 = 2184$$

(c)

2	12
2	6
3	3
	1

2	48
2	24
2	12
2	6
3	3
	1

2	96
2	48
2	24
2	12
2	6
3	3
	1

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

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

$$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

$$\therefore \text{L.C.M.} = 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 96$$

2	108	2	96	2	84
2	54	2	48	2	42
3	27	2	24	3	21
3	9	2	12	7	7
3	3	2	6		1
	1	3	3		
			1		

$$108 = 2 \times 2 \times 3 \times 3 \times 3$$

$$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

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

$$\therefore \text{L.C.M.}$$

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

$$= 6048$$

3	21	2	24	2	36	2	48
7	7	2	12	2	18	2	24
	1	2	6	3	9	2	12
		3	3	3	3	2	6
			1		1	3	3
							1

$$21 = 3 \times 7$$

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

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

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

$$\therefore \text{L.C.M.} = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7$$

$$= 1008$$

2	12	3	15	2	18	2	24
2	6	5	5	3	9	2	12
3	3		1	3	3	2	6
	1				1	3	3
							1

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

$$15 = 3 \times 5$$

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

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

$$\text{L.C.M.} = 2 \times 2 \times 2 \times 3 \times 3 \times 5$$

$$= 360$$

2. Find the L.C.M. of the numbers by division method :

Ans. (a)

3	9,	36,	45
3	3,	12,	15
4	1,	4,	5
5	1,	1,	5
	1,	1,	1

$$\therefore \text{L.C.M. of } 9, 36, 45$$

$$= 3 \times 3 \times 4 \times 5$$

$$= 180$$

2	112,	96,	64
2	56,	48,	32
2	28,	24,	16
2	14,	12,	8
2	7,	6,	4
2	7,	3,	2
3	7,	3,	1
7	7,	1,	1
	1,	1,	1

$$\therefore \text{L.C.M. of } 112, 96, 64$$

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

$$= 1344$$

2	33,	36,	144
2	33,	18,	72
3	33,	9,	36
3	11,	3,	12
4	11,	1,	4
11	11,	1,	1
	1,	1,	1

$$\therefore \text{L.C.M. of } 33, 36, 144$$

$$= 2 \times 2 \times 3 \times 3 \times 4 \times 11$$

$$= 1584$$

2	15,	30,	60,	90
3	15,	15,	30,	45
3	5,	5,	6,	15
5	5,	5,	2,	5
2	1,	1,	2,	1
	1,	1,	1,	1

$$\therefore \text{L.C.M. of } 15, 30, 60 \text{ and } 90$$

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

$$= 180$$

2	180,	144,	384
2	90,	72,	192
2	45,	36,	96
2	45,	18,	48
3	45,	9,	24
3	15,	3,	8
2	5,	1,	8
4	5,	1,	4
5	5,	1,	1
	1,	1,	1

$$\therefore \text{L.C.M. of } 180, 144 \text{ and } 384$$

$$= 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 2 \times 4 \times 5$$

$$= 5760$$

(f)	2	2,	12,	16,	24,	36
	2	4,	6,	8,	12,	18
	2	2,	3,	4,	6,	9
	3	1,	3,	2,	3,	9
	2	1,	1,	2,	1,	3
	3	1,	1,	1,	1,	3
		1,	1,	1,	1,	1

∴ L.C.M. of 8, 12, 16, 24 and 36
 $= 2 \times 2 \times 2 \times 3 \times 2 \times 3 = 144$

(g)	3	225,	125,	45,	15
	3	75,	125,	15,	5
	5	25,	125,	5,	5
	5	5,	25,	1,	1
	5	1,	5,	1,	1
		1,	1,	1,	1

∴ L.C.M. of 225, 125, 45 and 15
 $= 3 \times 3 \times 5 \times 5 \times 5 = 1125$

(h)	2	25,	30,	40,	45,	48
	2	25,	15,	20,	45,	24
	2	25,	15,	10,	45,	12
	3	25,	15,	5,	45,	6
	5	25,	5,	5,	15,	2
	5	5,	1,	1,	3,	2
	3	1,	1,	1,	3,	2
	2	1,	1,	1,	1,	2
		1,	1,	1,	1,	1

