Advance Maths

Help-Kit-5

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Chapter 1 : Let Us Revise

1. Fill in the blanks :

Ans. a. 99999 b. 99001 c. 49999 d. 100000
e. 1000 f. 999999 g. 96999 h. 73000

2. Match the following numbers of column 'A' with their names in column 'B':

	Column 'A'	Column 'B'
Ans. a.	1,00,000	vi. One lakh
b.	10	i. Ten
c.	100	ii. One hundred
d.	1,000	iii. One thousand
e.	10,00,00,000	v. Ten crore
f.	1,00,00,000	iv. One crore

3. Fill in the blanks :

Ans. a. 67,796 = **6** ten thousands + **7** thousands + 7 hundreds + **9** tens + **6** ones
b. 4,90,070 = **4** lakhs + **9** ten thousands + **0** thousands + **0** hundreds + **7** tens + **0** ones.

4. Write the following in words (according to Indian Numeral System) :

Ans. a. Seventy five thousand seven hundred fifty-nine
b. Thirty thousand
c. Four lakhs ten thousand eight hundred
d. Three lakhs fifty-nine thousand six hundred and eighty
e. One lakh fifty thousand one hundred and forty-six

5. Write the number name (according to International Numeral System) :

Ans. a. Six hundred thousand three hundred and fifty
b. Four hundred fifty thousand one hundred fifty two
c. Three million nine hundred eleven thousand six hundred
d. Six million thirty seven thousand and seven
e. Eight million

6. Write the place value of the given digits :

Ans. a.	25,683	2	20000	6	600	5	5000
b.	34,592	3	30000	4	4000	5	500
c.	5,32,176	5	500000	7	70	2	2000
d.	7,12,583	7	700000	1	10000	5	500
e.	14,56,398	1	1000000	4	400000	5	50000

7. Express the following in figures :

Ans. a. 55435 b. 79660 c. 100000 d. 310527
e. 900004 f. 4333065 g. 6400245 h. 8731215
i. 5324834 j. 8006403

8. Find the following sums :

Ans. a.

TTh	Th	H	T	O
1	1	1	1	
	8	4	3	6	2
+	9	6	8	4	8
1	8	1	2	1	0

b.

TTh	Th	H	T	O
1	1	1	1	
	7	4	5	7	8
+	3	5	4	8	3
1	1	0	0	6	1

c.

TTh	Th	H	T	O
	1			
	7	3	5	1	0
+	3	8	4	3	7
1	1	1	9	4	7

d.

TTh	Th	H	T	O
1	1	1		
	8	7	6	5	3
+	5	8	7	5	3
1	4	6	4	0	6

e.

TTh	Th	H	T	O
	1	1		
	5	8	7	2	0
+	8	7	6	5	0
1	4	6	3	7	0

f.

TTh	Th	H	T	O
	1	1		1	
	8	6	5	4	7
+	2	7	6	4	8
1	1	4	1	9	5

9.

TTh	Th	H	T	O
	5	12	13	17	15
	~~6~~	~~3~~	~~4~~	~~8~~	~~5~~
–	3	7	5	8	9
	2	5	8	9	6

63,485 – 37,589

So, 63485 – 37589 = 25896

10. Find the difference :

Ans. a.

TTh	Th	H	T	O
	7	16	15	14	0
	~~8~~	~~7~~	~~6~~	~~5~~	~~0~~
–	7	8	7	5	9
	0	8	8	9	1

b.

TTh	Th	H	T	O
		2	11	10	10
	8	~~3~~	~~2~~	~~1~~	~~0~~
–	1	2	3	8	9
	7	0	8	2	1

c.

TTh	Th	H	T	O
	8	14		8	12
	~~7~~	~~4~~	5	~~9~~	~~2~~
–	5	6	3	4	6
	1	8	2	4	6

11. Fill in the missing digits :

Ans. a.

TTh	Th	H	T	O
	2	3	4	5	6
+	1	3	4	5	2
	3	6	9	0	8

b.

TTh	Th	H	T	O
	6	7	1	2	0
–	2	4	3	1	3
	④	2	8	0	7

c.

L	TTh	Th	H	T	O
	3	6	0	9	2	3
–	2	3	4	4	4	4
	①	2	⑥	4	7	⑨

d.

L	TTh	Th	H	T	O
	4	5	2	7	8	3
+	3	9	3	7	3	6
	8	4	6	5	①	9

12. Difference between two numbers = 42,321

Greater number = 9,34,567

Let smaller number be x.

9,34,567 – x = 42321

x = 934567 – 42321

x = 892246

∴ The smallest no. is 892246.

L	TTh	Th	H	T	O
	~~9~~	~~3~~	4	5	6	7
–		4	2	3	2	4
	8	9	2	2	4	6

13. Total no. of bags in story = 4,36,840
No. of bags sold out on Monday = 5,180
No. of bags sold out on Tuesday = 45,670
No. of bags left = 436840 – (5180 + 45670)
= 436840 – 50850 = 385990

	L	TTh	Th	H	T	O
	0	13	5	17	14	
	~~4~~	~~3~~	~~6~~	~~8~~	~~4~~	0
–		5	0	8	5	0
	3	8	5	9	9	0

	TTh	Th	H	T	O
	1		1		
	~~4~~	5	~~6~~	7	0
+		5	1	8	0
	5	0	8	5	0

14. Cost of shoes = ₹ 150.25
Cost of dress = ₹ 225
Cost of blouse = ₹ 75.30
Total money she spent = ₹ 150.25 + ₹ 225 + ₹ 75.30
= ₹ 450.55

1	1		
150	.	25	
225	.	00	
+75	.	30	
450	.	55	

15. Quantity of mustard oil sold = 80 / 150 ml
Quantity of sunflower oil sold = 78 / 480 ml
Total litres of oil he sold = 80 / 150 ml + 78 / 480 ml
= 158 / 630 ml

16. Solve the following :

Ans. a.

	L	TTh	Th	H	T	O
			2	3	0	4
				×	9	2
			4	6	0	8
+	2	0	7	3	6	×
	2	1	1	9	6	8

b.

	L	TTh	Th	H	T	O
			7	2	4	5	0
					×	3	2
	1	4	4	9	0	0
2	1	7	3	5	0	×
2	3	1	8	4	0	0

c.

	L	TTh	Th	H	T	O
		4	7	8	2	1
				×	5	9
	4	3	0	3	8	9
2	3	9	1	0	5	×
2	8	2	1	4	3	9

d.

	L	TTh	Th	H	T	O
		1	0	4	9	5
				×	7	3
		3	1	4	8	5
7	3	4	6	5	×	
7	6	6	1	3	5	

e.
```
  864
34)29405
  -272
   220      Q : 864
  -204      R : 29
   165
  -136
    29
```

f.
```
  28262
34)536987
  -38
   156      Q : 2826
  -152      R : 9
    49
   -38
    118
   -114
     47
```

g.
```
      4966
12 ) 59593
   - 48
     115
   - 108
      79
    - 72
      73
     -72
       1
```
Q : 4966
R : 1

h.
```
      48431
15 )726476
   - 60
     126
    -120
      64
     -60
      47
     -45
      26
     -15
      11
```
Q : 48431
R : 11

17. Write the number name for the following :

a. Eight b. Nineteen c. Thirty-seven d. Twenty-five

18. Which of the following are meaningless?

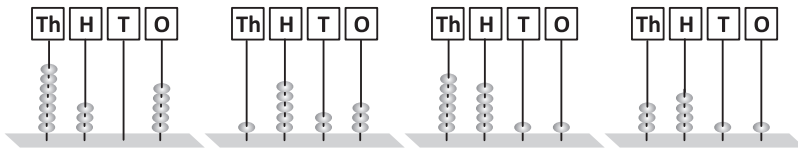
a. meaningless c. meaningless e. meaningless
g. meaningless h. meaningless i. meaningless

19. Compare and put the correct symbol >, < or = in the placeholders :

a. XCIII < CXIII b. CD > CCCXC c. CCLIX > CCXLI
d. CDXL < CDLX e. CXLIX < CLXXXIX f. CCXXVI < CCXXIX

20. Show the given numbers on the abacus by drawing beads :

a. 7305 b. 1523 c. 6511 d. 3412



21. Use the greater (>) or smaller (<) sign between the given numbers :

a. 2314 < 8769 b. 5643 > 5632 c. 6098 > 4509
d. 5090 < 5097 e. 4321 > 3421 f. 7690 > 7686
g. 2747 < 2774 h. 8765 > 8756 i. 2008 < 2800
j. 1143 > 1123 k. 6798 > 4567 l. 5678 > 5646

22. Write the following in short form :

a. 6311 b. 2155 c. 1569 d. 5975 e. 1768
f. 6087 g. 5768 h. 1925 i. 5057 j. 6214

23. Write the Roman numerals for the following :

a. XXVI b. XXXVIII c. XLIX d. XCVIII e. XXV

24. Write the following in expanded form :

S.No.	Number	Expanded Form
a.	15,265	10000 + 5000 + 200 + 60 + 5
b.	3,05,450	300000 + 5000 + 400 + 50
c.	89,472	80000 + 9000 + 400 + 70 + 2

d.	92,503	90000 + 2000 + 500 + 3
e.	4,87,399	400000 + 80000 + 7000 + 300 + 90 + 9
f.	2,12,367	200000 + 10000 + 2000 + 300 + 60 + 7

25. Compare :

a. 59,253 and 65,256
As 65 > 59 so, 59,253 > 65,256

b. 83,246 and 94,341
Since, 94 > 83 so, 94,341 > 83,246

26. Circle and smallest number and underline the greatest number in the following :

a. **8706**; 78,205; 87,502; 76,450 b. **7341**, 98,131, 87,231; 87251

27. Arrange the following numbers in ascending order :

a. 53000 < 53376 < 53594 < 54465
b. 18900 < 37103 < 41905 < 41967
c. 23214 < 23412 < 34521 < 45321 < 52341 < 54123
d. 70258 < 70528 < 70825 < 78025 < 78052 < 87250 < 87502
e. 30872 < 72083 < 73280 < 80308 < 80327 < 80372 < 80723
f. 13658 < 16384 < 16483 < 63148 < 63441 < 83416 < 83641
g. 56979 < 57996 < 75669 < 77569 < 79965 < 96579 < 99765

28. Arrange the following numbers in descending order :

a. 43012 > 42031 > 40321 > 4312
b. 74321 > 49378 > 6394 > 3649
c. 75654 > 65437 > 63574 > 63475 > 57634 > 57436 > 54378
d. 32100 > 30012 > 20013 > 13002 > 12300 > 12030 > 10032
e. 79124 > 74291 > 71924 > 17924 > 14297 > 14279 > 12497
f. 73326 > 62373 > 62337 > 33762 > 32673 > 27363 > 26733

29. Observe the pattern and fill in the blanks :

a. 912410, 912510, 912610, 912710, 912810, 921910
b. 74256, 75256, 76256, 77256, 78256, 79256
c. 210000, 310000, 410000, 510000, 610000, 710000

30. Multiply :

a. 112 × 123

		H	T	O
		1	1	2
	×	1	2	3
		3	3	6
	2	2	4	×
+	1	1	2	× ×
	1	3	7	7 6

So, 112 × 123 = 13776

b. 312 × 512

			H	T	O
			3	1	2
		×	5	1	2
			6	2	4
		3	1	2	×
+	1	5	6	0	× ×
	1	5	9	7	4 4

So, 312 × 512 = 159744

c. 313×212

		H	T	O
		3	1	3
	×	2	1	2
		6	2	6
	3	1	3	×
+	6	2	6	× ×
	6	6	3	5 6

So, $313 \times 212 = 66356$

d. 2321×1211

			H	T	O
		2	3	2	1
	×	1	2	1	1
		2	3	2	1
	2	3	2	1	×
4	6	4	2	×	×
+ 2	3	2	1	×	× ×
2	8	1	0	7	3 7

So, $2321 \times 1211 = 2810731$

31. Fees charged from 1 student = ₹ 310
No. of students = 132
Total fees charged = ₹ 310×132
= ₹ 40920

		H	T	O
		3	1	0
	×	1	3	2
		6	2	0
	9	3	0	×
+ 3	1	0	×	×
4	0	9	2	0

32. Find the quotient in each of the following :

a. $11,556 \div 6$

$$
\begin{array}{r|l}
6 & 11556 \\
-6 & \\
\hline
55 & \\
-54 & \\
\hline
15 & \\
-12 & \\
\hline
36 & \\
-36 & \\
\hline
0 &
\end{array}
\quad 1926
$$

Quotient = 1926

b. $63,215 \div 5$

$$
\begin{array}{r|l}
5 & 63215 \\
-5 & \\
\hline
13 & \\
-10 & \\
\hline
32 & \\
30 & \\
\hline
21 & \\
-20 & \\
\hline
15 & \\
-15 & \\
\hline
0 &
\end{array}
\quad 12643
$$

Quotient = 12643

c. $9,18,548 \div 4$

$$
\begin{array}{r|l}
5 & 918548 \\
-8 & \\
\hline
11 & \\
-8 & \\
\hline
38 & \\
-36 & \\
\hline
25 & \\
-24 & \\
\hline
 & 14 \\
 & -12 \\
\hline
 & 28 \\
 & -28 \\
\hline
 & 0
\end{array}
\quad 12643
$$

Quotient = 229637

d. $25,431 \div 7$

$$
\begin{array}{r|l}
6 & 25431 \\
-21 & \\
\hline
44 & \\
-42 & \\
\hline
23 & \\
-21 & \\
\hline
21 & \\
-21 & \\
\hline
0 &
\end{array}
\quad 1926
$$

Quotient = 3633

33. No. of boxes = 6
No. of apples = 480
Apples in each box = 480 ÷ 6 = 80

$$\begin{array}{r} 80 \\ 6\overline{)480} \\ -480 \\ \hline 0 \end{array}$$

34. Distance covered by bus = 240 km
Time taken to cover the distance = 4 hours
Distance covered in 1 hour = 240 ÷ 4 = 60 km
Distance covered in 3 hours = 60 × 3 = 180 km

35. Number of tubelights produced by factory in 1 week = 14000
Number of tubelights produced by factory in 1 day = 14000 ÷ 7 = 2000

$$\begin{array}{r} 2000 \\ 7\overline{)14000} \\ -14 \\ \hline 0000 \end{array}$$

Tubelights produced in 30 days = 2000 × 30 = 60000

36. Observe the pattern and write the next three numbers :

a.	5, 10, 15, 20,	**25,**	**30,**	**35**
b.	6, 12, 18, 24,	**30,**	**36,**	**42**
c.	14, 28, 42, 56,	**70,**	**84,**	**98**
d.	10, 20, 30, 40,	**50,**	**60,**	**70**
e.	80, 70, 60, 50,	**40,**	**30,**	**20**
f.	2, 12, 22, 32, 42	**52,**	**62,**	**72**
g.	26, 24, 22, 20, 18	**16,**	**14,**	**12**
h	. 123, 456, 789, 1122	**1455,**	**1780,**	**2121**
i.	108, 208, 308, 408	**508,**	**608,**	**708**
j.	1246, 2246, 3246	**4246,**	**5246,**	**6246**
k.	AB, CD, EF, GH	**IJ,**	**KL,**	**MN**
l.	A1, B2, C3, D4	**E5,**	**F6,**	**G7**
m.	ABA, CDC, EFE, GHG	**IJI,**	**KLK,**	**MNM**

37. Look at the pattern and complete the number towers :

a.

	28	
15		13
7	8	5

b.

	41	
19		22
9	10	12

c.

	24	
6		4
6	1	4

d.

	60	
10		6
5	2	3

e.

	46	
21		25
11	10	15

f.

	17	
8		9
8	1	9

38. Observe the pattern and fill in the blanks :

a. $1 \times 8 + 1 = 9$
$12 \times 8 + 2 = 98$
$123 \times 8 + 3 = 987$
$1234 \times 8 + 4 = 9876$
$12345 \times 8 + 5 = 98765$
$123456 \times 8 + 6 = 987654$

b. $1 \times 1 = 1$
$11 \times 11 = 121$
$111 \times 111 = 12321$
$1111 \times 1111 = 1234321$
$11111 \times 11111 = 123454321$
$111111 \times 111111 = 12345654321$

c. $6 \times 6 = 36$
$66 \times 66 = 4356$
$666 \times 666 = 443556$
$6666 \times 6666 = 44435556$
$66666 \times 66666 = 4444355556$
$666666 \times 666666 = 444443555556$

d. $7 \times 9 = 63$
$77 \times 99 = 7623$
$777 \times 999 = 776223$
$7777 \times 9999 = 77762223$
$77777 \times 99999 = 7777622223$
$777777 \times 999999 = 777776222223$

39. a. $5 \times 16 = 80$, so it is a **multiple** of 5 and 16.
b. $3 \times 5 \times 2 = 30$, so, 2, 3, 5, 6, 10 and 15 are **factors** of 30.
c. 18 and 4 are factors of 72. So 72 is **divisible** by 18 and 4.
d. Among 22, 36, 45, 338, 4831 and 11,780, **45** and **4831** are odd numbers.
e. Among 18, 29, 85, 563, 900 and 32,324, **18**, **900** and **32324** are even numbers.
f. The second and third multiplies of 18 are **36** and **54** respectively.
g. Three factors of 28 other than 1 and 28 are **2**, **4** and **7**.
h. To make 253 divisible by 5, the smallest number that needs to be added to it is **2**.
i. Among 13,23,33 and 63 the prime numbers are **13** and **23**.
j. Among 34,37,39 and 47, the composite numbers are **34** and **39**.

40. **Write the following :**
a. 6, 12, 18
b. 18, 36
c. 24, 48
d. 111, 113, 115, 117, 119

41. **Write the following :**
a. 98
b. 101
c. 99999

42. **Find which of the following numbers are divisible by 2 as well as 3 :**
a. 3452
3452 is divisible by 2 as its last digit is even.
In 3452 sum of digits = 3 + 4 + 5 + 2 = 14 is not a multiple of 3 so it is not divisible by 3.
b. 4323
4323 is not divisible by 2 as its last digit is odd.
Checking sum of digits $= 4 + 3 + 2 + 3$
$= 12$
Since, sum of digits is a multiple of 3.
So, 4323 is divisible by 3.
c. 5022
Since, last digit of 5022 is even, so 5002 is divisible by 2.
Sum of digits = 5 + 2 + 2 = 9
Since, the sum of digits is divisible by 3.
So, 5022 is divisible by 3 also.
So, 5022 is divisible by 2 and 3.

d. 2244
Since, last digit is 4 which is even so, 2244 is divisible by 2.
Sum of digits = 2 + 2 + 4 + 4 = 12.
Since, sum of digits is divisible by 3.
So, 2244 is divisible by 3.
So, 2244 is divisible by 2 and 3.

43. Which of the following numbers are divisible by 10?

a. 12,345
Since, the last digit is not 0. So 12,345 is not divisible by 10.

b. 6,43,210
Since, the last digit is not 0. So 6,43,210 is divisible by 10.

c. 98,900
Since, the last digit is 0. So 98,900 is not divisible by 10.

d. 93,216
Since, the last digit is 6. So 93,216 is not divisible by 10.

44. Check the divisibility of the following numbers by 2, 3, 4, 5, 6, 8, 10 and 11. Tick (✓) the box if divisible and (✗) if not divisible :

	Number	2	3	4	5	6	8	10	11
a.	81,620	✓	✗	✓	✓	✗	✗	✓	✓
b.	61,800	✓	✓	✓	✓	✓	✓	✓	✗
c.	2,98,53,300	✓	✓	✓	✓	✓	✗	✓	✗
d.	65,175	✗	✓	✗	✓	✗	✗	✗	✓
e.	37,290	✓	✓	✗	✓	✓	✗	✓	✓
f.	5,381	✗	✗	✗	✗	✗	✗	✗	✗
g.	4,26,972	✓	✓	✓	✗	✓	✗	✗	✗

45. Find the following differences mentally :

a. 85 – 76 = 9 b. 165 – 126 = 39 c. 99 – 11 = 88
d. 100 – 35 = 65 e. 53 – 29 = 24 f. 403 – 150 = 253

46. Find the HCF of the following :

a. 18 and 12

$$\begin{array}{r} 1 \\ 12\overline{)\,18} \\ -12 \\ \hline 6\overline{)\,12}\,(2 \\ -12 \\ \hline 0 \end{array}$$

So, HCF of 18 and 12 is 6.

b. 24 and 16

$$\begin{array}{r} 1 \\ 16\overline{)\,24} \\ -16 \\ \hline 8\overline{)\,16}\,(2 \\ -16 \\ \hline 0 \end{array}$$

So, HCF of 24 and 16 is 8.

c. 36 and 46

$$\begin{array}{r} 1 \\ 36\overline{)46} \\ -36 \\ \hline 10\overline{)36}(3 \\ -30 \\ \hline 6\overline{)10}(1 \\ -6 \\ \hline 4\overline{)6}(1 \\ -4 \\ \hline 2\overline{)4}(2 \\ -4 \\ \hline 0 \end{array}$$

So, HCF of 36 and 46 is 2.

d. 60 and 40

$$\begin{array}{r} 1 \\ 40\overline{)60} \\ -40 \\ \hline 20\overline{)40}(2 \\ -40 \\ \hline 0 \end{array}$$

So, HCF of 60 and 40 is 20.

47. **Write five multiples of the given number :**

a. 8 : 16, 32, 40, 48, 56

b. 12 : 24, 36, 48, 60, 72

48. No. of eggs 1 hen lays = 160

No. of eggs 39 hens product = 160 × 39

= 6240

	H	T	O
	1	6	0
	×	3	9
1	4	4	0
4	8	0	×
6	2	4	0

49. Match lasted for 8 hours 10 min = (8 × 60) + 10 min

= 480 + 10 = 490 min

50. Capacity of tanker = 500 *l*

Oil in tanker = 255.630 *l*

Oil which can be put into tanker = 500 *l* – 255.630 *l*

= 244.370 *l*

	4	9	9	9	10
	~~5~~	~~0~~	~~0~~	~~.~~	~~0~~ 0
–	2	5	5	.	6 3 0
	2	4	4	.	3 7 0

51. Weight of each cheese cube = 0.03

Number of cubes in 1 box = 25

Total weight of 25 cubes = 0.03 × 25 = 0.75 kg

Cost of cheese per kilogram = $\frac{\text{Cost of box}}{\text{Total weight}} = \frac{48}{0.75} = \frac{48}{0.75} = \frac{4800}{75}$

= ₹ 64

52. Length of blackboard = 300 cm

Breadth of blackboard = 140 cm

Perimeter of blackboard = 2 × (length + breadth)

= 2 × (300 + 140)

= 2 × (440) = 880 cm

Area of blackboard = Length × Breadth

= 300 × 140 = 42000 cm^2

53. Sum of 7.2 and 9.7 $= 7.2 + 9.7 = 16.9$ cm

$(7.2 + 9.7) - 8.11 = 16.9\text{ cm} - 8.11\text{ cm}$

$= 8.79$ cm

	7.2
+	9.7
	16.9

	16	8	10
	~~1~~	~~6~~	~~.~~ ~~9~~ ~~0~~
−	8	.	1 1
	8	.	7 9

54. Fill in the blanks :

a. $\frac{1}{3}$ of 18 = **6**, $\frac{3}{4}$ of 60 = **45**, $\frac{5}{16}$ of 96 = **30**.

b. $\frac{14}{9}$ is a/an **improper** fraction and $7\frac{3}{5}$ is a/an **mixed** fraction.

c. In $9\frac{2}{5}$, the integral part is **9** and the fraction part is $\frac{2}{5}$.

d. Among $\frac{2}{3}, \frac{5}{12}, \frac{11}{12}, \frac{5}{9}$, and $\frac{7}{12}$ the like fractions are : $\frac{5}{12}, \frac{11}{12}, \frac{7}{12}$.

e. $\frac{2}{3} = \frac{10}{15}$, $\frac{7}{8} = \frac{42}{48}$, $\frac{5}{12} = \frac{40}{96}$, $\frac{8}{15} = \frac{24}{45}$

f. True

g. True

h. $\frac{24}{36}$ in lowest terms is $\frac{2}{3}$ and $\frac{75}{100}$ in lowest terms is $\frac{3}{4}$.

i. In 52.643, the place value of 5 is **50**, that of 6 is $\frac{6}{10}$, that of 4 is $\frac{4}{100}$ and that of 3 is $\frac{3}{1000}$.

j. In the expanded form, $8.193 = 8 + \frac{1}{10} + \frac{9}{100} + \frac{3}{1000}$.

k. 280 rupees 75 paise = ₹ **280.75**.

55. Put the sign >, < or = :

a. > b. > c. > d. = e. = f. =

56. Arrange the following fractions in descending order :

a. Descending order is given by $\frac{6}{9} > \frac{5}{9} > \frac{3}{9}$.

b. Descending order is given by $\frac{10}{11} > \frac{8}{11} > \frac{5}{11}$.

c. Descending order is given by $\frac{5}{10} > \frac{3}{10} > \frac{2}{10}$.

d. Descending order is given by $\frac{6}{9} > \frac{6}{11} > \frac{6}{12}$.

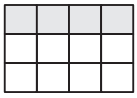
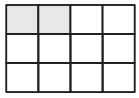
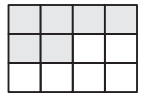
e. Descending order is given by $\frac{3}{1} > \frac{3}{9} > \frac{3}{10}$.

f. Descending order is given by $\frac{4}{9} > \frac{4}{11} > \frac{4}{18}$.

57. Colour the given fractional parts and write their sum :

a.  and  make 

$\frac{2}{8}$ + $\frac{4}{8}$ = $\frac{\mathbf{6}}{8}$

b.  and  make 

$\frac{4}{12}$ + $\frac{2}{12}$ = $\frac{\mathbf{6}}{12}$

58. $\frac{5}{5} - \frac{3}{5} = \frac{5-3}{5} = \frac{2}{5}$

59. Total homework done by Aman on Sunday and Monday $= \frac{6}{9}$

Part of homework done by Aman on Sunday $= \frac{2}{9}$

Part of homework done by Aman on Monday $= \frac{6}{9} - \frac{2}{9} = \frac{4}{9}$

60. Write the following as decimals :

a. $\frac{8}{100} = 0.08$ b. $\frac{6}{100} = 0.6$ c. $\frac{14}{100} = 0.14$ d. $\frac{5}{100} = 0.05$

e. $\frac{27}{1000} = 0.027$ f. $3\frac{5}{100} = \frac{5}{100} = 3 + 0.05 = 3.05$

g. $123\frac{5}{100} = 123 + \frac{5}{100} = 123 + 0.05 = 123.05$

h. $2\frac{25}{100} = 2 + \frac{25}{100} = 2 + 0.25 = 2.25$

61. Write the following decimal numbers as fraction or mixed fraction :

a. $0.73 = \frac{73}{100}$ b. $0.11 = \frac{11}{100}$ c. $2.05 = \frac{205}{100} = 2\frac{5}{100}$

d. $29.37 = \frac{2937}{100} = 29\frac{37}{100}$ e. $0.183 = \frac{183}{1000}$

f. $71.546 = \frac{71546}{1000} = 71\frac{546}{1000}$

62. Simplify :

a. $\frac{3}{5} + \frac{7}{10}$

Take LCM of 5 and 10 which is 10.

$\frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10}$, $\frac{7}{10} = \frac{7 \times 1}{10 \times 1} = \frac{7}{10}$

$\frac{3}{5} + \frac{7}{10} = \frac{6}{10} + \frac{7}{10} = \frac{(6+7)}{10} = \frac{13}{10}$ or $1\frac{3}{10}$

b. $8\frac{1}{7} + 2\frac{3}{5}$

$8\frac{1}{7} = \frac{(8 \times 7) + 1}{7} = \frac{57}{7}$

$2\frac{3}{5} = \frac{(2 \times 5) + 3}{5} = \frac{(10+3)}{5} = \frac{13}{5}$

$\frac{57}{7} + \frac{13}{5}$

Taking LCM of 7 and 5.

$$\frac{57\times5}{7\times5}+\frac{13\times7}{5\times7}=\frac{285+91}{35}=\frac{376}{35}=10\frac{26}{35}$$

c. $3\frac{1}{2}-1\frac{2}{3}$

$$3\frac{1}{2}=\frac{(3\times2)+1}{2}=\frac{(6+1)}{2}=\frac{7}{2}$$

$$1\frac{2}{3}=\frac{(1\times3)+2}{3}=\frac{3+2}{3}=\frac{5}{3}$$

$$3\frac{1}{2}-1\frac{2}{3}=\frac{7}{2}-\frac{5}{3}$$

Taking LCM of 2 and 3 which is 6.

$$\frac{7}{2}=\frac{7\times3}{2\times3}=\frac{21}{6},\ \frac{5}{3}=\frac{5\times2}{3\times2}=\frac{10}{6}$$

$$3\frac{1}{2}-1\frac{2}{3}=\frac{21}{6}-\frac{10}{6}=\frac{11}{6}=1\frac{5}{6}$$

d. $5\frac{2}{6}+3\frac{1}{6}-8$

$$5\frac{2}{6}=\frac{(5\times6)+2}{6}=\frac{32}{6},\ 3\frac{1}{6}=\frac{(3\times6)+1}{6}=\frac{19}{6}$$

$$\frac{32}{6}+\frac{19}{6}-8=\frac{51}{6}-8$$

Taking LCM of 1 and 6 which is 6.

$$\frac{51}{6}-\frac{8\times6}{6}=\frac{51-48}{6}=\frac{3}{6}=\frac{1}{2}$$

e. $\frac{5}{7}-\frac{2}{7}+\frac{6}{7}=\left(\frac{5-2+6}{7}\right)=\frac{9}{7}$ or $1\frac{1}{2}$

f. $\frac{7}{10}+\frac{3}{10}-\frac{2}{10}=\left(\frac{7+3-2}{10}\right)=\left(\frac{10-2}{10}\right)=\frac{8}{10}$ or $\frac{4}{5}$

g. $\frac{4}{5}-\frac{3}{4}+\frac{5}{6}-\frac{15}{20}$

Take LCM of 5, 4, 6, 20 which is 60.

$$\frac{4}{5}=\frac{4\times12}{5\times12}=\frac{48}{60},\qquad \frac{3}{4}=\frac{3\times15}{4\times15}=\frac{45}{60}$$

$$\frac{5}{6}=\frac{5\times10}{6\times10}=\frac{50}{60},\qquad \frac{50}{20}=\frac{15\times3}{20\times3}=\frac{45}{60}$$

$$\frac{4}{5}-\frac{3}{4}+\frac{5}{6}-\frac{15}{20}=\left(\frac{48-45+50-45}{60}\right)=\frac{3+5}{60}=\frac{8}{60}\text{ or }\frac{2}{15}$$

h. $\frac{12}{25}+\frac{7}{25}+\frac{11}{25}+\frac{14}{25}=\left(\frac{12+7+11+14}{25}\right)=\frac{44}{25}=1\frac{19}{25}$

i. $\frac{7}{10}-3\frac{1}{5}+5\frac{1}{2}=\frac{7}{10}-\left(\frac{(3\times5)+1}{5}\right)+\frac{(5\times2)+1}{2}$

$$=\frac{7}{10}-\frac{16}{5}+\frac{11}{2}$$

Take LCM of 10, 5 and 2 which is 10.

$$\frac{7}{10} - \frac{16 \times 2}{5 \times 2} + \frac{11 \times 5}{2 \times 5} = \frac{7}{10} - \frac{32}{10} + \frac{55}{10} = \frac{7 - 32 + 55}{10}$$

$$= \frac{-25 + 55}{10} = \frac{30}{10} = 3$$

63. Write the following in decimal fractions :

a. 42.3 b. 28.75 c. 3.743

d. 0.63 e. 0.004 f. 0.043

64. Simplify :

a. $3.96 + 4.26 - 6.9$

$= (3.96 + 4.26) - 6.9$

$= 8.22 - 6.9 = 1.32$

① ①
3.96
+4.26
8.22

⑦ ⑫
~~8.72~~
−6.90
10.32

b. $7.08 - 3.523$

$= 3.557$

⑦ ⑩ ⑦ ⑩
~~7.080~~
−3.523
3.557

c. $4.065 + 31.23$

$= 35.295$

31.230
+ 4.065
35.295

d. $26.07 - 12.64 + 0.65$

$= (26.07 - 12.64) + 0.65$

$= 13.43 + 0.65$

$= 14.08$

⑤ ⑩
~~26.07~~
−12.64
13.43

①
13.43
+ 0.65
14.08

e. $0.85 + 0.7 - 0.203$

$= (0.85 + 0.7) - 0.203$

$= 1.55 - 0.203$

$= 1.347$

①
0.85
+0.70
1.55

④ ⑩
1.55~~0~~
−0.203
1.347

65. Convert the following :

a. 7450 m

7450 = 7000 m + 450 m

Since, 1 km = 1000 m

$\therefore$ 7000 m = 7 km

7450 m = 7 km 450 m

b. 3095 cm

3095 cm = 3000 cm + 95 cm

Since, 1000 cm = 1 m

$\therefore$ 3095 cm = 30 m 95 cm

c. 5085 ml

5085 ml = 5000 ml + 85 ml

Since, 1000 ml = 1 l

So, 5085 ml = 5 l 85 ml

d. 12,827 g

12827 g = 12000 + 827 g

Since, 1000 g = 1 kg

So, 12827 g = 12 kg 827 g

66. Add the following :

a.

km	m
1	
2	240
+3	210
+7	610
13	060

b.

km	m
1 1	1
5	943
+7	258
+6	460
19	661

c.

km	m
1 1	1
5	223
+4	611
+9	876
19	710

d.

km	m
1 1	1
8	869
+1	218
+6	369
16	456

e.

km	m
1	
17	125
+19	135
+20	300
56	560

f.

km	m
1	2 2
5	289
+6	385
+12	229
23	903

67. Subtract the following :

a.

km	m
22	800
−17	500
5	300

b.

km	m
17	600
−12	200
5	400

c.

km	m
28	325
−16	156
12	169

68. Find the following :

a. 97 kg 22 g × 7

kg	g
97	022
	× 7
679	154

97 kg 22 g × 7 = 679 kg 154 g

b. 777 kg 910 g ÷ 7

```
   111130
7)777910
 −7
  07
 −7
  09
 −7
  21
 −21
  00
```

777 kg 910 g ÷ 7 = 111 kg 130 g

c. 112 kg 50 g × 8

kg	g
112	050
	× 8
896	400

112 kg 50 g × 8 = 896 kg 400 g

69. **Find the following :**

a. 62 / 420 ml × 5

	6 2 4 2 0
	× 5
	3 1 2 1 0 0

62 / 420 ml × 5 = 312 / 100 ml

b. 887 / 14 ml × 8

	8 8 7 0 1 4
	× 8
	7 0 9 6 1 1 2

887 / 14 ml × 8 = 7096 / 12 ml

c. 408 / 24 ml ÷ 9

```
   45336
9 ) 408024
   –36
    48
   –45
     30
    –27
      32
     –27
       54
      –54
        0
```

So, 408 / 24 ml ÷ 9 = 45 / 336 ml

70. Wire contain in roll = 210 m

Wire sold out = 60 m 55 cm

Wire left = 210 m – 60 m 55 cm

= 149 m 45 cm

	①	⑩	⑨ ⑨ ⑩
	~~2~~	~~1~~	~~0~~ . ~~0~~ ~~0~~
–	6	0	. 5 5
	1	4	9 . 5 5

71. **Write each of the following time using a.m. or p.m. :**

S. No.	Time	a.m. or p.m.
a.	0800 hours	8 a.m.
b.	1520 hours	3:20 p.m.
c.	1807 hours	6:07 p.m.
d.	0655 hours	6:55 a.m.

72. **Convert the following into minutes :**

a. 10 hours

Since, 1 hour = 60 min

10 hours = 60 × 10 min = 60 min

b. 5 hours 30 minutes

5 hours = 5 × 60 min = 300 min

5 hours 30 minutes = 300 min + 30 min = 330 min

c. 3 hours 36 minutes

3 hours = 3 × 60 min = 180 min

3 hours 36 minutes = 18 min + 36 min = 216 min

d. 21 hours 45 minutes
21 hours = 21 × 60 min = 1260 min
21 hours 45 minutes = 1260 min + 45 min = 1305 min

11	80
~~12~~	~~28~~
− 9	: 45
2	: 35

73. Departure time of train from New Delhi = 9:45 a.m.
Arrival time of train to Agra = 12:20 p.m.
Time taken by train to reach Agra from New Delhi = 12:20 – 9:45
∴ The time taken by train to reach Agra station from New Delhi is 2 hours 35 min.

74. Convert the following into months :

a. 2 years 4 months
1 year = 12 months
2 years = 2 × 12 = 24 months
So, 2 year 4 months = 24 months + 4 months = 28 months

b. 15 years 10 months
1 year = 12 months
15 year = 15 × 12 = 180 months
15 years 10 months = 180 months + 10 months = 190 months

c. 3 years 5 months
1 year = 12 months
3 years = 12 × 3 = 36 months
3 years 5 months = 5 months + 36 months = 41 months

d. 6 years 9 months
1 year = 12 months
6 years = (6 × 12) months = 72 months
6 years 9 months = (72 months + 9 months) = 81 months

e. 4 years 3 months
1 year = 12 months
4 years = 12 × 4 = 48 months
4 years 3 months = 48 months + 3 months = 51 months

f. 5 years
1 year = 12 months
5 years = 5 × 12 months = 60 months

75. Convert the following into days :

a. 5 weeks 2 days
1 week = 7 days ⇒ 5 weeks = 5 × 7 = 35 days
5 weeks 2 days = 35 days + 2 days = 37 days

b. 9 weeks
1 week = 7 days
9 weeks = 9 × 7 = 63 days

c. 52 weeks 15 days
1 week = 7 days
52 weeks = 52 × 7 days = 364 days ⇒ 52 weeks + 15 days = (364 + 15) days
= 79 days

d. 2 weeks 1 day
1 week = 7 days
2 weeks = 2 × 7 = 14 days 2 weeks + 1 day = 15 days

76. Write the time shown in the clocks :

a. 4 : 52

Four fifty-two

b. 2 : 35

Two thirty five

c. 4 : 58

Four fifty eight

d. 4 : 37

Four thirty seven

e. 1 : 51

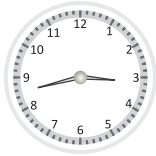
One fifty one

f. 10 : 05

Ten-five

77. Draw the minute hand and the hour hand to show the given time :

a.



3 : 43

b.

seven twenty-eight

c.

4 : 31

d.

9 : 0 7

e.

5 : 27

f.

Half past eight

78. Fill in the blanks. (Use the calendar of the recent year.)

a. Second Saturday of February falls on **14** (write the data).
b. Number of days from 10 October to 15 November are **36**.
c. The date 26 days after 15 January is **10 February**.
d. Number of Sundays in the month of December are **4**.
e. If yesterday was Monday, the day after tomorrow will be **Thursday**.
f. The date 40 days before 15 June is **6 May**.
g. Raksha was born on 29 February, Her next birthday will fall after **4** years.
h. A summer camp at Shimla starts on 15 May. If the camp is for 2 weeks, it will finish on **28 May**.

79. Add the following :

a.

Hrs.	Min.
9	30
+ 6	25
15	55

b.

Hrs.	Min.
12	50
+ 8	46
21	36

c.

Hrs.	Min.	Sec.
	1	
7	18	25
+ 5	42	36
13	1	1

d.

Hrs.	Min.	Sec.
13	09	53
+ 4	13	22
17	23	15

e.

Hrs.	Min.	Sec.
10	20	40
+ 11	35	28
21	56	8

f.

Hrs.	Min.	Sec.
18	41	15
+ 21	30	52
40	12	7

80. Subtract the following :

a.

Hrs.	Min.
15	40
– 7	13
8	27

b.

Hrs.	Min.
7	86
~~8~~	~~26~~
– 5	32
2	54

c.

Hrs.	Min.	Sec.
12	15	35
– 4	07	18
8	8	17

d.

Hrs.	Min.	Sec.
13	81	92
~~14~~	~~22~~	~~32~~
– 6	36	44
7	45	48

e.

Hrs.	Min.	Sec.
19	68	75
~~20~~	~~09~~	~~15~~
– 13	40	37
6	28	38

f.

Hrs.	Min.	Sec.
30	82	87
~~31~~	~~23~~	~~27~~
– 81	43	35
12	39	52

81. Add the following :

a.

₹	P
1	
327	. 57
+ 521	. 68
849	. 25

b.

₹	P
1 1	
541	. 79
+ 291	. 81
833	. 60

c.

₹	P
1	1
981	. 11
+ 121	. 23
+ 521	. 59
1623	93

d.

₹	P
1 1	
207	. 91
+ 130	. 21
+ 97	. 68
425	77

82. Subtract the following :

a.

₹	P
813	. 50
– 219	. 06
594	. 44

b.

₹	P
205	. 45
– 145	. 30
60	. 15

c.

₹	P
547	. 91
– 391	. 21
156	. 70

d.

₹	P
498	. 70
– 211	. 20
287	. 50

83. Solve the following :

a. Cost of 6 books = ₹ 384
Cost of 1 book = ₹ 384 ÷ 6 = ₹ 64

$$\begin{array}{r} 64 \\ 6\overline{)\,384} \\ -\,364 \\ \hline 24 \\ -\,24 \\ \hline 0 \end{array}$$

b. No. of buses = 6
No. of students in each bus = 55
No. of children who went to picnic = 55 × 6 = 330

$$\begin{array}{r} {\scriptstyle 3} \\ 55 \\ \times\ 6 \\ \hline 330 \end{array}$$

c. No. of of box = 6
Total weight = 2 kg 622 g = 2622
Weight of each box = 2 kg 622 g ÷ 6
= 437 g

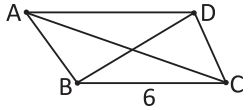
$$\begin{array}{r} 437 \\ 6\overline{)2622} \\ -\ 24 \\ \hline 22 \\ -\ 18 \\ \hline 42 \\ -\ 42 \\ \hline 0 \end{array}$$

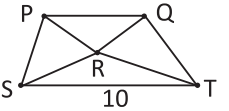
d. There are 366 days in a leap year.

e. Anita gets up at 7 a.m.
Time she leaves for office = 9 : 10 am
Time taken by Anita to get ready = 130 minutes

f. Money earned by worker every month = ₹ 925
Money earned by worker in 8 months = ₹ 925 × 8
= ₹ 7400

84. Join the points by line segments. Write the number of line segments you can make :

a. 

b. 

85. Find the perimeter of each of the following figures :

a. Perimeter of given figure = 3 cm + 4 cm + 5 cm
= 12 cm

b. Perimeter of given figure = 5 m + 4 m + 3 m + 4 m + 5 m
= 21 m

86. Perimeter of triangular park = 20 m + 35 m + 25 m = 80 m
Distance covered by Mohan in 5 complete rounds of the park
= 5 × Perimeter of park
= 5 × 80 m = 400 m

87. Length of garden = 30 m
Breadth of garden = 25 m
Length of boundary wall = Perimeter of garden
Perimeter of garden = 2 × (Length + Breadth)
= 2 × (30 m + 25 m)
= 2 × 55 m = 110 m
∴ The length of boundary wall = 110 m

88. a. 30 students got distinction in English.
b. 50 students got distinction in Maths.
c. No. of students got distinction more in social studies than in Science is 10.

d. The no. of students who got distinction in all got & distinction in all subjects is 80.
e. Total number of students represented in the pictograph is 130.