L.C.M. of 25, 30, 40, 45, 48
 $= 2 \times 2 \times 2 \times 3 \times 5 \times 5 \times 3 \times 2$
 $= 3600$

(i)	2	96,	48,	144,	128
	2	48,	24,	72,	64
	2	24,	12,	36,	32
	2	12,	6,	18,	16
	2	6,	3,	9,	8
	3	3,	3,	9,	4
	3	1,	1,	3,	4
	2	1,	1,	1,	4
	2	1,	1,	1,	2
		1,	1,	1,	1

∴ L.C.M. of 96, 48, 144 and 128
 $= 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 2 \times 2$
 $= 1152$

(j)	2	16,	91,	280,	90,	455
	2	8,	91,	140,	45,	455
	2	4,	91,	70,	45,	455
	5	2,	91,	35,	45,	455
	7	2,	91,	7,	9,	91
	13	2,	13,	1,	9,	13

	2	2,	1,	1,	9,	1
	3	1,	1,	1,	9,	1
	3	1,	1,	1,	3,	1
		1,	1,	1,	1,	1

∴ L.C.M. of 16, 91, 280, 90, 455
 $= 2 \times 2 \times 2 \times 5 \times 7 \times 13 \times 2 \times 3 \times 3$
 $= 65520$

(k)	2	7,	10,	15,	21,	28
	3	7,	5,	15,	21,	14
	5	7,	5,	5,	7,	14
	7	7,	1,	1,	7,	14
	2	1,	1,	1,	1,	2
		1,	1,	1,	1,	1

∴ L.C.M. = $2 \times 3 \times 5 \times 7 \times 2 = 420$

(l)	2	25,	50,	55,	110
	5	25,	25,	55,	55
	5	5,	5,	11,	11
	11	1,	1,	11,	11
		1,	1,	1,	1

∴ L.C.M. of 25, 50, 55, 110
 $= 2 \times 5 \times 5 \times 11 = 550$

3. Find the L.C.M. of the number by finding their H.C.F. :

Ans. (a) H.C.F. of 60 and 84

2	60	2	84
2	30	2	42
3	15	3	21
5	5	7	7
	1		1

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

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

$$\therefore \text{H.C.F.} = 2 \times 2 \times 3 = 12$$

∴ L.C.M.

$$= \frac{\text{Product of two numbers}}{\text{H.C.F.}}$$

$$= \frac{60 \times 84}{12} = \frac{5040}{12}$$

$$= 420$$

∴ L.C.M. = 420

(b)	2	156	13	299
	2	78	23	23
	3	39		1
	13	13		
		1		

H.C.F. of 156 and 299

$$156 = 2 \times 2 \times 3 \times 13$$

$$299 = 13 \times 23$$

∴ H.C.F. = 13

$$\begin{aligned} \therefore \text{L.C.M.} &= \frac{\text{Product of two number}}{\text{H.C.F.}} \\ &= \frac{156 \times 299}{13} = \frac{46644}{13} \\ &= 3588. \end{aligned}$$

$$\therefore \text{L.C.M.} = 3588$$

(c)	$\begin{array}{r l} 2 & 420 \\ \hline 2 & 210 \\ 3 & 105 \\ 5 & 35 \\ 7 & 7 \\ \hline & 1 \end{array}$	$\begin{array}{r l} 2 & 360 \\ \hline 2 & 180 \\ 2 & 90 \\ 3 & 45 \\ 3 & 15 \\ 5 & 5 \\ \hline & 1 \end{array}$
-----	--	---

H.C.F. of 420 and 360

$$420 = 2 \times 2 \times 3 \times 5 \times 7$$

$$360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$$

$$\text{H.C.F.} = 2 \times 2 \times 3 \times 5 = 60$$

$$\begin{aligned} \therefore \text{L.C.M.} &= \frac{\text{Product of two numbers}}{\text{H.C.M.}} \\ &= \frac{420 \times 360}{60} \\ &= 420 \times 6 = 2520 \end{aligned}$$