89. Fill in the blanks :

a. A triangle having all sides equal is called **equilateral**.
b. An acute angle is **less** than 90°.
c. 90° is called a **right** angle.
d. Perimeter of an equilateral triangle = **3 × side**.
e. Radius of a circle is **half** of its diameter.
f. LCM of two prime numbers is equal to their **product**.
g. HCF of two co-prime numbers is always **1**.
h. 19 45 hours is equivalent to **7:45 p.m**.
i. A leap year has **366** days.
j. $\frac{3}{5} = \frac{12}{20}$.

CHAPTER 2 : LARGE NUMBERS

Exercise-2.1

1. Rewrite the following numerals using commas to separate the periods according the Indian place value system and International place value system :

S. No.	Numeral	Indian System	International System
a.	426769804	42,67,69,804	426,769,804
b.	999999999	99,99,99,999	999,999,999
c.	198423007	19,84,23,007	198,423,007
d.	453200500	45,32,00,500	453,200,500
e.	900000000	90,00,00,000	900,000,000
f.	30001234	3,00,01,234	30,001,234

2. Write the number name according to Indian System :

a. Eight lakh seventy three thousand nine hundred ninety-one
b. Seventy-two lakhs thirteen thousand five hundred thirty-five
c. Ninety-nine lakhs ten thousand one
d. One crore
e. Six crore ninety seven lakhs thirty five thousand seven hundred eighty seven
f. Eight-eight crore ninety-nine lakhs seventy seven thousand six hundred sixty six

3. Write the number name according to International System :

a. Two million five hundred sixty-one thousand one
b. Four million three hundred fifty three thousand four hundred five
c. Sixty nine million six hundred thousand one hundred eighty
d. Seventy-nine million one hundred fifty-seven thousand two hundred eighty seven

e. One hundred fifty-three million two hundred fifty-four thousand three hundred fifty-six

f. Two hundred fifty-six million five hundred forty-five thousand one hundred ninety-eight

4. Write the numeral for each of the following :

S.No.	Number Name	Numeral
a.	Fifty-two crore fifty-two lakh fifty-two thousand five hundred twenty-five	52,52,52,525
b.	Two crore seven lakh eight thousand sixty	2,07,08,060
c.	Seventy crore seventy lakh seventy thousand seven hundred seven	70,70,70,707
d.	Forty-two crore five lakh	42,05,00,000
e.	Nine crore nine lakh nine thousand nine	9,09,09,009
f.	Fifty crore fifty	50,00,00,050
g.	Seventy-six crore	76,00,00,000
h.	Ninety-five lakh two hundred seven	95,00,207

5. Write the numeral for each of the following :

S. No.	Number Name	Numeral
a.	One hundred twenty-three million six hundred fifty-four thousand two hundred thirty-four.	123,654,234
b.	Four billion one hundred fifty million two hundred thousand five hundred forty.	4,150,200,540
c.	Two hundred one million three hundred one thousand four hundred one.	201,301,401
d.	Fifty-two million four hundred seventy-eight thousand two hundred thirteen.	52,478,213
e.	One billion four hundred sixty-five thousand two hundred forty-six.	1,000,465,246
f.	Two hundred seventy million five thousand six hundred seventy-eight.	270,005,678
g.	One hundred thirty-five million seven hundred eighty-nine thousand two hundred forty-six.	135,789,246

6. Fill in the blanks :

a. 10 crores = 100 millions

b. 10 millions = 1 crore

c. 100 lakhs = 10 millions

d. 10 lakhs = 1 millions

e. 1 million = 1000 thousands

f. 1 billion = 100 crore

NCERT Corner

Fill in the blanks appropriately. Use commas as required.

Number	Number Name
8,045	Eight thousand forty-five
7,209	Seven thousand two hundred nine

10,599	Ten thousand five hundred ninety- nine
10,743	Ten thousand seven hundred forty-three
20,869	Twenty thousand eight hundred sixty nine
13,579	Thirteen thousand five hundred seventy nine
10,018	Ten thousand ten
56,491	Fifty-six thousand four hundred ninety-one
45,045	Forty five thousand forty five
39,593	Thirty nine thousand five hundred ninety three
50,005	Fifty thousand fifty
26,050	Twenty six thousand fifty
81,200	Eighty one thousand two hundred
90,009	Ninety thousand nine
23,230	Twenty-three thousand two hundred thirty
36,001	Thirty-six thousand one

Exercise-2.2

1. Find the place-value of :

a.

L	TTh	Th	H	T	O
9	3	6	1	2	5

Place value of 1 in 936125 = 100

b.

TC	C	TL	L	TTh	Th	H	T	O
4	6	9	0	3	7	1	1	1

Place value of 4 in 469037111 = 400000000

c.

C	TL	L	TTh	Th	H	T	O
5	6	9	3	1	0	7	5

Place value of 0 is 0.

d.

C	TL	L	TTh	Th	H	T	O
7	0	6	5	9	3	1	8

Place value of 6 is 600000.

e.

TC	C	TL	L	TTh	Th	H	T	O
4	0	9	7	3	5	0	0	9

Place value of 7 is 700000.

f.

C	TL	L	TTh	Th	H	T	O
6	0	6	2	5	3	2	1

Place value of 5 is 5000.

2. Write the place-value of each digit in 69,56,35,459.

Place value of 6 is 600000000
Place value of 9 is 90000000
Place value of 5 is 5000000
Place value of 6 is 600000
Place value of 3 is 30000

Place value of 5 is 5000
Place value of 4 is 400
Place value of 5 is 50
Place value of 9 is 9

3. Write the expanded form of the following numbers :

a. 95,56,068
$9 \times 1000000 + 5 \times 100000 + 5 \times 10000 + 6 \times 1000 + 6 \times 10 + 8$
$= 9000000 + 500000 + 50000 + 6000 + 60 + 8$

b. 53,82,981
$5 \times 1000000 + 3 \times 100000 + 8 \times 10000 + 2 \times 1000 + 9 \times 100 + 8 \times 10 + 1 \times 1$
$= 5000000 + 300000 + 80000 + 2000 + 900 + 80 + 1$

c. 15,35,17,765
$1 \times 100000000 + 5 \times 10000000 + 3 \times 1000000 + 5 \times 100000 + 1 \times 10000 + 7 \times 1000 + 7 \times 100 + 6 \times 10 + 5 \times 1$
$= 100000000 + 50000000 + 3000000 + 500000 + 10000 + 7000 + 700+60+5$

d. 81,12,518
$8 \times 1000000 + 1 \times 100000 + 1 \times 10000 + 2 \times 1000 + 5 \times 100 + 1 \times 10 + 8 \times 1$
$= 8000000 + 100000 + 10000 + 2000 + 500 + 10 + 8$

e. 28,35,17,780
$2 \times 100000000 + 8 \times 10000000 + 3 \times 1000000 + 5 \times 100000 + 1 \times 10000 + 7 \times 1000 + 7 \times 100 + 8 \times 10 + 0 \times 1$
$= 200000000 + 80000000 + 3000000 + 500000 + 10000 + 7000+700+80+0$

f. 7,78,45,631
$7 \times 10000000 + 7 \times 1000000 + 8 \times 100000 + 4 \times 10000 + 5 \times 1000 + 6 \times 100 + 3 \times 10 + 1 \times 1$
$= 70000000 + 7000000 + 800000 + 40000 + 5000 + 600 + 30 + 1$

g. 61,635
$6 \times 10000 + 1 \times 1000 + 6 \times 100 + 3 \times 10 + 5 \times 1$
$= 60000 + 1000 + 600 + 30 + 5$

h. 7,15,098
$7 \times 100000 + 1 \times 10000 + 5 \times 1000 + 9 \times 10 + 8 \times 1$
$= 700000 + 10000 + 5000 + 90 + 8$

i. 86,53,432
$8 \times 1000000 + 6 \times 100000 + 5 \times 10000 + 3 \times 1000 + 4 \times 100 + 3 \times 10 + 2 \times 1$
$= 8000000 + 600000 + 50000 + 3000 + 400 + 30 + 2$

j. 4,11,09,613
$4 \times 10000000 + 1 \times 1000000 + 1 \times 100000 + 0 + 9 \times 1000 + 6 \times 100 + 1 \times 10 + 3 \times 1$
$= 40000000 + 1000000 + 100000 + 9000 + 600 + 10 + 3$

k. 76,81,00,302
$7 \times 100000000 + 6 \times 10000000 + 8 \times 1000000 + 1 \times 100000 + 3 \times 100 + 0 \times 10 + 2 \times 1$
$= 700000000 + 60000000 + 8000000 + 100000 + 300 + 2$

l. 45,18,09,356
$4 \times 100000000 + 5 \times 10000000 + 1 \times 1000000 + 8 \times 100000 + 0 \times 10000 + 9 \times 1000 + 3 \times 100 + 5 \times 10 + 6 \times 1$
$= 400000000 + 50000000 + 1000000 + 800000 + 0 + 9000 + 300 + 50 + 6$

4. Write the following numbers in short form :

a. 65354321	b. 202030405	c. 7915465	d. 58040203
e. 104020707	f. 8753044	g. 59324	h. 985452
i. 7138519	j. 62547225	k. 888501064	l. 55506348

Exercise-2.3

1. Write the predecessor and successor of the following numbers :

a. 6,79,54,370
Predecessor = 67954370 – 1 = 67954369
Successor = 67954370 + 1 = 67954371

b. 15256897
Predecessor = 15256897 – 1 = 15256896
Successor = 15256897 + 1 = 15256898

c. 37561200
Predecessor = 37561200 – 1 = 37561199
Successor = 37561200 + 1 = 37561201

d. 817161395
Predecessor = 817161395 – 1 = 817161394
Successor = 817161395 + 1 = 817161396

e. 100000
Predecessor = 100,000 – 1 = 99999
Successor = 100000 + 1 = 100,001

f. 999999
Predecessor = 999999 – 1 = 999998
Successor = 999,999 + 1 = 1000000

2. Put > , < or = into the boxes :

a. 8,27,365 > 8,27,356	b. 72,23,374 > 52,23,374
c. 65,89,783 > 46,89,783	d. 5,00,00,000 < 50,00,00,000
e. 1,43,58,397 < 4,35,83,000	f. 93,39,393 > 9,39,339
g. 70,00,000 = 7,000,000	h. 4,18,52,342 < 4,18,52,977
i. 912,856 = 9,12,856	j. 33,54,565 < 33,56,545

3. Arrange the following numbers in ascending order :

a. Ascending order is given by
11,15,006 < 11,15,506 < 11,51,006 < 11,51,506

b. Ascending order is given by
4,097,340 < 4,973,304 < 4,973,400 < 4,973,403

c. Ascending order is given by
22,14,15,112 < 22,14,15,122 < 22,14,15,211 < 22,14,15,212

d. Ascending order is given by
89,345,120 < 89,435,120 < 98,345,120 < 98,543,120

e. Ascending order is given by
87,421 < 6,16,324 < 8,91,342 < 45,64,248 < 76,10,123

f. Ascending order is given by
8,395 < 83,110 < 1,87,360 < 84,20,369 < 93,16,224

g. Ascending order is given by
9,82,182 < 42,24,360 < 74,50,071 < 84,16,203 < 87,27,364

h. Ascending order is given by
2,18,14,121 < 3,27,18,396 < 3,61,22,481 < 4,36,00,000 < 5,45,00,000

4. Arrange the following numbers in descending order :

a. Descending order is given by
63,600,879 > 63,600,789 > 63,060,789 > 63,006,789

b. Descending order is given by
121,220,565 > 5,123,565 > 5,122,565 > 5,121,565

c. Descending order is given by
14,82,35,989 > 14,28,35,989 > 14,28,35,988 > 12,28,53,989

d. Descending order is given by
81,82,14,911 > 81,82,14,712 > 81,82,14,217 > 81,82,14,119

e. Descending order is given by
73,897 > 73,567 > 73,642 > 73,493 > 73,227

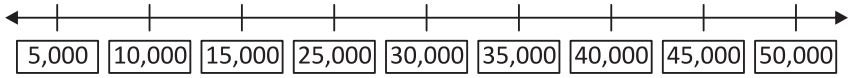
f. Descending order is given by
75,00,000 > 25,77,889 > 5,63,409 > 59,741 > 25,632

g. Descending order is given by
8,70,900 > 6,49,700 > 6,43,826 > 4,62,589 > 4,39,571

h. Descending order is given by
4,65,49,000 > 4,50,45,369 > 4,45,28,302 > 4,23,36,408 > 41,72,603

NCERT Corner

1. 18,926 < 34,407 < 34,740 < 40,347 < 40,473 < 73,404 < 74,430
2. No, the student is not correct because the place value of 9 is 9000 whereas of 4 is 40000.



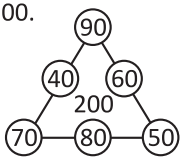
Mental Maths

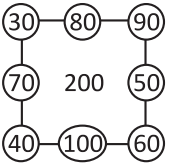
The 3 numbers along each line add up to 200.
Write in the missing numbers.

Choose from :

a. 40, 50, 60, 70, 80, 90

b. 30, 40, 50, 60, 70, 80, 90, 100





Exercise-2.4

1. Make the greatest and the smallest numbers using all the given digits :

	Digits	Greatest number	Smallest number
a.	7, 8, 3, 0, 5, 4	875430	304578

b.	6, 3, 8, 9, 6, 2, 0	9866320	2036689
c.	0, 1, 3, 5, 7, 9, 0	9753100	1003579
d.	6, 8, 3, 5, 5, 3, 5, 7	87655533	33555678
e.	6, 5, 8, 9, 8, 7, 0, 2	98876520	20567889

2. Write the smallest and the greatest 6-digit numbers (without repeating a digit) using the following digits :

a. Smallest 6-digit number without repeating the digit using given digits = 103457
Greatest 6-digit number without repeating the digit using given digits = 754310

b. Smallest 6-digit number using given digits = 234589
Greatest 6-digit number using given digits = 985432

3. Write the greatest and the smallest 7-digit numbers (you may repeat a digit) using the following digits :

a. Greatest 7-digit number formed using digits 4, 3, 0, 5, 9, 8 = 9985430
Smallest 7-digit number formed using digits 4, 3, 0, 5, 9, 8 is 3004589.

b. Greatest 7-digit number formed using digits 7, 6, 7, 1, 3, 8 is 8876321.
Similarly, smallest 7-digit number formed using digits 2, 6, 7, 1, 3, 8 is 1123678.

4. Greatest 7-digit number which can be formed using the digits 9, 3, 7, 1, 0, 4 is 9974310.
Smallest 7-digit number which can be formed using the digits 9, 3, 7, 1, 0, 4 is 1003479.

5. Smallest 8-digit number formed using digits 6, 3, 9, 4, 2, 0, 5, 1 is 10234569.
Smallest 8-digit number formed using digits 6, 3, 9, 4, 2, 0, 3, 1 is 96543210.

6. Write the successive numbers :

a.	9,56,748;	9,56,749;	9,56,750;	9,56,751;
b.	3,42,10,463;	3,42,10,464;	3,42,10,465	3,42,10,466;
c.	21,050,206;	21,050,207;	21,050,208;	21,050,209;
d.	48,71,36,597;	48,71,36,598;	48,71,36,599;	48,71,36,600

7. Count in hundreds and fill in the numbers :

a.	7,428,526;	7,428,726;	7,428,726;	7,428,826;
b.	3,517,600;	3,517,700;	3,517,800 ;	3,517,900 ;
c.	8,42,39,287;	8,42,39,387;	8,42,39,487;	8,42,39,587;
d.	9,63,00,853;	9,63,00,853 ;	9,63,01,053;	96,31,153;

8. Count in thousands and fill in the numbers :

a.	4,05,921;	40,6921;	407921;	4,08,921;
b.	13,07,00,587;	13,07,01,087;	13,07,02,587;	18,07,03,587;
c.	4,528,415;	4,529,415;	4,530,415;	4,531,415;
d.	7,132,068;	7,134,068;	7,134,068;	7,135,068;

Exercise-2.5

1. Round off the following numbers to the nearest 10 :

a. 5486
Here, the one's digit is 6 which is greater than 5.
So, 5486 rounded off to nearest tens is 5490.

b. 17,092
Here, the one's digit is 2 which is less than 5.
So, 17092 rounded off to nearest tens is 17090.

c. 63,547
Here, the one's digit is 7 which is greater than 5.
So, 63,547 rounded off to nearest tens is 63,550.

d. 70,965
Here, the one's digit is 5, so 70,965 rounded off to nearest 10 is 70,970.

e. 70,293
Here, the one's digit is 3 which is less than 2.
So, 70,293 rounded off to nearest 10 is 70,290.

2. Round off the following numbers to the nearest 100 :

a. 54,760
Here, the ten's digit is 6 which is more than 5.
So, 54,760 rounded off to nearest 100 is 54,800.

b. 2,30,528
Here, the ten's digit is 2 which is less than 5.
So, 2,30,528 rounded off to nearest 100 is 2,30,500.

c. 90,450
Here, the ten's digit is 5. So 90,450 rounded off to nearest 100 is 90,500.

d. 4,63,573
Here, the ten's digit is 7 which is more than 5.
So, 4,63,573 rounded off to nearest 100 is 463,600.

e. 23,28,716
Here, the ten's digit is 1 which is less than 5.
So, 23,28,716 rounded off to nearest 100 is 23,28,700.

3. Round off the following numbers to the nearest 1000 :

a. 80,567
Here, the hundreds digit is 5. So, 80,567 rounded off to nearest 1000 is 81,000.

b. 7,96,500
Here, the hundreds digit is 5. So 7,96,500 rounded off to nearest 1000 is 7,97,000.

c. 29,482
Here, the hundreds digit is 4. So 29,482 rounded off to nearest 1000 is 29,000.

d. 73,69,702
Here, the hundreds digit is 7 which is more than 5.
So 73,69,702 rounded off to nearest 1000 is 73,70,000.

4. Which of the following can be rounded off? Write 'yes' or 'no' :

a. No b. Yes c. No d. Yes e. No

Mental Maths

Complete this famous series of numbers called the Fibonacci Series.

1, 1, 3, 5, 8, 13, **21 (8 + 13)**

Use this idea in an addition trick.

Write any two numbers. Say 7 and 4.

	7	
	4	
Add them :	11	(7 + 4)
Add the previous two numbers :	15	(4 + 11)
Add the previous two numbers :	26	(11 + 15)
Add the previous two numbers :	41	(15 + 26)
	104	

Stop when you have six numbers in a row.

Total : 104

Find the total by multiplying the fifth number, 26 by 4.

$26 \times 4 = 104$

Check by adding :

$4 + 7 + 11 + 15 + 26 + 41 = 104$

Try with the following numbers :

1.	2.	3.
6 and 3	8 and 5	9 and 7
6	8	9
3	5	7
9 (6 + 3)	**13 (8 + 5)**	**16 (9 + 7)**
12 (3 + 9)	**31 (18 + 13)**	**39 (23 + 16)**
33 (12 + 21)	**4 (31 + 18)**	**62 (39 + 23)**
54 (21 + 33)	**80 (49 + 31)**	**101 (39 + 62)**

Check : 6 + 3 + 8 + 12 + 21 + 33 + 54 = 133

Check : 8 + 5 + 13 + 18 + 31 + 49 + 80 = 204

Check : 23 + 39 + 62 + 101 = 257

Multiple Choice Questions

Tick (✓) the correct choice :

1. (c) 2. (b) 3. (b) 4. (a) 5. (b) 6. (a) 7. (b) 8. (a)

Test Exercise

1. Write the following numbers in expanded form :

a. 6,50,624 = 600000 + 50000 + 0 + 600 + 20 + 4
b. 9,71,982 = 900000 + 70000 + 1000 + 900 + 80 + 2
c. 6,94,808 = 600000 + 90000 + 4000 + 800 + 00 + 8
d. 5,21,096 = 500000 + 20000 + 1000 + 00 + 90 + 6

2. Write the following numbers in standard form :

a. 623040 b. 942920 c. 37609
d. 80007 e. 80016 f. 253501

3. Write the following numbers in words :

a. Seventy-nine thousand four hundred sixty two
b. Sixty thousand eight hundred ninety nine
c. Seventy two thousand four hundred five
d. Nine lakhs fifty thousand forty eight

4. Compare the following numbers using >, <, or = :

a. 12,096 < 12,906 b. 21,989 > 21,899
c. 25,490 < 25,940 d. 14,825 + 5 > 14,830 − 5
e. 21,099 − 9 = 21,090 f. 43,247 + 13 > 43,237 − 13

5. Arrange the following numbers in ascending order :

a. 3187 < 4025 < 6,72,345 < 9,14,520
b. 1048 < 1840 < 61,408 < 8,61,084
c. 16,593 < 39,356 < 45,396 < 7,23,965
d. 70,36,125 < 42,56,29,385 < 42,59,21,385 < 53,44,25,662 < 56,41,20,105
e. 1,56,41,219 < 2,48,56,105 < 3,29,32,380 < 4,62,00,318 < 5,49,34,315
f. 28,85,73,281<29,55,70,189<46,19,28,179<54,72,81,369< 62,29,30,905
g. 70,00,804 < 2,90,21,308 < 4,0024,180 < 5,61,29,195 < 9,32,49,306
h. 29,45,21,629<34,98,42,216<38,59,69,512<49,03,20,521< 50,00,40,205

6. Arrange the following numbers in descending order :

a. 8250 > 5802 > 2085 > 2805
b. 728076 > 47068 > 36087 > 18067
c. 346582 > 48652 > 45682 > 42865
d. 55,47,201 > 53,49,152 > 49,62,321 > 48,50,304 > 42,51,629
e. 50,05,050 > 47,59,950 > 40,40,004 > 36,20,195 > 35,49,257
f. 4,35,16,396 > 3,96,19,927 > 2,60,40,216 > 1,65,29,615 > 95,91,290
g. 60,06,02,360>56,29,15,176>50,09,92,988>49,09,20,156> 47,56,25,609
h. 85,96,29,152>76,67,89,925>69,02,85,929>65,29,94,369> 45,69,28,280

7. Fill in the blanks :

a. The largest 6-digit number = 999999
b. The predecessor of 90,000 = 89999
c. The successor of 78,799 = 78800
d. The place value of 9 in 19,072 = 9000
e. The number 100 more than 1968 = 2068
f. The smallest 6-digit number = 100000

Chapter 3 : Fractions

Exercise-3.1

1. Tick (✓) the proper fractions :

a. $\frac{9}{6}$ **b.** $\frac{5}{9}$ ✓ **c.** $\frac{1}{4}$ ✓ **d.** $\frac{15}{11}$

2. Tick (✓) the improper fractions :

a. $\frac{10}{9}$ ✓ **b.** $\frac{12}{11}$ ✓ **c.** $\frac{6}{7}$ **d.** $\frac{18}{17}$ ✓

3. Change the following into improper fractions :

a. $2\frac{1}{2} = \frac{(2\times 2)+1}{2} = \frac{4+1}{2} = \frac{5}{2}$

b. $4\frac{3}{8} = \frac{(4\times 8)+3}{8} = \frac{32+3}{8} = \frac{35}{8}$

c. $5\frac{1}{2} = \frac{(5\times 2)+1}{6} = \frac{(10+1)}{2} = \frac{11}{2}$

d. $6\frac{3}{6} = \frac{(6\times 6)+3}{6} = \frac{36+3}{6} = \frac{39}{6}$

e. $4\frac{1}{4} = \frac{(4\times 4)+1}{4} = \frac{16+1}{4} = \frac{17}{4}$

f. $3\frac{1}{2} = \frac{(3\times 2)+1}{2} = \frac{6+1}{2} = \frac{7}{2}$

g. $9\frac{1}{5} = \frac{(9\times 5)+1}{5} = \frac{45+1}{5} = \frac{46}{5}$

h. $7\frac{2}{3} = \frac{(7\times 3)+2}{3} = \frac{21+2}{3} = \frac{23}{3}$

4. Change the following into mixed fractions :

a. $\frac{15}{8}$

$\frac{15}{8} = \text{Quotient}\ \frac{\text{Remainder}}{\text{Divisor}}$

Quotient = 1, Remainder = 7, Divisor = 8

$\therefore\ \frac{15}{8} = 1\frac{7}{8}$

$$\begin{array}{r} 1 \\ 8\overline{)\,15} \\ -\ 8 \\ \hline 7 \end{array}$$

b. $\frac{16}{7}$

$\frac{16}{7} = \text{Quotient}\ \frac{\text{Remainder}}{\text{Divisor}} = 2\frac{2}{7}$

$$\begin{array}{r} 2 \\ 7\overline{)\,16} \\ -14 \\ \hline 2 \end{array}$$

c. $\frac{25}{6}$

$\therefore\ \frac{25}{6} = \text{Quotient}\ \frac{\text{Remainder}}{\text{Divisor}} = 4\frac{1}{6}$

$$\begin{array}{r} 4 \\ 6\overline{)\,25} \\ -24 \\ \hline 1 \end{array}$$

d. $\frac{67}{12}$

$\therefore\ \frac{67}{12} = 5\frac{7}{12}$

$$\begin{array}{r} 5 \\ 12\overline{)\,67} \\ -60 \\ \hline 7 \end{array}$$

e. $\frac{63}{13}$

$\therefore \frac{63}{13} = 4\frac{11}{13}$

$13\overline{)63}$ (4), -52, 11

f. $\frac{81}{18}$

$\therefore \frac{81}{18} = 4\frac{9}{18}$

$18\overline{)81}$ (4), -72, 9

g. $\frac{50}{17}$

$\therefore \frac{50}{17} = 2\frac{16}{17}$

$17\overline{)50}$ (2), -34, 16

h. $\frac{63}{8}$

$\therefore \frac{63}{8} = 7\frac{7}{8}$

$8\overline{)63}$ (7), -56, 7

NCERT Corner

1. Circle the fractions below that are equal to $\frac{1}{2}$.

(2/4) 5/9 3/5 5/7 (6/12) (7/14) (10/20) (5/10) 6/8 (8/16)

2. Some fractions are written in the box below. Circle the fractions that are less than half. How do you know? Discuss your reasoning in the class.

(3/9) 2/4 12/15 8/15 11/12 (3/15) 4/8 (1/3) 7/11 11/16 15/31 (6/18)

Exercise-3.2

1. Write the fraction for the shaded part :

a. $\frac{1}{4}$ **b.** $\frac{3}{8}$ **c.** $\frac{3}{4}$

2. Write two equivalent fractions for the following :

a. $\frac{3}{5}$

Multiply the numerator and denominator by same non-zero number we have

$\frac{3}{5} = \frac{3\times2}{5\times2} = \frac{6}{10}$, $\frac{3}{5} = \frac{3\times3}{5\times3} = \frac{9}{15}$

Thus, $\frac{6}{10}$ and $\frac{9}{15}$ are two equivalent fractions of $\frac{3}{5}$.

b. $\frac{4}{15}$

Multiply the numerator and denominator by same non-zero number.

$\frac{4}{15} = \frac{4\times2}{15\times2} = \frac{8}{30}$, $\frac{4\times3}{15\times3} = \frac{12}{45}$

Thus, $\frac{8}{30}$ and $\frac{12}{45}$ are two equivalent fractions of $\frac{4}{15}$.

c. $\frac{8}{11}$

Multiply the numerator and denominator by same non-zero number.

$\frac{8}{11} = \frac{8 \times 2}{11 \times 2} = \frac{16}{22}$, $\frac{8}{11} = \frac{8 \times 3}{11 \times 3} = \frac{24}{33}$

Thus, $\frac{16}{32}$ and $\frac{24}{33}$ are two equivalent fractions of $\frac{8}{11}$.

d. $\frac{7}{15}$

Multiply the numerator and denominator by same non-zero number.

$\frac{7}{15} = \frac{7 \times 2}{15 \times 2} = \frac{14}{30}$, $\frac{7}{15} = \frac{7 \times 3}{15 \times 3} = \frac{21}{45}$

Thus, $\frac{14}{30}$ and $\frac{21}{45}$ are two equivalent fractions of $\frac{7}{15}$.

3. Find the equivalent fraction for each of the following whose numerator is 18 :

a. $\frac{1}{2}$

To find an equivalent fraction of $\frac{1}{2}$ with numerator 18, we have to multiply numerator and denominator by 18.

$\frac{1}{2} = \frac{1 \times 18}{2 \times 18} = \frac{18}{36}$

Thus, $\frac{18}{36}$ is an equivalent fraction of $\frac{1}{2}$ with numerator 18.

b. $\frac{2}{5}$

To find an equivalent fraction of $\frac{2}{5}$ with numerator 18, multiply numerator and denominator by 9.

$\frac{2}{5} = \frac{2 \times 9}{5 \times 9} = \frac{18}{45}$

Thus, $\frac{18}{45}$ is an equivalent fraction of $\frac{2}{5}$ with numerator equals to 18.

c. $\frac{6}{8}$

To find an equivalent fraction of $\frac{6}{8}$ with numerator 18, multiply numerator and denominator by 3.

$\frac{6}{8} = \frac{6 \times 3}{8 \times 3} = \frac{18}{24}$

Thus, $\frac{18}{24}$ is an equivalent fraction of $\frac{6}{8}$ with numerator equals to 18.

d. $\frac{9}{15}$

To find an equivalent fraction of $\frac{9}{15}$ with numerator 18, we have to multiply numerator and denominator with 2.

$\frac{9}{15} = \frac{9 \times 2}{15 \times 2} = \frac{18}{30}$

Thus, $\frac{18}{30}$ is an equivalent fraction of $\frac{9}{15}$ with numerator equals to 18.

4. Find the equivalent fraction for each of the following whose denominator is 40 :

a. $\frac{3}{4}$

To find an equivalent fraction of $\frac{3}{4}$ with denominator 40, multiply numerator and denominator by 10.

$\frac{3}{4} = \frac{3 \times 10}{4 \times 10} = \frac{30}{40}$

Thus, $\frac{30}{40}$ is an equivalent fraction of $\frac{3}{4}$ with denominator 40.

b. $\frac{5}{8}$

Multiply numerator and denominator by 5.

$\frac{5}{8} = \frac{5 \times 5}{8 \times 5} = \frac{25}{40}$

Thus, $\frac{25}{40}$ is an equivalent fraction of $\frac{5}{8}$ with denominator 40.

c. $\frac{9}{10}$

Multiply numerator and denominator by 4.

$$\frac{9}{10} = \frac{9 \times 4}{10 \times 4} = \frac{36}{40}$$

Thus, $\frac{36}{40}$ is an equivalent fraction of $\frac{9}{10}$ with denominator equals to 40.

d. $\frac{13}{5}$

Multiply numerator and denominator by 8, so as to get the denominator 40.

$$\frac{13}{5} = \frac{13 \times 8}{5 \times 8} = \frac{104}{40}$$

Thus, $\frac{104}{40}$ is an equivalent fraction of $\frac{13}{5}$ with denominator 40.

5. Fill the missing numbers :

a. $\frac{8}{9} = \frac{\square}{36}$

Since 9 × 4 = 36, so 8 × 4 = 32

So, 32 is the required number.

b. $\frac{6}{17} = \frac{36}{\square}$

Since, 6 × 6 = 36, so 17 × 6 = 102

So, 102 is the required number.

c. $\frac{13}{18} = \frac{104}{\square}$

Since, 13 × 8 = 104, so 18 × 8 = 144

So, 144 is the required number.

d. $\frac{12}{17} = \frac{\square}{119}$

Since, 17 × 7 = 119, so 12 × 7 = 84

So, 84 is the required number.

e. $\frac{1}{5} = \frac{\square}{20}$

Since, 5 × 4 = 20, so 1 × 4 = 4

So, 4 is the required number.

f. $\frac{3}{4} = \frac{\square}{24}$

Since, $4 \times 6 = 24$, so $3 \times 6 = 18$

So, 18 is the required number.

g. $\frac{2}{3} = \frac{\square}{24}$

Since, $3 \times 8 = 24$, so $2 \times 8 = 16$

So, 16 is the required number.

h. $\frac{\square}{14} = \frac{1}{7}$

Since, $7 \times 2 = 14$, so $1 \times 2 = 2$

So, 2 is the required number.

Exercise-3.3

1. Reduce the following fractions to their lowest terms :

a. $\frac{65}{80}$

Divide numerator and denominator by their HCF which is 5.

$\frac{65 \div 5}{80 \div 5} = \frac{13}{16}$

b. $\frac{82}{90}$

Divide numerator and denominator by their HCF which is 2.

$\frac{82 \div 2}{90 \div 2} = \frac{41}{45}$

Hence, $\frac{41}{45}$ is the reduced form of $\frac{82}{90}$.

c. $\frac{26}{46}$

Divide numerator and denominator by their HCF which is 2.

$\frac{26 \div 2}{46 \div 2} = \frac{13}{23}$

Hence, $\frac{13}{23}$ is the reduced form of $\frac{26}{46}$.

d. $\frac{18}{90}$

Divide numerator and denominator by their HCF of 18 and 90 which is 18.

$$\frac{18 \div 18}{90 \div 18} = \frac{1}{5}$$

Hence, $\frac{1}{5}$ is the reduced form of $\frac{18}{90}$.

e. $\frac{32}{50}$

Divide numerator and denominator by the HCF of 32 and 50 which is 2.

$$\frac{32 \div 2}{50 \div 2} = \frac{16}{25}$$

Hence, $\frac{16}{25}$ is the reduced form of $\frac{32}{50}$.

f. $\frac{75}{35}$

Divide numerator and denominator by the HCF of 75 and 35 which is 5.

$$\frac{75 \div 5}{35 \div 5} = \frac{15}{7}$$

Hence, $\frac{15}{7}$ is the reduced form of $\frac{75}{35}$.

g. $\frac{112}{192}$

Divide numerator and denominator by their HCF of 112 and 192 which is 16.

$$\frac{112 \div 16}{192 \div 16} = \frac{7}{12}$$

Hence, $\frac{7}{12}$ is the reduced form of $\frac{112}{192}$.

h. $\frac{55}{100}$

Divide numerator and denominator by their HCF of 55 and 100 which is 5.

$$\frac{55 \div 5}{100 \div 5} = \frac{11}{20}$$

Hence, $\frac{11}{20}$ is the reduced form of $\frac{65}{100}$.

i. $\frac{8}{30}$

Divide numerator and denominator by their HCF of 8 and 30 which is 2.

$$\frac{8 \div 2}{30 \div 2} = \frac{4}{15}$$

Hence, $\frac{4}{15}$ is the reduced form of $\frac{8}{30}$.

j. $\frac{27}{45}$

Divide numerator and denominator by the HCF of 27 and 45 which is 9.

$$\frac{27 \div 9}{45 \div 9} = \frac{3}{5}$$

Hence, $\frac{3}{5}$ is the reduced form of 27 and 45.

k. $\frac{68}{136}$

Divide numerator and denominator by their HCF of 68 and 136 which is 68.

$$\frac{68 \div 68}{136 \div 68} = \frac{1}{2}$$

Hence, $\frac{1}{2}$ is the reduced form of 68 and 136.

l. $\frac{102}{119}$

Divide numerator and denominator by their HCF of 102 and 119 which is 17.

$$\frac{102 \div 17}{119 \div 17} = \frac{6}{7}$$

Hence, $\frac{6}{7}$ is the reduced form of $\frac{102}{119}$.

Exercise-3.4

1. Fill in the blanks using signs > or < :

a. $\frac{3}{5} > \frac{3}{8}$ **b.** $\frac{5}{14} < \frac{5}{8}$ **c.** $\frac{11}{16} < \frac{11}{12}$

d. $\frac{14}{17} < \frac{14}{15}$ **e.** $\frac{15}{19} > \frac{15}{23}$ **f.** $\frac{3}{5} < \frac{4}{5}$

g. $\frac{6}{11} > \frac{5}{11}$ **h.** $\frac{13}{16} > \frac{11}{16}$ **i.** $\frac{23}{25} < \frac{24}{25}$

j. $\frac{4}{5} > \frac{2}{5}$ **k.** $\frac{3}{8} < \frac{4}{8}$ **l.** $\frac{5}{6} > \frac{5}{7}$

m. $\frac{9}{6} > \frac{6}{6}$ **n.** $\frac{3}{8} < \frac{4}{7}$ **o.** $2\frac{4}{9} > 1\frac{3}{12}$

2. Which is greater?

a. $\frac{4}{5}$ or $\frac{2}{7}$

Cross multiple both sides

$4 \times 7 = 28, 5 \times 2 = 10$

Since, $28 > 10$, so $\frac{4}{5} > \frac{2}{7}$

b. $\frac{3}{8}$ or $\frac{9}{15}$

On cross multiplying each other we get

$3 \times 15 = 45, 9 \times 8 = 72$

Since, $45 < 72$, so $\frac{3}{8} < \frac{9}{15}$

Hence, $\frac{9}{15}$ is greater than $\frac{3}{8}$.

c. $\frac{7}{8}$ or $\frac{3}{4}$

On cross multiplying each other, we get

$7 \times 4 = 28, 8 \times 3 = 24$

Since, $28 > 24$, so $\frac{7}{8} > \frac{3}{4}$

Hence, $\frac{7}{8}$ is greater than $\frac{3}{4}$.

d. $\frac{8}{11}$ or $\frac{3}{5}$

On cross multiplying each other, we get

$8 \times 5 = 40, 11 \times 3 = 33$

Since, $40 > 33$, so $\frac{8}{11} > \frac{3}{5}$

Hence, $\frac{8}{11}$ is greater than $\frac{3}{5}$.

e. $\frac{3}{4}$ or $\frac{9}{10}$

On cross multiplying both sides, we get

$3 \times 10 = 30$, $4 \times 9 = 36$

Since, $30 < 36$, so $\frac{3}{4} < \frac{9}{10}$

Hence, $\frac{9}{10}$ is greater than $\frac{3}{9}$.

f. $\frac{9}{12}$ or $\frac{8}{18}$

On cross multiplying both sides, we get

$9 \times 18 = 162$, $12 \times 8 = 96$

Since, $162 > 96$, so $\frac{9}{12} > \frac{8}{18}$

So, $\frac{9}{12}$ is greater than $\frac{8}{18}$.

3. Arrange the following fractions in ascending order :

a. $\frac{9}{3}, \frac{9}{5}, \frac{9}{2}, \frac{9}{7}, \frac{9}{4}, \frac{9}{6}$

Numerator are same. Make the value of denominator lesser is the fraction.

So, ascending order is given by $\frac{9}{7} < \frac{9}{6} < \frac{9}{5} < \frac{9}{4} < \frac{9}{3} < \frac{9}{2}$..

b. $\frac{26}{15}, \frac{26}{11}, \frac{26}{21}, \frac{26}{18}, \frac{26}{24}, \frac{26}{13}$

Ascending order is given by $\frac{26}{24} < \frac{26}{21} < \frac{26}{18} < \frac{26}{15} < \frac{26}{13} < \frac{26}{11}$.

c. $\frac{93}{45}, \frac{93}{84}, \frac{93}{7}, \frac{93}{28}, \frac{93}{52}, \frac{93}{36}$

Ascending order is given by $\frac{93}{84} < \frac{93}{52} < \frac{93}{45} < \frac{93}{36} < \frac{93}{28} < \frac{93}{7}$.

d. $\frac{3}{4}, \frac{7}{12}, \frac{5}{8}, \frac{9}{20}, \frac{1}{4}, \frac{11}{20}$

First converting given unlike fraction to like fraction by taking LCM.

LCM of (4, 12, 8, 20, 4, 20) is 120.

$\frac{3}{4}=\frac{3\times30}{4\times30}=\frac{90}{120}, \frac{7}{12}=\frac{7\times10}{12\times10}=\frac{70}{120}, \frac{5}{8}=\frac{5\times15}{8\times15}=\frac{75}{120}$

$\frac{9}{20}=\frac{9\times6}{20\times6}=\frac{54}{120}, \frac{1}{4}=\frac{1\times30}{4\times30}=\frac{30}{120}, \frac{11}{20}=\frac{11\times6}{20\times6}=\frac{66}{120}$

Ascending order is given by $\frac{30}{120}<\frac{54}{120}<\frac{66}{120}<\frac{70}{120}<\frac{75}{120}<\frac{90}{120}$

or

$\frac{1}{4}<\frac{9}{20}<\frac{11}{20}<\frac{7}{12}<\frac{5}{8}<\frac{3}{4}$

e. $\frac{2}{3}, \frac{8}{15}, \frac{5}{9}, \frac{11}{27}, \frac{23}{30}, \frac{4}{9}$

First convert into like fractions by taking their LCM.

LCM of (3, 15, 9, 27, 30) is 270.

$\frac{2}{3}=\frac{2\times90}{3\times90}=\frac{180}{270}, \frac{8}{15}=\frac{8\times18}{15\times8}=\frac{144}{270}, \frac{23}{30}=\frac{23\times9}{30\times9}=\frac{207}{270}$

$\frac{5}{9}=\frac{5\times30}{9\times30}=\frac{150}{270}, \frac{11}{27}=\frac{11\times10}{27\times10}=\frac{55}{135}=\frac{110}{270}, \frac{4}{9}=\frac{4\times30}{9\times30}=\frac{120}{270}$

Ascending order is given by $\frac{110}{270}<\frac{120}{270}<\frac{144}{270}<\frac{150}{270}<\frac{180}{270}<\frac{207}{270}$

or

$\frac{11}{27}<\frac{4}{9}<\frac{8}{15}<\frac{5}{9}<\frac{2}{3}<\frac{23}{30}$

f. $2\frac{3}{5}, 2\frac{4}{15}, 2\frac{7}{15}, 2\frac{9}{25}, 2\frac{1}{5}, 2\frac{11}{25}$

First convert mixed fraction into improper fraction.

$2\frac{3}{5}=\frac{(2\times5)+3}{5}=\frac{10+3}{5}=\frac{13}{5}$

$2\frac{4}{15}=\frac{(2\times15)+4}{15}=\frac{30+4}{15}=\frac{34}{15}$

$2\frac{7}{15}=\frac{(2\times15)+7}{15}=\frac{30+7}{15}=\frac{37}{15}$

$2\frac{9}{25}=\frac{(2\times25)+9}{25}=\frac{(50+9)}{25}=\frac{59}{25}$

$2\frac{1}{5}=\frac{(2\times5)+1}{5}=\frac{(10+1)}{5}=\frac{11}{5}$

$$2\frac{11}{25} = \frac{(2\times 25)+11}{25} = \frac{50+11}{25} = \frac{61}{25}$$

Take LCM of 15, 25, 5, 25 is 75.

$$\frac{7}{15} = \frac{37\times 5}{15\times 5} = \frac{185}{75}, 2\frac{9}{25} = \frac{59\times 3}{25\times 3} = \frac{177}{75}$$

$$2\frac{1}{5} = \frac{(2\times 5)+1}{5} = \frac{11\times 15}{5\times 15} = \frac{165}{75}, 2\frac{11}{25} = \frac{61\times 3}{25\times 3} = \frac{183}{75}$$

$$2\frac{3}{5} = \frac{13\times 15}{5\times 15} = \frac{195}{75}, 2\frac{4}{15} = \frac{34\times 5}{15\times 5} = \frac{170}{75}$$

Ascending order is given by

$$\frac{165}{75} < \frac{170}{75} < \frac{177}{75} < \frac{183}{75} < \frac{185}{75} < \frac{195}{75}$$

or

$$2\frac{1}{5} < 2\frac{4}{15} < 2\frac{9}{25} < 2\frac{11}{25} < 2\frac{7}{15} < 2\frac{3}{5}$$

4. Arrange the following fractions in descending order :

a. $\frac{13}{8}, \frac{13}{11}, \frac{13}{5}, \frac{13}{2}, \frac{13}{9}, \frac{13}{6}$

Since, numerators are same, the denominator having smallest value is largest fraction.