(d)	$\begin{array}{r l} 2 & 348 \\ \hline 2 & 174 \\ 3 & 87 \\ 29 & 29 \\ \hline & 1 \end{array}$	$\begin{array}{r l} 17 & 493 \\ \hline 29 & 29 \\ \hline & 1 \end{array}$
-----	---	---

$$348 = 2 \times 2 \times 3 \times 29$$

$$493 = 17 \times 29$$

$$\text{H.C.F.} = 29$$

$$\begin{aligned} \therefore \text{L.C.M.} &= \frac{\text{Product of two numbers}}{\text{H.C.M.}} \\ &= \frac{348 \times 493}{29} = \frac{171564}{29} \\ &= 5916 \end{aligned}$$

4. (a) The H.C.F. of two numbers is 5 and their L.C.M. is 210. If one number is 30, find the other number.

Ans. $\text{H.C.F.} \times \text{L.C.M.}$
 $= \text{One number} \times \text{other number}$

$$\begin{aligned} \therefore \text{Other number} &= \frac{\text{H.C.F.} \times \text{L.C.M.}}{\text{One number}} \\ &= \frac{5 \times 210}{30} \\ &= 35 \\ &= \text{other number is } 35 \end{aligned}$$

- (b) The H.C.F. of two numbers is 28 and their L.C.M. is 336. If one number is 84, find the other.

Ans. $\text{H.C.F.} \times \text{L.C.M.}$
 $= \text{One number} \times \text{Other number}$

$$\begin{aligned} \therefore \text{Other number} &= \frac{\text{H.C.F.} \times \text{L.C.M.}}{\text{One number}} \\ &= \frac{28 \times 336}{84} \\ &= \frac{9408}{84} \\ &= 112 \end{aligned}$$

Other number is 112.

Exercise - 18

1. The product of two numbers is 4149040, if the L.C.M. of the number is 33460, find its H.C.F.

Ans. $\text{H.C.F.} = \frac{\text{Product of two numbers}}{\text{L.C.M.}}$
 $= \frac{449040}{33460}$

$$\begin{array}{r} 33460 \overline{)4149040} \quad (124 \\ \underline{-33460} \\ 80304 \\ \underline{-66920} \\ 133840 \\ \underline{-133840} \\ \times \end{array}$$

$$= 124$$

\therefore H.C.F. is 124.

2. The product of two numbers is 1164933. If the H.C.F. of the number is 123, find the L.C.M. of the numbers.

Ans. $\text{L.C.M.} = \frac{\text{Product of two numbers}}{\text{H.C.F.}}$
 $= \frac{1164933}{123}$

$$\begin{array}{r} 123 \overline{)1164933} \quad (124 \\ \underline{-1107} \\ 579 \\ \underline{-492} \\ 873 \\ \underline{-861} \\ 123 \\ \underline{-123} \\ \times \end{array}$$

$$= 9471$$

\therefore L.C.M. is 9471.

3. The product of two numbers is 2560. If the H.C.F. of the number is 8, find their LCM.

Ans. $\text{L.C.M.} = \frac{\text{Product of two numbers}}{\text{H.C.F.}}$
 $= \frac{2560}{8}$

$$\begin{array}{r}
 8 \overline{)2560} \text{ (320)} \\
 \underline{-24} \\
 16 \\
 \underline{-16} \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{\times} \\

 \end{array}$$

$$= 320$$

∴ L.C.M. is 320.

4. **The H.C.F. of two numbers is 26 and L.C.M. is 5148, if one number is 234, find the other number.**

Ans. ∴ H.C.F. × L.C.M.
= One number × other number

$$\begin{aligned}
 \therefore \text{Other number} &= \frac{\text{H.C.F.} \times \text{L.C.M.}}{\text{One number}} \\
 &= \frac{26 \times 5148}{234} \\
 &= \frac{133848}{234}
 \end{aligned}$$

$$\begin{array}{r}
 234 \overline{)133848} \text{ (572)} \\
 \underline{-1170} \\
 1684 \\
 \underline{-1638} \\
 468 \\
 \underline{-468} \\
 \\
 \underline{\times} \\

 \end{array}$$

$$= 572$$

∴ Other number is 572.

5. **The H.C.F. of two numbers is 77 and L.C.M. is 9702, if one number is 1078, find the other number.**

Ans. H.C.F. × L.C.M.
= One number × other number

$$\begin{aligned}
 \therefore \text{Other number} &= \frac{\text{H.C.F.} \times \text{L.C.M.}}{\text{One number}} \\
 &= \frac{77 \times 9702}{1078} \\
 &= \frac{747054}{1078}
 \end{aligned}$$

$$\begin{array}{r}
 1078 \overline{)747054} \text{ (693)} \\
 \underline{-6468} \\
 10025 \\
 \underline{-9702} \\
 3234 \\
 \underline{-3234} \\
 \\
 \underline{\times} \\

 \end{array}$$

$$= 693$$

∴ Other number is 693.

6. **The H.C.F. of two numbers is 13 and L.C.M. is 1989, if one number is 221, find the other number.**

Ans. H.C.F. × L.C.M.
= One number × Other number

$$\begin{aligned}
 \therefore \text{Other number} &= \frac{\text{H.C.F.} \times \text{L.C.M.}}{\text{One number}} \\
 &= \frac{13 \times 1989}{221} = 117
 \end{aligned}$$

∴ Other number is 117.

7. **Find the greatest number that exactly divides 96 and 144.**

Ans. Greatest number is the H.C.F. of 96 and 144

$$\begin{array}{r}
 96 \overline{)144} \text{ (1)} \\
 \underline{-96} \\
 48 \overline{)96} \text{ (2)} \\
 \underline{-96} \\
 \\
 \underline{\times} \\

 \end{array}$$

∴ The greatest number that exactly divides 96 and 144 is 48.

8. **Find the greatest number that can divide 700 and 1082 leaving remainder 7 and 4 respectively.**

Ans. The required number
= H.C.F. of (700 - 7) and (1082 - 4)
= H.C.F. of 693 and 1078

$$\begin{array}{r}
 693 \overline{)1078} \text{ (1)} \\
 \underline{-693} \\
 385 \overline{)693} \text{ (1)} \\
 \underline{-385} \\
 308 \overline{)385} \text{ (1)} \\
 \underline{-308} \\
 77 \overline{)308} \text{ (4)} \\
 \underline{-308} \\
 \\
 \underline{\times} \\

 \end{array}$$

∴ H.C.F. = 77

∴ The required number is 77.

9. **The length and breadth of a hall room are 16 m 50 cm and 12 m 25 cm respectively. What would be the largest size of the tile which can cover the floor of hall room exactly?**

Ans. The required size is the H.C.F. of 16 m 50 cm and 12 m 25 cm
Converting m into cm we get,
16.50 × 100 = 1650 cm
12.25 × 100 = 1225 cm

$$\begin{array}{r}
 1225 \overline{)1650} \text{ (1)} \\
 \underline{-1225} \\
 425 \overline{)1225} \text{ (2)} \\
 \underline{-850} \\
 375 \overline{)425} \text{ (1)} \\
 \underline{-375} \\
 50 \overline{)375} \text{ (7)} \\
 \underline{-350} \\
 25 \overline{)50} \text{ (2)} \\
 \underline{-50} \\
 \\
 \underline{\times} \\

 \end{array}$$

∴ H.C.F. = 25

∴ The required size of the tile is 25 cm.

10. Find the least number which when divided by 24, 42, 60 and 90 leaves a remainder 11 in each case.

Ans. Here, the required number
= (L.C.M of 24, 42, 60, 92) + 11

2	24,	42,	60,	90
2	12,	21,	30,	45
3	6,	21,	15,	45
5	2,	7,	5,	15
2	2,	7,	1,	3
3	1,	7,	1,	3
7	1,	7,	1,	1
	1,	1,	1,	1

$$\therefore \text{L.C.M.} = 2 \times 2 \times 3 \times 5 \times 2 \times 3 \times 7 \\ = 2550$$

$$\therefore \text{Required number} = 2520 + 100 = 2531$$

So, the required number is 2531.