So, Descending order is given by

$$\frac{13}{2} > \frac{13}{6} > \frac{13}{6} > \frac{13}{8} > \frac{13}{9} > \frac{13}{11}$$

b. $\frac{61}{52}, \frac{61}{43}, \frac{61}{58}, \frac{61}{29}, \frac{61}{37}, \frac{61}{40}$

Since numerators are same, so denominators having larger value is smallest one and lower value is the greatest one.

$$\frac{61}{29} > \frac{61}{37} > \frac{61}{40} > \frac{61}{43} > \frac{61}{52} > \frac{61}{58}$$

c. $\frac{123}{96}, \frac{123}{111}, \frac{123}{120}, \frac{123}{82}, \frac{123}{75}, \frac{123}{47}$

Descending order is given by

$$\frac{123}{47} > \frac{123}{75} > \frac{123}{82} > \frac{123}{96} > \frac{123}{111} > \frac{123}{120}$$

d. $\frac{2}{5}, \frac{9}{25}, \frac{3}{5}, \frac{11}{25}, \frac{18}{25}, \frac{12}{15}$

Take the LCM of (5, 25, 15) which is 75.

$\frac{2}{5}=\frac{2\times15}{5\times15}=\frac{30}{75}, \frac{9}{25}=\frac{9\times3}{25\times3}=\frac{27}{75}$

$\frac{3}{5}=\frac{3\times15}{5\times15}=\frac{45}{75}, \frac{11}{25}=\frac{11\times3}{25\times3}=\frac{33}{75}$

$\frac{18}{25}=\frac{18\times3}{25\times3}=\frac{54}{75}, \frac{12}{15}=\frac{12\times5}{15\times5}=\frac{60}{75}$

Descending order is given by

$\frac{60}{75}>\frac{54}{75}>\frac{45}{75}>\frac{33}{75}>\frac{30}{75}>\frac{27}{75}$ or $\frac{12}{15}>\frac{18}{25}>\frac{3}{5}>\frac{11}{25}>\frac{2}{5}>\frac{9}{25}$

e. $\frac{7}{12}, \frac{13}{36}, \frac{15}{24}, \frac{5}{12}, \frac{7}{24}, \frac{23}{36}$

Take LCM of (12, 24, 36) which is 72.

$\frac{7}{12}=\frac{7\times6}{12\times6}=\frac{21}{36}\frac{42}{72}, \frac{13}{36}=\frac{13\times2}{36\times2}=\frac{26}{72}$

$\frac{15}{24}=\frac{15\times3}{24\times3}=\frac{45}{72}, \frac{5}{12}=\frac{5\times6}{12\times6}=\frac{30}{72}, \frac{7}{24}=\frac{7\times3}{24\times3}=\frac{21}{72}$

$\frac{23}{36}=\frac{23\times2}{36\times2}=\frac{46}{72}$

Descending order is given by

$\frac{46}{72}>\frac{45}{72}>\frac{42}{72}>\frac{30}{72}>\frac{26}{72}>\frac{21}{72}$

or

$\frac{23}{36}>\frac{15}{24}>\frac{7}{12}>\frac{5}{12}>\frac{13}{36}>\frac{7}{24}$

f. $4\frac{2}{7}, 4\frac{8}{21}, 4\frac{11}{14}, 4\frac{3}{7}, 4\frac{13}{21}$

First convert mixed fraction into improper fraction.

$4\frac{2}{7}=\frac{(4\times7)+2}{7}=\frac{(28+2)}{7}=\frac{30}{7}$

$4\frac{8}{21}=\frac{(4\times21)+8}{21}=\frac{84+8}{21}=\frac{92}{21}$

$4\frac{11}{14}=\frac{(4\times14)+11}{14}=\frac{(56+11)}{14}=\frac{67}{14}$

$4\frac{3}{7}=\frac{(4\times7)+3}{7}=\frac{(28+3)}{7}=\frac{31}{7}$

$$4\frac{13}{21} = \frac{(4 \times 21) + 13}{21} = \frac{84 + 13}{21} = \frac{97}{21}$$

Take LCM of 7, 14, 21 which is 42.

$$\frac{30}{7} = \frac{30 \times 6}{36 \times 2} = \frac{180}{42}, \frac{92}{21} = \frac{92 \times 2}{21 \times 2} = \frac{184}{42}, \frac{67}{14} = \frac{67 \times 3}{14 \times 3} = \frac{201}{42}$$

$$\frac{31}{7} = \frac{31 \times 6}{7 \times 6} = \frac{186}{42}, \frac{97}{21} = \frac{97 \times 2}{21 \times 2} = \frac{194}{42}$$

Descending order is given by

$$\frac{201}{42} > \frac{194}{42} > \frac{186}{42} > \frac{184}{42} > \frac{180}{42}$$

or

$$4\frac{11}{14} > 4\frac{13}{21} > 4\frac{3}{7} > 4\frac{8}{21} > 4\frac{2}{7}$$

Exercise-3.5

1. Find the sum of the following :

a. $\frac{5}{13}$ and $\frac{2}{13}$

$$\frac{5}{13} + \frac{2}{13} = \frac{(5 + 2)}{13} = \frac{7}{13}$$

b. $\frac{6}{17}$ and $\frac{3}{17}$

$$\frac{6}{17} + \frac{3}{17} = \frac{(6 + 3)}{17} = \frac{9}{17}$$

c. $\frac{8}{6}$ and $\frac{3}{5} = \frac{8}{6} + \frac{3}{5}$

LCM of 6 and 5 is 30.

$$\frac{8}{6} = \frac{8 \times 5}{6 \times 5} = \frac{40}{30}, \frac{3}{5} = \frac{3 \times 6}{5 \times 6} = \frac{18}{30}$$

So, $\frac{8}{6} + \frac{3}{5} = \frac{40}{30} + \frac{18}{30} = \frac{58}{30}$

Divide numerator and denominator by their HCF which is 2.

$$\frac{8}{6} + \frac{3}{5} = \frac{58 \div 2}{30 \div 2} = \frac{29}{15} = 1\frac{14}{15}$$

d. $\frac{2}{5} + \frac{1}{6}$

Take LCM of 5 and 6, which is 30.

$$\frac{2}{5} = \frac{2 \times 6}{5 \times 6} = \frac{12}{30}, \frac{1}{6} = \frac{1 \times 5}{6 \times 5} = \frac{5}{30}$$

$$\frac{2}{5} + \frac{1}{6} = \frac{12}{30} + \frac{5}{30} = \frac{17}{30}$$

e. $\frac{5}{7}+\frac{6}{14}+\frac{11}{8}$

Take LCM of (7, 14, 8) which is equal to 56.

$\frac{5}{7}=\frac{5\times8}{7\times8}=\frac{40}{56}, \frac{6}{14}=\frac{6\times4}{14\times4}=\frac{24}{56}, \frac{11}{8}=\frac{11\times7}{8\times7}=\frac{77}{56}$

$\frac{5}{7}+\frac{6}{14}+\frac{11}{8}=\frac{40}{56}+\frac{24}{56}+\frac{77}{56}=\frac{(40+24+77)}{58}$

$=\frac{141}{56}=2\frac{29}{56}$

f. $\frac{6}{17}+\frac{7}{34}+\frac{1}{17}$

Take LCM of 17 and 34 which is equal to 34.

$\frac{6}{17}=\frac{6\times2}{17\times2}=\frac{12}{34}, \frac{7}{34}=\frac{7\times1}{34\times1}, \frac{1}{17}=\frac{1\times2}{17\times2}=\frac{2}{34}$

$\Rightarrow\frac{6}{7}+\frac{7}{34}+\frac{1}{17}=\frac{12}{34}+\frac{7}{34}+\frac{1}{34}=\frac{21}{34}$

2. Add the following unlike fractions :

a. $\frac{9}{16}+\frac{3}{8}$

Take LCM of 16 and 8 which is equals to 16.

$\frac{9}{16}+\frac{(3\times2)}{16}=\frac{(9+6)}{16}=\frac{15}{16}$

b. $\frac{6}{16}+\frac{5}{8}$

Take LCM of 16 and 8 which is equal to 16.

$\frac{6}{16}=\frac{6}{16}, \frac{5\times2}{8\times2}=\frac{10}{16}$

$\frac{6}{16}+\frac{5}{8}=\frac{6}{16}+\frac{10}{16}=\left(\frac{6+10}{16}\right)=\left(\frac{16}{16}\right)$ or 1

c. $\frac{1}{2}+\frac{3}{4}+\frac{5}{8}$

Take LCM of 2, 4, 8 which is equal to 8.

$\frac{1}{2}=\frac{1\times4}{2\times4}=\frac{4}{8}, \frac{3}{4}=\frac{3\times2}{4\times2}=\frac{6}{8}$

So, $\frac{1}{2}+\frac{3}{4}+\frac{5}{8}=\frac{4}{8}+\frac{6}{8}+\frac{5}{8}=\frac{15}{8}$

d. $\frac{1}{3}+\frac{2}{9}+\frac{7}{18}$

Take LCM of 3, 9, 18 which is equal to 18.

$\frac{1}{3}=\frac{1\times6}{3\times6}=\frac{6}{18}, \frac{2}{9}=\frac{2\times2}{9\times2}=\frac{4}{18}, \frac{7}{18}=\frac{7\times1}{18\times1}=\frac{7}{18}$

So, $\frac{1}{3}+\frac{2}{9}+\frac{7}{18}=\frac{6}{18}+\frac{4}{18}+\frac{7}{18}=\frac{(6+4+7)}{18}=\frac{17}{18}$

e. $\frac{9}{35}+\frac{6}{7}+\frac{8}{25}$

Take LCM of 7, 25, 35 which is equal to 175.

$\frac{9}{35}=\frac{9\times5}{35\times5}=\frac{45}{175}, \frac{6}{7}=\frac{6\times25}{7\times25}=\frac{150}{175}, \frac{8}{25}=\frac{8\times7}{25\times7}=\frac{56}{175}$

$\frac{9}{35}+\frac{6}{7}+\frac{8}{25}=\frac{45}{175}+\frac{150}{175}+\frac{56}{175}=\frac{260}{175}\frac{251}{175}$

f. $128+\frac{3}{14}+\frac{5}{7}$

Take LCM of 7 and 14 which is equal to 14.

$\frac{(128\times14)+3+(5\times2)}{14}=\frac{(1792+3+10)}{14}=\frac{180}{14}=128\frac{15}{14}$

3. Add the following :

a. $5\frac{3}{7}+6\frac{2}{7}$

$\Rightarrow \frac{38}{7}+\frac{44}{7}=\frac{(38+44)}{7}=\frac{82}{7}=11\frac{5}{7}$

b. $3\frac{1}{7}+4\frac{6}{7}+3$

$\Rightarrow \frac{22}{7}+\frac{34}{7}+\frac{3}{1}$

Take LCM of 7 and 1.

$\frac{22}{7}+\frac{34}{7}+\frac{(3\times7)}{7}=\frac{(22+34+21)}{7}=\frac{77}{7}=11$

c. $7\frac{6}{9}+3\frac{1}{3}$

$\frac{(7\times9)+6}{9}+\frac{(3\times3)+1}{3}=\frac{(63+9)}{9}+\frac{(10)}{3}=\frac{69}{9}+\frac{10}{3}$

Take LCM of 9 and 3.

$$= \frac{69}{9} + \frac{(10 \times 3)}{8} = \frac{69}{9} + \frac{30}{9} = \frac{(69+30)}{9} = \frac{99}{9} = 11$$

d. $6\frac{3}{8} + 4\frac{1}{16}$

$$\Rightarrow \frac{(6 \times 8) + 3}{8} + \frac{(4 \times 16) + 1}{16}$$

$$\Rightarrow \frac{(48+3)}{8} + \frac{(64+1)}{16} = \frac{51}{8} + \frac{65}{16}$$

Take LCM of 8 and 16.

$$= \frac{(51 \times 2) + 65}{16} = \frac{102+65}{16} = \frac{167}{16} = 10\frac{7}{16}$$

e. $2\frac{1}{6} + 2\frac{3}{8}$

Separate whole parts and fractional part.

$$2 + \frac{1}{6} + 2 + \frac{3}{8} = 4 + \frac{1}{6} + \frac{1}{8}$$

Take LCM of 6 and 8 which is equals to 24.

$$\frac{(4 \times 24) + (1 \times 4) + (1 \times 3)}{24} = \frac{96+4+3}{24} = \frac{103}{24} = 4\frac{7}{24}$$

f. $1\frac{1}{2} + 1\frac{3}{4} + \frac{5}{8}$

Add whole parts and fractional parts separately.

$$1 + \frac{1}{2} + 1 + \frac{3}{4} + \frac{5}{8} = 2 + \frac{1}{2} + \frac{3}{4} + \frac{5}{8}$$

Take LCM of 2, 4 and 8 which is equals to 8.

$$1\frac{1}{2} + 1\frac{3}{4} + \frac{5}{8} = 2 + \frac{(1 \times 4) + (3 \times 2) + (5 \times 1)}{8}$$

$$= \frac{(2 \times 8) + 4 + 6 + 5}{8}$$

$$= \frac{16+4+6+5}{8} = \frac{31}{8} = 3\frac{7}{8}$$

g. $4\frac{1}{5} + 3\frac{1}{10}$

Add whole parts and fractional parts separately.

$$4 + \frac{1}{5} + 3 + \frac{1}{10} = (4+3) + \left(\frac{1}{5} + \frac{1}{10}\right) = 7 + \frac{(1 \times 2) + (1 \times 1)}{10}$$

$$= 7 + \frac{(2+1)}{10} = 7 + \frac{3}{10} = \frac{70+3}{10} = \frac{73}{10} = 7\frac{3}{10}$$

h. $3\frac{1}{10} + 11\frac{1}{5} + 16\frac{2}{5}$

Add fractional and whole number parts separately.

$$3\frac{1}{10} + 11\frac{1}{5} + 16\frac{2}{5} = 3 + \frac{1}{10} + 11 + \frac{1}{5} + 16 + \frac{2}{5}$$

$$= (3 + 11 + 16) + \left(\frac{1}{10} + \frac{1}{5} + \frac{2}{5}\right)$$

Take LCM of 10 and 5 which is 5.

$$= 30 + \left(\frac{1}{10} + \frac{1 \times 2}{5 \times 2} + \frac{2 \times 2}{5 \times 2}\right)$$

$$= 30 + \left(\frac{1}{10} + \frac{2}{10} + \frac{4}{10}\right)$$

$$= 30 + \frac{7}{10}$$

$$= \frac{(30 \times 10) + 7}{10} = \frac{300 + 7}{10} = \frac{307}{10} = 30\frac{7}{10}$$

i. $5\frac{4}{9} + 4\frac{2}{3} + 1\frac{1}{6}$

Add whole parts and imaginary parts separately.

$$5 + \frac{4}{9} + 4 + \frac{2}{3} + 1 + \frac{1}{6} = 10 + \frac{4}{9} + \frac{2}{3} + \frac{1}{6}$$

Take LCM of 9, 3, 6 is 18.

$$\Rightarrow 10 + \frac{(4 \times 2) + (2 \times 6) + (1 \times 3)}{18}$$

$$\Rightarrow 10 + \frac{(8 + 12 + 3)}{18} = \frac{10}{1} + \frac{23}{18}$$

Take LCM of 1 and 18 which is 18.

$$= \frac{(10 \times 18) + 23}{18} = \frac{(180 + 23)}{18} = \frac{203}{18} = 11\frac{5}{18}$$

j. $10\frac{1}{3} + \frac{2}{3} + 5\frac{3}{6}$

Add whole parts and fractional parts.

$$= 10 + \frac{1}{3} + \frac{2}{3} + 5 + \frac{3}{6}$$

$$= 5 + 10 + \left(\frac{1}{3} + \frac{2}{3}\right) + \frac{3}{6} = 15 + 1 + \frac{3}{6} = 16 + \frac{3}{6}$$

$$= \frac{(16 \times 6) + 3}{6} = \frac{(96 + 3)}{6} = \frac{99}{6} = 16\frac{3}{6}$$

k. $2\frac{1}{12} + 5\frac{1}{4} + 14\frac{2}{3}$

Separate whole parts and fractional parts.

$$2 + \frac{1}{12} + 5 + \frac{1}{4} + 14 + \frac{2}{3}$$

$$\Rightarrow (2 + 5 + 14) + \left(\frac{1}{12} + \frac{1}{4} + \frac{2}{3}\right)$$

$$\Rightarrow 21 + \left(\frac{1}{12} + \frac{1}{4} + \frac{2}{3}\right)$$

Take LCM of 12, 4 and 3 which is equal to 12.

$$21 + \left(\frac{1 + (1 \times 3) + (2 \times 4)}{12}\right)$$

$$= 21 + \left(\frac{1 + 3 + 8}{12}\right) = 21 + \frac{12}{12} = 21 + 1 = 22$$

l. $6\frac{1}{12} + 1\frac{2}{6} + 14\frac{2}{4}$

Add whole parts and fractional parts separately.

$$= 6 + \frac{1}{12} + 1 + \frac{2}{6} + 14 + \frac{2}{4}$$

$$= (6 + 1 + 14) + \left(\frac{1}{12} + \frac{2}{6} + \frac{2}{4}\right)$$

$$= 21 + \left(\frac{1 + 4 + 6}{12}\right) = 21 + \frac{11}{12} = 21\frac{11}{12}$$

4. Find the sum of mixed and proper fractions :

a. $3\frac{4}{7} + \frac{6}{8}$

$$= \frac{(3 \times 7) + 4}{7} + \frac{6}{8}$$

$$= \frac{(21 + 4)}{7} + \frac{6}{8} = \frac{25}{7} + \frac{6}{8}$$

Take LCM of 7 and 8 which is 56.

$$= \frac{(25 \times 8) + (6 \times 7)}{56} = \frac{(200 + 42)}{56} = \frac{242}{56} = 4\frac{18}{56}$$

b. $3\frac{1}{18} + \frac{2}{6}$

Separating whole numbers part and fractional part.

$$3 + \frac{1}{18} + \frac{2}{6} = 3 + \frac{1}{18} + \frac{(2 \times 3)}{10}$$

$$= 3 + \frac{1 + 6}{18} = 3 + \frac{7}{18} + \frac{(3 \times 18) + 7}{18} = \frac{54 + 7}{18} = \frac{61}{18}$$

$$= 3\frac{7}{18}$$

c. $3 + 1\frac{1}{5}$

$$= 3 + \frac{(1 \times 5) + 1}{5} = \frac{3}{1} + \frac{6}{5}$$

Take LCM of 1 and 5.

$$= \frac{(3 \times 5) + 6}{5} = \frac{(15 + 6)}{5} = \frac{21}{5} = 4\frac{1}{5}$$

d. $6\frac{1}{3} + \frac{3}{10}$

$$= \frac{(6 \times 3) + 1}{3} + \frac{3}{10}$$

$$= \frac{(18 + 1)}{3} + \frac{3}{10}$$

$$= \frac{19}{3} + \frac{3}{10}$$

Take LCM of 3 and 10 which is 30.

$$= \frac{(19 \times 10) + (3 \times 3)}{30}$$

$$= \left(\frac{190 + 9}{30}\right) = \frac{199}{30} = 6\frac{19}{30}$$

e. $2\frac{1}{6} + \frac{2}{3}$

Separating whole numbers part and fractional part.

$$\Rightarrow \frac{(2 \times 6) + 1}{6} + \frac{2}{3}$$

$$\Rightarrow \frac{(12+1)}{6}+\frac{2}{3}$$

$$\Rightarrow \frac{13}{6}+\frac{2}{3}$$

Take LCM of 6 and 3.

$$=\frac{(13\times 1)+(2\times 2)}{6}=\left(\frac{13+4}{6}\right)=\frac{17}{6}=2\frac{5}{6}$$

f. $5\frac{3}{8}+\frac{4}{12}+\frac{20}{6}$

$$=\frac{(5\times 8)+3}{8}+\frac{4}{12}+\frac{20}{6}$$

$$=\frac{40+3}{8}+\frac{4}{12}+\frac{20}{6}$$

$$=\frac{43}{8}+\frac{4}{12}+\frac{20}{6}$$

Take LCM of 8, 12 and 6 which is 24.

$$=\frac{(43\times 3)+(4\times 2)+(20\times 4)}{24}$$

$$=\frac{129+8+80}{24}=\frac{217}{24}=9\frac{1}{24}$$

Exercise-3.6

1. Find the difference of the following :

a. $\frac{7}{3}-\frac{2}{3}=\frac{(7-2)}{3}=\frac{5}{3}$

b. $\frac{16}{11}-\frac{8}{11}=\frac{(16-8)}{11}=\frac{8}{11}$

c. $\frac{5}{9}-\frac{1}{9}=\frac{(5-1)}{9}=\frac{4}{9}$

d. $\frac{23}{25}-\frac{19}{25}=\frac{(23-19)}{25}=\frac{4}{25}$

e. $\frac{15}{29}-\frac{10}{29}=\frac{(15-10)}{29}=\frac{5}{29}$

f. $\frac{14}{17}-\frac{1}{17}=\frac{13}{17}$

2. Subtract :

a. $\frac{5}{7}-\frac{1}{6}$

Take LCM of 7 and 6 which is equal to 42.

$$\frac{5}{7}=\frac{5\times 6}{7\times 6}=\frac{30}{42},\ \frac{1}{6}=\frac{1\times 7}{6\times 7}=\frac{7}{42}$$

$$\frac{5}{7}-\frac{1}{6}=\frac{30}{42}-\frac{7}{42}=\frac{(30-7)}{42}=\frac{23}{42}$$

b. $\frac{7}{10} - \frac{3}{20}$

Take LCM of 10 and 20 which is 20.

$= \frac{(7 \times 2) - 3}{20} = \frac{14 - 3}{20} = \frac{11}{20}$

c. $\frac{7}{13} - \frac{1}{8}$

Take LCM of 13 and 8 which is equal to 104.

$= \frac{(7 \times 8) - (1 \times 13)}{104}$

$= \frac{(56 - 13)}{104}$

$= \frac{43}{104}$

d. $\frac{7}{8} - \frac{5}{9}$

Take LCM of 8 and 9 which is 72.

$\frac{7}{8} = \frac{7 \times 9}{8 \times 9} = \frac{63}{72}, \frac{5}{9} = \frac{5 \times 8}{9 \times 8} = \frac{40}{72}$

So, $\frac{7}{8} - \frac{5}{9} = \frac{63}{72} - \frac{40}{72} = \frac{63 - 40}{72} = \frac{23}{72}$

e. $\frac{3}{8} - \frac{1}{6}$

LCM of 8 and 6 which is 48.

$\frac{3}{8} = \frac{3 \times 6}{8 \times 6} = \frac{18}{48}, \frac{1}{6} = \frac{1 \times 8}{6 \times 8} = \frac{8}{48}$

$\Rightarrow \frac{3}{8} - \frac{1}{6} = \frac{18}{48} - \frac{8}{48} = \frac{(18 - 8)}{48} = \frac{10}{48}$

Divide numerator and denominator by their HCF which is 2.

$\frac{10 \div 2}{48 \div 2} = \frac{5}{24}$

So, $\frac{3}{8} - \frac{1}{6} = \frac{5}{24}$

f. $\frac{4}{7} - \frac{11}{21}$

Take LCM of 7 and 21 which is 21.

$$\frac{4}{7}=\frac{4\times3}{7\times3}=\frac{12}{21},\ \frac{11}{21}=\frac{11\times1}{21\times1}=\frac{11}{21}$$

$$\frac{4}{7}-\frac{11}{21}=\frac{12}{21}-\frac{11}{21}=\frac{(12-11)}{21}=\frac{1}{21}$$

g. $\frac{5}{12}-\frac{5}{16}$

Take LCM of 12 and 16 which is 48.

$$\frac{5}{12}=\frac{5\times4}{12\times4}=\frac{20}{48},\ \frac{5}{16}=\frac{5\times3}{16\times3}=\frac{15}{48}$$

$$\frac{5}{12}-\frac{5}{16}=\frac{20}{48}-\frac{15}{48}=\frac{5}{48}$$

h. $\frac{8}{17}-\frac{5}{34}$

Take LCM of 17 and 34 which is 34.

$$\frac{8}{17}=\frac{8\times2}{17\times2}=\frac{16}{34},\ \frac{5}{34}=\frac{5\times1}{34\times1}$$

$$\frac{8}{17}-\frac{5}{34}=\frac{16}{34}-\frac{5}{34}=\frac{11}{34}$$

i. $\frac{5}{6}-\frac{7}{9}$

Take LCM of 6 and 9 which is equals to 18.

So, $\frac{5}{6}=\frac{5\times3}{6\times3}=\frac{15}{18},\ \frac{7}{9}=\frac{7\times2}{9\times2}=\frac{14}{18}$

$$\frac{5}{6}-\frac{7}{9}=\frac{15}{18}-\frac{14}{18}=\frac{1}{18}$$

j. $\frac{5}{11}-\frac{4}{12}$

Take LCM of 11 and 12 which is 132.

So, $\frac{5}{11}=\frac{5\times12}{11\times12}=\frac{60}{132},\ \frac{4}{12}=\frac{4\times11}{12\times11}=\frac{44}{132}$

$$\frac{5}{11}-\frac{4}{12}=\frac{60}{132}-\frac{44}{132}=\frac{16}{132}$$

k. $\frac{7}{15}-\frac{3}{10}$

Take LCM of 15 and 10 which is 30.

So, $\frac{7}{15}=\frac{7\times2}{15\times2}=\frac{14}{30}, \frac{3}{10}=\frac{3\times3}{10\times3}=\frac{9}{30}$

$\frac{7}{15}-\frac{3}{10}=\frac{14}{30}-\frac{9}{30}=\frac{5}{30}$

l. $\frac{23}{24}-\frac{15}{16}$

Take LCM of 24 and 16 which is equal to 48.

So, $\frac{23}{24}=\frac{23\times2}{24\times2}=\frac{46}{48}, \frac{15}{16}=\frac{15\times3}{16\times3}=\frac{45}{48}$

$\frac{23}{24}-\frac{15}{16}=\frac{46}{48}-\frac{45}{48}=\frac{(46-45)}{48}=\frac{1}{48}$

3. Subtract the following fractions :

a. $15\frac{2}{3}-7\frac{1}{2}$

$15\frac{2}{3}=\frac{(15\times3)+2}{3}=\frac{45+2}{3}=\frac{47}{5}$

$7\frac{1}{2}=\frac{(7\times2)+1}{2}=\frac{(14+1)}{2}=\frac{15}{2}$

$15\frac{2}{3}-7\frac{1}{2}=\frac{47}{5}-\frac{15}{2}$

Take LCM of 5 and 2 which is equal to 10.

$\Rightarrow \frac{47}{5}=\frac{47\times2}{5\times2}=\frac{94}{10}$

$7\frac{1}{2}=\frac{(7\times2)+1}{2}=\frac{15}{2}$

$15\frac{2}{3}-7\frac{1}{2}=\frac{94}{10}-\frac{15}{2}$

Take LCM of 10 and 5 which is 10.

$\frac{15}{2}=\frac{15\times5}{2\times5}=\frac{75}{10}$

$\frac{94}{10}-\frac{5}{2}=\frac{94}{10}-\frac{75}{10}=\frac{(94-75)}{10}=\frac{19}{10}=1\frac{9}{10}$

b. $13\frac{1}{2}-5\frac{3}{4}$

$13\frac{1}{2}=\frac{(13\times2)+1}{2}=\frac{(26+1)}{2}=\frac{27}{2}$

$$5\frac{3}{4}=\frac{(5\times4)+3}{4}=\frac{(20+3)}{4}=\frac{23}{4}$$

$$\Rightarrow 13\frac{1}{2}-5\frac{3}{4}=\frac{27}{2}-\frac{23}{4}$$

Take LCM of 2 and 4 which is 4.

$$\frac{27}{2}=\frac{27\times2}{2\times2}=\frac{54}{4}$$

So, $13\frac{1}{2}-5\frac{3}{4}=\frac{27}{2}-\frac{23}{4}=\frac{54}{4}-\frac{23}{4}=\frac{(54-23)}{4}=\frac{31}{4}$

c. $3\frac{5}{7}-2\frac{3}{8}$

$$3\frac{5}{7}=\frac{(3\times7)+5}{7}=\frac{(21+5)}{7}=\frac{26}{7}$$

$$2\frac{3}{8}=\frac{(2\times8)+3}{8}=\frac{(16+3)}{8}=\frac{19}{8}$$

d. $7\frac{5}{20}-2\frac{3}{8}$

$$7\frac{5}{20}=\frac{(7\times20)+5}{20}=\frac{(140+5)}{20}=\frac{(145)}{20}$$

$$2\frac{3}{8}=\frac{(2\times8)+3}{8}=\frac{(16+3)}{8}=\frac{19}{8}$$

$$7\frac{5}{20}-2\frac{3}{8}=\frac{145}{20}-\frac{19}{8}$$

Take LCM of 20 and 8 which is 40.

$$7\frac{5}{20}=\frac{145}{20}=\frac{145\times2}{20\times2}=\frac{290}{40},\ \frac{19}{8}=\frac{19\times5}{8\times5}=\frac{95}{40}$$

$$7\frac{5}{20}-2\frac{3}{8}=\frac{145}{20}-\frac{19}{8}=\frac{290}{40}-\frac{95}{40}=\frac{290-95}{40}=\frac{195}{40}=4\frac{35}{40}$$

e. $5\frac{7}{8}-1\frac{3}{8}$

$$5\frac{7}{8}=\frac{(5\times8)+7}{8}=\frac{40+7}{8}=\frac{47}{8}$$

$$1\frac{3}{8}=\frac{(1\times8)+3}{8}=\frac{(8+3)}{8}=\frac{11}{8}$$

$$\Rightarrow 5\frac{7}{8}-1\frac{3}{8}=\frac{47}{8}-\frac{11}{8}=\frac{36}{8}=4\frac{4}{8}$$

f. $15\frac{1}{3}-8\frac{2}{6}$

$15\frac{1}{3}=\frac{(15\times3)+1}{3}=\frac{(45+1)}{3}=\frac{46}{3}$

$8\frac{2}{6}=\frac{(6\times8)+2}{6}=\frac{(48+2)}{6}=\frac{50}{6}$

$15\frac{1}{3}-8\frac{2}{6}=\frac{46}{3}-\frac{50}{6}$

Take LCM of 3 and 6 which is 6.

$\frac{46}{3}=\frac{46\times2}{3\times2}=\frac{92}{6}$

$15\frac{1}{3}-8\frac{2}{6}=\frac{92}{6}-\frac{50}{6}=\frac{(92-50)}{6}=\frac{42}{6}=7$

g. $5\frac{3}{8}-1\frac{1}{4}$

$5\frac{3}{8}=\frac{(5\times8)+3}{8}=\frac{(40+3)}{8}=\frac{43}{8}$

$1\frac{1}{4}=\frac{(1\times4)+1}{4}=\frac{(4+1)}{4}=\frac{5}{4}$

$\Rightarrow 5\frac{3}{8}-1\frac{1}{4}=\frac{43}{8}-\frac{5}{4}$

Take LCM of 8 and 4 which is 8.

$\frac{5}{4}=\frac{5\times2}{4\times2}=\frac{10}{8}$

$5\frac{3}{8}-1\frac{1}{4}=\frac{43}{8}-\frac{10}{8}=\frac{33}{8}=4\frac{1}{8}$

h. $6\frac{3}{4}-3\frac{1}{2}$

$6\frac{3}{4}=\frac{(6\times4)+3}{4}=\frac{24+3}{4}=\frac{27}{4}$

$3\frac{1}{2}=\frac{(3\times2)+1}{2}=\frac{6+1}{2}=\frac{7}{2}$

$6\frac{3}{4}-3\frac{1}{2}=\frac{27}{4}-\frac{7}{2}$

Take LCM of 4 and 2 which is 4.

$\frac{7}{2}=\frac{7\times2}{2\times2}=\frac{14}{4}$

$$6\frac{3}{4}-3\frac{1}{2}=\frac{27}{4}-\frac{14}{4}=\frac{(27-14)}{4}=\left(\frac{13}{4}\right)=3\frac{1}{4}$$

i. $11\frac{13}{16}-5\frac{5}{8}$

$$\frac{(11\times16)+13}{16}=\frac{(176+13)}{13}=\frac{189}{13}$$

$$5\frac{5}{8}=\frac{(5\times8)+5}{8}=\frac{(40+5)}{8}=\frac{45}{8}$$

$$11\frac{13}{16}-5\frac{5}{8}=\frac{189}{13}-\frac{45}{8}$$

Take LCM of 13 and 8 which is 104.

$$\frac{189}{13}=\frac{189\times8}{13\times8}=\frac{1512}{104},\ \frac{45}{8}=\frac{45\times13}{104}=\frac{585}{104}$$

$$11\frac{13}{16}-5\frac{5}{8}=\frac{1512}{104}-\frac{585}{104}=\frac{(1512-585)}{104}=\frac{927}{104}=8\frac{85}{104}$$

j. $10\frac{9}{22}-8\frac{2}{11}$

$$10\frac{9}{22}=\frac{(22\times10)+9}{22}=\frac{220+9}{22}=\frac{229}{22}$$

$$8\frac{2}{11}=\frac{(8\times11)+2}{11}=\frac{(88+2)}{11}=\frac{90}{11}$$

$$10\frac{9}{22}-8\frac{2}{11}=\frac{229}{22}-\frac{90}{11}$$

Take LCM of 22 and 11 which is 22.

$$\frac{90}{11}=\frac{90\times2}{11\times2}=\frac{180}{22}$$

$$10\frac{9}{22}-8\frac{2}{11}=\frac{229}{22}-\frac{180}{22}=\frac{49}{22}=2\frac{5}{22}$$

k. $16\frac{9}{10}-14\frac{3}{5}$

$$16\frac{9}{10}=\frac{(16\times10)+9}{10}=\frac{(160+9)}{10}=\frac{169}{10}$$

$$14\frac{3}{5}=\frac{(14\times5)+3}{5}=\frac{(70+3)}{5}=\frac{73}{5}$$

$$16\frac{9}{10}-14\frac{3}{5}=\frac{169}{10}-\frac{73}{5}$$

Take LCM of 10 and 5 which is 10.

$$\frac{73}{5} = \frac{73 \times 2}{5 \times 2} = \frac{146}{10}$$

$$16\frac{9}{10} - 14\frac{3}{5} = \frac{169}{10} - \frac{146}{10} = \frac{(169-146)}{10} = \frac{23}{10} = 2\frac{3}{10}$$

I. $15\frac{3}{5} - 10\frac{11}{15}$

$$15\frac{3}{5} = \frac{(15 \times 5)+3}{5} = \frac{(75+3)}{5} = \frac{78}{5}$$

$$10\frac{11}{15} = \frac{(15 \times 10)+11}{15} = \frac{150+11}{15} = \frac{161}{15}$$

Take LCM of 5 and 15 which is 15.

$$\frac{78}{5} = \frac{78 \times 3}{5 \times 3} = \frac{234}{15}$$

$$15\frac{3}{5} - 10\frac{11}{15} = \frac{234}{15} - \frac{161}{15} = \frac{(234-161)}{15} = \frac{73}{15} = 4\frac{13}{15}$$

Exercise-3.7

1. Cloth bought by Radha $= 5\frac{1}{5} = \frac{(5 \times 5)+1}{5} = \frac{26}{5}$ m

Cloth bought by Amar $= 2\frac{1}{2} = \frac{(2 \times 2)+1}{2} = \frac{5}{2}$ m

Total length of cloth bought by them $= \frac{26}{5} + \frac{5}{2}$

$$= \frac{(26 \times 2) + (5 \times 5)}{10}$$

$$= \frac{(52+25)}{10} = \frac{77}{10} = 7\frac{7}{10} \text{ m}$$

2. Distance covered by bus $= 2\frac{2}{13}$ km $= \frac{(2 \times 13)+2}{13} = \frac{28}{13}$ km

Distance covered by car $= 2\frac{5}{13}$ km $= \frac{(2 \times 13)+5}{13} = \frac{31}{13}$ km

Distance covered by rickshaw $= 3\frac{4}{13}$ km $= \frac{(3 \times 13)+4}{13} = \frac{43}{13}$ km

Total distance covered by Renu $= \left(\frac{28}{13} + \frac{31}{13} + \frac{43}{13}\right)$ km

$$= \frac{102}{13} \text{ km} = 7\frac{11}{13} \text{ km}$$

3. Length of first piece $= 3\frac{1}{9}\text{ m} = \frac{(3\times 9)+1}{9} = \frac{28}{9}\text{ m}$

Length of second piece $= 6\frac{4}{9}\text{ m} = \frac{(6\times 9)+4}{9} = \frac{58}{9}\text{ m}$

Length of third piece $= 1\frac{7}{9}\text{ m} = \frac{(1\times 9)+7}{9} = \frac{16}{9}\text{ m}$

Length of ribbon before it was divided $= \frac{28}{9}\text{ m} + \frac{58}{9}\text{ m} + \frac{16}{9}\text{ m}$

$$= \frac{102}{9}\text{ m} = 11\frac{3}{9}\text{ metres}$$

4. Time spent by Ajay in studies $= \frac{3}{4}$ hours

Time spent by Ajay in cricket $= \frac{5}{6}$ hours

Total time spent $= \frac{3}{4} + \frac{5}{6} = \frac{3\times 3}{4\times 3} + \frac{5\times 2}{6\times 2}$

$$= \frac{9}{12} + \frac{10}{12} = \frac{9+10}{12} = \frac{19}{12}$$

$$= 1\frac{7}{12}\text{ hours}$$

5. Portion of chocolate Deepa has $\frac{7}{10}$.

Chocolate portion given to her friend $= \frac{2}{5}$

Portion of chocolate left with Deepa $= \frac{7}{10} - \frac{2}{5}$

$$= \frac{7}{10} - \frac{2\times 2}{5\times 2}$$

$$= \frac{7-4}{10} = \frac{3}{10}$$

Portion of chocolate left with Deepa $= \frac{3}{10}$

6. Length of telegraph pole $= 5\frac{1}{3} = \frac{(5\times 3)+1}{3} = \frac{16}{3}\text{ m}$

Length of pole dig into the ground $= 1\frac{1}{4}\text{ m} = \frac{(4\times 1)+1}{4} = \frac{5}{4}\text{ m}$

Length of pole above the ground $= \frac{16}{3}\text{ m} - \frac{5}{4}\text{ m}$

$$= \left(\frac{16 \times 4 - 5 \times 3}{12}\right)$$

$$= \left(\frac{64 - 15}{12}\right) = \frac{49}{12}$$

$$= 4\frac{1}{12}\text{ m}$$

7. Total weight of 2 books $= 3\frac{1}{4}\text{ kg} = \frac{(3 \times 4) + 1}{4} = \frac{13}{4}\text{ kg}$

Weight of 1 book $= 1\frac{2}{5}\text{ kg} = \frac{(1 \times 5) + 2}{5} = \frac{7}{5}\text{ kg}$

Weight of other book $= \left(\frac{13}{4} - \frac{7}{5}\right)\text{kg}$

$$= \left(\frac{13 \times 5 - 7 \times 4}{20}\right)$$

$$= \left(\frac{65 - 28}{20}\right)$$

$$= \frac{37}{20} = 1\frac{17}{20}\text{ kg}$$

8. Perimeter of triangular plot $= 36\frac{4}{5} = \frac{(36 \times 5) + 4}{5} = \frac{184}{5}\text{ m}$

Length of one side of plot $= 12\frac{7}{10} = \frac{(12 \times 10) + 7}{10} = \frac{127}{10}\text{ m}$

Length of second side of plot $= 8\frac{11}{15} = \frac{131}{15}\text{ m}$

Length of third side = Perimeter of triangle – Sum of all sides

$$= \frac{184}{5} - \left(\frac{127}{10} + \frac{131}{15}\right)$$

$$= \frac{184}{5} - \left[\frac{(127 \times 3) + (131) \times 2}{30}\right]$$

$$= \frac{184}{5} - \left[\frac{381 + 262}{30}\right]$$

$$= \frac{184}{5} - \frac{643}{30}$$

$$= \frac{184 \times 6 - 643}{30} = \frac{1104 - 643}{30} = \frac{461}{30}$$

$$= 15\frac{11}{30}\text{ m}$$

9. Length of blue ribbon $= 5\frac{1}{5}\text{ m} = \frac{(5 \times 5) + 1}{5} = \frac{26}{5}\text{ m}$

Length of green ribbon $= 2\frac{1}{2}\text{ m} = \frac{(2 \times 2) + 1}{2} = \frac{5}{2}\text{ m}$

Total length of ribbon Aarti has $= \frac{26}{5}\text{ m} + \frac{5}{2}\text{ m}$

$$= \frac{(26 \times 2) + (5 \times 5)}{10}$$

$$= \frac{(52\text{ m} + 25\text{ m})}{10}$$

$$= \frac{77\text{ m}}{10}$$

$$= 7\frac{7}{10}\text{ m}$$

10. Portion of cake eaten by girls $= 4\frac{1}{2} = \frac{(4 \times 2) + 1}{2} = \frac{9}{2}$

Portion of cake eaten by boys $= 3\frac{1}{2} = \frac{(3 \times 2) + 1}{2} = \frac{7}{2}$

Total portion of cake eaten at Akshay's birthday

$$= \frac{9}{2} + \frac{7}{2} = \frac{(9 + 7)}{2} = \frac{16}{2} = 8$$

11. Cups of water bought by Anamika $= 2\frac{1}{2} = \frac{5}{2}$

Cups of milk bought everyday $= 2\frac{1}{4} = \frac{9}{4}$

Total field I have to drink $= \frac{5}{2} + \frac{9}{4}$

$$= \frac{(5 \times 2) + (9 \times 1)}{4}$$

$$= \left(\frac{10 + 9}{4}\right) = \frac{19}{4} = 4\frac{3}{4}$$

Exercise-3.8

1. Find the product of the following :

a. $\frac{1}{8} \times 24 = \frac{24}{8} = 3$

b. $\frac{1}{3} \times 50 = \frac{50}{3} = 16\frac{2}{3}$

c. $\frac{4}{6} \times 36 = \frac{144}{6} = 24$

d. $\frac{5}{21} \times 63 = \frac{315}{21} = 15$

e. $\frac{3}{7} \times 42 = \frac{3 \times 42}{7} = \frac{126}{7} = 18$

f. $\frac{5}{6} \times 246 = 5 \times 41 = 205$

2. Multiply :

a. $\frac{3}{4} \times \frac{3}{8}$

$\frac{3}{4} \times \frac{3}{8} = \frac{3 \times 3}{4 \times 8} = \frac{9}{32}$

b. $\frac{5}{12} \times \frac{3}{15}$

$\frac{5}{12} \times \frac{3}{15} = \frac{5 \times 3}{12 \times 15} = \frac{15}{180}$

Divide numerator and denominator by their HCF which is 15.

$\frac{15}{180} = \frac{15 \div 15}{180 \div 15} = \frac{1}{12}$

c. $\frac{11}{13} \times \frac{3}{7}$

$\frac{11 \times 3}{13 \times 7} = \frac{33}{91}$

d. $\frac{1}{5} \times \frac{1}{3} = \frac{1}{5 \times 3} = \frac{1}{15}$

e. $3\frac{1}{2} \times \frac{3}{8} = \frac{7}{2} \times \frac{3}{8} = \frac{7 \times 3}{2 \times 8} = \frac{21}{16}$

f. $\frac{25}{32} \times \frac{16}{45} = \frac{25 \times 16}{32 \times 45} = \frac{400}{1440}$

Divide numerator and denominator by their HCF which is 80.