11. Find the greatest number of five digits which is exactly divisible by 36, 48, 54 and 60.

Ans. Required number
= Greatest number of five digits
– L.C.M. of all the numbers

First we will find the L.C.M. of 36, 48, 54 and 60.

2	36,	48,	54,	60
2	18,	24,	27,	30
2	9,	12,	27,	15
2	9,	6,	27,	15
3	9,	3,	27,	15
3	3,	1,	9,	5
3	1,	1,	3,	5
5	1,	1,	1,	5
	1,	1,	1,	1

$$\therefore \text{L.C.M.} = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5 \\ = 2160$$

Greatest number of five digits = 99999
Now will find the greatest number of

five digits which is a multiple of 2160.

$$\begin{array}{r} 2160 \overline{)99999} 46 \\ \underline{-8640} \\ 13599 \\ \underline{-12960} \\ 639 \end{array}$$

$$\therefore \text{Greatest number of 5 digits exactly divisible by 2160} \\ 99999 - 639 = 99360$$

12. Find the number nearest to 1000000, which is exactly divisible by 12, 18, 32 and 63.

Ans. First we will find the L.C.M. of 12, 18, 32 and 63.

2	12,	18,	32,	63
2	6,	9,	16,	63
2	3,	9,	8,	63
3	3,	9,	4,	63
3	1,	3,	4,	21
2	1,	1,	4,	7
2	1,	1,	2,	7
7	1,	1,	1,	7
	1,	1,	1,	1

$$\therefore \text{L.C.M.} = 2 \times 2 \times 2 \times 3 \times 3 \times 2 \times 2 \times 7 \\ = 2016$$

Now we will find the numbers nearest to 1000000 which are the multiples of 2016

$$\begin{array}{r} 2016 \overline{)1000000} 496 \\ \underline{-80640} \\ 19360 \\ \underline{-18144} \\ 12160 \\ \underline{12096} \\ 64 \end{array}$$

$$\therefore \text{Nearest numbers to 1000000 exactly divisible by 2016} = 1000000 - 64 = 999936 \text{ and } 999936 + 2016 = 1001952$$

10

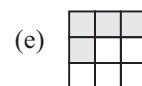
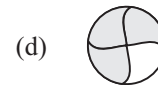
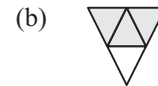
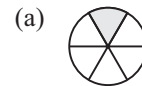
1. Write the fraction representing the shaded portion:

Ans. (a) $\frac{1}{2}$ (b) $\frac{2}{4}$ (c) $\frac{3}{4}$ (d) $\frac{1}{4}$

(e) $\frac{1}{2}$ (f) $\frac{1}{5}$ (g) $\frac{1}{4}$ (h) $\frac{3}{7}$

2. Colour the part according to the fraction given:

Ans.



Fractions

3. Identify the error, if any:
Ans. The shaded portions do not represent the given fractions.

4. What fraction of a day is 8 hours?
Ans. Total hours in a day = 24 hours
 Hours given = 8 hours

$$\therefore \text{Fraction} = \frac{8}{24} = \frac{1}{3}$$

5. What fraction of an hour is 40 minutes?
Ans. Total minutes in an hour = 60
 Minutes given = 40 minutes

$$\therefore \text{Fraction} = \frac{40}{60} = \frac{2}{3}$$

6. Neelam, Karuna and Vimla shared lunch. Neelam brought two sandwiches one made of vegetable and one of jam. The other two girls forgot to bring their lunch. Neelam agreed to share her sandwiches so that each person will have an equal share of each sandwich.

Ans. Number of Sandwiches = 2
 Number of girls = 3

\therefore (a) Neelam will divide each sandwich into three equal parts, and give one part of each sandwich to each one of them.

(b) Part received from 1st sandwich
 $= \frac{1}{3}$

Part received from 2nd sandwich
 $= \frac{1}{3}$

So, each girl will receive $\frac{2}{6}$ part of sandwich.

7. Kanchan has three frocks that she wears while playing. The material is good, but the colours are faded. Her mother buys some blue dye and uses it on two of the frocks. What fraction of the Kanchan's frocks did her mother dye?

Ans. Total number of frocks = 3
 Frocks on which dye was used = 2

$$\therefore \text{Fraction of the frocks dyed} = \frac{2}{3}$$

8. Write the natural number from 2 to 12. What fractions of them are prime numbers?

Ans. Natural number
 $= 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12$
 Prime numbers = 2, 3, 5, 7, 11

\therefore Total numbers = 11
 and Prime numbers = 5

$$\therefore \text{Fraction} = \frac{5}{11}$$

9. Write the natural numbers from 102 to 113. What fraction of them are prime numbers?

Ans. Natural number = 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113
 Prime numbers = 103, 107, 109, 113

\therefore Total number = 12
 and prime numbers = 4

$$\therefore \text{Fraction} = \frac{4}{12} \text{ or } \frac{1}{3}$$

10. What fraction of these circles have X's in them?

Ans. (a) Total circles = 8
 Circles having X's = 5

$$\therefore \text{Fraction} = \frac{5}{8}$$

(b) Total circles = 8
 Circles having X's = 3

$$\therefore \text{Fraction} = \frac{3}{8}$$

(c) Total circles = 8
 Circles having X's = 4

$$\therefore \text{Fraction} = \frac{4}{8} \text{ or } \frac{1}{2}$$

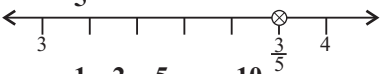
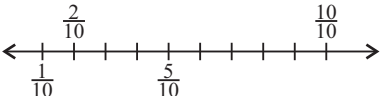
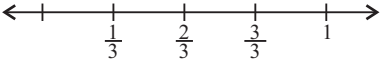
11. Dinesh, Sumit, Ram, Joy, Marshal, Imran, Jayant, Babu, Kabir and Rohan decide to play basketball. The first five boys are in the first team and the rest are in the second team. What fraction of the boys is in the first team?

Ans. Total number of boys = 10
 Number of boys in the first team = 5
 Fraction of the boys in the first team
 $= \frac{5}{10} \text{ or } \frac{1}{2}$

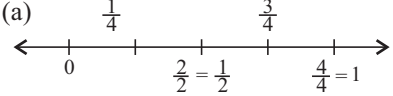
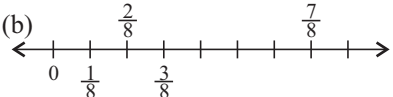
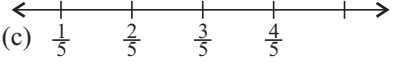
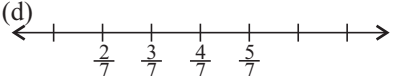
12. Naveen received a CD player for his birthday. He has been collecting CDs since then. He bought 3 CDs and received 50 others as gifts. What fraction of his total CDs did he buy?

Ans. CD's bought by Naveen = 3
 CD's received as gift = 50
 Total number of CD's = 50 + 3 = 53
 Fraction of CD's he bought = $\frac{3}{53}$

Exercise-20

1. Show $\frac{3}{5}$ on a number line.
 Ans. 
2. Show $\frac{1}{10}$, $\frac{2}{10}$, $\frac{5}{10}$ and $\frac{10}{10}$ on a number line.
 Ans. 
3. Can you show any three fractions between 0 and 1?
 Ans. 
4. Write five fractions that you can show and depict on the number line.
 Ans. $\frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, \frac{2}{3}$
5. How many fractions lie between 0 and 1? Think, discuss and write your answer?
 Ans. Infinite fractions lie between 0 and 1.