$\frac{400 \div 80}{1440 \div 80} = \frac{5}{18}$

3. Find the value of the following :

a. $\frac{1}{4}$ of ₹ $100 = \frac{100}{4} =$ ₹ 25

$$
\begin{array}{r}
25 \\
4\overline{)100} \\
-8\downarrow \\
\hline
20 \\
-20 \\
\hline
0
\end{array}
$$

b. $\frac{8}{13} \times 2600 = \frac{8 \times 2600}{13} = \frac{20800}{13}$

$= ₹\ 1600$

$$\begin{array}{r} 1600 \\ 13\overline{)\,20800} \\ -13\downarrow \\ \hline 78 \\ -78\downarrow \\ \hline 000 \end{array}$$

c. $\frac{4}{5} \times 300 = \frac{4 \times 300}{5} = \frac{1200}{5}$

$= 240$

$$\begin{array}{r} 240 \\ 5\overline{)\,1200} \\ -10\downarrow \\ \hline 20 \\ -20\downarrow \\ \hline 00 \end{array}$$

d. $\frac{8}{9} \times 3\frac{4}{10}\ \text{kg} = \frac{8}{9} \times \frac{(10 \times 3 + 4)}{10} = \frac{8}{9} \times \left(\frac{34}{10}\right)$

$= \left(\frac{34 \times 8}{9 \times 10}\right) = \frac{272}{90}$

Divide numerator and denominator by their HCF which is 2.

$\frac{272 \div 2}{90 \div 2} = \frac{136}{45} = 3\frac{1}{45}\ \text{kg}$

e. $\frac{2}{5} \times \frac{1}{2} = \frac{2}{5 \times 2} = \frac{2}{10}$

Divide numerator and denominator by their HCF which is 2.

$\frac{2}{10} = \frac{2 \div 2}{10 \div 2} = \frac{1}{5}$

f. $\frac{6}{7} \times ₹\ 28 = ₹\ \frac{6 \times 28}{7}$

$= ₹\ \frac{168}{7} = ₹\ 24$

$$\begin{array}{r} 24 \\ 7\overline{)\,168} \\ -14\downarrow \\ \hline 28 \\ -28 \\ \hline 0 \end{array}$$

4. Fill in the blanks :

a. $\frac{11}{17} \times 1 = \frac{11}{17}$

b. $\frac{8}{9} \times \frac{1}{2} = \frac{1}{2} \times \frac{8}{9} = \frac{8}{18}$

c. $\frac{8}{15} \times 0 = 0$

d. $\frac{9}{13} \times 1 = \frac{9}{13}$

e. $0 \times \frac{7}{17} = 0$

f. $\left(\frac{2}{3} \times \frac{4}{5}\right) \times \frac{1}{4} = \frac{2}{3} \times \left(\frac{4}{5} \times \frac{1}{4}\right)$

Exercise-3.9

1. Find the reciprocal of each of the following :

a. Reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$.

b. Reciprocal of $\frac{4}{7}$ is $\frac{7}{4}$.

c. Reciprocal of 5 is $\frac{1}{5}$.

d. Reciprocal of $1\frac{2}{9} = \frac{(1 \times 9) + 2}{9} = \frac{11}{9} = \frac{9}{11}$

e. Reciprocal of $\frac{25}{7}$ is $\frac{7}{25}$.

f. $2\frac{5}{16} = \frac{(2 \times 16) + 5}{16} = \frac{32 + 5}{16} = \frac{37}{16}$

Reciprocal of $\frac{37}{16}$ is $\frac{16}{37}$.

2. Divide the following :

a. $\frac{3}{5} \div 3 = \frac{3}{5} \times \frac{1}{3} = \frac{3 \times 1}{5 \times 3} = \frac{3}{15}$

Divide numerator and denominator by their HCF which is 3.

$\frac{3}{15} = \frac{3 \div 3}{15 \div 3} = \frac{1}{5}$

b. $\frac{3}{2} \div 6$

$\frac{3}{2} \times \frac{1}{6} = \frac{3 \times 1}{2 \times 6} = \frac{3}{12}$

Divide numerator and denominator by their HCF which is 3.

$\frac{3 \div 3}{12 \div 3} = \frac{1}{4}$

c. $8\frac{1}{2} = \frac{(8 \times 2) + 1}{2} = \frac{16 + 1}{2} = \frac{17}{2}$

$8\frac{1}{2} \div 2 = \frac{17}{2} \div 2 = \frac{17}{2} \times \frac{1}{2} = \frac{17}{4} = 4\frac{1}{4}$

d. $\frac{5}{12} \div \frac{3}{4} = \frac{5}{12} \times \frac{4}{3} = \frac{5 \times 4}{12 \times 3} = \frac{20}{36}$

Divide numerator and denominator by their HCF which is 4.

$\frac{20 \div 4}{36 \div 4} = \frac{5}{9}$

e. $2\frac{1}{5}$ by $\frac{5}{8}$

$2\frac{1}{5} = \frac{(2 \times 5) + 1}{5} = \frac{10 + 1}{5} = \frac{11}{5}$

$\frac{11}{5} \div \frac{5}{8} = \frac{11}{5} \times \frac{8}{5} = \frac{11 \times 8}{5 \times 5} = \frac{88}{25} = 3\frac{13}{25}$

f. $11\frac{1}{4} \div \frac{10}{9}$

$11\frac{1}{4} = \frac{(11 \times 4) + 1}{4} = \frac{44 + 1}{4} = \frac{45}{4}$

$\frac{45}{4} \div \frac{10}{9} = \frac{45}{4} \times \frac{9}{10} = \frac{45 \times 9}{4 \times 10} = \frac{405}{40}$

Divide numerator and denominator by their HCF which is 5.

$\frac{405 \div 5}{40 \div 5} = \frac{81}{8}$

3. Divide the following :

a. $\frac{2}{5} \div \frac{15}{7}$

$\frac{2}{5} \times \frac{7}{15} = \frac{2 \times 7}{5 \times 15} = \frac{14}{75}$

b. $\frac{5}{6} \div 10$

$\frac{5}{6} \times \frac{1}{10} = \frac{5}{6 \times 10} = \frac{5}{60}$

Divide numerator and denominator by 5.

$\frac{5 \div 5}{60 \div 5} = \frac{1}{12}$

c. $\frac{7}{8} \div \frac{1}{6}$

$\frac{7}{8} \times 6 = \frac{7 \times 6}{8} = \frac{42}{8}$

Divide numerator and denominator by 2.

$\frac{42 \div 2}{8 \div 2} = \frac{21}{4}$

d. $9\frac{1}{3} \div 1\frac{3}{5}$

$9\frac{1}{3} = \frac{((9 \times 3) + 1)}{3} = \frac{(27 + 1)}{3} = \frac{28}{3}$

$$1\frac{3}{5} = \frac{((1 \times 5) + 3)}{5} = \frac{5+3}{5} = \frac{8}{5}$$

$$9\frac{1}{3} \div 1\frac{3}{5} = \frac{28}{3} \div \frac{8}{5} = \frac{28}{3} \times \frac{5}{8} = \frac{140}{24}$$

Divide numerator and denominator by their HCF which is 4.

$$\frac{140 \div 4}{24 \div 4} = \frac{35}{6}$$

e. $4\frac{1}{3} \div 12\frac{2}{3}$

$$4\frac{1}{3} = \frac{(4 \times 3) + 1}{3} = \frac{12+1}{3} = \frac{13}{3}$$

$$12\frac{2}{3} = \frac{(12 \times 3) + 2}{3} = \frac{(36+2)}{3} = \frac{38}{3}$$

$$4\frac{1}{3} \div 12\frac{2}{3} = \frac{13}{3} \div \frac{38}{3} = \frac{13}{3} \times \frac{3}{38} = \frac{13}{38}$$

f. $10\frac{1}{2} \div 1\frac{13}{22}$

$$10\frac{1}{2} = \frac{(10 \times 2) + 1}{2} = \frac{(20+1)}{2} = \frac{21}{2}$$

$$1\frac{13}{22} = \frac{(1 \times 22) + 13}{22} = \frac{22+13}{22} = \frac{35}{22}$$

$$\frac{21}{2} \div \frac{35}{2} = \frac{21}{2} \times \frac{22}{35} = \frac{462}{70}$$

Divide numerator and denominator by their HCF which is 14.

$$\frac{462 \div 14}{70 \div 14} = \frac{33}{5} \text{ or } 6\frac{3}{5}$$

Exercise-3.10

1. Cost of $2\frac{7}{9}$ kg of mangoes = ₹ 400

Cost of $\frac{25}{9}$ kg of mangoes = ₹ 400

Cost of 1 kg mangoes $= 400 \div \frac{25}{9}$

$$= 400 \times \frac{9}{25}$$

$$= \frac{3600}{25} = 144$$

```
      144
25 ) 3600
     -25
     ---
      110
     -100
     ----
      100
     -100
     ----
        0
```

$\therefore$ Cost of 1 kg mangoes = ₹ 144

2. Cost of 1 table $= ₹\ 50\frac{3}{20} = \frac{(50 \times 20) + 3}{20} = \frac{1000 + 3}{20} = \frac{1003}{20}$

Cost of 100 tables $= ₹\ \frac{1003}{20} \times 100 = ₹\ \frac{100300}{20}$

$= ₹\ 5015$

$$
\begin{array}{r}
5015 \\
20\overline{)\,100300} \\
-100 \\
\hline
030 \\
-20 \\
\hline
100 \\
-100 \\
\hline
0
\end{array}
$$

3. Length of wire $= 12\frac{1}{2}\text{ m} = \frac{(12 \times 2) + 1}{2} = \frac{25}{2}\text{ m}$

No. of pieces $= 10$

Length of each piece $= \frac{25}{2} \div 10 = \frac{25}{2 \times 10} = \frac{25}{20} = 1.25\text{ m}$

$= \frac{5}{4} = 1\frac{1}{4}$ metres

$$
\begin{array}{r}
1.25 \\
20\overline{)\,25} \\
-20 \\
\hline
50 \\
-40 \\
\hline
100
\end{array}
$$

4. Length of piece of cloth $= \frac{3}{4}\text{ m}$

No. of pieces of clothes $= 10$

Total length of 10 pieces of cloth $= \frac{3}{4} \times 10 = \frac{30}{4} = \frac{15}{2}$

$= 7\frac{1}{2}\text{ m}$

5. Total piece of cake Meenakshi had $= \frac{4}{5}$

Portion of cake she ate $= \frac{1}{2}$

Part of whole cake she have eaten $= \frac{4}{5} \div 2 = \frac{4}{5} \times \frac{1}{2} = \frac{2}{5}$

6. Distance covered by train in 1 hour = 320 km

Distance covered by train in $1\frac{1}{4}$ hours $= \left(\frac{5}{4}\text{ hours}\right)$

$= 320 \times \frac{5}{4} = \frac{320 \times 5}{4} = \frac{1600}{4} = 400\text{ km}$

7. Time taken by Reena to paint a table $= \frac{1}{4}$ hours

Time taken by Reena to paint 24 tables $= \frac{1}{4} \times 24 = 6$ hours

8. Money received by Rahul from his mother = ₹ 180

Money spent in purchasing a dress $= \frac{2}{9} \times 180 = 2 \times 20 =$ ₹ 40

Money left with Rahul = ₹ 180 – ₹ 40 = ₹ 140

9. Distance covered by aeroplane in $2\frac{1}{5}$ hours $\left(\frac{11}{5} \text{ hours}\right) = 1568$

Distance covered by aeroplane in 1 hour $= 1568 \div \left(\frac{11}{5}\right)$

$$= \frac{1568 \times 5}{11} = \frac{7840}{11} = 712\frac{8}{11} \text{ km}$$

$$\begin{array}{r} 712 \\ 11\overline{)7840} \\ -77\downarrow \\ \hline 14 \\ -11\downarrow \\ \hline 30 \\ -22 \\ \hline 8 \end{array}$$

10. Product of two numbers = 48

One number $= 4\frac{5}{9} = \frac{41}{9}$

Other number $= 48 \div \frac{41}{9} = \frac{48 \times 9}{41} = \frac{432}{41} = 63\frac{91}{41}$

$$\begin{array}{r} 91 \\ 41\overline{)432} \\ -369 \\ \hline 63 \\ -41 \\ \hline 22 \end{array}$$

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) **2.** (a) **3.** (c) **4.** (c) **5.** (c) **6.** (a)

Chapter 4 : Roman Numerals

1. Write the Roman numerals for the following :

a. 9 = IX	b. 45 = XLV	c. 20 = XX
d. 31 = XXXI	e. 11 = XI	f. 71 = LXXI
g. 40 = XL	h. 37 = XXXVII	i. 86 = LXXXV
j. 92 = XCII	k. 154 = CLIV	l. 560 = DLX
m. 243 = CCXLII	n. 434 = CDXXXIV	o. 970 = CMLXX
p. 220 = CCXX	q. 456 = CDLVI	r. 347 = CCCXLVII

2. Write the Hindu-Arabic numerals for the following :

a. VI = 6	b. XXII = 22	c. XL = 40
d. LXXVI = 76	e. XCV = 95	f. XIV = 14
g. XXVII = 27	h. XLIX = 49	i. LXII = 62
j. LXXV = 75	k. DXL = 540	l. CCXXVII = 227
m. MDCCLXXII = 1772	n. DCCIV = 704	o. DLXI = 561
p. MMCCLXIII = 2263	q. MMMXV = 3015	r. CMXIX = 919

3. Fill in the blanks with '<', '=' or '>' sign in the following :

a. LX > XL	b. XC < C	c. CDVI < CMVI
d. 125 = CXXV	e. 204 < CCCIV	f. XXXVIII < 83
g. XX + XXX = L	h. MMC÷DCC= III	i. CD – C > LX
j. LXX – LX < XI		

4. Fill in the blanks with the correct number :

a. XL + III = XLIII	b. L + VIII = LVIII	c. CCC – LXX = CCXXX
d. DCV – XC = DXV	e. XXX ÷ XXX = 1	f. M ÷ C = X
g. VIII × VII = IVI	h. C ÷ II = L	i. DCCCXC ÷ X=XXXXIX

5. Arrange the following in ascending order :

a. Ascending order is given by XVII < XLII < LIX < LX < LXXV < XCIX
b. Ascending order is given by LIV < CL < DX < MCD
c. Ascending order is given by VIII < XIX < XXIX < XXXIX < XLIII
d. Ascending order is given by LXV < LXXXIV < CX < CCXIX < CCCXVIII
e. Ascending order is given by V < X < XV < XXI < XL < XC < C
f. Ascending order is given by XXIV < XXVI < XXXII < LXV < LXXXI < XCV

6. Arrange the following in descending order :

a. Descending order is given by XCV > LXXV > LXV > LV > XLV > XXV
b. Descending order is given by MLIX > DCXX > CCXLV > CIX > LXXIV
c. Descending order is given by DCCCXVIII > CC > LXXXVI > XL > XXXVIII
d. Descending order is given by DDCIV > DCII > CCCXXVIII > CCXXVIII > XLIX
e. Descending order is given by XCII > LXXXII > XLIII > XIX > IX
f. Descending order is given by XCIX > LXVI > LIV > XLIX > XXX > XVI
g. Descending order is given by XCV > LXXVI > LXV > LV > XLV > XXV

7. Fill in the blanks '<', '=' or '<' :

a. XX + XXX = L	b. XXIV + XXX < 57	c. XXXIII ÷ XI = III
d. L + L = C	e. LXX LX < XII	f. LXII XXVI > XXVI
g. XLIII – XL = III	h. C ÷ II < LX	

8. Fill in the blanks with the correct number in Roman notation :

a. XX + III = XXIII b. XL + III = XLIII c. L + VIII = LVIII
d. XXII – XX = II e. LXX – L = XX f. LVIII – L = VIII
g. XXX ÷ XXX = I h. VIII × VII = LVI i. L × II = C
j. LXXXI ÷ IX = IX k. LXIV – IV = LX l. LX – XL = XX
m. LXXXVIII + XI = XCIX n. XLII + XIII = L o. C ÷ II = L

9. Which numeral is correct in each of the following?

a. LL, XX ✓ b. VV, II ✓ c. XXX, VVV ✓
d. XC, XXXX ✓ e. VL, LV ✓ f. XXC, XCV ✓
g. XLL, XCVII ✓ h. LXVI, XXVV ✓ i. XIX, XXXX ✓

NCERT Corner

1. Hindu Arabic 15
Devanagri १५
Roman XV

2. Hindu 19
Devanagri १९
Roman XIX

3. There are total 250 books.
Roman : CCL

4. Do it yourself

Exercise-4.2

1. Write the Hindu-Arabic numerals for the following :

a. MCMXLI 1941 b. DLXXIX 579 c. MCDXX 1420
d. MCM 1900 e. CXCIX 199 f. MMCDX 2410

2. Write the Roman numerals for the following :

a. 2012 MMXII b. 1415 MCDXV c. 3005 MMMV
d. 1971 MCMLXXI e. 1608 MDCVIII f. 2006 MMVI

3. Cross out the wrongly written Roman numerals :

a. VVV ✓ b. XI ✓ c. LLIV ✗
d. XM ✓ e. CCCL f. DDD ✗

4. Fill in the blanks using Roman numerals :

Do it yourself

5. Match the following Roman numerals with the Hindu-Arabic numerals :

a. XXXIV — iv. 34
b. DCCLXVIII — vii. 768
c. CIX — viii. 109
d. CCCL — ix. 350
e. MCCL — ii. 1250
f. CDXLIX — x. 449
g. MMCCCXXII — v. 2322
h. CMLXXVIII — vi. 978
i. MCCCXLIV — i. 1344
j. DCXLII — iii. 642

Mental Maths

XL – VI = XXXIV

Multiple Choice Questions

Tick (✓) the correct choice :

1. (b) 2. (c) 3. (c) 4. (b) 5. (a) 6. (b) 7. (a) 8. (b)

Mental Maths

Write the largest Roman numeral you can make using the given number of add lines. Remember, you can make use of any of the symbols I, V, X, L or M.

||	L
||||	M
|||||||	MLI
|||	LI
|||||	MI
||||||||	MM

Chapter 5 : Addition and Subtraction

Exercise-5.1

1. Fill in the blanks :

a. 75,638 + 0 = 75638

b. 99,999 + 1 = 100000

c. 1,89,439 + 2,52,715 = 262715 + 1,89,439

d. 0 + 975631 = 975,631

e. 121541 + (70000 + 89604) = (89604 + 121541) + 70000

f. (40,560 +750) + 391 = 40560 + (750 + 391)

2. Verify by adding :

a. 68275 + 139430

	L	TTh	Th	H	T	O
	1	1		1		
		6	8	2	7	5
+	1	3	9	4	3	0
	2	0	7	7	0	5

	L	TTh	Th	H	T	O
	1	1		1		
	1	3	9	4	3	0
+		6	8	2	7	5
	2	1	7	7	0	5

So, 68275 + 139430 = 139420 + 68275

b. 231610 + 508720

	L	TTh	Th	H	T	O
		1	1			
	2	3	1	6	1	0
+	5	0	8	7	2	0
	7	4	0	3	3	0

	L	TTh	Th	H	T	O
		1	1			
	5	0	8	7	2	0
+	2	3	1	6	1	0
	7	4	0	3	3	0

So, 231610 + 508720 = 508720 + 231610. Hence, verified.

c. (30451608 + 29143175) + 8975650

	C	TL	L	TTh	Th	H	T	O
							1	
	3	0	4	5	1	6	0	8
+	2	9	1	4	3	1	7	5
	5	9	5	9	4	7	8	3

	C	TL	L	TTh	Th	H	T	O
	1	1	1	1	1	1		
	5	9	5	9	4	7	8	3
+		8	9	7	5	6	5	0
	6	8	5	7	0	4	3	3

	C	TL	L	TTh	Th	H	T	O
	1	1	1			1		
	2	9	1	4	3	1	7	5
+		8	9	7	5	6	5	0
	3	8	1	1	8	8	2	5

	C	TL	L	TTh	Th	H	T	O
			1	1	1		1	
	3	8	1	1	8	8	2	5
+	3	0	4	5	1	6	0	8
	6	8	5	7	0	4	3	3

Hence, verified.

d. (7134291 + 1529057) + 927750

	TL	L	TTh	Th	H	T	O
			1		1		
	7	1	3	4	2	9	1
+	1	5	2	9	0	5	7
	8	6	6	3	3	4	8

	TL	L	TTh	Th	H	T	O
	1		1	1			
	8	6	6	3	3	4	8
+		9	2	7	7	5	0
	9	5	9	1	0	9	8

So, (7134291 + 1529057) + 927750 = 9591098

(7134291) + (1529057 + 927750)

	TL	L	TTh	Th	H	T	O
	1		1		1		
	1	5	2	9	0	5	7
+		9	2	7	7	5	0
	2	4	5	6	8	0	7

	TL	L	TTh	Th	H	T	O
			1	1			
	2	4	5	6	8	0	7
+	7	1	3	4	2	9	1
	9	5	9	1	0	9	8

So, (7134291 + 1529057) + 927750 = 7134291 + (1529057 + 927750)

NCERT Corner

Think what will happen to the sums if we interchange 2 and 5? Try interchanging other pairs of numbers and find the one that will make the sums equal.

a.

	1	3
	2	4
	7	5
+	9	+ 9
	19	21

b.

	5	9
	7	11
	12	13
+	15	+ 14
	39	47

c.

	11	13
	15	17
	19	21
+	23	+ 25
	68	76

d.

	77	81
	78	82
	79	83
+	80	+ 84
	314	330

Exercise-5.2

1. Add the following :

a.

	TL	L	TTh	Th	H	T	O
	1	2	4	5	6	9	4
+	4	3	2	1	2	0	3
	5	5	6	6	8	9	7

b.

	TL	L	TTh	Th	H	T	O
	1	1	1		1	1	
	3	7	6	5	4	8	4
+	3	8	7	8	4	6	7
	7	6	4	3	9	5	1

c.

	C	TL	L	TTh	Th	H	T	O
	1		1	1	1	1	1	
	1	8	4	1	6	5	6	1
+	3	2	3	8	4	4	3	9
	5	0	8	0	1	0	0	0

d.

	C	TL	L	TTh	Th	H	T	O
	1				1			
	2	6	5	8	4	3	1	3
+	3	8	4	1	2	7	8	3
	6	4	9	9	7	0	9	6

e.

	TL	L	TTh	Th	H	T	O
	1			1	2		
	9	4	8	4	6	8	4
	2	3	0	0	0	6	1
+	2	3	1	4	7	8	4
1	4	0	9	9	5	2	9

f.

	C	TL	L	TTh	Th	H	T	O
	1	1	1	1	1	1	1	
	6	1	4	1	2	3	4	5
	2	8	4	1	7	8	4	3
+		7	8	1	6	5	7	1
	9	7	6	4	6	7	6	3

g.

	TL	L	TTh	Th	H	T	O
	2	1	2	3	4	5	8
+	9	7	3	5	4	2	1
1	1	8	5	8	8	7	9

h.

	L	TTh	Th	H	T	O
			1		1	
	3	4	3	6	7	8
+	5	3	0	4	0	7
	8	7	4	0	8	5

i.

	L	TTh	Th	H	T	O
	2	1	1	1	1	
	8	9	7	8	2	0
+	4	6	2	2	8	9
+	5	7	6	8	5	7
1	9	3	6	9	6	6

j.

	L	TTh	Th	H	T	O
			1	1	1	
	7	0	3	6	8	9
+	7	0	3	7	3	1
+	2	3	1	5	2	6
1	6	3	8	9	4	6

k.

	L	TTh	Th	H	T	O
	1	2	2	2	2	
	6	1	5	4	3	2
+	5	7	4	3	7	5
+	2	0	4	6	0	5
+	6	3	9	8	8	9
2	0	3	4	3	0	1

l.

	L	TTh	Th	H	T	O
	2		1	1		
	6	8	4	8	7	1
+	8	9	4	0	2	0
+	5	5	0	3	5	0
+	4	3	0	1	5	6
2	5	5	9	3	9	7

2. Arrange the following in columns and add :

a. 86,84,696 + 6,69,414

TL	L	TTh	Th	H	T	O
1	1	1	1	1	1	
8	6	8	4	6	9	6
+	6	6	9	4	1	4
9	3	5	4	1	1	0

Hence, 8684696 + 669414 = 9,354,110

b. 5,99,565 + 8,86,605

	L	TTh	Th	H	T	O
	1	1	1		1	
	5	9	9	5	6	5
+	8	8	6	6	0	5
1	4	8	6	1	7	0

Hence, 599565 + 886605 = 1486170

c. 73,73,892 + 9,60,612

	TL	L	TTh	Th	H	T	O
	1	1		1	1		
	7	3	7	3	8	9	2
+		9	6	0	6	1	2
	8	3	3	4	5	0	4

Hence, 7373892 + 960612 = 8334504

d. 89,68,416 + 8,92,314 + 3,15,26,120

	C	TL	L	TTh	Th	H	T	O
	1	1	1	1			1	
		8	9	6	8	4	1	6
			8	9	2	3	1	4
+	3	1	5	2	6	1	2	0
	4	1	3	8	6	8	5	0

Hence, 89,68,416 + 8,92,314 + 3,15,26,120 = 41386850

e. 563456 + 765765

	L	TTh	Th	H	T	O
	1		1	1	1	
	5	6	3	4	5	6
+	7	6	5	7	6	5
1	3	2	9	2	2	1

Hence, 563456 + 765765 = 1329221

f. 8978957 + 5453215

	TL	L	TTh	Th	H	T	O
	1	1	1	1		1	
	8	9	7	8	9	5	7
+	5	4	5	3	2	1	5
1	4	4	3	2	1	7	2

Hence, 8978957 + 5453215 = 14432172

g. 452334 + 5439254 + 7769943

	TL	L	TTh	Th	H	T	O
	1	1	1	1	1	1	
		4	5	2	3	3	4
	5	4	3	9	2	5	4
+	7	7	6	9	9	3	4
1	3	6	6	1	5	3	1

Hence, 45234 + 5439254 + 7769943 = 13661531

h. 339102, 1469645, 5567890 and 6565656

	TL	L	TTh	Th	H	T	O
	1	1	1	1	1	1	
		3	3	9	1	0	2
	1	4	6	9	6	4	5
+	6	5	6	5	6	5	6
	8	3	7	4	4	0	3

So, 339102 + 1469645 + 6565656 = 8374403

	TL	L	TTh	Th	H	T	O
		1	1	1			
	8	3	7	4	4	0	3
+	5	5	6	7	8	9	0
1	3	9	4	2	2	9	3

Thus, 339102 + 1469645 + 5567890 + 6565656 = 13942293

3. Fill the missing numbers in the boxes :

a.

L	TTh	Th	H	T	O
	9	8	6	5	7
+	3	8	7	8	9
1	3	7	4	5	6

b.

C	TL	L	TTh	Th	H	T	O
	7	4	8	2	6	8	9
+	8	3	1	7	8	8	3
1	5	8	0	0	5	7	2

c.

C	TL	L	TTh	Th	H	T	O
		9	1	3	1	7	5
+		4	1	5	5	6	3
+		1	2	8	3	6	9
	1	4	4	7	1	0	7

d.

L	TTh	Th	H	T	O
		1	1	1	
	4	1	7	8	7
+	1	7	4	3	2
+	2	5	3	8	9
	8	4	6	0	8

e.

	C	TL	L	TTh	Th	H	T	O
			1	1	1	1		
	2	6	5	8	4	5	5	0
+		2	0	5	6	7	8	9
	2	8	6	4	1	3	3	9

f.

	TL	L	TTh	Th	H	T	O
		1	1	1	1		
	4	1	7	8	7	4	5
+	1	7	4	3	2	3	4
+	2	5	3	8	9	6	6
	8	4	6	0	9	4	5

g.

	L	TTh	Th	H	T	O
	1		1	1		
	5	5	0	3	7	1
	6	8	4	3	6	5
+	1	4	6	3	2	1
+		2	5	3	4	2
	1	3	9	6	3	9	9

h.

	C	TL	L	TTh	Th	H	T	O
			1		1	1		
	1	4	6	8	4	2	7	7
	1	2	2	9	4	0	2	0
+	2	7	0	0	0	3	5	0
+	3	9	4	1	0	1	5	6
	9	3	2	8	8	8	0	3

Exercise-5.3

1. Cost of house = ₹ 55,23,800
Cost of car = ₹ 8,49,350
Total money spent in all = ₹ 5523800 + ₹ 849350
= ₹ 6373150

	TL	L	TTh	Th	H	T	O
	1		1	1			
	5	5	2	3	8	0	0
+		8	4	9	3	5	0
	6	3	7	3	1	5	0

2. Number of soap cakes manufactured = 18,34,869
Number of cold-drink bottles manufactured = 2,52,86,147

	C	TL	L	TTh	Th	H	T	O
		1	1	1	1	1	1	
		1	8	3	4	8	6	9
+	2	5	2	8	6	1	4	7
	2	7	1	2	1	0	1	6

Total no. of items manufactured by company = 2,71,21,016

3. Population of country A = 14,65,86,300
Population of country B = 6,15,21,350
Total population of countries = 14,65,86,300 + 6,15,21,350

	TC	C	TL	L	TTh	Th	H	T	O
	1		1	1					
	1	4	6	5	8	6	3	0	0
+		6	1	5	2	1	3	5	0
	2	0	8	1	0	7	6	5	0

Total population of countries A and B is 20,81,07,650.

4. Number of males = 98,41,628
Number of females = 37,64,162
Total no. of eligible voters = 9841628 + 3764162
Total number of eligible voters in the state is 13605790.

	TL	L	TTh	Th	H	T	O
	1	1					
	9	8	4	1	6	2	8
+	3	7	6	4	1	6	2
	1	3	6	0	5	7	9	0

5. Money Mr. Kapoor had = ₹ 47,35,150
Money he deposited = ₹ 18,87,250
Money he have in his account
= ₹ 47,35,150 + ₹ 18,87,250
Money he have in his account now = ₹ 6622400

	TL	L	TTh	Th	H	T	O
	1	1	1		1	1	
	4	7	3	5	1	5	0
+	1	8	8	7	2	5	0
	6	6	2	2	4	0	0

6. No. of toys produced in January = 12,36,840
No. of toys produced in February = 25,25,800
No. of toys produced in March = 16,30,785
Total toys produced in three months
= 12,36,840 + 25,25,800 + 16,30,785
= 53,93,425

	TL	L	TTh	Th	H	T	O
	1		1	1	1		
	1	2	3	6	8	4	0
	2	5	2	5	8	0	0
+	1	6	3	0	7	8	5
	5	3	9	3	4	2	5

7. Cost of house = ₹ 34,25,800
Cost of car = ₹ 3,40,450
Total money he spent = ₹ 34,25,800 + ₹ 3,40,450
= ₹ 3766250

	TL	L	TTh	Th	H	T	O
	1		1	1	1		
	3	4	2	5	8	0	0
+		3	4	0	4	5	0
	3	7	6	6	2	5	0

8. Votes got by first candidate = 1,75,912
Votes got by second candidate = 2,65,313
Votes got by third candidate = 75,630
Total votes polled = 1,75,912 + 2,65,313 + 75,630
= 5,16,855

	TL	L	TTh	Th	H	T	O
		1	1	1			
		1	7	5	9	1	2
		2	6	5	3	1	3
+			7	5	6	3	0
		5	1	6	8	5	5

9. Population of country A = 1,35,80,607
Population of country B = 8,01,67,145
Population of country C = 6,25,65,680
Total population
= 1,35,80,607 + 8,01,67,145 + 6,25,65,680
= 156313432

	C	TL	L	TTh	Th	H	T	O
		1	1	1	1	1	1	
	1	3	5	8	0	6	0	7
	8	0	1	6	7	1	4	5
+	6	2	5	6	5	6	8	0
1	5	6	3	1	3	4	3	2

10. No. of books sold in first week = 4,26,212
No. of books sold in second week = 85,32,154
Total books sold at end of two week = 4,26,212 + 85,32,154 = 89,58,366

	TL	L	TTh	Th	H	T	O
		4	2	6	2	1	2
+	8	5	3	2	1	5	4
	8	9	5	8	3	6	6

11. Production of wheat in first state = 375708 kg
Production of wheat in second state = 38,96,501 kg
Production of wheat in third state = 28,79,597 kg

	TL	L	TTh	Th	H	T	O
	(2)	(2)	(2)	(1)	(1)	(1)	
		3	7	5	7	0	8
+	3	8	9	6	5	0	1
+	2	8	7	9	5	9	7
	7	1	5	1	8	0	6

Total production of wheat = 375708 + 38,96,501 + 28,79,597
= 71,51,806 kg

12. Cost of plot = ₹ 9,36,000
Cost of materials = ₹ 4,96,378
Money paid to labourers = ₹ 96,900
Total money spent = ₹ 936000 + ₹ 496378
+ ₹ 96900
= ₹ 1529278

	TL	L	TTh	Th	H	T	O
		(1)	(1)	(1)			
		9	3	6	0	0	0
		4	9	6	3	7	8
+			9	6	9	0	0
	1	5	2	9	2	7	8

13. No. of chocolates distributed = 6,32,34,101
No. of notebooks distributed = 4,10,25,107
No. of uniform sets distributed = 42,53,735
Total no. of items distributed
= 6,32,34,101 + 4,10,25,107 + 42,53,735

	C	TL	L	TTh	Th	H	T	O
			(1)	(1)			(1)	
	6	3	2	3	4	1	0	1
+	4	1	0	2	5	1	0	7
+			4	2	5	3	7	3	5
1	0	8	5	1	2	9	4	3

Therefore, the total no. of items distributed = 108512943

14. Worth of gold = ₹ 24,50,750
Worth of diamonds = ₹ 19,23,450
Worth of other previous stones = ₹ 13,49,648
Total number he spent
= ₹ 24,50,750 + ₹ 19,23,450 + ₹ 13,49,648
= ₹ 57,23,848

	TL	L	TTh	Th	H	T	O
	(1)	(1)	(1)	(1)	(1)		
	2	4	5	0	7	5	0
+	1	9	2	3	4	5	0
+	1	3	4	9	6	4	8
	5	7	2	3	8	4	8

15. Votes polled for 1st candidate = 87,24,738
Votes polled for 2nd candidate = 45,54,936
Votes polled for 3rd candidate = 9,37,569
No. of votes which are not polled = 3,45,607
Total votes = 87,24,738 + 45,54,936 + 9,37,569 + 3,45,607

	TL	L	TTh	Th	H	T	O
	(2)	(1)	(1)	(2)	(1)	(2)	
	8	7	2	4	7	3	8
	4	5	5	4	9	3	6
+		9	3	7	5	6	9
1	4	2	1	7	2	4	3

	TL	L	TTh	Th	H	T	O
			(1)			(1)	
	1	4	2	1	7	2	4	3
+			3	4	5	6	0	7
	1	4	5	6	2	8	5	0

Total votes = 14562850

16. Number of men = 5,79,20,408
Number of women = 4,56,72,082
Number of children = 3,99,00,785

	C	TL	L	TTh	Th	H	T	O
	(2)	(2)			(1)		(1)	
	5	7	9	2	0	4	0	0
	4	5	6	7	2	0	8	2
+	3	9	9	0	0	7	8	5
1	4	3	4	9	3	2	7	8

Total people lived in country

= 5,79,20,408 + 4,56,72,082 + 3,99,00,785

= 14,34,93,275

17. Bags of cement produced in 2008 = 68325689
Bags of cement produced in 2009 = 69765465
Bags of cement produced in 2010 = 69987656
Bags of cement produced in these 3 years
= 68325689 + 69765465 + 69987656
= 20,80,78,810

	C	TL	L	TTh	Th	H	T	O
	2	2	1	1	1	1	1	
	6	8	3	2	5	6	8	9
	6	9	7	6	5	4	6	5
+	6	9	9	8	7	6	5	6
2	0	8	0	7	8	8	1	0

18. Cloth produced in 2007 = 63875765 m
Cloth produced in 2008 = 66987564 m
Cloth produced in 2009 = 68767326 m
Total cloth produced in three years
= (63875765 + 66987564 + 68767326) m
= 19,96,30,655

	C	TL	L	TTh	Th	H	T	O
	1	1	2	2	1	1	1	
	6	3	8	7	5	7	6	5
	6	6	9	8	7	5	6	4
+	6	8	7	6	7	3	2	6
1	9	9	6	3	0	6	5	5

19. Number of men = 58764538
Number of women = 58679897
Number of children = 87643869
Total population of country
= 58764538 + 58679897 + 87643869
= 205088304

	C	TL	L	TTh	Th	H	T	O
	2	2	1	1	2	2	2	
	5	8	7	6	4	5	3	8
+	5	8	6	7	9	8	9	7
+	8	7	6	4	3	8	6	9
2	0	5	0	8	8	3	0	4

20. Largest 7-digit number = 9999999
Largest 8-digit number = 99999999
Sum of largest 7-digit no. and largest 8-digit no.
= 9999999 + 99999999
= 109999998

	C	TL	L	TTh	Th	H	T	O
	1	1	1	1	1	1	1	
	9	9	9	9	9	9	9	9
+		9	9	9	9	9	9	9
1	0	9	9	9	9	9	9	8

21. Cost of farmhouse = ₹ 487655367
Cost of factory = ₹ 187632896
Cost of shopping complex = ₹ 368767458
Money he spent = ₹ 487645367 +
₹ 187632896 + ₹ 368767458
Total money he spent = ₹ 1044045721

	CL	C	TL	L	TTh	Th	H	T	O
	2	2	2	1	1	1	2	2	
	4	8	7	6	4	5	3	6	7
	1	8	7	6	3	2	8	9	6
+	3	6	8	7	6	7	4	5	8
1	0	4	4	0	4	5	7	2	1

Exercise-5.4

1. Fill in the blanks :

a. 79,34,693 – 0 = 7934693

b. 6,66,66,666 – 1 = 66666665

c. 6,34,507 – 634507 = 0

d. 8,19,734 – 0 = 8,19,734

Exercise-5.5

1. Subtract the following :

a.

	TL	L	TTh	Th	H	T	O
		7	13	11	11	13	
	5	~~8~~	~~4~~	~~2~~	~~2~~	~~3~~	
–	1	3	8	9	9	8	
	4	4	5	2	2	5	

b.

	TL	L	TTh	Th	H	T	O
		5	7	9	14		
	8	~~6~~	~~8~~	~~0~~	~~4~~	7	7
–	5	3	8	9	9	4	1
	3	2	9	0	0	3	6

c.

	TL	L	TTh	Th	H	T	O
	6	16		6	14	9	14
	~~7~~	~~6~~	5	~~7~~	~~5~~	~~0~~	~~4~~
–	2	9	4	1	8	3	8
	4	7	1	5	6	6	6

d.

	TL	L	TTh	Th	H	T	O
			3	9	12		
	6	5	~~4~~	~~0~~	~~2~~	3	4
–	1	4	2	9	4	1	4
	5	1	2	0	8	2	0

e.

	C	TL	L	TTh	Th	H	T	O
	8	15	15	2	15	15	11	14
	~~9~~	~~6~~	5	~~1~~	~~6~~	~~6~~	~~2~~	~~4~~
–	3	9	9	0	6	6	4	7
	5	6	6	0	9	9	7	7

f.

	C	TL	L	TTh	Th	H	T	O
			7	13	11	13	13	
	9	7	~~8~~	4	~~2~~	~~4~~	~~3~~	6
–	6	5	1	4	3	8	4	2
	3	2	6	9	8	5	9	4

g.

	C	TL	L	TTh	Th	H	T	O
	3	15		13	10		5	16
	~~4~~	~~5~~	~~8~~	~~4~~	~~0~~	3	~~6~~	~~6~~
–	1	8	3	8	4	2	5	7
	2	7	4	5	0	1	0	9

h.

	TC	C	TL	L	TTh	Th	H	T	O
	4	9	9	12	9	10	3	15	16
	~~5~~	~~0~~	~~0~~	~~3~~	~~0~~	~~0~~	~~4~~	~~5~~	~~2~~
–	2	1	1	7	8	9	2	6	1
	2	8	8	5	1	1	1	9	1

i.

	C	TL	L	TTh	Th	H	T	O
	8	11	12	17			5	14
	~~9~~	~~2~~	~~3~~	~~7~~	4	5	~~6~~	~~4~~
–	1	2	3	8	1	4	2	5
	7	9	9	9	3	1	3	9

2. Find the difference of the following :

a. 91,41,662 – 88,99,412

	TL	L	TTh	Th	H	T	O
	8	10	13	11			
	~~9~~	~~1~~	~~1~~	~~4~~	6	6	2
–	8	8	9	9	4	1	2
	0	2	4	2	2	5	0

Thus, 91,41,662 – 88,99,412 = 2,42,250

b. 86,00,004 – 23,14,164

	TL	L	TTh	Th	H	T	O
	8	5	9	9	9	10	
	8	~~6~~	~~0~~	~~0~~	~~0~~	~~0~~	4
–	2	3	1	4	1	6	4
	6	2	8	5	8	4	0

Thus, 86,00,004 – 23,14,164 = 62,85,840

c. 9,70,00,654 – 7,38,41,642

	C	TL	L	TTh	Th	H	T	O
		6	9	9	10			
	9	~~7~~	~~0~~	~~0~~	~~0~~	6	5	4
–	7	8	8	4	1	6	4	2
	2	3	1	5	9	0	1	2

Thus, 9,70,00,654 – 7,38,41,642 = 2,31,59,012

d. 8,69,41,237 – 2,86,54,124

	C	TL	L	TTh	Th	H	T	O
	7	10	8	13	11			
	~~8~~	~~6~~	~~9~~	~~4~~	~~1~~	2	3	7
–	2	8	6	5	4	1	2	4
	5	8	2	8	7	1	1	3

Thus, 8,69,41,237 – 2,86,54,124 = 5,82,87,113

3. Minuend = 8,00,03,014
Subtrahend = 5,91,46,239
Difference = Minuend – Subtrahend
= 8,00,03,014 5,91,46,239
= 20856775

	C	TL	L	TTh	Th	H	T	O
	7	9	9	9	12	9	10	14
	~~8~~	~~0~~	~~0~~	~~0~~	~~3~~	~~0~~	~~1~~	~~4~~
–	5	9	1	4	6	2	3	9
	2	0	8	5	6	7	7	5

4. Minuend = 1,85,34,126
Subtrahend = 8,84,163
Difference = Minuend Subtrahend
= 18534126 884163
= 17649963

	C	TL	L	TTh	Th	H	T	O
		7	14	12	13	10	12	
	1	~~8~~	~~5~~	~~3~~	~~4~~	~~1~~	~~2~~	6
–			8	8	4	1	6	5
	1	7	6	4	9	9	6	3

5. Fill the missing numbers in boxes :

a.

	TL	L	TTh	Th	H	T	O
	9	9	9	4	9	8	6
–	4	3	4	1	6	4	4
	5	6	5	3	3	4	2

b.

	L	TTh	Th	H	T	O
	8	1	6	5	6	5
–	4	3	4	1	7	6
	3	8	2	3	8	9

c.

	C	TL	L	TTh	Th	H	T	O
	2	6	5	8	3	5	0	0
–		2	9	5	6	7	8	9
	2	3	6	2	6	7	1	1

d.

	TL	L	TTh	Th	H	T	O
	9	5	9	6	4	5	2
–	4	0	2	5	8	1	7
	5	5	7	0	6	3	5

e.

	TL	L	TTh	Th	H	T	O
	7	5	9	3	1	4	1
–		6	7	2	3	4	5
	6	9	2	0	8	9	6

f.

	TL	L	TTh	Th	H	T	O
	9	6	5	5	6	7	0
–	7	2	6	5	4	2	8
	2	3	9	0	2	4	2

NCERT Corner

1. Find the relationship between the numbers in the given statements and fill in the blanks appropriately.

a. If 46 + 21 = 67, then,
67 – 21= 46.
67 – 46= 21.

b. If 198 – 98 = 100, then,
100 + 98 = 198
198 – 100 = 98.

c. If 189 + 98 = 287, then,
287 – 98 = 189.
287 – 189 = 98.

d. If 872 – 672 = 200, then,
200 + 672 = 872.
872 – 200 = 672

2. In each of the following, write the subtraction and addition sentences that follow from the given sentence.

a. If 78 + 164 = 242, then,
242 – 78 = 164
242 – 164 = 78

b. If 462 +839 = 1301, then,
1301 – 839 = 462
1301 – 462 = 839

Exercise-5.6

1. Sum of two numbers = 68,47,911
One number = 36,27,819
Other number = 68,47,911 – 36,27,819
So, the other number is 3220092.