Exercise-21

1. Draw number lines and locate the points of them:
 Ans. (a) 
 (b) 
 (c) 
 (d) 
2. Express the following as mixed fractions:
 Ans. (a) $\frac{20}{3} = 20 \div 3$

$$\begin{array}{r} 3 \overline{)20} 6 \\ \underline{-18} \\ 2 \end{array}$$

$$= 6 \frac{2}{3}$$
 (b) $\frac{11}{5} = 11 \div 5$

$$\begin{array}{r} 5 \overline{)11} 2 \\ \underline{-10} \\ 1 \end{array}$$

$$= 2 \frac{1}{5}$$
 (c) $\frac{17}{7} = 17 \div 7$

$$\begin{array}{r} 7 \overline{)17} 2 \\ \underline{-14} \\ 3 \end{array}$$

$$= 2 \frac{3}{7}$$
 (d) $\frac{28}{5} = 28 \div 5$

$$\begin{array}{r} 5 \overline{)28} 5 \\ \underline{-25} \\ 3 \end{array}$$

$$= 5 \frac{3}{5}$$

- (e) $\frac{19}{6} = 19 \div 6$

$$\begin{array}{r} 6 \overline{)19} 3 \\ \underline{-18} \\ 1 \end{array}$$

$$= 3 \frac{1}{6}$$
- (f) $\frac{35}{9} = 35 \div 9$

$$\begin{array}{r} 9 \overline{)35} 3 \\ \underline{-27} \\ 8 \end{array}$$

$$= 3 \frac{8}{9}$$
- (g) $\frac{100}{9} = 100 \div 9$

$$\begin{array}{r} 9 \overline{)100} 11 \\ \underline{-9} \\ 10 \\ \underline{-9} \\ 1 \end{array}$$

$$= 11 \frac{1}{9}$$
- (h) $\frac{130}{11} = 130 \div 11$

$$\begin{array}{r} 11 \overline{)130} 11 \\ \underline{-11} \\ 20 \\ \underline{-11} \\ 9 \end{array}$$

$$= 11 \frac{9}{11}$$
- (i) $\frac{254}{19} = 254 \div 19$

$$\begin{array}{r} 19 \overline{)254} 13 \\ \underline{-19} \\ 64 \\ \underline{-57} \\ 7 \end{array}$$

$$= 13 \frac{7}{19}$$
- (j) $\frac{380}{25} = 380 \div 25$

$$\begin{array}{r} 25 \overline{)380} 15 \\ \underline{-25} \\ 130 \\ \underline{-125} \\ 5 \end{array}$$

$$= 15 \frac{5}{25}$$
3. Express the following as improper fractions:
 Ans. (a) $7 \frac{3}{4} = (7 \times 4) + \frac{3}{4} = \frac{31}{4}$
 (b) $5 \frac{6}{7} = (5 \times 7) + \frac{6}{7} = \frac{41}{7}$
 (c) $2 \frac{5}{6} = (2 \times 6) + \frac{5}{6} = \frac{17}{6}$
 (d) $10 \frac{3}{5} = (10 \times 5) + \frac{3}{5} = \frac{53}{5}$
 (e) $9 \frac{3}{7} = (9 \times 7) + \frac{3}{7} = \frac{66}{7}$
 (f) $8 \frac{4}{9} = (8 \times 9) + \frac{4}{9} = \frac{76}{9}$

$$\begin{aligned} \text{(g)} \quad 9\frac{2}{7} &= (9 \times 7) + \frac{2}{7} = \frac{65}{7} \\ \text{(h)} \quad 11\frac{3}{8} &= (11 \times 8) + \frac{3}{8} = \frac{91}{8} \\ \text{(i)} \quad 23\frac{7}{11} &= (23 \times 11) + \frac{7}{11} = \frac{260}{11} \\ \text{(j)} \quad 39\frac{13}{19} &= (39 \times 19) + \frac{13}{19} = \frac{754}{19} \end{aligned}$$

Worksheet

Different primary classes look after the school garden. Use the information given in the following diagram to answer the questions.