	TL	L	TTh	Th	H	T	O
					8	10	11
	6	8	4	7	~~9~~	~~1~~	~~1~~
–	3	6	2	7	8	1	9
	3	2	2	0	0	9	2

2. Cost of three storey building = ₹ 4,84,16,238
Amount of money man has = ₹ 1,57,68,416
Required money to buy three story building
= ₹ 4,84,16,238 – ₹ 1,57,68,416

	C	TL	L	TTh	Th	H	T	O
		7	13	10	15	12		
	4	~~8~~	~~4~~	~~1~~	~~6~~	~~2~~	3	8
–	1	5	7	6	8	4	1	6
	3	2	6	4	7	8	2	2

Thus, men requires ₹ 3,26,47,822 more money to buy the three storey building.

3. Cost of computer and printer = ₹ 74,984
Cost of computer = ₹ 35,978
Cost of printer = ₹ 74,984 – ₹ 35,978
= ₹ 39,006

	TTh	Th	H	T	O
	6	14		7	14
	~~7~~	~~4~~	9	~~8~~	~~4~~
–	3	5	9	7	8
	3	9	0	0	6

4. Amount of wheat produced = 4,63,841 kg
Amount of rice produced = 2,14,576 kg
Amount of load which can be carried in a train
= 2,02,025 kg
Total amount of cereals = 4,63,841 + 2,14,576
= 678417 kg
Cereals left from 2nd trip = 678417 – 2,02,025
= 4,76,392 kg

	L	TTh	Th	H	T	O
			1	1		
	4	6	~~3~~	~~8~~	4	1
+	2	1	4	5	7	6
	6	7	8	4	1	7

	L	TTh	Th	H	T	O
				3	11	
	6	7	8	~~4~~	~~1~~	7
–	2	0	2	0	2	5
	4	7	6	3	9	2

5. Number of voters = 76,56,322
Number of people who cast their voters = 62,93,488
Number of people who do not cast their votes
= 76,56,322 – 62,93,488
Number of people who do not cost their votes
= 13,62,894

	TL	L	TTh	Th	H	T	O
		5	15	5	12	12	12
	7	~~6~~	~~5~~	~~6~~	~~3~~	~~3~~	~~2~~
–	6	2	9	3	4	8	8
	1	3	6	2	8	4	4

6. 7,70,770 is more than 3,24,985 by
7,70,770 – 3,24,985 = 445785

	L	TTh	Th	H	T	O
		6	9	16	16	10
	7	~~7~~	~~0~~	~~7~~	~~7~~	~~0~~
–	3	2	4	9	8	5
	4	4	5	7	8	5

7. Population of state in 2001 was 87,75,988
Population increased upto 2,75,70,903
Increase in the population
= 2,75,70,903 – 87,75,988
Population increases by 18794915

	C	TL	L	TTh	Th	H	T	O
	1	16	19	16	9	18	9	13
	~~2~~	~~7~~	~~5~~	~~7~~	~~0~~	~~9~~	~~0~~	~~3~~
–		8	7	7	5	9	8	8
	1	8	7	9	4	9	1	5

8. Amount Shiv borrowed = ₹ 18,88,972
Amount he paid = ₹ 15,75,612
The amount which has to be paid yet
= ₹ 18,88,972 – ₹ 15,75,612
= ₹ 3,13,360

	TL	L	TTh	Th	H	T	O
	1	8	8	8	9	7	2
–	1	5	7	5	6	1	2
		3	1	3	3	6	0

9. Given number = 2,96,17,895
Sum = 5,17,63,509
Amount to be added
= 5,17,63,509 – 2,96,17,895
= 2,21,45,614

	C	TL	L	TTh	Th	H	T	O
	4	11		5	12	14	10	
	~~5~~	~~1~~	7	~~6~~	~~3~~	~~5~~	~~0~~	9
–	2	9	6	1	7	8	9	5
	2	2	1	4	5	6	1	4

10. First number = 4,36,18,805
Second number = 4,36,18,805 – 1,21,93,781
= 31425024

	C	TL	L	TTh	Th	H	T	O
			5	11		7	10	
	4	3	~~6~~	~~1~~	8	~~8~~	~~0~~	5
–	1	2	1	9	3	7	8	1
	3	1	4	2	5	0	2	4

Sum of two numbers = 43618805 + 31425024
= 75043829

	C	TL	L	TTh	Th	H	T	O
		1		1				
	4	3	6	1	8	8	0	5
+	3	1	4	2	5	0	2	4
	7	5	0	4	3	8	2	9

11. Population of country = 7,11,90,821
Number of people died = 43,70,090
Number of people fled to neighbouring country = 2,25,36,615
Number of people which were still in the country = 71190821 – (4370090 + 22536615)

	C	TL	L	TTh	Th	H	T	O
			1			7		
	2	2	~~5~~	3	6	~~6~~	1	5
+		4	3	7	0	0	9	0
	2	6	3	0	6	7	0	5

= 71190821 – 26906705
= 44284116

	C	TL	L	TTh	Th	H	T	O
					10		1	11
	7	1	1	9	~~0~~	8	~~2~~	~~1~~
–		2	6	9	0	6	7	0
	4	4	2	8	4	1	1	6

12. Number of children appeared in the BOARD exams last year = 3,58,162
The number of children appeared in the BOARD exams this year = 4,02,215
Number of children which appeared more in this year examination than in previous year examination= 402215 – 358162 = 44053

	L	TTh	Th	H	T	O
	3	9	12	1	11	
	~~4~~	~~0~~	~~2~~	~~2~~	~~1~~	5
–	3	5	8	1	6	2
	0	4	4	0	5	3

13. Population of city A = 32,46,015
Population of city B = 43,12,103
City B is more popular than city A by 1066088.

	TL	L	TTh	Th	H	T	O
		2	10	12	0	9	13
	4	~~3~~	~~1~~	~~2~~	~~1~~	~~0~~	~~3~~
–	3	2	4	6	0	1	5
	1	0	6	6	0	8	8

14. Production of bulbs in year 2007 = 23,18,720
Production of bulbs in year 2008 = 21,89,615
Production of bulbs in year 2007 is greater than in year 2008 by
= 23,18,720 – 21,89,615 = 1,29,105

	TL	L	TTh	Th	H	T	O
		2	10	18		1	10
	2	~~3~~	~~1~~	~~8~~	7	~~2~~	~~0~~
–	2	1	8	9	6	1	5
	0	1	2	9	1	0	5

15. Earnings of company = ₹ 8,12,75,450
Total expenditure = 6,80,92,375
Profit = Earning – Expenditure
= 8,12,75,450 – 6,80,92,375
Profit made by the company = 1,31,83,075

	C	TL	L	TTh	Th	H	T	O
	7	11	1	17		3	14	10
	~~8~~	~~1~~	~~2~~	~~7~~	5	~~4~~	~~5~~	~~0~~
–	6	8	0	9	2	3	7	5
	1	3	1	8	3	0	7	5

16. Total candidates appeared = 7,63,412
No. of candidates passed = 2,72,528
No. of candidates failed = 7,63,412 – 2,72,528
No. of candidates which were failed in examination = 4,90,884

	L	TTh	Th	H	T	O
	6	16	2	13	10	12
	~~7~~	~~6~~	~~3~~	4	~~1~~	~~2~~
–	2	7	2	5	2	8
	4	9	0	8	8	4

17. Number of men = 5,32,917
Number of women = 3,42,913
Number of children = 26,098
Total population of town
= 5,32,917 + 3,42,913 + 26,098 = 9,01,928

	L	TTh	Th	H	T	O
	1	1	1	1	1	
	5	3	2	9	1	7
	3	4	2	9	1	3
+	1	2	6	0	9	8
	9	0	1	9	2	8

18. Annual salary of Hari = ₹ 3,55,524
Total money he spend = ₹ 2,09,000
Money saved by Hari annually
= ₹ 3,55,524 – ₹ 2,09,000
= ₹ 1,46,524

	L	TTh	Th	H	T	O
		4	15			
	3	~~5~~	~~5~~	5	2	4
–	2	0	9	0	0	0
	1	4	6	5	2	4

19. Fill in the blanks from the table given above :

a. Annual stock of all the items together in the shop is
371942 + 274180 + 267893 + 179172 = 1093187

b. Difference in the annual stock of pencils and notebooks is
371942 – 274180 = 97762

c. Difference in the number of pencils and erasers is
371942 – 267893 = 104049

d. Notebook by 95008

20. Largest 7-digit number = 9999999
Smallest 9-digit number = 100000000
Difference between them
= 100000000 – 9999999
= 90000001

	CT	C	TL	L	TTh	Th	H	T	O
		9	9	9	9	9	9	9	10
	~~1~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~
		–	9	9	9	9	9	9	9
	9	0	0	0	0	0	0	0	1

21. Difference of 2 numbers = 208363456
Smaller number = 98989767
Larger number = 208363456 + 98989767
= 307353223
∴ Larger number = 30,73,53,223

	CT	C	TL	L	TTh	Th	H	T	O
	1	1	1	1	1	1	1	1	1
	2	0	8	3	6	3	4	5	6
+		9	8	9	8	9	7	6	7
	3	0	7	3	5	3	2	2	3

22. Difference of 2 numbers = 187632564
Larger number = 299000686
Larger number – Difference = Smaller number
= 299000686 – 187632564
= 111368122
Smaller no. is 11,13,68,122.

	CT	C	TL	L	TTh	Th	H	T	O
			8	9	9	10			
	2	9	~~9~~	~~0~~	~~0~~	~~0~~	6	8	6
–	1	8	7	6	3	2	5	6	4
	1	1	1	3	6	8	1	2	2

23. Sum of two numbers = 46320100
One number = 29764532
Other one = 46320100 – 29764532
= 16555568
Other number is 1,65,55,568.

	C	TL	L	TTh	Th	H	T	O
	3	15	12	11	9	10	9	10
	~~4~~	~~6~~	~~3~~	~~2~~	~~0~~	~~1~~	~~0~~	~~0~~
–	2	9	7	6	4	5	3	2
	1	6	5	5	5	5	6	8

24. Given number = 906110001
Other number = 906110001 – 76458643
= 82,96,51,358

	CT	C	TL	L	TTh	Th	H	T	O
	8	9	15	10	10	9	9	9	11
	~~9~~	~~0~~	~~6~~	~~1~~	~~1~~	~~0~~	~~0~~	~~0~~	~~1~~
–		7	6	4	5	8	6	4	3
	8	2	9	6	5	1	3	5	8

25.

	CT	C	TL	L	TTh	Th	H	T	O
		5	14	10	9	9	11	12	11
	~~7~~	~~6~~	~~4~~	~~8~~	~~0~~	~~0~~	~~2~~	~~3~~	~~1~~
		–	3	8	6	5	9	9	8	7
	7	2	6	1	4	0	2	4	4

∴ 764800231 exceed 38659987 by 726140244

26.

	C	TL	L	TTh	Th	H	T	O
					3	14		
	9	3	3	5	~~4~~	~~4~~	8	9
−	1	2	3	4	3	5	7	9
	8	1	0	1	0	9	1	0

∴ 12343579 is less than 93354489 by 81010910

27. 5436721 + 3104276 – 3814355

(5436721 + 3104276) – 3814355

= (8540997) – (3814355) = 4726642

	TL	L	TTh	Th	H	T	O
			1				
	5	4	~~3~~	6	7	2	1
+	3	1	0	4	2	7	6
	8	5	4	0	9	9	7

	TL	L	TTh	Th	H	T	O
	7	13	3	10			
	~~8~~	~~5~~	~~4~~	~~0~~	9	9	8
−	3	8	1	4	3	5	5
	4	7	2	6	6	4	3

28. 44023456 – 6756898 – 24365789

	C	LT	L	TTh	Th	H	T	O
	1	1	1	1	1	1	1	
	~~0~~	~~6~~	~~7~~	~~5~~	~~6~~	~~8~~	~~9~~	8
+	2	4	3	6	5	7	8	9
	3	1	1	2	2	6	8	7

	C	LT	L	TTh	Th	H	T	O
		3	10		2	13	14	16
	4	~~4~~	~~0~~	2	~~3~~	~~4~~	~~5~~	~~6~~
−	3	1	1	2	2	6	8	7
	1	2	9	0	0	7	6	9

So, 44023456 – 6756898 – 24365789 = 12900769

29. Price of new car = ₹ 653700

Price of used car = ₹ 197250

Difference in prices of two cars

= ₹ 653700 – ₹ 197250

= ₹ 456450

	L	TTh	Th	H	T	O
	5	14	13	6	10	
	~~6~~	~~5~~	~~3~~	~~7~~	~~0~~	0
−	1	9	7	2	5	0
	4	5	6	4	5	0

30. Number of people lived in State A = 2843152

No. of people which moves from State B to State A = 355475

No. of people which moved from State A to State C = 134523

Number of people live in State A = (2843152 + 355475) – 134523

= 3198627 – 134523

= 3064104

	TL	L	TTh	Th	H	T	O
	3	1	9	8	6	2	7
−		1	3	4	5	2	3
	3	0	6	4	1	0	4

	TL	L	TTh	Th	H	T	O
	1				1		
	~~2~~	8	4	3	~~1~~	5	2
+		3	5	5	4	7	5
	3	1	9	8	6	2	7

31 Population before 10 years = 187523896

Population after 10 years = 302300500

Increase in population =

302300500 – 187523896

= 114776604

	CT	C	TL	L	TTh	Th	H	T	O
	2	9	11	12	9	9	14	9	10
	~~3~~	~~0~~	~~2~~	~~3~~	~~0~~	~~0~~	~~5~~	~~0~~	~~0~~
−	1	8	7	5	2	3	8	9	6
	1	1	4	7	7	6	6	0	4

32. Votes got by winning candidate = 1263023
Votes got by his rival candidate = 659698
Candidates win that election by margin of 603325.

	TL	L	TTh	Th	H	T	O
	0	12	5	12	0	11	13
	~~1~~	~~2~~	~~6~~	~~3~~	~~0~~	~~2~~	~~3~~
–		6	5	9	6	9	8
		6	0	3	3	2	5

33. Total population of metro city = 19830345
Number of men = 9648745
Number of women = 8967452
No. of children = 19830345 – 9648745 – 8967452
= 19830345 – 18616197
= 1214148

	LT	L	TTh	Th	H	T	O
		7	10	10	2	13	15
	1	9	~~8~~	~~3~~	~~0~~	~~3~~	~~4~~	~~5~~
–	1	8	6	1	6	1	9	7
		1	2	1	4	1	4	8

	LT	L	TTh	Th	H	T	O
		1	1	1	1		
	9	6	4	8	7	4	5
+	8	9	6	7	4	5	2
	1	8	6	1	6	9	7

34. Number of jackets sold in 2018 = 267764
Number of jackets sold in 2019 = 30140605
No. of jackets that were sold more in 2019 than in 2018
= 30140605 – 267764 = 20872841

	C	LT	L	TTh	Th	H	T	O
	2	9	10	13	9	15	10	
	~~3~~	~~0~~	~~1~~	~~4~~	~~0~~	~~6~~	~~0~~	5
		–	2	6	7	7	6	4
	2	9	8	7	2	8	4	1

35. No. of washing machines produced in 2017 = 18674258
No. of washing machines produced in 2018 = 20001065
No. of washing machines produced more in 2018 than 2017
= 20001065 – 18674258 = 1326807

	C	LT	L	TTh	Th	H	T	O
	1	9	9	9	10	10	5	15
	~~2~~	~~0~~	~~0~~	~~0~~	~~1~~	~~0~~	~~6~~	5
–	1	8	6	7	4	2	5	8
	0	1	3	2	6	8	0	7

36. No. of candidates appeared = 16324030
No. of candidates who get selected = 987685
No. of candidates who did not get through
= 16324030 – 987685
= 15336345

	C	LT	L	TTh	Th	H	T	O
		5	12	11	13	9	12	10
1	~~6~~	~~3~~	~~2~~	~~4~~	~~0~~	~~3~~	~~0~~
–		9	8	7	6	8	5
1	5	3	3	6	3	4	5

Multiple Choice Questions

Tick (✓) the correct choice :

1. (c) 2. (a) 3. (b) 4. (c) 5. (b) 6. (c) 7. (b)

Text Exercise

1. To Test the memory and comprehension, let us do the following fill ups :

a. sum b. addend c. place value
d. difference e. subtrahend f. number g. successor
h. predecessor i. product j. multiplier
k. quotient l. zero.

2. Add the following :

a.

	TTh	Th	H	T	O
		1	1	1	
	3	4	8	7	6
+	2	3	4	6	5
	5	8	3	4	1

b.

	L	TTh	Th	H	T	O
	1	1	1	1	1	
	2	3	6	8	7	6
+	3	7	9	4	7	8
	6	1	6	3	5	4

c.

	L	TTh	Th	H	T	O
	1	1	1			
	9	7	5	8	2	4
+	8	6	4	3	6	3
1	8	4	0	1	8	7

3. Subtract the following :

a.

	TTh	Th	H	T	O
	7	16	11	3	13
	~~8~~	~~7~~	~~1~~	~~4~~	~~3~~
–	2	7	8	3	9
	5	9	3	0	4

b.

	L	TTh	Th	H	T	O
	8	17	15	13	9	10
	9	8	~~6~~	~~4~~	~~0~~	0
–		9	8	7	8	9
	8	8	7	6	1	1

c.

	L	TTh	Th	H	T	O
			7	13		
	5	7	~~8~~	~~3~~	9	6
–	4	3	2	7	8	4
	1	4	5	6	1	2

4. Fill in the blanks :

a. 546361 + 0 = 546361
b. 49639 + 1 = 49640
c. 49364 – 0 = 49364
d. 83648 – 1 = 83647
e. 49364 + 500 = 49864
f. 893364 + 4000 = 897364
g. 57369 – 4000 = 53369
h. 368 + 274 = 274 + 368

Chapter 6 : Multiplication and Division

Exercise-6.1

1. Fill in the blanks using the multiplications properties :

a. 93,597 × **0** = 0
b. 6,79,125 × **1** = 6,79,125
c. 25,798 × 69,437 = 69,437 × **25798**
d. 9,35,095 × 0 = **0**
e. 1 × 85,793 = **85793**
f. **8175** × 5595 = 5595 × 8175
g. 82 × (40 × 6) = (82 × 40) × **6** = 19680 × (82 × 6)
h. 286 × 1 = **286**
i. 425 × **1** = 425
j. 0 × 630 = **0**
k. 48 × 25 = 25 × **48**
l. (30 × 6) × 10 = 30 × (6 × **10**)
m. 1298 × **0** = 0

2. By using suitable grouping find the following products :

a. 2 × 5 × 16 = (2 × 5) × 16 = 10 × 16 = **160**
b. 5 × 3 × 2 = **30**
c. 4 × 25 × 36 = **3600**
d. 4 × 500 × 8 = **16000**
e. 2 × 50 × 97 = **9700**

3. Find the product by using distributive property :

a. 99 × (107) = 99 × (100 + 7) = 9900 + (99 × 7) = 9900 + 693 = 10593
b. 79 × 92 = 79 × (100 – 8) = (79 × 100) – (79 × 8) = 7900 – 632 = 7268
c. 46 × 139 = 46 × (100 + 39) = (46 × 100) + (46 × 39)
= 4600 + 1794 = 6394
d. 19 × 3065 = 19 × (3000 + 65) = (19 × 3000) + (19 × 65)
= 57000 + 1235 = 58235
e. 65 × 98 = 65 × (100 – 2) = (65 × 100) – (65 × 2)
= 6500 – 130 = 6370

f. $28 \times 878 = 28 \times (1000 - 122) = (28 \times 1000) - (28 \times 122)$
$= 28000 - 3416 = 24584$

Exercise-6.2

1. Fill in the blanks :

a. $68 \times \mathbf{100} = 6800$
b. $6935 \times 1000 = \mathbf{6935000}$
c. $286 \times \mathbf{10000} = 28,60,000$
d. $121 \times 1,00,000 = \mathbf{12100000}$
e. $9999 \times 10 = \mathbf{99990}$
f. $\mathbf{1000000} \times 89 = 8,90,00,000$
g. $92 \times 10 = \mathbf{920}$
h. $146 \times 20 = \mathbf{2920}$
i. $283 \times 400 = \mathbf{113200}$
j. $56 \times 1000 = \mathbf{56000}$
k. $25 \times 8000 = \mathbf{200000}$
l. $189 \times 3000 = \mathbf{567000}$

2. Multiply :

a. $178 \times 50 = \mathbf{8900}$

	H	T	O
	1	7	8
	×	5	0
	0	0	0
+	8	9	0 ×
	8	9	0 0

b. $2369 \times 60 = \mathbf{142140}$

	Th	H	T	O
	2	3	6	9
		×	6	0
	0	0	0	0
+	1	4	2	1 4 ×
	1	4	2	1 4 0

c. $861 \times 900 = \mathbf{774900}$

		H	T	O
		8	6	1
	×	9	0	0
		0	0	0
	0	0	0	×
+	7	7	4	9 × ×
	7	7	4	9 0 0

d. $13,169 \times 600 = \mathbf{7001400}$

	TTh	Th	H	T	O
	1	3	1	6	9
		×	6	0	0
	0	0	0	0	0
	0	0	0	0	×
+	7	9	0	1	4 × ×
	7	9	0	1	4 0 0

e. $7215 \times 5000 = \mathbf{36075000}$

		Th	H	T	O
		7	2	1	5
	×	5	0	0	0
		0	0	0	0
	0	0	0	0	×
	0	0	0	0	× ×
+	3	6	0	7	5 × × ×
	3	6	0	7	5 0 0 0

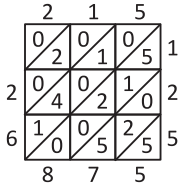
f. $8271 \times 3000 = \mathbf{29813000}$

		TTh	Th	H	T	O
			8	2	7	1
	×	3	0	0	0	
		0	0	0	0	
	0	0	0	0	×	
	0	0	0	0	× ×	
+	2	4	8	1	3 × × ×	
	2	4	8	1	3 0 0 0	

g. $20 \times \mathbf{20} = 400$
h. $521 \times \mathbf{100} = 5200$
i. $13 \times \mathbf{300} = 3900$
j. $425 \times \mathbf{1000} = 4,25,000$
k. $68 \times \mathbf{200} = 13,600$
l. $1598 \times \mathbf{1000} = 15,98,000$

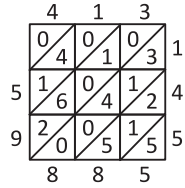
3. Multiply the following using lattice multiplication :

a. 215 × 125



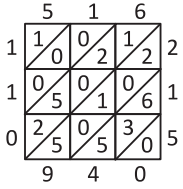
215 × 125 = 26875

b. 413 × 145



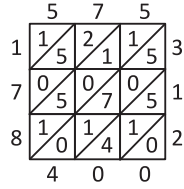
413 × 145 = 59885

c. 516 × 215



516 × 215 = 110940

d. 575 × 312



575 × 312 = 179400

NCERT Corner

Solve the following problems like this :

a. 78 × 4

×	70	8
4	280	32
	312	

b. 83 × 9

×	80	3
9	720	27
	747	

c. 67 × 28

×	20	8
60		
7		
	1680	196
	1876	

d. 53 × 37

×	30	7
50		
3		
	1850	111
	1961	

Exercise-6.3

1. Multiply :

a. 15675 × 923

	TTh	Th	H	T	O
		1	5	6	7	5
			×	9	2	3
		4	7	0	2	5
		3	1	3	5	0	×
+	1	4	1	0	7	5	×	×
	1	4	4	6	8	0	2	5

15675 × 923 = 14468625

b. 12376 × 476

	TTh	Th	H	T	O
		1	2	3	7	6
			×	4	7	6
		7	4	2	5	6
		8	6	6	3	2	×
+	4	9	5	0	4	×	×
	5	8	9	0	9	7	6

12376 × 476 = 5890976

c. 355321 × 243

		L	TTh	Th	H	T	O
		3	5	5	3	2	1
				×	2	4	3
		1	0	6	5	9	6	3
	1	4	2	1	2	8	4	×
+	7	1	0	6	4	2	×	×
	8	6	3	4	3	0	0	3

355321 × 243 = 86343003

d. 11267 × 243

		TTh	Th	H	T	O
		1	1	2	6	7
			×	2	4	3
		3	3	8	0	1
	4	5	0	6	8	×
+	2	2	5	3	4	×	×
	2	7	3	7	8	8	1

11267 × 243 = 2737881

e. 7304 × 125

		Th	H	T	O
		7	3	0	4
		×	1	2	5
		3	6	5	2	0
	1	4	6	0	8	×
+	7	3	0	4	×	×
	9	1	3	0	0	0

7304 × 125 = 913000

f. 2135 × 135

		Th	H	T	O
		2	1	3	5
		×	1	3	5
		1	0	6	7	5
		6	4	0	5	×
+	2	1	3	5	×	×
	2	8	8	2	2	5

2135 × 135 = 288225

g. 19434 × 1562

		TTh	Th	H	T	O
		1	9	4	3	4
		×	1	5	6	2
		3	8	8	6	8
	1	1	6	6	0	4	×
	9	7	1	7	0	×	×
+	1	9	4	3	4	×	×	×
	3	0	3	5	5	9	0	8

19434 × 1562 = 30355908

h. 10654 × 875

		TTh	Th	H	T	O
		1	0	6	5	4
			×	8	7	5
		5	3	2	7	0
	7	4	5	7	8	×
+	8	5	2	3	2	×	×
	9	3	2	2	2	5	0

10654 × 875 = 9322250

i. 9234 × 325

		Th	H	T	O
		9	2	3	4
		×	3	2	5
		4	6	1	7	0
	1	8	4	6	8	×
+	2	7	7	0	2	×	×
	3	0	0	1	0	5	0

9234 × 325 = 3001050

2. Find the product :

a. 55,555 × 626

	TTh	Th	H	T	O
	5	5	5	5	5
		×	6	2	6
	3	3	3	3	3	0
	1	1	1	1	1	0	×
+	3	3	3	3	3	0	×	×
	3	4	7	7	7	4	3	0

55,555 × 626 = 34777430

b. 60,121 × 585

	TTh	Th	H	T	O
	6	0	1	2	1
		×	5	8	5
	3	0	0	6	0	5
	4	8	0	9	6	8	×
+	3	0	0	6	0	5	×	×
	3	5	1	7	0	7	8	5

60,121 × 585 = 35170785

c. 18,357× 369

	TTh	Th	H	T	O
	1	8	3	5	7
		×	3	6	9
	1	6	5	2	1	3
	1	1	0	1	4	2	×
+	5	5	0	7	1	×	×
	6	7	7	3	7	3	3

18,357× 369 = 6773733

d. 4,70,896 × 813

		TTh	Th	H	T	O
	4	7	0	8	9	6
			×	8	1	3
	1	4	1	2	6	8	8
	4	7	0	8	9	6	×
+	3	7	6	7	1	6	8	×	×
	3	8	2	8	3	8	4	4	8

4,70,896 × 813 = 382838448

e. 7,64,897 × 252

	L	TTh	Th	H	T	O
	7	6	4	8	9	7
			×	2	5	2
	1	5	2	9	7	9	4
	3	8	2	4	4	8	5	×
+	1	5	2	9	7	9	4	×	×
	1	9	2	7	5	4	0	4	4

7,64,897 × 252 = 192754044

f. 3,85,462 × 518

	L	TTh	Th	H	T	O
	3	8	5	4	6	2
			×	5	1	8
	3	0	8	3	6	9	6
	3	8	5	4	6	2	×
+	1	9	2	7	3	1	0	×	×
	1	9	9	6	6	9	3	1	6

3,85,462 × 518 = 199669316

g. 35,639 × 428

	TTh	Th	H	T	O
	3	5	6	3	9
		×	4	2	8
	2	8	5	1	1	2
	7	1	2	7	8	×
+	1	4	2	5	5	6	×	×
	1	5	2	5	3	4	9	2

35,639 × 428 = 15253492

h. 1,24,597 × 96

	L	TTh	Th	H	T	O
	1	2	4	5	9	7
				×	9	6
	7	4	7	5	8	2
+	1	1	2	1	3	7	3	×
	1	1	9	6	1	6	3	1	2

1,24,597 × 96 = 11961312

3. Find the following products without actual multiplication :

a. 23,968 × 999

23,968 × (1000 – 1) = 23968000 – 23968

23968 × 999 = 23944032

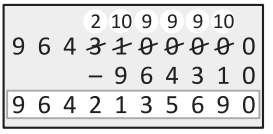
				7	9	9	10
2	3	9	6	~~8~~	~~0~~	~~0~~	~~0~~
			–	2	3	9	6	8
2	3	9	4	4	0	3	2

b. 9,64,310 × 9999

9,64,310 × (10000 − 1)

= 9643100000 − 9634310

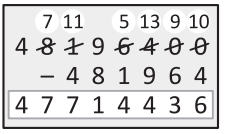
= 9642135690



c. 4,81,964 × 99

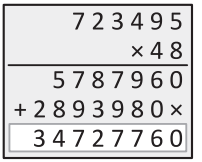
(481964) × (100 − 1) = 48196400 − 481964

= 47714436

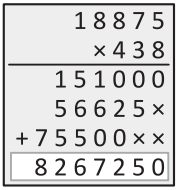


Exercise-6.4

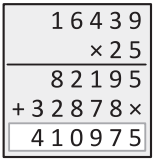
1. No. of apartments = 48
   Cost of each apartment = ₹ 7,23,495
   Total money earned by builder = ₹ 723,495 × 48
   By selling all the apartments in the block
   money earned by builder = ₹ 3,47,27,760



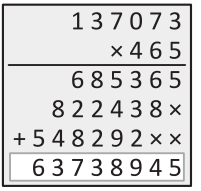
2. No. of students = 438
   Money paid by each student in each year = ₹ 18,875
   Money they pay altogether = 18875 × 438
   = ₹ 826750



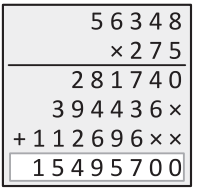
3. Money saves by Harsh every year = ₹ 16,439
   Money saved by Harsh in 25 years = 16439 × 25
   = ₹ 410975



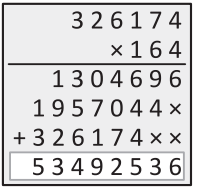
4. Total number of employees = 1,37,073
   Bonus given to each employee = ₹ 465
   Total bones amount = 137073 × 465
   Total bonus amount = ₹ 6,37,38,945



5. No. of members in club = 56,348
   Money contributed by each member = ₹ 275
   Total money club collected = 56348 × 275
   = ₹ 1,54,95,700



6. Number of copies printed by publisher = 3,26,174
   Cost of each book = ₹ 164
   Money earned by publisher = ₹ 164 × 326174



7. No. of workers = 150
Salary of each worker = ₹ 26850
Total amount paid by as salary by factory in 1 year = 26850 × 150 × 12
= 4027500 × 12
= 48330000

```
  26850
×   150
-------
  00000
 134250×
+26850××
-------
 4027500
```

```
  4027500
×      12
---------
  8055000
+4027500×
---------
 48330000
```

8. Weight of 1 book = 975 g
No. of boxes = 35
No. of books in each box = 33
Total no. of books = 35 × 33 = 1155
Total weight of 1155 books = 975 × 1155 = 1126125 g

```
   35
×  33
-----
  105
 105×
-----
 1155
```

```
   1155
×   975
--------
   5775
  8085×
 10395××
--------
 1126125
```

9. Number of teddy bears produced in a day = 893
Number of holidays = 15
Number of teddy bears produced in an year excluding holidays (365 – 15) = 350 × 893
= 312550

```
  350
× 893
-----
 1050
 3150×
+2800××
-------
 312550
```

Cost of 1 teddy bear = ₹ 30
Cost of 312550 teddy bears = ₹ 30 × 312550
= ₹ 9376500

```
  312550
×     30
--------
  000000
 937650×
+93765××
--------
 9376500
```

10. No. of toys produced daily = 2,35,790
No. of toys produced in 24 working days = 235790 × 24
= 5658960

```
  235790
×     24
--------
  943160
 471580×
+47158××
--------
 5658960
```

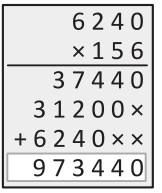
11. Smallest number formed by digits 6, 0, 7 is 607.
Greatest 5-digit number = 99999
Product of smallest no. formed using digits 6, 0, 7 and greatest 5-digit number = 99999 × 607
= ₹ 50699393

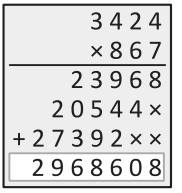
```
  99999
×   607
-------
 699993
 00000×
+599994××
---------
 60699393
```

12. Quantity of wheat in each bag = 254 kg
No. of bags of wheat = 7883
Amount of wheat carried = 7883 × 254 kg
= 2002282 kg

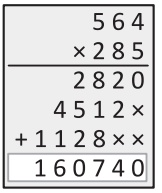
```
  7883
×  254
-------
 31532
 39415×
+15766××
--------
 2002282
```

13. No. of T-shirts sold = 6,240
Cost of each T-shirt = ₹ 156
Money he make by selling T-shirt = 6240 × 156
= ₹ 973440
No. of jeans sold = 3424
Cost of each jeans = ₹ 867
Money he make by selling jeans = ₹ 867 × 3424
= ₹ 2968608
Total money he make = ₹ 973440 + ₹ 2968608
= ₹ 39,42,048

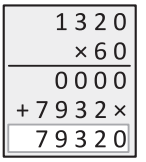




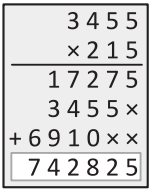
14. Cost of 1 bicycle = ₹ 564
Cost of 285 bicycles = ₹ 564 × 285
= ₹ 1,60,740



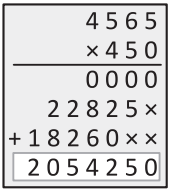
15. 1 hour has 60 minutes.
1322 hours has 1322 × 60 minutes = 79,320 minutes



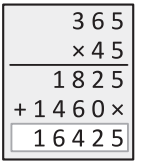
16. No. of toys made by factory in 1 week = 3455
No. of toys made by factory in 215 weeks = 3455 × 215
= 7,42,825



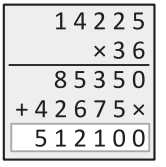
17. Fees per student = ₹ 4565
Money collected from 450 students = ₹ 4564 × 450
= ₹ 2,54,250



18. No. of days in 1 year = 365
No. of days in 45 years = 365 × 45
= 16,425



19. Money earned by Anita in two months = ₹ 28,450
Money earned by Anita in each month = 28450 ÷ 2
= ₹ 14225
Money earned by Anita is 36 months = 14225 × 36
(3 years) = ₹ 5,12,100



20. Money saved by businessman every week = ₹ 5165
Money saved by businessman in 300 weeks = ₹ 5165 × 300
= ₹ 15,49,500

```
  5165
 ×300
 0000
 0000×
+15495××
 1549500
```

21. No. of tubes produced by factory everyday = 23,780
No. of tubes produced by factory in 1578 days
= 23780 × 1578
= 3,75,24,840

```
  23780
 ×1578
 190240
 166460×
 118900××
+23780×××
 37524840
```

22. Cost of scooter = ₹ 29595
Cost of 2130 scooters = ₹ 5975 × 2130
= ₹ 6,30,37,350

```
  29595
 ×2130
 00000
 88785×
 29595××
+59190×××
 63037350
```

23. Cost of 1 sofa set = ₹ 5975
Cost of 1865 sofa sets = ₹ 5975 × 1865
= ₹ 11143375

```
  5975
 ×1865
 29875
 35850×
 47800××
+5975×××
 11143375
```

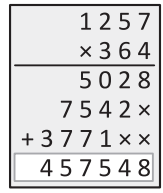
24. No. of Iron nails which can be packed in 1 box = 74925
No. of iron nails which can be packed in 1755 boxes
= 74925 × 1755
= 13,14,93,375

```
  74925
 ×1755
 374625
 374625×
 524475××
+74925×××
 131493375
```

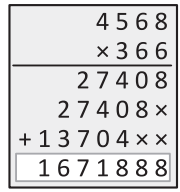
25. Largest 3-digit number = 999
Largest 4-digit number = 9999
Product of largest 3-digit number and
largest 4 digit number = 999 × 9999
= 99,89,001

```
  9999
 ×999
 89991
 89991×
+89991××
 9989001
```

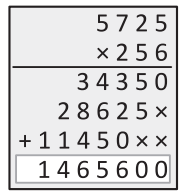
26. No. of dolls factory produces in a day = 1257
No. of dolls factory produces in 364 days = 1257 × 364
= 4,57,548



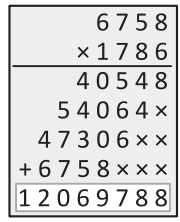
27. Milk sold by dairy everyday = 4568 litres
Milk sold by dairy in a leap year = 4568 × 366 litres
= 1671888 litres



28. No. of oranges packed in a box = 256
No. of oranges packed in 5725 boxes = 5725 × 256
= 1465600
1465600 oranges can be kept in 5725 boxes.



29. No. of students in City Public School = 1786
Fees paid by each student = ₹ 6758
Money collected in whole year = ₹ 6758 × 1786
= ₹ 12069788



Exercise-6.5

1. Fill in the blanks :

a. 9359 ÷ 9359 = **1**
b. 18,750 ÷ 1 = **18750**
c. 0 ÷ 12,559 = **0**
d. 89,549 ÷ 89,549 = **1**
e. 0 ÷ 99,999 = **0**
f. **35** ÷ 35 = 1
g. 46 ÷ 46 = **1**
h. 0 ÷ 126 = **0**
i. 16 ÷ 1 = **16**
j. 14 ÷ 0 = **not defined**
k. **0** ÷ 128 = 0
l. 16 ÷ **16** = 1
m. 24 ÷ **24** = 1
n. **0** ÷ 157 = 0
o. **829** ÷ 829 = 1
p. 76 ÷ **76** = 1

2. Divisor = 45, Quotient = 25, Remainder = 9
Dividend = (Divisor × Quotient) + Remainder
= (45 × 25) + 9
= 1125 + 9 = 1134

3. Let divisor be x.
Dividend = 4904
Quotient = 29

Remainder = 3

Dividend = (Divisor × Quotient) + Remainder

$4904 = (x \times 29) + 3$

$4904 = 29x + 3$

$4904 - 3 = 29x$

$4901 = 29x$

$x = \frac{4901}{29} = 169$

So, the divisor is 169.

$$\begin{array}{r} 169 \\ 29\overline{)\,4901} \\ -29\downarrow \\ \hline 200 \\ -174\downarrow \\ \hline 261 \\ -\,261 \\ \hline 0 \end{array}$$

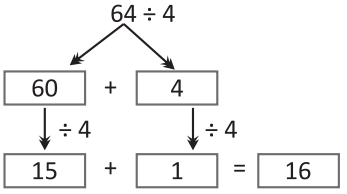
4. Divide mentally and fill in the empty boxes :

a.	35,249 ÷ 10	Quotient = **3524**	Remainder = **9**
b.	6,07,148 ÷ 10	Quotient = **60714**	Remainder = **8**
c.	11,53,679 ÷ 100	Quotient = **11536**	Remainder = **79**
d.	58,073 ÷ 100	Quotient = **580**	Remainder = **73**
e.	24,01,389 ÷ 1,000	Quotient = **2401**	Remainder = **389**
f.	8,10,015 ÷ 1,000	Quotient = **810**	Remainder = **15**
g.	4,137 ÷ 1000	Quotient = **4**	Remainder = **137**
h.	72,957 ÷ 1000	Quotient = **72**	Remainder = **957**
i.	25,790 ÷ 10000	Quotient = **2**	Remainder = **5790**

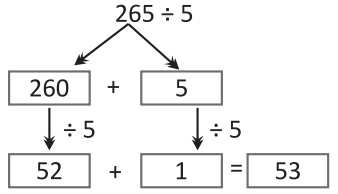
NCERT Corner

Try it!

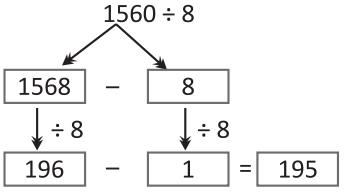
1.



2.

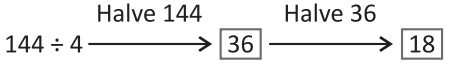


3.



4.

5.



Exercise-6.6

1. Divide the following :

a. 56,38,272 ÷ 324

```
   17402
324)5638272
  -324
   2398
  -2268
    1302
   -1296
      672
     -248
       24
```

Quotient = 174082
Remainder = 24

b. 1,90,920 ÷ 215

```
   12728
15)190920
  -15
   40
  -30
   109
  -105
    42
   -30
   120
  -120
     0
```

Quotient = 12728
Remainder = 0

c. 64,32,750 ÷ 125

```
   51472
125)6432750
  -625
    182
   -125
     577
    -500
      775
     -750
       250
      -250
         0
```

Quotient = 51472
Remainder = 0

d. 27,30,311 ÷ 463

```
    5897
463)2730311
  -2315
    4153
   -3704
     4491
    -4167
      3241
     -3241
        0
```

Quotient = 5897
Remainder = 0

e. 5,50,514 ÷ 409

```
   134
409)550514
  -409
    1415
   -1227
     1881
    -1636
      2454
     -2454
        0
```

Quotient = 134
Remainder = 0

f. 1,32,07,876 ÷ 3509

```
    3764
3509)13207876
  -10527
     26808
    -24565
      22457
     -21054
       14036
      -14036
          0
```

Quotient = 3764
Remainder = 0

g. 27,30,312 ÷ 463

```
   5897
463)2730312
  –2315
   4153
  –3704
    4491
   –4167
     3292
    –3241
       1
```

Quotient = 5897
Remainder = 1

h. 93,94,989 ÷ 963

```
   975
963)9394989
  –8667
    7279
   –6741
     5388
    –4815
      573
```

Quotient = 975
Remainder = 573

i. 28,29,04,694 ÷ 523

```
    540926
523)282904694
  –2615
    2140
   –2092
     4846
    –4707
      1399
     –1046
       3534
      –3138
        396
```

Quotient = 540926
Remainder = 396

2. Divide and check your answer :

a. 18,923 ÷ 15

```
  1261
15)18923
 –15
  39
 –30
  92
 –90
   23
  –15
    8
```

So, 18,923 ÷ 15 = 1261
Check : Dividend = Divisor × Quotient + Remainder
= (15 × 1261) + 8
= 18915 + 8
18923 = 18923

b. 7239 ÷ 37
So, 7239 ÷ 37 = 195

```
   195
37)7239
  -37
  353
 -333
   209
  -185
    24
```

Check : Dividend = Divisor × Quotient + Remainder
= (37 × 195) + 24
= 7215 + 24
7239 = 7239

So, 7239 ÷ 37 = 195

c. 42,872 ÷ 36

```
  1190
36)42872
 -36
  68
 -36
  327
 -324
    32
```

Dividend = Divisor × Quotient + Remainder
42872 = 36 × 1190 + 32
= 42840 + 32
= 42872

d. 26,854 ÷ 284

```
   94
284)26854
 -2556
  1294
 -1136
   158
```

So, 26,854 ÷ 284 = 944
Check : Dividend = Divisor × Quotient + Remainder
= (284 × 94) + 158
= 26696 + 158
26854 = 26854

e. 1,62,097 ÷ 176

```
   921
176)162097
 -1584
   369
  -353
    177
   -176
      1
```

Quotient = 921, Remainder = 1
Check : Dividend = Divisor × Quotient + Remainder
= (176 × 921) + 1
= 162096 + 1
162097 = 162097

f. 32,138 ÷ 368

```
   87
368)32138
 -2944
  2698
 -2576
   122
```

Dividend = (368 × 87) + 122
= 32016 + 122
32138 = 32138
Quotient = 87, Remainder = 122

g. 25,766 ÷ 115

```
   224
115)25766
  -230
   276
  -230
   466
  -460
     6
```

Quotient = 224, Remainder = 4
Dividend = 115 × 224 + 6
= 25760 + 6
25766 = 25766

h. 42,135 ÷ 533

```
   79
533)42135
 -3731
  4825
 -4797
    28
```

Quotient = 79, Remainder = 28
Dividend = (533 × 79) + 28
= 42107 + 28
= 42135

i. 53,962 ÷ 215

```
   250
215)53962
 -430
  1096
 -1075
   212
```

Quotient = 250, Remainder = 212
Dividend = (250 × 215) + 212
= 5370 + 212
= 53962

Exercise-6.7

1. Cost of 216 mobile phones = ₹ 11,72,880
Cost of 1 mobile phone = ₹ 1172880 ÷ 216
= ₹ 5430

```
   5430
216)1172880
 -1080
   928
  -826
    648
   -648
      0
```

2. Product of two numbers = 2,69, 928
One number = 552
Other number = 269928 ÷ 552
= 489

```
   489
552)269928
 -2208
   4912
  -4416
    4968
   -4968
      0
```

3. Total money = ₹ 5,73,125
Number of labourers = 125
Each labourer gets = ₹ 573125 ÷ 125
= ₹ 4585

4585
125) 573125
–500
731
–625
1062
–1000
625
–625
0

4. No. of books packed in 1 box = 945
No. of boxes required to pack = 6,14,250
books = 614250 ÷ 945
= 650

650
945) 614250
–5670
4725
–4725
00

5. No. of mangoes packed in a carton = 563
No. of cartons required to pack 1,82,47,575
Mangoes = 18247575 – 563
= 32411
No. of cartons left = 182
No. of mangoes left = 182

32411
563) 18247575
–1689
1357
–1126
2313
–2252
637
–563
745
–563
182

6. Cost of 316 washing machines is = ₹ 8,07,380
Cost of 1 washing machine is = ₹ 807380 ÷ 316
= ₹ 2555

2555
316) 807380
–632
1753
–1580
1738
–1580
1580
–1580
0

7. Capacity of stadium = 52650
Number of people sit in each row = 975
Number of rows in stadium = 52650 ÷ 975
= 54

54
975) 52650
–4875
3900
–3900
0

8. Number of books packed in 1 box = 563
Number of boxes required to pack = 1,82,412 ÷ 563
= 324

```
      324
563 ) 182412
     -1689
      1351
     -1126
      2252
     -2252
        0
```

9. Cost of 218 calculators = ₹61,040
Cost of 1 calculators = ₹ 61,040 ÷ 218
= 280

```
      280
218 ) 61040
     -436
      1744
     -1744
        00
```

10. Total students in school = 856
Total money collected = ₹ 3,42,400
Contribution of each student = ₹ 342400 ÷ 856
= ₹ 400

```
      400
856 ) 342400
     -3424
       000
```

11. Divisor of number = 435
Quotient = 5643
Remainder = 46
Number = (Divisor × Quotient) + Remainder
= (435 × 5643) + 46
= 2454705 + 46
= 24,54,751

12. Greatest 6-digit number = 999999
Greatest 3-digit number = 999
Since, 999999 ÷ 999 = 101
As 999999 is exactly divisible by 999 so, greatest 6-digit no. which is exactly divisible by greatest 3-digit no. is 999999.

```
      101
999 ) 999999
     -999
      0999
      -999
         0
```

13. Money earned by 688 persons = ₹ 31,09,760
Money earned by 1 person = ₹ 31,09,760 ÷ 688
= ₹ 45202
Money earned by 765 persons = 4520 × 765
= ₹ 34,57,800

```
      4520
688 ) 3109760
     -2752
      3577
     -3440
      1376
     -1376
        00
```

```
    4 5 2 0
  × 7 6 5
-----------
  2 2 6 0 0
2 7 1 2 0 ×
+3 1 6 4 0 × ×
-----------
3 4 5 7 8 0 0
```

14. No. of glasses hold by 1 packet is 185.
Required no. of glasses = 8,34,535 ÷ 185
= 4511

```
      4511
185 ) 834535
     -740
      945
     -925
       203
      -185
        185
       -185
          0
```

15. No. of washing machine = 295
Total cost of washing machines = 22,27,250
Cost of 1 washing machine = ₹ 2227250 ÷ 295
= ₹ 7550

```
      7550
295 ) 2227250
     -2065
      1622
     -1472
       1475
      -1475
         00
```

16. Length of water pipe to be packed = 176435
Each bundle contains 355 m.
No. of bundles = 176435 ÷ 355
= 497

```
      497
355 ) 176435
     -1420
      3443
     -3195
       2485
      -2485
          0
```

17. No. of tractors = 2415
Weight carried by tractors = 18,20,910 kg
Weight carried by 1 tractor = 18,20,910 ÷ 2415
= 754 kg

```
      754
2415 ) 1820910
     -16905
      13041
     -12075
       9660
      -9660
          0
```

18. No. of toys produced in a month = 53,46,250
No. of toys in each packet = 1250
Packets required to pack the toys = 53,46,250 ÷ 1250
∴ 4277 packets are required to pack the toys produced in a month.

```
      4277
1250 ) 5346250
     -5000
      3462
     -2500
       9625
      -8750
        8750
       -8750
          0
```

19. No. of tricycles = 378
Cost of 378 tricycles = ₹ 471366
Cost of 1 tricycle = 471366 ÷ 378
Thus, the cost of 1 tricycle = ₹ 1247

```
      1247
378)471366
   -378↓
     933
    -756↓
     1776
    -1512↓
      2646
     -2646
        0
```

20. No. of screws in 1 carton = 576
Total no. of screws = 1655424
No. of cartons needed to pack total screws = 1655424 ÷ 576
= 2874
2874 cartons are needed to pack 1655424 screws.

```
      2874
576)1655424
   -1152↓
     5034
    -4608↓
      4262
     -4032↓
      2304
     -2304
        0
```

21. No. of persons = 782
Total money to be donated = ₹ 3406392
Money donated by each person = 3406392 ÷ 782
= 4356
Money donated by each person = ₹ 4356

```
      4356
782)3406392
   -3128↓
     2783
    -2346↓
     4379
    -3910↓
      4693
     -4692
        0
```

22. Total litres of water to be pumped out = 1001950
Water pumped out in 1 minute = 725 l
Time taken to pump out 1001950 quantity of water = 1001950 ÷ 725
Time taken to pump out 1001950 litres of water is 1382 minutes = 23 hours 2 minutes

```
      1382
725)1001950
   -725↓
     2759
    -2175↓
     5945
    -5800↓
      1450
     -1450
        0
```

23. Product of two numbers = 1217460
One number = 1236
Other number = 121760 ÷ 1236 = 985
the other number is 985.

```
      985
1236)1217460
   -11124↓
     10506
    -9888↓
      6180
     -6180
        0
```

24. First we divide 1418076 by 1234.
Quotient = 1149, Remainder = 210
then 1234 – 210 = 1024 is the required no.

```
      1149
1234) 1418076
     –1234
      1840
     –1234
      6067
     –4936
      11316
     –11106
       210
```

25. First we divide 25376454 by 3456.
Quotient = 7342, Remainder = 2502
then 3456 – 2502 = 954
So, the least number which is added to 25376454 so that result is exactly divisible by 3456 is 954.

```
      7342
3465) 25376454
     –24192
      11844
     –10368
      14765
     –13824
       9414
      –6912
       2502
```

26. First we divide 53648328 by 5634
then, Quotient = 9522 Remainder = 1380
So, 1380 must be subtracted from 53648328 to make it divisible by 5634.

```
      9522
5634) 53648328
     –50706
      29423
     –28170
      12532
     –11268
      12648
     –11268
       1380
```

27. Distance travelled by aeroplane = 4875160 km
Time taken = 2456 hours
Distance covered by aeroplane in 1 hour = 4875160 ÷ 2456
∴ 1985 km is the distance covered by aeroplane in 1 hour.

```
      1985
2456) 4875160
     –2456
      24191
     –22104
      20876
     –19648
      12280
     –12280
          0
```

28. Total number of pages = 1235
No. of letters written in it = 2451475
No. of letters in each page = 2451475 ÷ 1235
No. of letters in each page = 1985

```
      1985
1235) 2451475
     –12124
      12164
     –11115
      10497
     –9880
      6175
     –6175
        0
```

29. Number of guavas = 200000
Number of guavas in each box = 176
Number of box used = 20000 ÷ 176
1136 boxes were used and 64 guavas were left over.

```
      1136
176 ) 210000
     -176
      240
     -176
      640
     -528
      1120
     -1056
       64
```

30. Amount of water pump out in 1 hour = 486 litres
Total amount of water to be pumped out = 1079892 litres
No. of hours = 1079892 ÷ 486
No. of hours pump take is 2222 litres.

```
      2222
486 ) 1079892
     -972
      1078
     -972
      1069
     -972
      972
     -972
      0
```

31. Cost of an electric machine = ₹ 9995
Total money collected = ₹ 7346325
No. of sets he sell = 7346325 – 9995
= 735
Total number of sets he sell sold is 735.

```
      735
9995 ) 7346325
     -69965
      34982
     -29985
      49975
     -49975
      0
```

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) 2. (c) 3. (b) 4. (b)

Mental Maths

Find the quotient and fill in the cross number puzzle :

[1] 1	0	[1] 1		
		[2] 2	6	[2] 3
[3] 2	0			3
0		[4] 8	4	5
[5] 2	2			0

Test Exercise

1. Multiply the following :

a. 3082 × 265

	Th	H	T	O
	3	0	8	2
	×	2	6	5
	1	5	4	1	0
1	8	4	9	2	×
+ 6	1	6	4	×	×
8	1	6	7	3	0

So, 3082 × 265 = 8,16,730

b. 2574 × 198

	Th	H	T	O
	2	5	7	4
	×	1	9	8
	2	0	5	9	2
2	3	1	6	6	×
+ 2	5	7	4	×	×
5	0	9	6	5	2

So, 2574 × 198 = 5,09,652

c. 4829 × 364

	Th	H	T	O
	4	8	2	9
	×	3	6	4
	1	9	3	1	6
2	8	9	7	4	×
+ 1	4	4	8	7	×	×
1	7	5	7	7	5	6

So, 4829 × 364 = 17,57,756

d. 3687 × 408

	Th	H	T	O
	3	6	8	7
	×	4	0	8
	2	9	4	9	6
	0	0	0	0	×
+ 1	4	7	4	8	×	×
1	5	0	4	2	9	6

So, 3687 × 408 = 15,04,296

e. 5613 × 297

	Th	H	T	O
	5	6	1	3
	×	2	9	7
	3	9	2	9	1
5	0	5	1	7	×
+ 1	1	2	2	6	×	×
1	6	6	7	0	6	1

So, 5613 × 297 = 16,67,061

f. 3082 × 498

	Th	H	T	O
	3	0	8	2
	×	4	9	8
	2	4	6	5	6
2	7	7	3	8	×
+ 1	2	3	2	8	×	×
1	5	3	4	8	3	6

So, 3082 × 498 = 15,34,836

2. Find the product :

a. 19,310 × 62

	TTh	Th	H	T	O
	1	9	3	1	0
			×	6	2
		3	8	6	2	0
+ 1	1	5	8	6	0	×
1	1	9	7	2	2	0

So, 19,310 × 62 = 11,97,220

b. 6,11,125 × 285

	L	TTh	Th	H	T	O
	6	1	1	1	2	5
			×	2	8	5
	3	0	5	5	6	2	5
4	8	8	9	0	0	0	×
+ 1	2	2	2	2	5	0	×	×
1	7	4	1	7	0	6	2	5

So, 6,11,125 × 285 = 17,41,70,625

c. 1,83,579 × 651

			L	TTh	Th	H	T	O
			1	8	3	5	7	9
					×	6	5	1
			1	8	3	5	7	9
		9	1	7	8	9	5	×
+	1	1	0	1	4	7	4	× ×
	1	1	9	5	0	9	9	2 9

So, 1,83,579 × 651 = 11,95,09,929

d. 7,40,869 × 912

			L	TTh	Th	H	T	O
			7	4	0	8	6	9
					×	9	1	2
		1	4	8	1	7	3	8
		7	4	0	8	6	9	×
+	6	6	6	7	8	2	1	× ×
	6	7	5	6	7	2	5	2 8

So, 7,40,869 × 912 = 67,56,72,528

e. 45,673 × 529

			TTh	Th	H	T	O
			4	5	6	7	3
				×	5	2	9
		4	1	1	0	5	7
		9	1	3	4	6	×
+	2	2	8	3	6	5	× ×
	2	4	1	6	1	0	1 7

So, 45,673 × 529 = 2,41,61,017

f. 3,69,170 × 283

			L	TTh	Th	H	T	O
			3	6	9	1	7	0
					×	2	8	3
		1	1	0	7	5	1	0
	2	9	5	3	3	6	0	×
+	7	3	8	3	4	0	×	×
1	0	4	4	7	5	1	1	0

So, 3,69,170 × 283 = 10,44,75,110

g. 76,489 × 251

			TTh	Th	H	T	O
			7	6	4	8	9
				×	2	5	1
			7	6	4	8	9
		3	8	2	4	4	5 ×
+	1	5	2	9	7	8	× ×
	1	9	1	9	8	7	3 9

So, 76,489 × 251 = 1,91,98,739

h. 3,85,462 × 581

			L	TTh	Th	H	T	O
			3	8	5	4	6	2
					×	5	8	1
			3	8	5	4	6	2
		3	0	8	3	6	9	6 ×
+	1	9	2	7	3	1	0	× ×
	2	2	3	9	5	3	4	2 0

So, 3,85,462 × 581 = 22,39,53,422

i. 2,58,348 × 425

			L	TTh	Th	H	T	O
			2	5	8	3	4	8
					×	4	2	5
		1	2	9	1	7	4	0
		5	1	6	6	9	6	×
+	1	0	3	3	3	9	2	× ×
	1	0	9	7	9	7	9	0 0

So, 2,58,348 × 425 = 10,97,97,900

3. Find the product and express the result in words according to Indian Number System :

a. 6,73,210 × 562

			L	TTh	Th	H	T	O
			6	7	3	2	1	0
					×	5	6	2
		1	3	4	6	4	2	0
	4	0	3	9	2	6	0	×
+	3	3	6	6	0	5	0	×
	3	7	8	3	4	4	0	2

So, 6,73,210 × 562 = 37,83,44,020
Thirty-seven crore eighty three lakhs forty four thousand and twenty

b. 8,96,340 × 323

			L	TTh	Th	H	T	O
			8	9	6	3	4	0
					×	3	2	3
		2	6	8	9	0	2	0
	1	7	9	2	6	8	0	×
+	2	6	8	9	0	2	0	×
	2	8	9	5	1	7	8	2

So, 8,96,340 × 323 = 28,95,17,820
Twenty-eight crore ninety five lakhs seventeen thousand eight hundred and twenty

c. 3,94,522 × 151

			L	TTh	Th	H	T	O
			3	9	4	5	2	2
					×	1	5	1
			3	9	4	5	2	2
	1	9	7	2	6	1	0	×
+	3	9	4	5	2	2	×	×
	5	9	5	7	2	8	2	2

So, 3,94,522 × 151 = 5,95,72,822
Five crores ninety five lakhs seventy two thousand eight hundred twenty two

d. 2,54,322 × 246

			L	TTh	Th	H	T	O
			2	5	4	3	2	2
					×	2	4	6
		1	5	2	5	9	3	2
	1	0	1	7	2	8	8	×
+	5	0	8	6	4	4	×	×
	6	2	5	6	3	2	1	2

So, 2,54,322 × 246 = 6,25,63,212
Six crores twenty five lakhs sixty three thousand two hundred twelve

e. 1625435 × 86

				L	TTh	Th	H	T	O
			1	6	2	5	4	3	5
							×	8	6
			9	7	5	2	6	1	0
+	1	3	0	0	3	4	8	0	×
	1	3	9	7	8	7	4	1	0

So, 1625435 × 86 = 13,97,87,410
Thirteen crore ninety seven lakhs eighty seven thousand four hundred ten.

4. Find the quotient and check the answer in each of the following :

a. 6,294 ÷ 9

```
  699
9)6294
 -54
  89
 -81
  84
 -81
   3
```

Quotient = 699, Remainder = 3
Check : Dividend = Divisor × Quotient + Remainder
6294 = (9 × 699) + 3
6294 = 6291 + 3 = 6294

b. 5,086 ÷ 8

```
  635
8)5086
 -48
  28
 -24
  46
 -40
   6
```

Quotient = 635, Remainder = 6
Check : Dividend = Divisor × Quotient + Remainder
= (8 × 635) + 6
5086 = 5080 + 6 = 5086

c. 2,794 ÷ 6

```
  465
6)2794
 -24
  39
 -36
  34
 -30
   4
```

Quotient = 465, Remainder = 4
Check : Dividend = Divisor × Quotient + Remainder
= (6 × 465) + 4
2794 = 2790 + 4
2794 = 2794

d. 30,845 ÷ 7

```
 4406
7)30845
 -28
  28
 -28
  045
 -42
   3
```

Quotient = 4406, Remainder = 3
Check : 30845 = (7 × 4406) + 3
= 30842 + 3
= 30845

e. 4,2798 ÷ 5

```
  8559
5)42798
 -40
  27
 -25
  29
 -25
  48
 -45
   3
```

Quotient = 8559, Remainder = 3
Check : 42798 = (8559 × 5) + 3
= 42795 + 3
= 42798

f. 5,20,386 ÷ 4

```
 130096
4)520386
 -4
  12
 -12
   0038
  -36
    26
   -24
     2
```

Quotient = 130096, Remainder = 2
Check : 520386 = (4 × 130096) + 2
= 520384 + 2 = 520386

5. Find the quotient and the remainder in the following questions and also verify your answer :

a. 67,892 ÷ 74

```
  917
74)67892
 -666
  129
  -74
   552
  -518
    34
```

Quotient = 917, Remainder = 34
Verify : Dividend = Divisor × Quotient + Remainder
= (74 × 917) + 34
= 67858 + 34
67892 = 67892

b. 5,43,869 ÷ 86

```
  6324
86)543869
 -516
  278
 -258
  206
 -172
   349
  -344
     5
```

Quotient = 6324, Remainder = 5
Verify : 543864 = (86 × 6324) + 5
= 543864 + 5 = 543869

c. 86,752 ÷ 51

```
  1701
51)86752
  -51
  357
 -357
  052
  -51
    1
```

Quotient = 1701, Remainder = 1
Verify : 86752 = (51 × 170) + 1
= 86751 + 1
= 86752

d. 58,432 ÷ 68

```
  859
68)58432
 -544
  403
 -340
  632
 -612
   20
```

Quotient = 859, Remainder = 20
Verify : 58432 = (68 × 859) + 20
= 58412 + 20
= 58432

e. 26,908 ÷ 58

```
  463
58)26908
 -232
  370
 -348
  228
 -174
   54
```

Quotient = 463, Remainder = 54
Verify : 26908 = (58 × 463) + 54
= 26854 + 54
= 26908

f. 47,349 ÷ 36

```
  1315
36)47349
 -36
  113
 -108
   54
  -36
  189
 -180
    9
```

Quotient = 1315, Remainder = 9
Verify : 47349 = (36 × 1315) + 9
= 47340 + 9
= 47349

g. 8,36,921 ÷ 59

```
   14185
59)836921
  -59
  ----
   246
  -236
  ----
   109
   -59
  ----
   502
  -472
  ----
    301
   -295
   ----
      6
```

Quotient = 14185, Remainder = 6
Verify : 836921 = (59 × 14185) + 6
= 836915 + 6 = 836921

h. 75,602 ÷ 84

```
   900
84)75602
  -756
  ----
   00002
```

Quotient = 900, Remainder = 2
Verify : 75602 = (84 × 900) + 2
= 75600 + 2 = 75602

i. 59,024 ÷ 62

```
   952
62)59024
  -558
  ----
   322
  -310
  ----
    122
   -122
   ----
      0
```

Quotient = 952, Remainder = 0
Verify : 59024 = (62 × 952) + 0 = 59024

6. Find the quotient and remainder in the following and check your answer :

a. 30,97,112 ÷ 371

```
   8348
371)3097112
  -2968
  -----
   1291
  -1113
  -----
    1781
   -1484
   -----
     2972
    -2968
    -----
       4
```

Quotient = 8348, Remainder = 4
Verify : Dividend = (Divisor × Quotient) + Remainder
= (371 × 8348) + 4
= 3097108 + 4
= 3097112

b. 28,24,408 ÷ 632

```
        4469
632 ) 2824408
     -2528
       2964
      -2528
        4360
       -3792
         5688
        -5688
            0
```

Quotient = 4469, Remainder = 0

Check : 2824408 = (632 × 4469) + 0 = 2824408

c. 14,66,328 ÷ 321

```
        4568
321 ) 1466328
     -1284
       1823
      -1605
        2182
       -1926
         2568
        -2568
            0
```

Quotient = 4568, Remainder = 0

Check : 1466328 = (321 × 4568) + 0 = 1466328

d. 4,86,96,296 ÷ 757

```
        64328
757 ) 48696296
     -4542
       3276
      -3026
        2482
       -2271
         2119
        -1514
          6056
         -6056
             0
```

Quotient = 64328, Remainder = 0

Check : 48696296 = (757 × 64328) + 0

= 48696296

e. 31,53,075 ÷ 255

```
    12365
255)3153075
  -255
    603
   -510
     930
    -765
     1657
   -1530
      1275
     -1275
        0
```

Quotient = 12365, Remainder = 0
Check : 3153075 = (255 × 12365) + 0
= 3153075

f. 1,67,620 ÷ 515

```
   325
515)167620
  -1545
    1312
   -1030
     2820
    -2575
      245
```

Quotient = 325, Remainder = 245
Check : 167620 = (515 × 325) + 245
= 167375 + 245 = 167620

7. Divisor = 321, Quotient = 1234, Remainder = 46
Dividend = (Divisor × Quotient) + Remainder
= (321 × 1234) + 46
= 396114 + 46
= 396160

8. Dividend = 563247, Divisor = 425

```
   1325
425)563247
  -425
    1382
   -1275
     1074
    -850
     2247
   - 2125
      122
```

Quotient = 1325, Remainder = 122

Chapter 7 : Multiples and Factors

NCERT Corner

Shreya and Manvi have joined a Hip-Hop dance class. For practice, the teacher told the 30 children of the class to group themselves equally in groups of 3 or more so that no child is left out. A group of more than 10 children is not allowed. How many groups can be formed?

Number of Children In Each Group	Number of Groups
3	10
5	6
6	5
10	3

Exercise-7.1

1. Fill in the blanks :

a. The **multiples** of a number are the products we get when we multiply it by various numbers.
b. The first five multiples of **7** are 7, 14, 21, 28, 35.
c. The first multiple of a number is the **number itself**.
d. Multiples of a number have no **end**.
e. If a number is a multiple of two numbers, it is called a **common multiple**.

2. Find the following :

a. First ten multiple of 15 are 15, 30, 45, 60, 75, 90, 105, 120, 135, 150.
b. Twentieth multiple of 17 is 340.
c. Eight multiple of 25 is $25 \times 8 = 200$
d. Hundredth multiple of 50 is $50 \times 100 = 5000$.

3. Fill in the blanks with next five multiples of the given numbers :

a. 3	:	6	9	12	15	18
b. 12	:	24	36	48	60	72
c. 11	:	22	33	44	55	66

4. Find two common multiples of the following :

a. Two common multiples of 12 and 8 are 24, 48.
b. Two common multiples of 16 and 6 are 48, 96.
c. Two common multiples of 5, 10, 25 and 50, 100.
d. Two common multiples of 6, 15, 30 are 30, 60.

5. Write all the factors of the following numbers :

a. 24
The factors of 24 are 1, 2, 3, 4, 6, 8, 12, 24.
b. 36
The factors of 36 are 1, 2, 3, 4, 6, 9, 12, 16, 36.
c. 108
The factors of 108 are 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108.
d. 25
The factors of 25 are 1, 5, 25.

e. 15
The factors of 15 are 1, 3, 5, 15.
f. 28
The factors of 28 are 1, 2, 4, 7, 14, 28.
g. 35
The factors of 35 are 1, 5, 7, 35.
h. 19
The factors of 19 are 1 and 19.
i. 52
The factors of 52 are 1, 2, 4, 13, 26, 52.
k. 30
The factors of 30 are 1, 2, 3, 5, 6, 10, 15, 30.
l. 23
The factors of 23 are 1 and 23.
m. 27
The factors of 27 are 1, 3, 9, 27.
n. 72
The factors of 72 are 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72.
o. 65
The factors of 65 are 1, 5, 13, 65.
p. 31
The factors of 31 are 1, 31.
q. 42
The factors of 42 are 1, 2, 3, 6, 7, 14, 21, 42.
r. 49
The factors of 49 are 1, 7, 49.
s. 60
The factors of 60 are 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60.
t. 10
The factors of 10 are 1, 2, 5, 10.

6. Find the common factors of the following pair of numbers :

a. 14 and 30
Factors of 14 are 1, 2, 7, 14.
Factors of 30 are 1, 2, 3, 5, 6, 10, 30.
Common factors of 14 and 30 are 1 and 2.
b. 27 and 42
Factors of 27 are 1, 3, 9, 27.
Factors of 42 are 1, 2, 3, 6, 7, 14, 21, 42.
Common factors of 27 and 42 are 1, 3.
c. 44 and 66
Factors of 44 are 1, 2, 4, 11, 22, 44.
Factors of 66 are 1, 2, 3, 6, 11, 22, 33, 66.
Common factors of 44 and 66 are : 2, 11, 22.

d. 36, 45
Factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18, 36.
Factors of 45 are 1, 3, 5, 9, 15, 45.
Common factors of 36 and 45 are 1, 3, 9.

Exercise-7.2

1. All even numbers between 1 and 30 are 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28.
All odd numbers between 1 and 30 are 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29.

2. All the prime numbers between 20 and 40 are 23, 29, 31, 37.

3. All the composite numbers between 23 and 46 are 24, 25, 26, 27, 28, 30, 32, 33, 34, 35, 36, 38, 40, 42, 44.

4. Twin prime numbers upto 20 are (3, 5), (5, 7), (11, 13), (17, 19).

5. (b), (e), (f) are co-prime numbers.

6. **Identify the groups of prime and composite numbers from the table below. Write 'P' for prime and 'C' for composite numbers :**

	Numbers	Prime or Composite
a.	8, 12, 16, 24	C
b.	3, 7, 11, 13	P
c.	10, 15, 18, 25	C
d.	17, 19, 37, 53	P
e.	41, 59, 73, 83	P
f.	4, 6, 10, 35	C
g.	29, 31, 43, 47	P

Exercise-7.3

1. **Without actual division, check which of the numbers are divisible by the first number in the circle :**
a. 168, 68460 are divisible by 2 as their last digit is even.
b. 96, 89304, 9831016 is divisible by 8 as their last 3 digit is divisible by 8.
c. 918 and 7386 is divisible by 3 as their sum of digits is multiple of 3.
d. 2354 and 7180910 is divisible by 11 as the difference between the sum of digits at odd places and even places to a multiple of 11.
e. 640, 468545 are divisible by 5 as their last digit ends in either 0 or 5.
f. 6102, is divisible by 6 as it is divisible by 2 and 3 both.
g. 97860, 5280, 795860 is divisible by 10 as their last digit is zero.
h. 69388, 33608 and 40 are divisible by 4 as the last two digits is divisible by 4.

2. **State true or false :**
a. False b. True c. True d. True e. False

3. **Check which of the following numbers are divisible by 2 and 4 using the tests of divisibility :**
A number is divisible by 2 if its last digit is even.

A number is divisible by 4 if its last two digits is divisible by 4.

a. 8926 is divisible by 2 as its last digit is even. It is not divisible by 4.

b. 10,552 is divisible by 2 and 4 both.

c. 3,68,700
It is also divisible by 2 and 4 as it follows their divisibility rules.

d. 7,02,908
Since, last digit is even and last 2 digits of given number are divisible by 4.
So, the number 7,02,908 is divisible by 4.

4. Find out the numbers which are divisible by 3 from the following :

a. 2832
Here, sum of digits = 2 + 8 + 3 + 2 = 15 which is a multiple of 3. So, 2832 is divisible by 3 .

b. 74,048
Here, sum of digits = 7 + 4 + 4 + 8 = 23 which is not divisible by 3. So, 74048 is not divisible by 3 .

c. 4,53,105
Here, sum of digits = 4 + 5 + 3 + 1 + 0 + 5 = 18 which is divisible by 3. So, 453105 is divisible by 3.

d. 8,91,450
Here, sum of digits = 8 + 9 + 1 + 4 + 5 + 0 = 27 which is divisible by 3. So, 8,91,450 is divisible by 3.

5. Which of the following numbers are divisible by 5 but not by 10?

A number is divisible by 5 when its last digit is either 0 or 5.
A number is divisible by 10 when its last digit is zero.

a. 8600 is divisible by both 5 and 10.

b. 54,805 is divisible by 5 but not by 10.

c. 2,73,913 is divisible by 5 but not by 10.

d. 683090 is divisible by both 5 and 10.

6. Find out the numbers which are divisible by 6 :

A number is divisible by 6 if it is divisible by both 2 and 3.

a. 9234 is divisible by 2 as its last digit is even.
Sum of digits = 9 + 2 + 3 + 4 = 18 which is divisible by 3. As it is divisible by both 2 and 3 it is divisible by 6 also.

b. 67,200
Since, last digit is even so it is divisible by 2.
Sum of digits = 6 + 7 + 2 + 0 + 0 = 15 which is divisible by 3.
So, given number is divisible by 6.

c. 1,43,842
143812 is divisible by 2 as its last digit is even.
Sum of digits = 1 + 4 + 3 + 8 + 4 + 2 = 22 which is not divisible by 3.
So, given no. is not divisible by 6.

d. 7,18,650
Since, last digit is even so 718,650 is divisible by 2.
Sum of digits = 7 + 1 + 8 + 6 + 5 + 0 = 27 which is divisible by 3.
So, given number is divisible by 6.

7. Which of the following numbers are divisible by 9?

The number is divisible by 9 if sum of its digits is divisible by 9.

a. 5310
Sum of digits = 5 + 3 + 1 + 0 = 9 which is a multiple of 9. So, 5310 is divisible by 9.

b. 24,720
Since, sum of digits = 2 + 4 + 7 + 2 + 0 = 15 which is not divisible by 9 so 24720 is not divisible by 9.

c. 5,87,430
Since, sum of digits = 5 + 8 + 7 + 4 + 3 + 0 = 27 which is a multiple of 9.
So, given no. 5,87,430 is divisible by 9.

d. 8,63,121
Since, sum of digits = 8 + 6 + 3 + 1 + 2 + 1 = 21 which is not a multiple of 9.
So, given no. 8,63,121 is not divisible by 9.

8. Which of the following numbers are divisible by 3 but not by 9?

a. 9246
Sum of digits = 9 + 2 + 4 + 6 = 21 is a multiple of 3.
Since, sum of digits of given numbers is multiple of 3 but not of 9. so, 9246 is divisible by 3 but not with 9.

b. 75,600
Sum of digits = 7 + 5 + 6 + 0 + 0 = 18 which is a multiple of 3 and 9 both. So, 75600 is divisible by 3 and 9 both.

c. 2,59,413
Sum of digits = 2 + 5 + 9 + 4 + 1 + 3 = 24 which is a multiple of 3 only. So, given number 2,59,413 is divisible by only 3 but not by 9.

d. 5,36,220
Sum of digits = 5 + 3 + 6 + 2 + 2 + 0 = 18 which is a multiple of 3 and 9 both.
So given number 5,36,220 is divisible by 3 and 9 both.

Exercise-7.4

1. Tick (✓) the correct prime factorisation :

a. 68 = 2 × 2 × 17

c. 25 = 5 × 5

d. 98 = 2 × 7 × 7

e. 125 = 5 × 5 × 5

2. Find the prime factors of the following by division method :

a. 36

2	36
2	18
3	9
3	3
	1

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

b. 64

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

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

c. 75

3	75
5	25
5	5
	1

$75 = 3 \times 5 \times 5$

d. 91

7	91
13	13
	1

$91 = 7 \times 13$

e. 12

2	12
2	6
3	3
	1

$12 = 2 \times 2 \times 3$

f. 35

5	35
7	7
	1

$35 = 5 \times 7$

g. 76

2	76
2	38
19	19
	1

$76 = 2 \times 2 \times 19$

h. 65

5	65
13	13
	1

$65 = 5 \times 13$

i. 88

2	88
2	44
2	22
11	11
	1

$88 = 2 \times 2 \times 2 \times 11$

j. 95

5	95
19	19
	1

$95 = 5 \times 19$

k. 48

2	48
2	24
2	12
2	6
3	3
	1

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

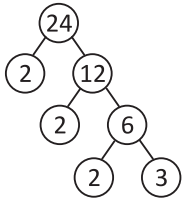
l. 26

2	26
13	13
	1

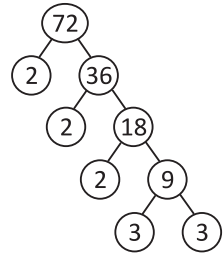
$26 = 2 \times 13$

3. Construct factor trees for :

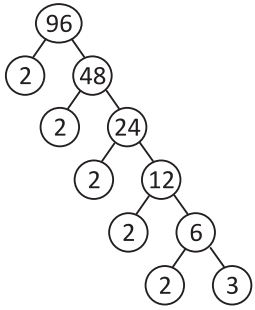
a. 24



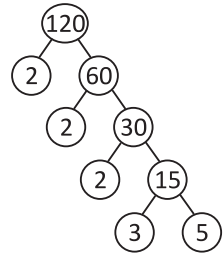
b. 72



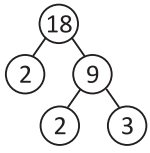
c. 96



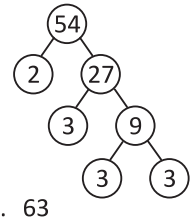
d. 120



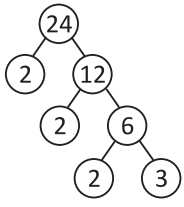
e. 18



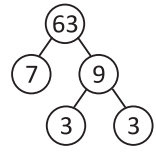
f. 54



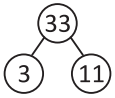
g. 24



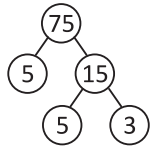
h. 63



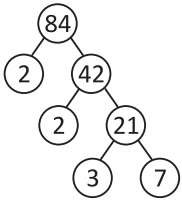
i. 33



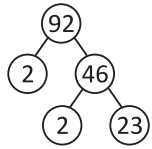
j. 75



k. 84



l. 92



Exercise-7.5

1. Find the HCF by Prime factorisation :

a. 54 and 108

2	54
3	27
3	9
3	3
	1

2	108
2	54
3	27
3	9
3	3
	1

$54 = 2 \times 3 \times 3 \times 3$

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

Common prime factors $= 2 \times 3 \times 3 \times 3$

$= 27 \times 2 = 54$

$\therefore$ HCF of 54 and 108 is 54.

b. 216 and 252

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

2	252
2	126
3	63
3	21
7	7
	1

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

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

Common prime factors $= 2 \times 2 \times 3 \times 3 = 36$

$\therefore$ HCF of 216 and 252 is 36.

c. 430, 280, 640

2	430
5	215
43	43
	1

2	280
2	140
2	70
5	35
7	7
	1

2	640
2	320
2	160
2	80
2	40
2	20
2	10
5	5
	1

$430 = 2 \times 5 \times 43$
$280 = 2 \times 2 \times 2 \times 5 \times 7$
$640 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 5$
Product of common factors $= 2 \times 5 = 10$
$\therefore$ HCF of (430, 280, 640) = 10

d. 3261, 3093, 5577

3	3261
11	187
17	17
	1

3	3093
1031	1031
	1

3	5577
11	1859
13	169
13	13
	1

$3261 = 3 \times 11 \times 17$
$3093 = 3 \times 1031$
$5577 = 3 \times 11 \times 13 \times 13$
Product of common factors = 3
$\therefore$ HCF of 3261, 3093, 5577 is 3.

e. 762 and 1270

2	762
3	381
127	127
	1

2	1270
5	635
127	127
	1

$762 = 2 \times 3 \times 127$
$1270 = 2 \times 5 \times 127$
Product of common factors $= 2 \times 127 = 254$
$\therefore$ HCF of 762 and 1270 is 254.

f. 160, 182, 96

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

2	182
7	91
13	13
	1

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

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

$182 = 2 \times 7 \times 13$

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

Product of common factors = 2

$\therefore$ HCF of 160, 182, 96 is 2.

2. Find the HCF by division method :

a. 52 and 216

```
52) 216 (4
   -208
    8) 52 (6
     -48
      4) 8 (2
       -8
        0
```

$\therefore$ HCF of 52 and 216 is 4.

b. 640, 520

```
520) 640 (1
    -520
    120) 520 (4
      -480
       40) 120 (3
        -120
          0
```

$\therefore$ HCF of 640, 520 is 40.

c. 630, 435

```
435) 630 (1
   -435
   195) 435 (2
     -390
      45) 195 (4
       -180
        15) 45 (3
         -45
          0
```

$\therefore$ HCF of 630 and 435 is 15.

d. 310, 412

```
310) 412 (1
   -310
   102) 310 (3
     -306
      4) 102 (25
       -100
        2) 4 (2
         -4
          0
```

HCF of 310 and 412 is 2.

e. 42, 330

```
42) 330 (7
   -294
    36) 42 (1
     -36
      6) 36 (6
       -36
        0
```

HCF of 42, 330 is 6.

f. 154, 770 and 924

```
154) 770 (5
    -770
       0
```

HCF of 154 and 770 is 154.

Now, we find HCF of 154 and 924.

```
154) 924 (6
    -924
       0
```

$\therefore$ HCF of 154, 770, 924 is 154.

3. Tick (✓) the correct HCF of each pair of numbers :

Numbers	HCF
a. 16 and 24	(ii) 8
b. 12 and 20	(iii) 4
c. 84 and 36	(iii) 12
d. 63 and 66	(i) 3
e. 35 and 75	(ii) 5

4. Find the HCF of the following groups of numbers using common division method :

a. 3 and 9

3	3, 9
	1, 3

HCF of 3 and 9 is 3.

b. 15 and 45

3	15, 45
5	5, 15
	1, 3

HCF of 15 and 45 = 3 × 5 = 15

c. 62 and 124

2	62, 124
31	31, 62
	1, 2

HCF of 62 and 124 = 2 × 31 = 62

d. 9, 12 and 6

3	9, 12, 6
	3, 4, 2

HCF of 9, 12 and 6 is 3.

e. 44 and 22

2	22, 44
11	11, 22
	1, 2

HCF of 44 and 22 is 2 × 11 = 22

f. 80 and 60

2	60, 80
2	30, 40
5	15, 20
	3, 4

HCF of 80 and 60 = 2 × 2 × 5 = 20

g. 35 and 49

7	35, 49
	5, 7

So, HCF of 35 and 49 is 7.

h. 4, 6 and 9

1	4, 6, 9

HCF of 4, 6, 9 is 1.

Exercise-7.6

1. Find the LCM by prime factorisation :

a. 15, 30

3	15
5	5
	1

2	30
3	15
5	5
	1

Prime factorisation 15 = 3 × 5
Prime factorisation 30 = 2 × 3 × 5
LCM of 15 and 30 = 2 × 3 × 5 = 30

b. 42 and 84

2	42
3	21
7	7
	1

2	84
2	42
3	21
7	7
	1

LCM of 42 and 84 = $2 \times 2 \times 3 \times 7 = 4 \times 3 \times 7 = 84$

c. 45 and 65

3	45
3	15
5	5
	1

5	65
13	13
	1

LCM of 45 and 65 = $3 \times 3 \times 5 \times 13 = 45 \times 13 = 585$

d. 64, 96 and 112

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

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

2	112
2	56
2	28
2	14
7	7
	1

$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$
$96 = 2 \times 2 \times 2 \times 2 \times 3$
$112 = 2 \times 2 \times 2 \times 2 \times 7$
LCM of (64, 96, 112) $= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 7$
$= 64 \times 21 = 1344$

e. 125, 180 and 210

5	125
5	25
5	5
	1

2	180
2	90
3	45
3	15
5	5
	1

2	210
3	105
5	35
7	7
	1

$125 = 5 \times 5 \times 5$
$180 = 2 \times 2 \times 3 \times 3 \times 5$
$210 = 2 \times 3 \times 5 \times 7$
LCM of (125, 180, 210) $= 5 \times 5 \times 5 \times 2 \times 2 \times 3 \times 3 \times 7$
$= 31500$

f. 198, 216 and 360

2	198
3	99
3	33
11	11
	1

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

2	360
2	180
2	90
3	45
3	15
5	5
	1

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

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

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

LCM of (198, 216, 360) $= 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 11 = 11880$

2. Find the LCM of numbers by division method :

a. 22, 33 and 44

2	22, 33, 49
2	11, 33, 22
3	11, 33, 11
11	11, 11, 11
	1, 1, 1,

LCM of 22, 33 and 44
$= 2 \times 2 \times 3 \times 11$
$= 11 \times 12$
$= 132$

b. 16, 24 and 32

2	16, 24, 32
2	8, 12, 16
2	4, 6, 8
2	2, 3, 4
2	1, 3, 2
3	1, 3, 1
	1, 1, 1

LCM of 16, 24, 32
$= 2 \times 2 \times 2 \times 2 \times 2 \times 3$
$= 96$

c. 35, 51 and 85

3	35, 51, 85
5	35, 17, 85
7	7, 17, 17
17	1, 17, 17
	1, 1, 1

LCM of 35, 51, 85
$= 3 \times 5 \times 7 \times 17$
$= 1785$

d. 12, 24 and 36

2	12, 24, 36
2	6, 12, 18
3	3, 6, 9
3	3, 3, 9
2	1, 1, 3
	1, 1, 1

LCM of 12, 24 and 36
$= 2 \times 2 \times 2 \times 3 \times 3$
$= 72$

e. 16, 91, 90, 455

2	16, 91, 90, 455
2	8, 91, 45, 455
2	4, 91, 45, 455
2	2, 91, 45, 455
3	1, 91, 45, 455
3	1, 91, 5, 455
5	1, 91, 5, 455
7	1, 91, 1, 91
13	1, 13, 1, 13
	1, 1, 1, 1

LCM of (18, 91, 90, 455)
$= 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 7 \times 13$
$= 65520$

f. 44, 126, 198

2	44, 126, 198
2	22, 63, 99
3	11, 63, 99
3	11, 21, 33
7	11, 7, 11
11	11, 1, 11
	1, 1, 1

LCM of (44, 126, 198)
$= 2 \times 2 \times 3 \times 3 \times 7 \times 11$
$= 2772$

Exercise-7.7

1. The greatest number which exactly divides 28 and 48 is the HCF of 28 and 48.

$$
\begin{array}{r}
28\overline{)48}\,(1 \\
-28 \\
\hline
20\overline{)28}\,(1 \\
-20 \\
\hline
8\overline{)20}\,(2 \\
-16 \\
\hline
4\overline{)8}\,(2 \\
-8 \\
\hline
0
\end{array}
$$

Hence, the greatest no. which exactly divides 28 and 48 is 4.