- Ans. (a) Class I and II (b) Class V
 (c) Class IV and V (d) Class I, III
 (e) Class IV and V (f) Class I and II
 (g) Class III (h) $\frac{1}{4}$

11

Decimals

Exercise-22

1. Write the following as numbers in the given table:

	Hundreds (100)	Tens (10)	Ones (1)	Tenths (1/10)
a	0	3	1	2
b	1	1	0	4

2. Write the following decimals in the place value table:

	Hundreds (100)	Tens (10)	Ones (1)	Tenths (1/10)
a	0	1	9	4
b	0	0	0	3
c	0	1	0	6
d	2	0	5	9

3. Write each of the following as decimals:

- Ans. (a) Seven-tenths = $\frac{7}{10} = 0.7$
 (b) Twotenths and nine-tenths = $\frac{2}{10}, \frac{9}{10} = 0.2, 0.9$
 (c) Fourteen point six = 14.6
 (d) One hundred and two ones = 102.0
 (e) Six hundred point eight = 600.8

4. Write each of the following as decimals:

- Ans. (a) $\frac{5}{10} = 0.5$
 (b) $3 + \frac{5}{10} = 3 + 0.5 = 3.5$
 (c) $200 + \frac{1}{10} = 200 + 0.1 = 200.1$
 (d) $\frac{36}{10} = \frac{30}{10} + \frac{6}{10} = 3 + 0.6 = 3.6$
 (e) $70 + \frac{8}{10} = 70 + 0.8 = 70.8$

$$\text{(f)} \quad \frac{88}{10} = \frac{80}{10} + \frac{8}{10} = 8 + 0.8 = 8.8$$

$$\begin{aligned} \text{(g)} \quad 4\frac{2}{10} &= \frac{42}{10} = \frac{40}{10} + \frac{2}{10} \\ &= 4 + \frac{2}{10} = 4 + 0.2 = 4.2 \end{aligned}$$

$$\begin{aligned} \text{(h)} \quad \frac{3}{2} &= \frac{3}{2} \times \frac{5}{5} = \frac{15}{10} = \frac{10}{10} + \frac{5}{10} \\ &= 1 + 0.5 = 1.5 \end{aligned}$$

$$\text{(i)} \quad \frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10} = 0.4$$

$$\begin{aligned} \text{(j)} \quad \frac{12}{5} &= \frac{12 \times 2}{5 \times 2} = \frac{24}{10} = \frac{20}{10} + \frac{4}{10} \\ &= 2 + 0.4 = 2.4 \end{aligned}$$

$$\begin{aligned} \text{(k)} \quad 3\frac{3}{5} &= \frac{18}{5} = \frac{18}{5} \times \frac{2}{2} = \frac{36}{10} \\ &= \frac{30}{10} + \frac{6}{10} = 3 + 0.6 = 3.6 \end{aligned}$$

$$\begin{aligned} \text{(l)} \quad 4\frac{1}{2} &= \frac{9}{2} = \frac{9}{2} \times \frac{5}{5} = \frac{45}{10} \\ &= \frac{40}{10} + \frac{5}{10} = 4 + 0.5 = 4.5 \end{aligned}$$

5. Write the following decimals as fractions. Reduce the fractions to lowest form:

- Ans. (a) $0.6 = \frac{6}{10} = \frac{3}{5}$
 (b) $2.5 = 2 + \frac{5}{10} = \frac{20}{10} + \frac{5}{10} = \frac{25}{10} = \frac{5}{2}$
 (c) $1.0 = \frac{10}{10} = 1$
 (d) $3.8 = 3 + \frac{8}{10} = \frac{30}{10} + \frac{8}{10} = \frac{38}{10} = \frac{19}{5}$
 (e) $13.7 = 13 + \frac{7}{10} = \frac{130}{10} + \frac{7}{10} = \frac{137}{10}$
 (f) $21.2 = 21 + \frac{2}{10} = \frac{210}{10} + \frac{2}{10} = \frac{212}{10} = \frac{106}{5}$
 (g) $6.4 = 6 + \frac{4}{10} = \frac{60}{10} + \frac{4}{10} = \frac{64}{10} = \frac{32}{5}$
 (h) $3.5 = 3 + \frac{5}{10} = \frac{30}{10} + \frac{5}{10} = \frac{35}{10} = \frac{7}{2}$