2. The smallest number which is exactly divisible by 16, 30 and 45 is the LCM of 16, 30 and 45.

2	16, 30, 45
2	8, 15, 45
2	4, 15, 45
2	2, 15, 45
3	1, 15, 45
3	1, 5, 15
5	1, 1, 5
	1, 1, 1

LCM of (16, 30, 45) $= 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5$
$= 48 \times 15 = 720$

3. The greatest number that divides 396 and (619 – 7) = 612 is the HCF of 396 and 612.

Now, we find the HCF of 396 and 612.

$$\begin{array}{r} 396\overline{)\,612\,(1} \\ -396 \\ \hline 216\overline{)\,396\,(1} \\ -216 \\ \hline 180\overline{)\,216\,(1} \\ -180 \\ \hline 36\overline{)\,180\,(5} \\ -180 \\ \hline 0 \end{array}$$

Thus, HCF of 396 and 612 is 36.

So, the greatest number that divides 396 exactly but divides 619 to give remainder 7 is 36.

4. The smallest number divisible by 75, 135, 189, 252 is their LCM.

2	75, 135, 189, 252
2	75, 135, 169, 126
3	75, 135, 169, 63
3	25, 45, 63, 21
3	25, 15, 21, 21
5	25, 5, 7, 7
5	5, 1, 7, 7
7	1, 1, 7, 7
	1, 1, 1, 1

LCM of (75, 135, 189, 252) $= 3 \times 5 \times 5 \times 3 \times 3 \times 7 \times 4 = 18900$

Required number = LCM 7 = 18893

5. Weight of 4 boxes = 168 kg, 252 kg, 336 kg, 378 kg

Least amount of weight which can be put into exact number of parcels is LCM of 168, 252, 336, 378 kg.

2	168, 252, 336, 378,
2	84, 126, 168, 189
2	42, 63, 84, 189
2	21, 63, 42, 189
3	21, 63, 21, 189
3	7, 21, 7, 63
3	7, 7, 7, 21
7	7, 7, 7, 7
	1, 1, 1, 1

LCM = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 7 = 3024$

$\therefore$ Least amount of weight which can be put into exact no. of parcels is 3024 kg.

6. The capacity of greatest container which can be used to measure oil exactly is the HCF of 120, 180, 240.

$$\begin{array}{r} 120\overline{)\,180\,(1} \\ -120 \\ \hline 60\overline{)\,120\,(2} \\ -120 \\ \hline 0 \end{array} \qquad \begin{array}{r} 60\overline{)\,240\,(4} \\ -240 \\ \hline 0 \end{array}$$

$\therefore$ 60 litres is the capacity of the greatest container which can be used to measure oil exactly.

7. Interval of toll of 4 bells is 30, 70, 120 and 140 seconds.
The LCM of (30, 70, 120, 140) is the time at which ring together again.

2	30, 70, 120, 140
2	15, 35, 60, 70
2	15, 35, 30, 35
3	15, 35, 15, 35
5	5, 35, 5, 35
7	1, 7, 1, 7
	1, 1, 1, 1

8. Number of boys = 420
Number of girls = 540
Maximum no. of students which can be kept in each group is the HCF of 420 and 540.

$$
\begin{array}{r}
410\overline{)\,540\,(1} \\
-420 \\
\hline
120\overline{)\,420\,(3} \\
-360 \\
\hline
60\overline{)\,120\,(2} \\
-120 \\
\hline
0
\end{array}
$$

HCF of 420 and 540 is 60.
$\therefore$ Maximum students which can be kept in each group is 60.

9. Four bells ring together at an interval of 2, 5, 8, 10 seconds.
Next time they will ring together again is the LCM of given time intervals.

2	2, 5, 8, 10
2	1, 5, 4, 15
2	1, 5, 2, 15
5	1, 5, 1, 15
	1, 1, 1, 11

LCM of (2, 5, 8, 10) is $2 \times 2 \times 2 \times 5 = 40$
After 40 seconds, 4 bills will ring together again.

10. The greatest number which divides 72, 96, 136 without leaving a remainder is the HCF of given numbers.
Now, we will find HCF of 72, 96, 136
So, the greatest number which divides 72, 96 and 136 without leaving a remainder is 8.

$$
\begin{array}{r}
72\overline{)\,96\,(1} \\
-72 \\
\hline
24\overline{)\,72\,(3} \\
-72 \\
\hline
0
\end{array}
\qquad
\begin{array}{r}
24\overline{)\,136\,(5} \\
-120 \\
\hline
16\overline{)\,24\,(1} \\
-16 \\
\hline
8\overline{)\,16\,(1} \\
-16 \\
\hline
0
\end{array}
$$

11. LCM of 22, 54, 108, 135, 198

2	22
11	11
	1

2	54
3	27
3	9
3	3
	1

2	108
2	54
3	27
3	9
3	3
	1

3	135
3	45
3	15
5	5
	1

2	198
3	99
3	33
11	11
	1

$22 = 2 \times 11$
$54 = 2 \times 3 \times 3 \times 3$
$108 = 2 \times 2 \times 3 \times 3 \times 3$
$135 = 3 \times 3 \times 3 \times 5$
$198 = 2 \times 3 \times 3 \times 11$
LCM of $(22, 54, 108, 135, 198) = 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 11$
$= 5940$

12. Subtract the remainders from given numbers $208 - 18 = 190$, $358 - 18 = 340$
Now, we will find the HCF of 190 and 340.

$$
\begin{array}{r}
190\overline{)\,340\,(1} \\
-190 \\
\hline
150\overline{)\,190\,(1} \\
-150 \\
\hline
40\overline{)\,150\,(1} \\
-120 \\
\hline
30\overline{)\,40\,(5} \\
-30 \\
\hline
10\overline{)\,30\,(3} \\
-30 \\
\hline
0
\end{array}
$$

The greatest number which divides 208 and 358 so as to leave a remainder 18 in each case is 10.

13. Time at which 3 lions roar together is 11 a.m.
LCM of 20, 30, 40 minutes is the time at which they will roar together again.

2	20, 30, 40
2	10, 15, 20
2	5, 15, 10
3	5, 15, 5
5	5, 5, 5
	1, 1, 1

LCM of $20, 30, 40 = 2 \times 2 \times 2 \times 3 \times 5 = 120 = 2$ hours
At 1:00 p.m., they will roar together again.

14. Subtract the remainders from respective numbers
$3453 - 2 = 3451$, $9370 - 3 = 9367$
Now, the greatest no. which divides 3453 and 9370 is the HCF.
Finding the HCF of 3453 and 9370

$$
\begin{array}{r}
3451\overline{)\,9367\,(2} \\
-6902 \\
\hline
2465\overline{)\,3451\,(1} \\
-2456 \\
\hline
986\overline{)\,2465\,(2} \\
-1972 \\
\hline
493\overline{)\,986\,(2} \\
-986 \\
\hline
0
\end{array}
$$

$\therefore$ The greatest number which divides 3453 and 9370 leaving 2 and 3 as remainders.

15. Firstly we find LCM of 5, 8, 12, 15.

2	5, 8, 12, 15
2	5, 4, 6, 15
2	5, 2, 3, 15
3	5, 1, 3, 15
5	5, 1, 1, 5,
	1, 1, 1, 1

Since, LCM of 5, 8, 12, 15 = $2 \times 2 \times 2 \times 3 \times 5 = 120$

$5 - 2 = 3, 2 - 5 = 3, 12 - 9 = 3, 15 - 12 = 3$

Since, difference of given number and their respective remain less is constant.

So, 120 – 3 = 117 is the least number which when divided by 5, 8, 12, 15 leaves a remainder of 2, 5, 9, 12.

16. The greatest possible length which can be used to exactly measure the lengths 700 cm, 385 cm, 1295 cm is their HCF.

First, we find the HCF.

$$
\begin{array}{r}
385\overline{)\,700\,(1} \\
-385 \\
\hline
315\overline{)\,385\,(1} \\
-315 \\
\hline
70\overline{)\,315\,(4} \\
-280 \\
\hline
35\overline{)\,70\,(2} \\
-35 \\
\hline
0
\end{array}
$$

Thus, 35 cm is the required possible length.

17. Firstly we find LCM of 6, 8, 12, 5, 20.

2	6, 8, 12, 15, 20
2	3, 4, 6, 15, 10
2	3, 2, 3, 15, 15
3	3, 1, 3, 15, 16
5	1, 1, 1, 5, 15
	1, 1, 1, 1, 1

1 cm of 6, 8, 12, 15, 20 = $2 \times 2 \times 2 \times 3 \times 5 = 120$

$\therefore$ Remainder in each case = 5

So, the smallest no. which divided by 6, 8, 12, 15, 20 and leaves a remainder 5 is 125.

18. Mass of milk contained in 1st container = 1653 kg
Mass of milk contained in 2nd container = 2261 kg
Mass of milk contained in 3rd container = 2527 kg

```
1653)2261(1
   -1653
    608)1653(2
      -1216
       437)608(1
         -437
          171)437(2
            -342
             95)171(3
               -95
                76)95(1
                 -76
                  19)76(4
                    -76
                     0
```

The biggest measure of milk which must be there to measure all quantities exactly is their HCF.
19 kg of milk container must be there to measure the all quantities exactly.

19. Smallest no. of five digits = 10000
Firstly we find LCM of 60, 90, 80.

2	60, 90, 80
2	30, 45, 40
2	15, 45, 20
2	15, 45, 10
3	15, 45, 5
3	5, 15, 5
5	5, 5, 5
	1, 1, 1

LCM of (60, 90, 80) = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 720$
Required number = Smallest no. of five digits + LCM
= 10000 + 720 = 10720

20. Length of 1st piece of timber = 42 m
Length of 2nd piece of timber = 49 m
Length of 3rd piece of timber = 63 m
Greatest possible length of each plank
= HCF of length of timber pieces.
HCF of (42, 49, 63) is 7.

$$\begin{array}{r|l} 42 & 49\,(1 \\ -42 & \\ \hline 7 & 42\,(6 \\ -42 & \\ \hline 0 & \end{array} \qquad \begin{array}{r|l} 7 & 63\,(9 \\ -63 & \\ \hline 0 & \end{array}$$

∴ Greatest possible length of each plank = 7 m

21. Smallest no. of students in each row is the LCM of given number of students.
LCM of (10, 15, 16) is given by

2	10, 15, 16
2	5, 15, 8
2	5, 15, 4
2	5, 15, 2
3	5, 15, 1
5	5, 5, 1
	1, 1, 1

LCM of (10, 15, 16) = 2 × 2 × 2 × 2 × 3 × 5 = 240
Smallest no. of students = 240

22. 2 m 5 cm + 200 cm + 5 cm = 205 cm
3 m 69 cm = 300 cm + 69 cm = 369 cm
8 m 61 cm = 800 cm + 61 cm = 861 cm
Greatest possible length is their HCF.
HCF of (205, 369, 861) is given by

$$\begin{array}{r|l} 205 & 369\,(1 \\ -205 & \\ \hline 164 & 205\,(1 \\ -164 & \\ \hline 41 & 164\,(4 \\ -164 & \\ \hline 0 & \end{array}$$

Hence, greatest possible length is 41 cm.

23. The smallest number which is exactly divisible by 72, 108 and 144 is their LCM.
LCM of (72, 108, 144) is given by

2	72, 108, 144
2	36, 54, 72
2	18, 27, 36
2	9, 27, 18
2	9, 27, 9
3	3, 9, 3
3	1, 3, 1
	1, 1, 1

LCM of (72, 108, 144) = 2 × 2 × 2 × 2 × 3 × 3 × 3
= 432

∴ The smallest no. which is exactly divisible by 72, 108, 144 is 432.

24. The greatest number that will divide 840 and 2296 without leaving remainder is their HCF.

$$
\begin{array}{r}
840\overline{)2296}(2 \\
-1680 \\
\hline
616\overline{)840}(1 \\
-616 \\
\hline
224\overline{)616}(2 \\
-448 \\
\hline
168\overline{)224}(2 \\
-168 \\
\hline
56\overline{)168}(3 \\
-168 \\
\hline
0
\end{array}
$$

$\therefore$ the greatest number that will divide 840 and 2296 without leaving remainder is 56.

Exercise-7.8

1. HCF = 126, LCM = 2520
One number = 504
HCF × LCM = One number × Other number
126 v 2520 = 504 × Other number
Other number $= \frac{(126 \times 2520)}{504} = \frac{317520}{504} = 630$
the other number is 630.

2. Product of two numbers = 360
LCM = 60
HCF × LCM = Product of two numbers
HCF × 60 = 360
$\text{HCF} = \frac{360}{60} = 6$

3. LCM = 36, HCF = 216
One number = 54
Let other no. be x.
LCM × HCF = Product of 2 number
36 × 216 = 54x
$x = \frac{36 \times 216}{54} = \frac{7776}{54} = 144$
Other no. is 144.

4. Product of two numbers = 4800
LCM = 60
Let HCF be x.
LCM × HCF = 4800
60x = 4800
$x = \frac{4800}{60} = 80$
HCF is 80.

5. LCM = 133, HCF = 1596
one number = 114.
Let other number be x.
HCF × LCM = One number × other number
1596 × 133 = 114x
$x = \frac{1596 \times 133}{114} = \frac{212268}{144} = 1862$
the other number = 1862

Multiple Choice Questions
Tick (✓) the correct choice :
1. (a) 2. (c) 3. (a) 4. (c)

Chapter 8 : Decimals

Exercise-8.1

1. Write the following decimals in words :

a. Seven point four
b. Fifty three point zero eight
c. Sixty six point seven eight
d. Thirty six point four eight seven
e. Nine hundred seventy six point eight four four
f. Two thousand eight hundred thirty eight point six four one four

2. Write the following in figures :

a. 34.067 b. 80.966 c. 53.628
d. 227.123 e. 942.623 f. 75.349

3. Arrange the following numbers in the decimal place-value chart :

S. No.	Decimal No.	Thousands	Hundreds	Tens	Ones	Point	Tenths	Hundredths	Thousandths
a.	16.2			1	6	.	2		
b.	284.23		2	8	4	.	2	3	
c.	768.003		7	6	8	.	0	0	3
d.	384.634		3	8	4	.	6	3	4
e.	453.847		4	5	3	.	8	4	7
f.	2223.107	2	2	2	3	.	1	0	7

4. Write the place-value of the coloured digit :

a. Place value of 9 is 9
b. Place value of 7 is $\frac{7}{10} = 0.7$
c. Place value of 4 is $\frac{4}{100} = 0.04$
d. Place value of 5 is 5
e. Place value of 9 is $\frac{9}{10} = 0.9$
f. Place value of 2 is $\frac{2}{1000} = 0.002$

5. Write the following in expanded form :

a. 9.256 $\rightarrow$ $9 + 0.2 + 0.05 + 0.006$
b. 35.08 $\rightarrow$ $30 + 5 + 0.0 + 0.08$
c. 247.108 $\rightarrow$ $200 + 40 + 7 + 0.1 + 0.008$
d. 0.875 $\rightarrow$ $0 + 0.8 + 0.07 + 0.005$
e. 999.639 $\rightarrow$ $900 + 90 + 9 + 0.6 + 0.03 + 0.009$
f. 86.007 $\rightarrow$ $80 + 6 + 0.007$

6. Match the following :

a. 18.16 ii. Eighteen point one Six
b. 6.409 i. Six point four zero nine
c. 28.23 iv. Twenty-eight point two three
d. 0.05 iii. Zero point zero five

7. Write the following in short form as decimal fraction :

a. 865.276 b. 776.123 c. 965.379 d. 398.496 e. 236.156
f. 965.767 g. 119.634 h. 67.69 i. 8325.758

Exercise-8.2

1. Write the following in decimal form :

a. $\frac{6454}{10} = 645.4$ b. $\frac{69}{1000} = 0.069$ c. $\frac{18}{10000} = 0.0018$
d. $\frac{384}{10} = 38.4$ e. $\frac{979}{1000} = 0.979$ f. $\frac{3846}{100} = 38.46$

2. Express the following in fractional form :

a. $\frac{1067}{100}$ b. $\frac{459}{1000}$ c. $\frac{11835}{100}$
d. $\frac{241625}{100}$ e. $\frac{36290}{1000}$ f. $\frac{790087}{1000}$

3. Fill in the blanks with equivalent decimal :

a. 9.8 = 9.80 = **9.800** b. 42.5 = **42.50** = 42.500
c. **6.7** = 6.70 = 6.700 d. 85.7 = **85.70** = **85.700**
e. 0.4 = **0.40** = 0.400 f. **5.1** = **5.10** = 5.100

Exercise-8.3

1. Colour the following grids to compare :

Do it yourself

2. Convert the following into like decimals :

a. 24.71 → 24.710, 319.2 → 319.200, 38.5 → 38.500, 0.943 → 0.943
b. 83.44 → 83.440, 96.3 → 96.300, 101.432 → 101.432, 19.18 → 19.180
c. 90.12 → 90.12, 41 → 41.00, 50 → 50.00, 62.30 → 62.30
d. 100 → 100.000, 500.6 → 500.600, 6.80 → 6.800, 19.800 → 19.800

3. Compare using signs > , < or = :

a. 19.234 < 31.28 b. 131.12 > 36.02 c. 4.546 > 2.946
d. 18.687 > 1.3869 e. 13.86 < 22.365 f. 23.165 > 14.62

4. Arrange the following in ascending order :

a. 16.46, 12.623, 91.2, 10.634
Convert to like decimals
16.460, 12.623, 91.200, 10.634
Ascending order is given by 10.634 < 12.623 < 16.460 < 91.200
10.634 < 12.623 < 16.46 < 91.2

b. 18.46, 10.008, 84.6, 0.0846
Convert to like decimals
18.4600, 10.0080, 84.6000, 0.0846
Ascending order is given by 0.0846 < 10.0080 < 18.4600 < 84.6000
0.0846 < 10.008 < 18.46 < 84.6

c. 3.23, 6.66, 0.323, 26.62
Convert to like decimals
3.230, 6.660, 0.323, 26.620

Ascending order is given by $0.323 < 3.230 < 6.660 < 26.620$

$0.323 < 3.23 < 6.66 < 26.62$

d. 254, 25.4, 2.54, 0.254

Convert to like decimal places

254.000, 25.400, 2.540, 0.254

Ascending order is given by $0.254 < 2.540 < 25.400 < 254.000$

$0.254 < 2.54 < 25.4 < 254$

e. 8.72, 7.914, 0.695, 12.01, 10.896, 9.2

Convert to like decimals

8.720, 7.914, 0.695, 12.010, 10.896, 9.200

Ascending order is given by $0.695 < 7.914 < 8.720 < 9.200 < 10.896 < 12.010$

$0.695 < 7.914 < 8.72 < 9.2 < 10.896 < 12.01$

f. 5.3, 5.08, 5.91, 5.009, 5.29, 5.7

Convert to like decimals

5.300, 5.080, 5.910, 5.009, 5.290, 5.700

Ascending order is given by $5.009 < 5.080 < 5.290 < 5.300 < 5.700 < 5.910$

$5.009 < 5.08 < 5.29 < 5.3 < 5.7 < 5.91$

5. Arrange the following in descending order :

a. 0.096, 9.06, 9.36, 9.236

Convert to like decimals

0.096, 9.060, 9.360, 9.236

Descending order is given by

$9.360 > 9.236 > 9.060 > 0.096$

$9.36 > 9.236 > 9.06 > 0.096$

b. 16.38, 16.234, 16.22, 13.146

Convert to like decimals

16.380, 16.234, 16.220, 13.146

Descending order is given by

$16.380 > 16.234 > 16.220 > 13.146$

$16.38 > 16.234 > 16.22 > 13.146$

c. 0.345, 0.453, 0.534, 0.354

Descending order is given by

$0.534 > 0.453 > 0.354 > 0.345$

d. 25.963, 29.563, 27.963, 25.369

Descending order is given by

$29.563 > 27.963 > 25.963 > 25.369$

e. 48.4, 80.05, 12.97, 39.276, 101.2

Convert it into like decimals

48.400, 80.050, 12.970, 39.276, 101.200

Descending order is given by

$101.200 > 80.050 > 48.400 > 39.276 > 12.970$

$101.2 > 80.05 > 48.4 > 39.276 > 12.97$

f. 7.63, 7.81, 7.594, 7.2, 7.05
Convert to like decimals
7.630, 7.810, 7.594, 7.200, 7.050
Descending order is given by
7.810 > 7.630 > 7.594 > 7.200 > 7.050
7.81 > 7.63 > 7.594 > 7.2 > 7.05

Exercise-8.4

1. Find the sum :

a.
$$\begin{array}{r} {\scriptstyle 1} \\ 8.25 \\ +\ 3.18 \\ \hline 11.43 \end{array}$$

b.
$$\begin{array}{r} {\scriptstyle 1\,1\,1} \\ 169.8 \\ +\ 47.4 \\ \hline 217.2 \end{array}$$

c.
$$\begin{array}{r} {\scriptstyle 1} \\ 20.93 \\ +96.32 \\ \hline 117.25 \end{array}$$

d.
$$\begin{array}{r} {\scriptstyle 1\ \ 1\,1} \\ 0.871 \\ +7.479 \\ \hline 8.300 \end{array}$$

e.
$$\begin{array}{r} {\scriptstyle 1\ \ \ 1\,1} \\ 4.062 \\ +26.538 \\ \hline 30.600 \end{array}$$

f.
$$\begin{array}{r} {\scriptstyle 1\ \ \ 1} \\ 76.09 \\ +57.46 \\ \hline 133.55 \end{array}$$

2. Add the following decimal numbers :

a. 16.35 + 13.2

$$\begin{array}{r} 16.35 \\ +13.20 \\ \hline 29.55 \end{array}$$

∴ 16.35 + 13.2 = 29.55

b. 12.48 + 18.287

$$\begin{array}{r} {\scriptstyle 1\ \ 1} \\ 12.480 \\ +18.287 \\ \hline 30.767 \end{array}$$

∴ 12.48 + 18.287 = 30.767

c. 216.468 + 131.03

$$\begin{array}{r} 216.468 \\ +131.030 \\ \hline 343.498 \end{array}$$

So, 216.468 + 131.03 = 347.498

d. 325.81 + 89.097 + 0.78

$$\begin{array}{r} {\scriptstyle 1\,1\,1\,1} \\ 325.810 \\ 89.097 \\ +\ \ 0.780 \\ \hline 415.687 \end{array}$$

So, 325.810 + 89.097 + 0.78 = 415.687

e. 331.331 + 33.31 + 3.1 + 0.001

$$\begin{array}{r} 331.331 \\ 33.310 \\ 3.100 \\ +\ \ 0.001 \\ \hline 367.742 \end{array}$$

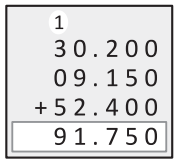
So, 331.331 + 33.31 + 3.1 + 0.001 = 367.742

f. 53.6 + 96.87 + 8.974 + 0.1

$$\begin{array}{r} {\scriptstyle 1\,1\,1} \\ 53.600 \\ 96.870 \\ 8.974 \\ +\ \ 0.100 \\ \hline 159.544 \end{array}$$

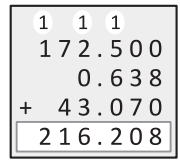
So, 53.6 + 96.87 + 8.974 + 0.100 = 159.544

g. 30.2 + 9.15 + 52.4



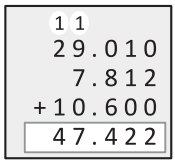
So, 30.200 + 9.15 + 52.4
= 91.750

h. 172.5 + 0.638 + 43.07



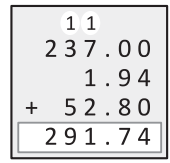
So, 172.5 + 0.638 + 43.07
= 216.208

i. 29.01 + 7.812 + 10.6



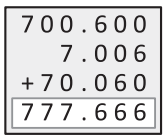
So, 29.010 + 7.812 + 10.600
= 47.420

j. 237 + 1.94 + 52.8



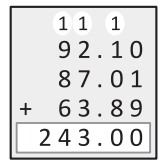
So, 237 + 1.94 + 52.8 = 291.74

k. 7.006 + 70.06 + 700.6



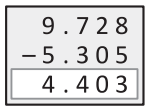
So, 700.600 + 7.006 + 70.060
= 777.666

l. 92.1 + 87.01 + 63.89

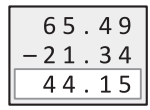


3. Subtract the following :

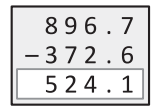
a.



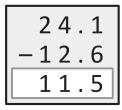
b.



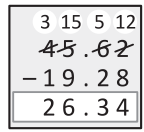
c.



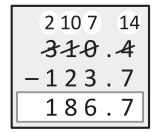
d.



e.

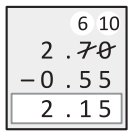


f.



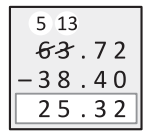
4. Subtract the following decimal numbers :

a. 2.7 − 0.55



2.7 − 0.55 = 2.15

b. 63.72 − 38.4

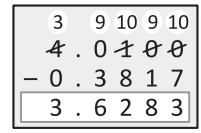


63.72 − 38.4 = 25.32

c. 2.015 – 0.58

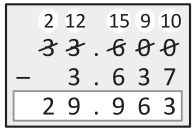
2.015 – 0.58 = 1.435

d. 4.01 – 0.3817



4.01 – 0.3817 = 3.6283

e. 33.6 – 3.637



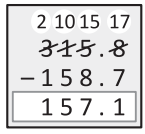
33.6 – 3.637 = 29.963

f. 500 – 386.713

500 – 386.713 = 113.287

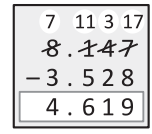
5. Arrange in columns and subtract :

a. 315.8 – 158.7



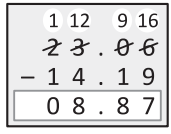
315.8 – 158.7 = 157.1

b. 8.147 – 3.528



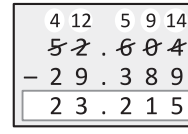
8.147 – 3.528 = 4.619

c. 23.06 – 14.19



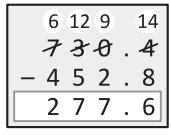
23.06 – 14.19 = 8.7

d. 52.604 – 29.389



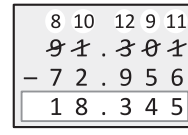
52.604 – 29.389 = 23.215

e. 730.4 – 452.8



730.4 – 452.8 = 277.6

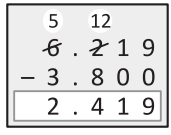
f. 91.301 – 72.956



91.301 – 72.956 = 18.345

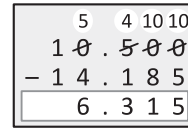
6. Find the difference of :

a. 6.219 – 3.8



So, 6.219 – 3.8 = 2.419

b. 10.5 – 4.185



So, 10.5 – 4.185 = 6.315

c. 82.41 – 49.73

	7	11		13	11
	~~8~~	~~2~~	.	~~4~~	~~1~~
–	4	9	.	7	3
	3	2	.	6	8

So, 82.41 – 49.73 = 32.68

d. 17.9 – 8.64

	0	17		8	10
	~~1~~	~~7~~	.	~~9~~	~~0~~
–		8	.	6	4
		9	.	2	6

So, 17.9 – 8.64 = 9.26

e. 100.00 – 50.45

	0	9	9		9	10
	~~1~~	~~0~~	~~0~~	.	~~0~~	~~0~~
–		5	0	.	4	5
		4	9	.	5	5

So, 100 – 50.45 = 49.55

f. 250 – 125.75

		4	9		9	10
	~~2~~	~~5~~	~~0~~	.	~~0~~	~~0~~
–	1	2	5	.	7	5
	1	2	4	.	2	5

So, 250 – 125.75 = 124.25

g. 512.87 – 304.92

		0	11		18
	5	~~1~~	~~2~~	.	~~8~~ ~~7~~
–	3	0	4	.	9 2
	2	0	7	.	9 5

So, 512.87 – 304.92 = 207.95

h. 13.14 – 7.826

	0	12	11	3	10
	~~1~~	~~3~~	.	~~1~~	~~4~~ ~~0~~
–		7	.	8	2 6
		5	.	3	1 4

So, 13.14 – 7.826 = 5.314

i. 83.005 – 39.173

	7	12		9	10	
	~~8~~	~~3~~	.	~~0~~	~~0~~	5
–	3	9	.	1	7	3
	4	3	.	8	3	2

So, 83.005 – 39.173 = 43.832

7. Let x must be subtracted from 60 to get 25.56.

60 – x = 25.56

60 – 25.56 = x

x = 34.44

So, 34.44 should be subtracted from 60 to get 25.56.

	5	9		9	10
	~~6~~	~~0~~	.	~~0~~	~~0~~
–	2	5	.	5	6
	3	4	.	4	4

8. Sum of 67.57 and 93.055

		1		1	
	6	7	.	5	7 0
+	9	3	.	0	5 5
	1	6	0	.	6 2 5

∴ Sum of 67.57 and 93.055 is 160.625

Exercise-8.5

1. Cost of first watch = ₹ 136.75

Cost of second watch = ₹ 134.60

Total amount spent by Shumbham = ₹ 136.75 + ₹ 134.60

= ₹ 271.35

		1	1	
	1	3	6	. 7 5
+	1	3	4	. 6 0
	2	7	1	. 3 5

2. Total distance = 236.5 km
Distance covered by Rajesh = 127.8 km
Distance he needs to cover = 236.5 km – 127.8 km
= 108.7 km

3. Height of pea plant measured on Tuesday = 75.5 cm
Height it grew on Thursday = 23.8
Total height of pea plant on Thursday = (75.5 + 23.8) cm
= 99.3 cm

4. Distance covered on Monday = 123.8 km
Distance covered on Tuesday = 189.9 km
Distance covered on Wednesday = 99.76 km
Total distance he drove = (123.8 + 189.9 + 99.76) km
= 413.46 km

5. Distance Suman covered = 200 m
Time taken by Suman = 102.1 sec

Speed of Suman $= \frac{\text{Distance Covered}}{\text{Time Taken}} = \frac{200 \text{ m}}{(102.1 \text{ sec})} = 1.958 \text{ m/sec}$

Distance Rinku covered = 200 m
Time taken by Rinku = 98.5 sec

Speed of Rinku $= \frac{\text{Distance Covered}}{\text{Time Taken}} = \frac{200 \text{ m}}{98.5 \text{ sec}}$
= 2.030

Since, speed of Rinku is greater than Suman, so Rinku is faster than Suman by (102.1 – 98.5) sec = 3.6 sec

Exercise-8.6

1. Find the product :

a. 6.5 × 5

$$\begin{array}{r} 6.5 \\ \times\ 5 \\ \hline 32.5 \end{array}$$

6.5 × 5 = 32.5

b. 5.21 × 19

$$\begin{array}{r} 5.21 \\ \times 19 \\ \hline 4689 \\ 521\times \\ \hline 98.91 \end{array}$$

5.21 × 19 = 98.99

c. 3.7 × 12

$$\begin{array}{r} 3.7 \\ \times 12 \\ \hline 74 \\ 37\times \\ \hline 44.4 \end{array}$$

3.7 × 12 = 44.4

d. 2.5 × 11

$$\begin{array}{r} 2.5 \\ \times 11 \\ \hline 25 \\ 25\times \\ \hline 27.5 \end{array}$$

2.5 × 11 = 27.5

e. 3.6×12

3.6
×12
72
36×
43.2

$3.6 \times 12 = 43.2$

f. 8.7×14

8.7
×14
348
87×
121.8

$8.7 \times 14 = 121.8$

2. Multiply :

a. $16.25 \times 10 = 162.5$

b. $13.836 \times 100 = 1383.6$

c. $28.6251 \times 1000 = 286251$

d. $6234.5 \times 10 = 62345$

e. $300.50 \times 100 = 30050$

f. $4.909 \times 1000 = 4909$

g. $3.61 \times 10 = 36.1$

h. $2.25 \times 10 = 22.5$

i. $3.761 \times 10 = 37.61$

3. Multiply the following :

a. 0.7×1.2

0.7
×1.2
14
07×
0.84

Thus, $0.7 \times 1.2 = 0.84$

b. 1.5×6.5

1.5
×6.5
75
90×
9.75

Thus, $1.5 \times 6.5 = 9.75$

c. 6.7×1.9

6.7
×1.9
603
+67×
12.73

Thus, $6.7 \times 1.9 = 12.73$

d. 1.33×1.4

1.33
×1.40
000
532×
133××
1.8820

Thus, $1.33 \times 1.4 = 1.8620$

e. 1.023×1.4

1.023
×1.4
4092
1023×
1.4322

Thus, $1.023 \times 1.4 = 1.4322$

f. 2.379×2.2

2.379
×2.2
4758
+4758×
5.2338

Thus, $2.379 \times 2.2 = 5.2338$

g. 4.365 × 4.4

4 . 3 6 5
× 4 . 4
1 7 4 6 0
+ 1 7 4 6 0
1 9 . 2 0 6 0

Thus, 4.365 × 4.4 = 19.2060

h. 7.013 × 1.3

7 . 0 1 3
× 1 . 3
2 1 0 3 9
+ 7 0 1 3 ×
9 . 1 1 6 9

Thus, 7.013 × 1.3 = 9.1169

i. 6.312 × 1.6

6 . 3 1 2
× 1 . 6
3 7 8 7 2
+ 6 3 1 2 ×
1 0 0 9 9 2

Thus, 6.312 × 1.6 = 10.0992

4. 16.9354 × 4.70

1 6 . 9 3 5 4
× 4 . 7 0
0 0 0 0 0 0
1 1 8 5 4 7 8 ×
+ 6 7 7 4 1 6 × ×
7 9 . 5 9 6 3 8 0

Thus, product of 16.9354 × 4.70 = 79.596380

Exercise-8.7

1. Find the quotient :

a. 20.4 ÷ 3

```
     6.8
  3) 20.4
    -18↓
      24
     -24
       0
```

So, 20.4 ÷ 3 = 6.8

b. 4.235 ÷ 25

```
       0.1694
  25) 4.235
     -25↓
      173
     -150↓
       235
      -225
       100
      -100
         0
```

So, 4.235 ÷ 25 = 0.1694

c. $243.18 \div 63$

$$
\begin{array}{r}
3.86 \\
63\overline{)\,243.18} \\
-189 \\
\hline
541 \\
-504 \\
\hline
378 \\
-378 \\
\hline
0
\end{array}
$$

So, $243.18 \div 63 = 3{,}86$

d. $0.108 \div 9$

$$
\begin{array}{r}
0.012 \\
9\overline{)\,0.108} \\
-9 \\
\hline
18 \\
-18 \\
\hline
0
\end{array}
$$

So, $0.108 \div 9 = 0.012$

e. $10.4192 \div 32$

$$
\begin{array}{r}
0.3256 \\
32\overline{)\,10.4192} \\
-96 \\
\hline
81 \\
64 \\
\hline
179 \\
-160 \\
\hline
192 \\
-192 \\
\hline
0
\end{array}
$$

So, $10.4192 \div 32 = 0.3256$

f. $204.4 \div 35$

$$
\begin{array}{r}
0.3256 \\
32\overline{)\,204.4} \\
-175 \\
\hline
294 \\
-280 \\
\hline
140 \\
-140 \\
\hline
0
\end{array}
$$

So, $204.4 \div 35 = 5.84$

g. $4.27 \div 7$

$$
\begin{array}{r}
0.61 \\
7\overline{)\,4.27} \\
-42 \\
\hline
07 \\
-7 \\
\hline
0
\end{array}
$$

So, $4.27 \div 7 = 0.61$

h. $112.5 \div 15$

$$
\begin{array}{r}
7.5 \\
15\overline{)\,112.5} \\
-105 \\
\hline
75 \\
-75 \\
\hline
0
\end{array}
$$

So, $112.5 \div 15 = 7.5$

i. $0.192 \div 12$

$$
\begin{array}{r}
0.16 \\
12\overline{)\,0.192} \\
-12 \\
\hline
72 \\
-72 \\
\hline
0
\end{array}
$$

So, $0.192 \div 12 = 0.016$

2. Divide the following :

a. $75.75 \div 10$

```
      7.575
 10 ) 75.75
     -70
      57
     -50
       75
      -70
       50
      -50
        0
```

So, $75.75 \div 10 = 7.575$

b. $167.8 \div 10$

```
      16.78
 10 ) 167.8
     -10
       67
      -60
        78
       -70
        80
       -80
         0
```

So, $167.8 \div 10 = 16.78$

c. $6079 \div 1000$

```
         6.079
 1000 ) 6079
       -6000
         7900
        -7000
          9000
         -9000
             0
```

So, $6079 \div 1000 = 6.079$

d. $180.75 \div 100$

```
        1.8075
 100 ) 180.75
      -100
        807
       -800
         750
        -700
         500
        -500
           0
```

So, $180.75 \div 100 = 1.8075$

e. $615.4 \div 1000$

```
         0.6154
 1000 ) 615.4
       -6000
         1540
        -1000
         5400
        -5000
         4000
        -4000
            0
```

So, $615.4 \div 1000 = 0.6154$

f. $10.9 \div 10$

```
      1.90
 10 ) 10.9
     -10
       090
       -90
         0
```

So, $10.9 \div 10 = 1.09$

3. Divide the following :

a. $16.9 \div 1.3 = \frac{169}{13}$

$$\begin{array}{r} 13 \\ 13\overline{)169} \\ -13\downarrow \\ \hline 39 \\ -39 \\ \hline 0 \end{array}$$

So, $16.9 \div 1.3 = 13$

b. $9.69 \div 1.9$

1.9 has 1 decimal place so, we multiply by 10 to make it a whole number.

$\frac{9.69 \times 10}{1.9 \times 10} = \frac{96.9}{19}$

So, $9.69 \div 1.9 = 5.1$

$$\begin{array}{r} 5.1 \\ 19\overline{)969} \\ -99\downarrow \\ \hline 19 \\ -19 \\ \hline 0 \end{array}$$

c. $4.41 \div 2.1$

2.1 has 1 decimal place so, we multiply by 10 to make it a whole number.

$\frac{4.41 \times 10}{2.1 \times 10} = \frac{44.1}{21}$

So, $4.41 \div 2.1 = 2.$

$$\begin{array}{r} 2.1 \\ 21\overline{)44.1} \\ -42\downarrow \\ \hline 21 \\ -21 \\ \hline 0 \end{array}$$

d. $23.6 \div 0.26$

0.26 has 2 decimal places, so we multiply by 100 to make it a whole number.

$\frac{23.6 \times 100}{0.26 \times 100} = \frac{2360}{26}$

So, $23.6 \div 0.26 = 90.76$

$$\begin{array}{r} 90.76 \\ 26\overline{)2360} \\ -2341 \\ \hline 200 \\ -182 \\ \hline 180 \\ -156 \\ \hline 24 \end{array}$$

e. $0.441 \div 21$

So, $0.441 \div 21 = 0.021$

$$\begin{array}{r} 0.021 \\ 21\overline{)0.441} \\ -42\downarrow \\ \hline 21 \\ -21 \\ \hline 0 \end{array}$$

f. $11.47 \div 0.031$

0.031 has 3 decimal places, so we multiply by 1000 to make it a whole number.

$\frac{11.47 \times 1000}{0.031 \times 1000} = \frac{11470}{31}$

So, $11.47 \div 0.031 = 370$

$$\begin{array}{r} 370 \\ 31\overline{)11470} \\ -93\downarrow \\ \hline 217 \\ -217\downarrow \\ \hline 00 \end{array}$$

g. $31.696 \div 0.28$

0.28 has 2 decimal places, so we multiply by 100 to make it a whole number.

$$\frac{31.696\times100}{0.28\times100} = \frac{3169.6}{28}$$

$$\begin{array}{r} 113.2 \\ 28\overline{)\,3169.6} \\ -28\downarrow \\ \hline 36 \\ -28\downarrow \\ \hline 89 \\ -84\downarrow \\ \hline 56 \\ -56 \\ \hline 0 \end{array}$$

So, $31.696 \div 0.28 = 113.2$

h. $0.792 \div 0.8$

0.8 has 1 decimal place, so we multiply by 10 to make it a whole number.

$$\frac{0.792\times10}{0.8\times10} = \frac{7.92}{8}$$

$$\begin{array}{r} 0.99 \\ 8\overline{)\,7.92} \\ -72 \\ \hline 72 \\ -72 \\ \hline 0 \end{array}$$

So, $0.792 \div 0.8 = 0.99$

i. $1.25 \div 2.5$

2.5 has 1 decimal places, so we multiply by 10 to make it a whole number.

$$\frac{1.25\times10}{2.5\times10} = \frac{12.5}{25}$$

$$\begin{array}{r} 0.5 \\ 25\overline{)\,12.5} \\ -12.5 \\ \hline 0 \end{array}$$

So, $1.25 \div 2.5 = 0.5$

Exercise-8.8

1. Cost of 12 bananas = ₹ 40.50
   Cost of 1 banana = $40.50 \div 12$
   = ₹ 3.375

$$\begin{array}{r} 3.375 \\ 12\overline{)\,40.50} \\ -36\downarrow \\ \hline 45 \\ -36\downarrow \\ \hline 90 \\ -84 \\ \hline 60 \\ -60 \\ \hline 0 \end{array}$$

2. Weight of 1 wheat bag = 131.5 g
   Weight of 16 bags = (131.6×16) kg
   = 2104 kg

$$\begin{array}{r} 131.5 \\ \times\ 1.6 \\ \hline 7890 \\ 1315\times \\ \hline 2104.0 \end{array}$$

3. Amount of fat in 1 litre milk = 0.245 kg
Amount of fat in 15.4 litres of milk = (0.245 × 154) kg
= 3.7730 kg

		0	.	2	4	5
		×	1	5	.	4
		0	9	8	0	
	1	2	2	5	×	
0	2	4	5	×	×	
0	.	3	7	7	3	0

4. Cost of 12.5 kg rice = ₹ 291.25

Cost of 3.5 kg rice = $\frac{(291.25 \times 3.5)}{12.5}$

= ₹ $\left(\frac{1019.375}{12.5}\right)$

= ₹ $\left(\frac{10193.75}{125}\right)$

= ₹ 81.55

		2	9	1	.	2	5
			×	3	.	5	
	1	4	5	6	2	5	
+	8	7	3	7	5	×	
1	0	1	9	.	3	7	5

```
      581.55
125 ) 10193.75
    −1000
      193
     −125
       687
      −625
        625
       −625
          0
```

5. 16 litres of petrol covers a journey of 157.6 km.
Number of kilometers covered in 1 litre of petrol = (157.6 ÷ 16) km
= 9.85 km

```
     9.85
16 ) 157.6
    −144
      136
     −128
       80
      −80
        0
```

6. Cost of 1 litre milk = ₹ 14.50
Cost of 125 litres milk = ₹ 125 × 14.50
= ₹ 1812.50

		1	4	.	5	0
		×	1	2	5	
		7	2	5	0	
	2	9	0	0	×	
+	1	4	5	0	×	×
	1	8	1	2	5	0

7. Cost of 6 kg potato = ₹ 18.75
Cost of 1 kg potato = ₹ 18.75 ÷ 6
= ₹ 3.125

```
     3.125
6 ) 18.75
    −18
      07
     −6
      15
     −12
      30
     −30
       0
```

8. Amount of sugar contained in a bag = 97.60 kg
Amount of sugar contained in 100 bags = 97.60 × 100 = 9760 kg

9. Cost of 30 m cloth = ₹ 1210.50

Cost of 1 m cloth = ₹ 1210.50 ÷ 30

= ₹ 40.35

$$\begin{array}{r} 40.35 \\ 30\overline{)1210.50} \\ -120 \\ \hline 105 \\ -90 \\ \hline 150 \\ -150 \\ \hline 0 \\ \hline \end{array}$$

10. Amount of soda water in a bottle = 0.47 *l*

Amount of soda water in 200 bottles = 0.47 × 200

= 94 litres

$$\begin{array}{r} 0.47 \\ \times 200 \\ \hline 000 \\ 000\times \\ 094\times\times \\ \hline 094.00 \end{array}$$

11. No. of chocolates = 19

No. of children = 8

No. of chocolates each child gets = 19 ÷ 8

= 2.375

$$\begin{array}{r} 2.375 \\ 8\overline{)19} \\ -16 \\ \hline 30 \\ -24 \\ \hline 60 \\ -56 \\ \hline 40 \\ -40 \\ \hline 0 \\ \hline \end{array}$$

12. Cost of 1 l petrol = ₹ 29.05

Cost of 50 l petrol = ₹ (29.05 × 50)

= ₹ 1452.50

$$\begin{array}{r} 29.05 \\ \times 50 \\ \hline 0000 \\ 14525\times \\ \hline 1452.50 \end{array}$$

13. Distance walked by Meenakshi in 1 step = 0.5 m

Total distance she walked = 20 m

Number of steps she walked $= 20 \div 0.5 = \frac{20}{0.5}$

$= \frac{200}{4} = 40$

14. Distance covered by bus in 1 hour = 60.5 km

Distance covered by bus in 10 hours = 60.5 × 10 km

= 605 km

15. Capacity of 1 tin = 15.5 *l*

Total quantity of petrol = 465 *l*

No. of tins required $= 465 \div 15.5 = \frac{465}{15.5} = \frac{4650}{155}$

= 30

$$\begin{array}{r} 30 \\ 155\overline{)4650} \\ -4650 \\ \hline \times \\ \hline \end{array}$$

16. Cost of 1 m cloth = ₹ 45.75

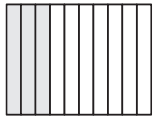
Cost of 20 cloth = ₹ (45.75 × 20)

= ₹ 915

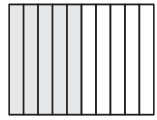
$$\begin{array}{r} 45.75 \\ \times 20 \\ \hline 0000 \\ +9150\times \\ \hline 915.00 \end{array}$$

NCERT Corner

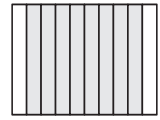
1. Write the decimals for the coloured part :



a. 0.3 three-tenths



b. 0.5, five-tenths



c. 0.8, eight-tenths

2. Colour to show the following :

Do it yourself

3. Match the following :

a. 1.7	(ii) one and seven tenths
b. 3.8	(i) three point eight
c. 5.6	(iv) five and six tenths
d. 0.5	(iii) five tenths

Multiple Choice Questions

Tick (3) the correct choice :

1. (a) **2.** (a) **3.** (c) **4.** (b)

Chapter 9 : Simplification of Numbers

Exercise-9.1

1. Find the value of :

a. $26 \div 2 + 7$
= 13 + 7 (Divide)
= 20 (Add)

b. $8 + 18 \div 3$
= 8 + 6 (Divide)
= 14 (Add)

c. $5 + 9 \times 5$
= 5 + 45 (Multiply)
= 50 (Add)

d. $28 + 12 \times 6$
= 28 + 72 (Multiply)
= 100 (Add)

e. $12 \times 6 \div 3$
= 12 × 2 (Divide)
= 24 (Multiply)

f. $6 \div 3 \times 15$
= 2 × 15 (Divide)
= 30 (Multiply)

2. Simplify :

a. $27 \div 3 + 5 \times 3 - 10$
= 9 + 5 × 3 – 10 (Divide)
= 9 + 15 – 10 (Multiply)
= 24 – 10 (Add)
= 14 (Subtract)

b. $78 - 42 \div 6 + 4$
= 78 – 7 + 4 (Divide)
= 78 + 4 – 7 = 82 – 7 (Add)
= 75 (Subtract)

c. $25 \times 27 \div 9 - 55$
$= 25 \times 3 - 55$ (Divide)
$= 75 - 55$ (Multiply)
$= 20$ (Subtract)

d. $12 - 21 \div 7 + 4 \times 2$
$= 12 - 3 + 4 \times 2$ (Divide)
$= 12 - 3 + 8$ (Multiply)
$= (12 + 8) - 3 = 20 - 3$ (Add)
$= 17$ (Subtract)

e. $38 - 42 \div 21 \times 2$
$= 38 - 2 \times 2$ (Divide)
$= 38 - 4$ (Multiply)
$= 34$ (Subtract)

f. $25 \times 4 + 12 \times 5 - 130$
$= 100 + 60 - 130$ (Multiply)
$= 160 - 130$ (Add)
$= 30$ (Subtract)

3. Solve the following :

a. $6.7 \times 8 + 2 \times 5.1 \times 2.5$
$= 53.6 + 25.5$ (Multiply)
$= 79.1$ (Add)

b. $9 + 8.2 + 5.8 + 3 \times 2.8$
$= 9 + 8.2 + 5.8 + 8.4$ (Multiply)
$= 31.4$ (Add)

c. $29.2 - 3.6 + 2.1 \times 1 + 6.8$
$= 29.2 - 3.6 + 2.1 + 6.8$ (Multiply)
$= 29.2 - 3.6 + 8.9$ (Add)
$= (29.2 + 8.9) - 3.6 = 38.1 - 3.6 = 34.5$ (Subtract)

d. $18.7 + 14 - 5.14$
$= (18.7 + 14) - 5.14 = 32.7 - 5.14$ (Subtract)
$= 27.56$

e. $35.4 - 13.3 + 2.9 \times 4.7$
$= 35.4 - 13.3 + 13.63$ (Multiply)
$= (35.4 + 13.63) - 13.3 = 49.03 - 13.63$ (Add)
$= 35.4$ (Subtract)

f. $17.2 - 6.9 + 1 \times 4.1 + 2.1$
$= 17.2 - 6.9 + 4.1 + 2.1$ (Multiply)
$= 17.2 - 6.9 + 6.2$
$= (17.2 + 6.2) - 6.9 = 23.4 - 6.9$ (Add)
$= 16.5$ (Subtract)

4. Simplify the following fractions :

a. $\frac{4}{5} \div \frac{7}{15}$ of $\frac{8}{9}$

$= \frac{4}{5} \div \frac{7}{15} \times \frac{8}{9}$ (of)

$= \frac{4}{5} \div \frac{56}{135}$

$= \frac{4}{5} \times \frac{135}{56} = \frac{540}{280}$ (Multiply)

Divide numerator and denominator by their HCF which is 20.

$$= \frac{540 \div 20}{280 \div 20} = \frac{27}{14} = 1\frac{13}{14}$$

b. $\frac{4}{5} \div \frac{7}{15} \times \frac{8}{9}$

$$= \frac{4}{5} \times \frac{15}{7} \times \frac{8}{9} \text{ (divide)}$$

$$= \frac{60 \times 8}{5 \times 7 \times 9} = \frac{418}{315} \text{ (Multiply)}$$

Divide numerator and denominator by their HCF which is 15.

$$= \frac{480 \div 15}{315 \div 15} = \frac{32}{21} = 1\frac{11}{21}$$

c. $5\frac{1}{4} \div \frac{3}{7} \times \frac{1}{2}$

$$= \frac{21}{4} \div \frac{3}{7} \times \frac{1}{2}$$

$$= \frac{21}{4} \times \frac{7}{3} \times \frac{1}{2} \text{ (divide)}$$

$$= \frac{21 \times 7}{4 \times 3 \times 2} = \frac{147}{24}$$

Divide numerator and denominator by their HCF.

$$\frac{147 \div 3}{24 \div 3} = \frac{49}{8} = 6\frac{21}{4}$$

d. $5\frac{1}{4} \div \frac{3}{7} \text{ of } \frac{1}{2}$

$$= \frac{21}{4} \div \frac{3}{7} \text{ of } \frac{1}{2} = \frac{21}{4} \div \frac{3}{7} \times \frac{1}{2} \text{ (of)}$$

$$= \frac{21}{4} \div \frac{3}{14} = \frac{21}{4} \times \frac{14}{5} \text{ (Multiply)}$$

$$= \frac{294}{12} \text{ (Multiply)} = 24\frac{6}{12} = 24\frac{1}{2}$$

e. $3\frac{3}{4} \div \frac{7}{8} \times 4\frac{1}{6} \times 1\frac{13}{15}$

$$= \frac{15}{4} \div \frac{7}{8} \times \frac{25}{6} \times \frac{28}{15}$$

$$= \frac{15}{4} \times \frac{8}{7} \times \frac{25}{6} \times \frac{28}{15}$$

$$= \frac{15 \times 8 \times 25 \times 28}{4 \times 7 \times 8 \times 15} = \frac{84000}{2520}$$

Divide numerator and denominator by their HCF which is 840.

$$= \frac{84000 \div 840}{2520 \div 840} = \frac{100}{3} = 33\frac{1}{3}$$

f. $\frac{7}{8} + 2\frac{5}{6} - \frac{11}{12} \times 3\frac{3}{11}$

$$= \frac{7}{8} + \frac{17}{6} - \frac{11}{12} \times \frac{36}{11}$$

$$= \frac{7}{8} + \frac{17}{6} - \frac{36}{12} = \frac{7}{8} + \frac{17}{8} - 3$$

Take LCM of 8, 6 and 1 which is 24.

$$= \frac{(7 \times 3) + (17 \times 4) - 3 \times 24}{24}$$

$$= \frac{21 + 68 - 72}{24} = \frac{89 - 72}{29} \text{ (Add)}$$

$$= \frac{17}{24} \text{ (Subtract)}$$

g. $\frac{1}{2} + 1\frac{1}{2} \div 1\frac{1}{2} \times \frac{2}{3} - \frac{1}{4}$

$$= \frac{1}{2} + \frac{3}{2} \div \frac{3}{2} \times \frac{2}{3} - \frac{1}{4}$$

$$= \frac{1}{2} + \frac{3}{2} \times \frac{2}{3} \times \frac{2}{3} - \frac{1}{4} \text{ (divide)}$$

$$= \frac{1}{2} + \frac{2}{3} - \frac{1}{4}$$

Take LCM of 2, 3, 4 which is 12.

$$= \frac{(1 \times 6) + (2 \times 4) - (1 \times 3)}{12}$$

$$= \frac{6 + 8 - 3}{12} = \frac{14 - 3}{12} \text{ (Add)} = \frac{11}{12}$$

h. $1\frac{4}{5} - 2\frac{3}{4} \text{ of } \frac{8}{11} + \frac{3}{8} \div \frac{9}{10}$

$$= \frac{9}{5} - \frac{11}{4} \times \frac{8}{11} + \frac{3}{8} \div \frac{9}{10} \text{ (of)}$$

$$= \frac{9}{5} - 2 + \frac{3}{8} \times \frac{10}{9}$$

$$= \frac{9}{5} - 2 + \frac{30}{72}$$

Take LCM of 5 and 72 which is 360.

$$= \frac{9 \times 72 - 2 \times 360 + 30 \times 5}{360} = \frac{648 - 720 + 150}{360}$$

$$= \frac{648 + 150 - 720}{360} = \frac{798 - 720}{360} \text{ (Add)}$$

$$= \frac{78}{360}$$

Divide numerator and denominator by HCF which is

$$= \frac{78 \div 6}{360 \div 6} = \frac{13}{60}$$

i. $9\frac{1}{3} \div \frac{3}{5} \text{ of } \frac{7}{9} \times \frac{4}{5}$

$$= \frac{28}{3} \div \frac{3}{5} \times \frac{7}{9} \times \frac{4}{5} \text{ (of)}$$

$$= \frac{28}{3} \div \frac{21}{95} \times \frac{4}{5} = \frac{28}{3} \times \frac{45}{21} \times \frac{4}{5} = \frac{28 \times 45 \times 4}{3 \times 21 \times 5} = \frac{5040}{315} = 16$$

j. $4\frac{3}{7} \text{ of } 2\frac{5}{8} \times 2\frac{2}{7} \div 4\frac{2}{15}$

$$= \left(\frac{31}{7} \times \frac{21}{8}\right) \times \frac{16}{7} \div \frac{62}{15} \text{ (of)}$$

$$= \frac{651}{56} \times \frac{16}{7} \times \frac{15}{62} = \frac{651 \times 16 \times 15}{56 \times 7 \times 62}$$

$$= \frac{45}{7} = 6\frac{3}{7}$$

k. $\frac{3}{5} \text{ of } 1\frac{3}{7} \div \frac{2}{5} - \frac{1}{2} + \frac{2}{3} \times \frac{6}{7}$

$$= \left(\frac{3}{5} \times \frac{10}{7}\right) \div \frac{2}{5} - \frac{1}{2} + \frac{2}{3} \times \frac{6}{7}$$

$$= \left(\frac{30}{35} \times \frac{5}{2}\right) - \frac{1}{2} + \frac{4}{7}$$

$$= \frac{15}{7} - \frac{1}{2} + \frac{4}{7}$$

Take LCM of 7, 2 which is 14.

$$= \frac{(15 \times 2) - (1 \times 7) + (4 \times 2)}{14} = \frac{30 - 7 + 8}{14}$$

$$= \frac{30 + 1}{14} = \frac{31}{14} = 2\frac{3}{14}$$

l. $25 \text{ of } \frac{3}{5} \div 1\frac{2}{3} + 3 \text{ of } \frac{1}{3} \div 10$

$= \left(25 \times \frac{3}{5}\right) \div \frac{5}{3} + \left(3 \times \frac{1}{3}\right) \div 10 \text{ (of)}$

$= (5 \times 3) \div \frac{5}{3} + 1 \div 10$

$= \left(15 \times \frac{3}{5}\right) + \frac{1}{10} = 9 + \frac{1}{10} = 90 + \frac{1}{10} = 9\frac{1}{10}$

m. $7\frac{1}{3} \div 3\frac{2}{3} \text{ of } 2 + 4\frac{1}{2} \div 2\frac{1}{4} - 2\frac{1}{2}$

$= \frac{22}{3} \div \left(\frac{11}{3} \times 2\right) + \frac{9}{2} \div \frac{9}{4} - \frac{5}{2}$

$= \frac{22}{3} \div \frac{22}{3} + \frac{9}{2} \times \frac{4}{9} - \frac{5}{2}$

$= 1 + 2 - \frac{5}{2} = 3 - \frac{5}{2} = \frac{6-5}{2} = \frac{1}{2}$

Exercise-9.2

1. Simplify the following expressions :

a. $\{97 - (15 + 2)\} \times 2$

$= (97 - 17) \times 2$

$= (80) \times 2 = 160$

b. $[90 - \{80 - (10 \times 3) \div 2\}]$

$= 90 - [80 - (30) \div 2]$

$= 90 - [80 - 15]$

$= 90 - 65 = 25$

c. $(42 \times 2) \div 12 - 3$

$= \frac{42 \times 2}{12} - 3 = \frac{42}{6} - 3$

$= 7 - 3 = 4$

d. $(90 + 5 \times 4) \div 11 \times 5$

$= (90 + 20) \div 11 \times 5$

$= 110 \div 11 \times 5$

$= 10 \times 5 = 50$

e. $25 - \{3 + (5 \times 8 - 5) \div 7\}$

$= 25 - \{3 + (40 - 5) \div 7\}$

$= 25 - [3 + 35 \div 7]$

$= 25 - [3 + 5] = 25 - 8 = 17$

f. $100 - [7\{3 + (5 \times 9 - 3) \div 6\}]$

$= 100 - [7\{3 + (45 - 3) \div 6\}]$

$= 100 - [7\{3 + 42 \div 6\}]$

$= 100 - [7\{3 + 7\}]$

$= 100 - [7 \times 10]$

$= 100 - 70 = 30$

g. $50 + [10 \times \{40 - (20 \div 5)\}]$

$= 50 + [10 \times \{40 - 4\}]$

$= 50 + [10 \times 36]$

$= 50 + 360 = 410$

h. $3 \times 2 + 6 - 4 - (4 - 0)$

$= 6 + 6 - 4 - 4$

$= 12 - 8 = 4$

i. $57.5 + 1 - 36.4 - 12.52$

$= 58.5 - 36.4 - 12.52$

$= 58.5 - 48.92 = 9.58$

j. $5.9 + 18.42 + 26.8 - 50.1$

$= (5.9 + 18.42 + 26.8) - 50.1$

$= 51.12 - 50.1 = 1.02$

k. $75 - 31 + (1.2 + 4.12)$

$= 44 + (5.32) = 49.32$

l. $(8.6 + 26 + 34.3) - 53.31$

$= 68.9 - 53.31 = 15.59$

2. Simplify the following :

a. $\left(\frac{4}{9}+\frac{7}{9}\right)\times 2\frac{1}{2}$

$= \frac{11}{9}\times\frac{5}{2} = \frac{11\times 5}{9\times 2} = \frac{55}{18} = 3\frac{1}{18}$

b. $\frac{3}{8}\div\left(1\frac{7}{8}-\frac{3}{4}\right)$

$= \frac{3}{8}\div\left(\frac{15}{8}-\frac{3}{4}\right) = \frac{3}{8}\div\left(\frac{15}{8}-\frac{3\times 2}{8}\right) = \frac{3}{8}\div\left(\frac{15}{8}-\frac{6}{8}\right)$

$= \frac{3}{8}\div\frac{9}{8} = \frac{3}{8}\times\frac{8}{9} = \frac{3}{9} = \frac{1}{3}$

c. $6+\left\{1+\frac{1}{2}+\left(\frac{3}{4}-\frac{1}{2}\right)\right\}$

$= 6+\left[\frac{3}{2}+\frac{3}{4}-\frac{1}{2}\right] = 6+\left[\frac{3}{2}-\frac{1}{2}+\frac{3}{4}\right]$

$= 6+\left[1+\frac{3}{4}\right] = 6+\left[\frac{4+3}{4}\right] = 6+\frac{7}{4}$

$= \frac{(6\times 4)+7}{4} = \frac{24+7}{4} = \frac{31}{4} = 7\frac{3}{4}$

d. $\left\{\left(13\frac{1}{3}-12\frac{1}{2}\right)\div\frac{5}{6}\right\}$ of $\frac{3}{8}$

$= \left[\left(\frac{40}{3}-\frac{25}{2}\right)\div\frac{5}{6}\right]\times\frac{3}{8}$

$= \left[\left(\frac{40\times 2-25\times 3}{6}\right)\div\frac{5}{6}\right]\times\frac{3}{8}$

$= \left[\left(\frac{80-75}{6}\right)\div\frac{5}{6}\right]\times\frac{3}{8}$

$= \left(\frac{5}{6}\div\frac{5}{6}\right)\times\frac{3}{8} = \frac{3}{8}$

e. $2\frac{1}{2}-\left\{\frac{13}{4}-\left(3\frac{1}{2}-1\frac{3}{4}\right)\right\}$

$=\frac{5}{2}-\left\{\frac{13}{4}-\left(\frac{7}{2}-\frac{7}{4}\right)\right\}=\frac{5}{2}-\left\{\frac{13}{4}-\left(\frac{(7\times2)-7}{4}\right)\right\}$

$=\frac{5}{2}-\left\{\frac{13}{4}-\left(\frac{14-7}{4}\right)\right\}=\frac{5}{2}-\left[\frac{13}{4}-\frac{7}{4}\right]$

$=\frac{5}{2}-\frac{6}{4}=\frac{(5\times2)-6}{4}=\frac{10-6}{4}=\frac{4}{4}=1$

f. $125-4+\{12\times(7-5)\}$

$= 121 + [12 \times 2] = 121 + 24 = 145$

g. $4\frac{1}{2}-\left[1+\left\{2\frac{1}{2}-\left(\frac{1}{3}-\frac{1}{4}\right)\right\}\right]$

$=\frac{9}{2}-\left[1+\left\{\frac{5}{2}-\left(\frac{4-3}{12}\right)\right\}\right]$

$=\frac{9}{2}-\left[1+\left\{\frac{5}{2}-\frac{1}{12}\right\}\right]$

$=\frac{9}{2}-\left[1+\left\{\frac{5\times6-1}{12}\right\}\right]=\frac{9}{2}-\left[1+\left\{\frac{30-1}{12}\right\}\right]$

$=\frac{9}{2}-\left[1+\frac{29}{12}\right]=\frac{9}{2}-\left[\frac{12+29}{11}\right]$

$=\frac{9}{2}-\frac{41}{12}=\frac{(9\times6)-41}{12}=\frac{54-41}{12}=\frac{13}{12}=1\frac{1}{12}$

h. $3\frac{1}{3}\text{ of }\frac{1}{2}+2\div\left[2\times\left\{2-\left(2-\frac{1}{5}\right)\right\}\right]$

$=\left(\frac{10}{3}\times\frac{1}{2}\right)+2\div\left[2\times\left\{2-\left(2-\frac{(10-1)}{5}\right)\right\}\right]$

$=\frac{10}{3}+2\div\left[2\times\left\{2-\frac{9}{5}\right\}\right]$

$=\frac{10}{6}+2\div\left[2\times\frac{(2\times5)-9)}{5}\right]$

$=\frac{10}{6}+2\div\left[2\times\frac{(10-9)}{5}\right]=\frac{10}{6}+2\div\left[2\times\frac{1}{5}\right]$

$=\frac{10}{6}\div\left(2\div\frac{2}{5}\right)=\frac{10}{6}+2\times\frac{5}{2}=\frac{10}{6}+5=\frac{10+(5\times6)}{6}=\frac{10+30}{6}$

$\frac{40}{6}=\frac{20}{3}=6\frac{2}{3}$

i. $3\frac{1}{12}-\left[1\frac{3}{4}+\left\{2\frac{1}{2}-\left(1\frac{1}{2}-\frac{1}{3}\right)\right\}\right]$

$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5}{2}-\left(\frac{3}{2}-\frac{1}{3}\right)\right\}\right]$

$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5}{2}-\left(\frac{(3\times3)-(1\times2)}{6}\right)\right\}\right]$

$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5}{2}-\frac{(9-2)}{6}\right\}\right]$

$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5\times3-7}{6}\right\}\right]$

$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{(15-7)}{6}\right\}\right]=\frac{37}{12}-\left[\frac{(7\times3)+(8\times2)}{12}\right]$

$=\frac{37}{12}-\left[\frac{21+16}{12}\right]=\frac{37}{12}-\frac{37}{12}=0$

j. $\left[2+5\times\left\{1\frac{1}{2}+\left(\frac{3}{4}-\frac{1}{10}\right)\right\}\right]+1\frac{1}{2}$

$=\left[2+5\times\left\{\frac{3}{2}+\left(\frac{(3\times5)-(1\times2)}{20}\right)\right\}\right]+\frac{3}{2}$

$=\left[2+5\times\left\{\frac{3}{2}+\frac{15-2}{20}\right\}\right]+\frac{3}{2}$

$=\left[2+5\times\left\{\frac{3}{2}+\frac{13}{20}\right\}\right]+\frac{3}{2}=\left[2+5\times\left\{\frac{(3\times20)+13}{20}\right\}\right]+\frac{3}{2}$

$=\left[2+5\times\left\{\frac{30+13}{20}\right\}\right]+\frac{3}{2}$

$=\left[2+5\times\frac{43}{20}\right]+\frac{3}{2}=\left[2+\frac{43}{4}\right]+\frac{3}{2}$

$=\left[\frac{(2\times4)+43}{4}\right]+\frac{3}{2}=\left(\frac{8+43}{4}\right)+\frac{3}{2}=\frac{51}{4}+\frac{3}{2}$

$=\frac{51}{4}+\frac{3\times2}{4}=\left(\frac{51+6}{4}\right)=\frac{57}{4}=14\frac{1}{4}$

k. $5\frac{1}{2}-\left[2\frac{1}{3}\div\left\{\frac{3}{4}-\frac{1}{2}\times\left(\frac{2}{3}-\frac{1}{24}\right)\right\}\right]$

$=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{3}{4}-\frac{1}{2}\times\left(\frac{16-1}{24}\right)\right\}\right]$

$$= \frac{11}{2} - \left[\frac{7}{3} \div \left\{\frac{3}{4} - \frac{15}{48}\right\}\right] = \frac{11}{2} - \left[\frac{7}{3} \div \left\{\frac{3 \times 12 - 15}{48}\right\}\right]$$

$$= \frac{11}{2} - \left[\frac{7}{3} \div \frac{21}{40}\right] = \frac{11}{2} - \left[\frac{7}{3} \times \frac{48}{21}\right] \times \frac{11}{2} - \frac{16}{3} = \frac{39 - 32}{6} = \frac{1}{6}$$

l. $5\frac{3}{4} - \left[3\frac{1}{8} \div \left\{5 - \left(4\frac{2}{3} - \frac{11}{12}\right)\right\}\right]$

$$= \frac{23}{4} - \left[\frac{25}{8} \div \left\{5 - \left(\frac{14}{3} - \frac{11}{12}\right)\right\}\right]$$

$$= \frac{23}{4} - \left[\frac{25}{8} \div \left\{5 - \left(\frac{56 - 11}{2}\right)\right\}\right] = \frac{23}{4} - \left[\frac{25}{8} \div \left\{5 - \frac{45}{12}\right\}\right]$$

$$= \frac{23}{4} - \left[\frac{25}{8} \div \left(\frac{60 - 45}{12}\right)\right] = \frac{23}{4} - \left[\frac{25}{8} \div \frac{15}{12}\right] = \frac{23}{4} - \left[\frac{15}{6}\right]$$

$$= \frac{23}{4} - \frac{5}{2} = \frac{23 - (5 \times 2)}{4} = \frac{13}{4} = 3\frac{1}{4}$$

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) **2.** (c) **3.** (a) **4.** (c)

NCERT Corner

Fill in the blanks :

Add (+) Subtract (–) Multiply (×) Divide (÷)

1. In a school, there are 4674 boys and 3694 girls.
   To find the total number of students in the school, we will **Add**.
   There are **8368** students in the school.
2. There are 450 pencils in a box. Mr Khan has to pack the pencils in 15 small boxes.
   To find out the number of pencils he can pack in each box, we will **divide**.
   There will be **30** pencils in each of the 15 boxes.
3. Suresh bought 45 balls, each ball costing ₹ 75. To find the cost of all the balls, we will **multiply**. All the 45 balls cost ₹ **3375**.
4. In a garden, there are 7000 red and black roses. Out of these, 5346 are red roses.
   To find the number of black roses, we will **subtract**. There are **1654** black roses.

Chapter 10 : Unitary Method

Exercise-10

1. Money saved by Ramesh in 8 months = ₹ 48000
   Money saved by Ramesh in 1 month = ₹ 48000 ÷ 8
   = ₹ 6000

$$\begin{array}{r} 6000 \\ 8\overline{)48000} \\ -48\downarrow\downarrow\downarrow \\ \hline 0000 \\ \hline \end{array}$$

2. Cost of 5 dozen bananas = ₹ 265
   Cost of 1 dozen banana = ₹ 265 ÷ 5 = ₹ 53

$$\begin{array}{r} 53 \\ 5\overline{)265} \\ -25 \\ \hline 15 \\ -15 \\ \hline 0 \\ \hline \end{array}$$

3. No. of toys produced in 30 days = 82440
   No. of toys produced in 1 day = 82440 ÷ 30
   = 2748

   So, no. of toys produced in 7 days = 2748 × 7
   = 19236

$$\begin{array}{r} 2748 \\ \times 7 \\ \hline 19256 \end{array}$$

$$\begin{array}{r} 2748 \\ 30\overline{)82440} \\ -60\downarrow \\ \hline 224 \\ -210\downarrow \\ \hline 144 \\ -120\downarrow \\ \hline 240 \\ -240 \\ \hline 0 \\ \hline \end{array}$$

4. No. of bricks carried by 1 truck = 4550
   No. of bricks carried by 25 trucks = 4550 × 25
   = 1,13,750

$$\begin{array}{r} 4550 \\ \times 25 \\ \hline 22750 \\ +1100\times \\ \hline 113750 \end{array}$$

5. Distance walk by Ankur in 30 days = 165 km
   Distance walk by Ankur in 1 day = 165 ÷ 30
   = 5.5 km
   Distance walk by Ankur in 105 days = 5.5 × 105
   = 577.5 km

$$\begin{array}{r} 5.5 \\ 30\overline{)165} \\ -150 \\ \hline 150 \\ -150 \\ \hline 0 \\ \hline \end{array}$$

$$\begin{array}{r} 105 \\ \times 5.5 \\ \hline 525 \\ 525\times \\ \hline 5775 \end{array}$$

6. 19 bottles contain 570 litres of water.
   Each bottle contains 570 ÷ 19 litres of water.
   So, each bottles contains 30 litres of water.

$$\begin{array}{r} 30 \\ 19\overline{)570} \\ -57\downarrow \\ \hline 00 \\ \hline \end{array}$$

7. Cost of 18 books = ₹ 8100
Cost of 1 book = ₹ 8100 ÷ 18 = ₹ 450
Cost of 36 books = ₹ 450 × 36 = ₹ 16,200

```
     450
18 ) 8100
    -72
      90
     -90
      00
```

```
   4 5 0
   × 3 6
 2 7 0 0
1 3 5 0 ×
1 6 2 0 0
```

8. To pack 5 kg of sugar 1 bag is needed.
To pack 235 kg of sugar no. of bags required
= 235 ÷ 5 = 47

```
    47
5 ) 235
   -20
    35
   -35
     0
```

9. Cost of 25 computers = ₹ 3,75,000
Cost of 1 computer = ₹ 375000 ÷ 25
= ₹ 15000

```
     15000
25 ) 375000
    -25
     125
    -125
     0000
```

10. No. of watches manufacture in 5 days = 1785
No. of watches manufacture in 1 day = 1785 + 5
= 357
No. of watches manufacture in 2 days = 357 × 2 = 714

```
1 1
3 5 7
  × 2
9 1 4
```

```
   357
5 )1785
  -15
    28
   -25
    35
   -35
     0
```

11. Cost of 39 bats = ₹ 39000
Cost of 1 bat = ₹ 3900 ÷ 39
= ₹ 1000

```
     1000
25 ) 39000
    -39
      0
```

12. Cost of 36 books = ₹ 6480
Cost of 1 book = ₹ 6480 ÷ 36
= ₹ 180

```
     180
36 ) 6480
    -36
     288
    -288
      00
```

13. Weight of 1 bag = 451 kg
Weight of 125 bags = (451 × 125) kg
= 56375 kg

			4 5 1
			× 1 2 5
			2 2 5 5
		9 0 2 ×	
	4 5 1 × ×		
5 6 3 7 5			

14. Money spend by Raghav in 12 months = ₹ 1,27,200
Money spend by Raghav in 1 months = ₹ 1,27,200 ÷ 12
= ₹ 10600
Money spent by Raghav in 8 months = ₹ 10600 × 8
= ₹ 84800

```
    10600
12) 127200
   -12↓
    072
    -72
     000
```

15. Distance covered by Arjun in 8 minutes = 480 m
Distance covered by Arjun in 1 minute = 480 ÷ 8 = 60 m
Distance covered by Arjun in 2 minutes = 60 × 20 m
= 1200 m

16. No. of cold drinks bottles produced in 30 days = 82440
No. of cold drinks bottles produced in 1 day = 82440 ÷ 30
= 2748
No. of cold drink bottles produced in 25 days
= 2748 × 25
= 68700

			2 7 4 8
			× 2 5
		1 3 7 4 0	
	+ 5 4 7 6 ×		
6 8 7 0 0			

```
     2748
30) 82440
   -60↓
    224
   -210↓
     144
   -120↓
      240
     -240
        0
```

17. Cost of 9 trousers = ₹ 1791
Cost of 1 trouser = ₹ 1791 ÷ 9
= ₹ 199

```
     199
9) 1791
  -9 ↓
   89
  -81↓
    81
   -81
     0
```

Total money he paid = 5,373
No. of trousers = $\frac{\text{Total cost}}{\text{Cost of 1 trouser}} = \frac{5373}{199}$
= 27
No. of trousers bought by Pankaj = 27

```
     27
199) 5373
   -398↓
    1393
   -1393
      0
```

18. Cost of 24 computers = ₹ 6,36,000
Cost of 1 computer = ₹ 636000 ÷ 24
= ₹ 26500
Total money = ₹ 14,57,500
Total computers company can buy = $\frac{\text{Total cost}}{\text{Cost of 1 computer}}$

$$= \frac{1457500}{26500} = \frac{14575}{265}$$

$$\begin{array}{r} 55 \\ 265\overline{)14575} \\ -1325\downarrow \\ \hline 1325 \\ -1325 \\ \hline 0 \end{array}$$

= 55

$$\begin{array}{r} 26500 \\ 24\overline{)636000} \\ -48\downarrow \\ \hline 156 \\ -144\downarrow \\ \hline 120 \\ -120\downarrow \\ \hline 000 \end{array}$$

19. Money saved by Mr Azad in 9 months = ₹ 63,000
Money saved in 1 month = ₹ 6300 ÷ 9
= ₹ 7000

$$\begin{array}{r} 7000 \\ 9\overline{)63000} \\ -63000 \\ \hline 0000 \end{array}$$

20. No. of spoons in 1 box = 1250
No. of spoons in 35 boxes = 1250 × 35
= 43750

$$\begin{array}{r} 1250 \\ \times\ 35 \\ \hline 6250 \\ 37500\ \times \\ \hline 43750 \end{array}$$

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) 2. (b) 3. (a) 4. (b)
5. (c) 6. (c) 7. (a)

NCERT Corner

Chef is making sandwiches for lunch.

1. 156 2. 140 3. No 4. 36

Ingredients for Noodles

1. 1200 g 2. cabbage 3. 3 4. 100

Chapter 11 : Average

NCERT Corner

1. Sum of quantities

2. Sum of observations = 11 + 35 + 15 = 61

   Total number of observations = 3

   $$\text{Average} = \frac{\text{Sum of observations}}{\text{Total number of observations}} = \frac{61}{3} = 20.33$$

3. $$\frac{20+20+40+50}{7} = \frac{130}{4} = 32.5$$

4. First 7 odd numbers are 1, 3, 5, 7, 9, 11, 13

   Sum of observations = 1 + 3 + 5 + 7 + 9 + 11 + 13 = 49

   Number of observations = 7

   $$\text{Average} = \frac{\text{Sum of observations}}{\text{Total number of observations}} = \frac{49}{7} = 7$$

Exercise-11

1. Find the average of the following sets of numbers.

(a) 18, 13, 14, 18, 21 and 28.

Sum of all observations = 18+13+14+18+21+28 = 112

Total no. of observations = 6

$$\text{Average} = \frac{\text{Sum of all observations}}{\text{Total number of observations}} = \frac{112}{6} = 18.67$$

(b) 20.5, 70.06, 57.2, 18.03, 59.1

Sum of all observations = 20.5+70.06+57.2+18.03+59.1

= 224.89

Total no. of observations = 5

$$\text{Average} = \frac{\text{Sum of all observations}}{\text{Total number of observations}} = \frac{224.89}{5}$$

= 44.978

```
   44.978
5) 224.89
  -20
   24
  -20
    48
   -45
     39
    -35
     40
    -40
      0
```

(c) 18, 39, 0, 3, 16, 31, 43 and 19.

Sum of all observations = 18+39+0+3+16+31+43+19

= 169

Total no. of observations = 8

$$\text{Average} = \frac{\text{Sum of all observations}}{\text{Total number of observations}} = \frac{169}{8}$$

= 21.125

```
   21.125
8) 169
  -16
   09
   -8
   10
   -8
   20
  -16
   40
  -40
    0
```

(d) ₹ 30.85, ₹ 25.30, ₹ 86.25 and ₹ 38.

Sum of all observations = 30.85+25.30+86.25+38+180.4

No. of observations = 4

$$\text{Average} = \frac{\text{Sum of all observations}}{\text{Total number of observations}} = \frac{180.4}{4} = 45.1$$

```
   45.1
4) 180
  -16
   20
  -20
   04
   -4
    0
```

(e) 3 m 26 cm, 12 m 20 cm, 6m 6 cm and 25 m 86 cm.

3 m 26 cm = (3 × 100 + 26) cm = (300 + 26) cm = 326 cm

12 m 20 cm = (12 × 100 + 20) cm = 1200 cm + 20 cm = 1220 cm

6 m 6 cm = (6 × 100 + 6) cm = (600 + 6) cm = 606 cm

25 m 86 cm = (25 × 100 + 86) cm = (2500 + 86) cm = 2586 cm

Total no. of observations = 4

$$\text{Average} = \frac{\text{Sum of all observations}}{\text{Total number of observations}}$$

$$= \frac{326 + 1220 + 606 + 2586}{4}$$

$$= \frac{4738}{4} = 11845 \text{ cm}$$

$$= 11 \text{ m } 84 \text{ cm } 5 \text{ mm}$$

```
  11845
4) 4738
  -4
   07
  -4
   33
  -32
   18
  -16
   20
  -20
    0
```

2. Find the average of these :

(a) First 4 whole numbers are 0, 1, 2, 3.

Total no. of observation = 4

$$\text{Average of first 4 whole no.'s} = \frac{\text{Sum of observations}}{\text{No. of observations}}$$

$$\text{Average} = \frac{0+1+2+3}{4} = \frac{6}{4} = 1.5$$

(b) First 6 prime numbers are 2, 3, 5, 7, 11, 13.

Sum of first 6 prime numbers = 2 + 3 + 5 + 7 + 11 + 13 = 41

Total no. of observations = 6

$$\text{Average of first 6 prime no.'s} = \frac{2+3+5+7+11+13}{6}$$

$$= \frac{41}{6} = 6.83$$

```
   6.83
6) 41
  -36
   50
  -48
   20
  -18
    2
```

(c) First three composite numbers are 4, 6, 8.

Average of first 3 composite no.'s $= \dfrac{\text{Sum of observations}}{\text{No. of observations}}$

$$= \frac{4+6+8}{3} = \frac{18}{3} = 6$$

(d) First 8 multiples of 7 are 7, 14, 21, 28, 35, 42, 49, 56.

Sum of first 8 multiples of 7 are 7+14+21+28+35+42+49+56

$= 252$

No. of observations = 8

Average of first 8 multiples of 7 $= \dfrac{\text{Sum of first multiples of 7}}{\text{Total no. of observations}}$

$$= \frac{252}{8} = 31.5$$

$$\begin{array}{r} 31.5 \\ 8\overline{)252} \\ -24\downarrow \\ \hline 12 \\ -8 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

(e) First eight consecutive composite numbers less than hundred are 4, 6, 8, 9, 10, 12, 14, 15.

Sum of first 8 consecutive composite numbers

$= 4 + 6 + 8 + 9 + 10 + 12 + 14 + 15$

$= 78$

Total number of observations = 8

Average of first eight consecutive numbers less than hundred

$$= \frac{78}{8} = \frac{39}{4} = 9.75$$

(f) Factors of 64 = 1, 2, 4, 8, 16, 32, 64

Sum of factors of 64 = 1 + 2 + 4 + 8 + 16 + 32 + 64 = 127

Total no. of observations = 7

Average of factors of 64 $= \dfrac{\text{Sum of factors of 64}}{\text{Total no. of observations}}$

$$= \frac{127}{7} = 18.14$$

3. Find the average of :

(a) $3, 4\frac{2}{5}, 8\frac{1}{3}, 3\frac{3}{10}$

Numbers are $3, \frac{22}{5}, \frac{25}{3}, \frac{33}{10}$

Sum of numbers $= 3 + \frac{22}{5} + \frac{25}{3} + \frac{33}{10}$

$$= \frac{(3 \times 30) + (22 \times 6) + (25 \times 10) + (33 \times 3)}{30}$$

$$= \frac{90 + 132 + 250 + 99}{30} = \frac{571}{30}$$

Total no. of observations = 4

$$\text{Average} = \frac{\text{Sum of numbers}}{\text{Total numbers}} = \frac{\left(\frac{571}{30}\right)}{4} = \frac{571}{120} = 4\frac{91}{120}$$

(b) $3\frac{1}{5}, 2\frac{3}{4}, 4\frac{1}{2}, 8\frac{7}{10}, \frac{3}{5}$

The numbers are $\frac{16}{5}, \frac{11}{4}, \frac{9}{2}, \frac{87}{10}, \frac{3}{5}$

$$\text{Sum of numbers} = \frac{16}{5} + \frac{11}{4} + \frac{9}{2} + \frac{87}{10} + \frac{3}{5}$$

$$= \frac{(16 \times 4) + (11 \times 5) + (9 \times 10) + (87 \times 2) + (3 \times 4)}{20}$$

$$\text{Sum of numbers} = \frac{(64 + 55 + 90 + 174 + 12)}{20} = \frac{395}{20}$$

$$\text{Average of given no.'s} = \frac{\text{Sum of observation}}{\text{Total no. of observation}} = \frac{\left(\frac{395}{20}\right)}{5}$$

$$= \frac{395}{20 \times 5} = \frac{79}{20}$$

$$= 3\frac{19}{20}$$

(c) $3, 0, 2\frac{3}{4}, 3\frac{2}{3}$

The given numbers are $3, 0, \frac{11}{4}, \frac{11}{3}$

$$\text{Sum of numbers} = 3 + 0 + \frac{11}{4} + \frac{11}{3} = \frac{(3 \times 12) + (11 \times 3) + (11 \times 4)}{12}$$

$$= \frac{36 + 33 + 44}{12} = \frac{113}{12}$$

No. of observations = 4

$$\text{Average of given no.'s} = \frac{\text{Sum of observations}}{\text{Total no. of observations}} = \frac{\left(\frac{113}{12}\right)}{4}$$

$$= \frac{113}{48} = 2\frac{17}{48}$$

(d) $\frac{7}{8}, \frac{3}{5}, \frac{7}{15}, \frac{9}{10}, \frac{4}{5}$

Sum of numbers $= \frac{7}{8} + \frac{3}{5} + \frac{7}{15} + \frac{9}{10} + \frac{4}{5}$

$= \frac{(7 \times 15) + (3 \times 24) + (7 \times 8) + (9 \times 12) + (4 \times 24)}{120}$

$= \frac{105 + 72 + 56 + 108 + 96}{120} = \frac{437}{120}$

Number of observations = 5

$\text{Average} = \frac{\text{Sum of observations}}{\text{Total no. of observations}} = \frac{\left(\frac{437}{120}\right)}{5} = \frac{437}{600}$

(e) $3\frac{1}{2}, 2\frac{2}{3}, 0, 1\frac{4}{3}, \frac{1}{12}$

The numbers are $\frac{7}{2}, \frac{8}{3}, 0, \frac{7}{3}, \frac{1}{12}$

Sum of observations $= \frac{7}{2} + \frac{8}{3} + 0 + \frac{7}{3} + \frac{1}{12}$

$= \frac{(7 \times 6) + (8 \times 4) + (7 \times 4) + 1}{12}$

$= \frac{42 + 32 + 28 + 1}{12} = \frac{103}{12}$

No. of observations = 5

$\text{Average} = \frac{\text{Sum of given numbers}}{\text{Total no. of observations}}$

$= \frac{\left(\frac{103}{12}\right)}{5} = \frac{103}{60} = 1\frac{43}{60}$

4. Fill in the blanks :

(a) The average of the first 7 multiples of 8 is **32**.

(b) The average of the first 5 whole numbers is **2**.

(c) The average of the first 6 counting numbers is **3.5**.

(d) The average of 5, 7 and 9 is **7**.

(e) The average of the first 6 prime numbers is **6.833**.

5. Write 'True' or 'False' for these statements.

(a) True (b) False (c) False (d) False

(e) True

6. Ages of 6 children = 2, 81, 9, 15, 21, 7

No. of children = 6

Sum of ages of 6 children = 2 + 18 + 9 + 15 + 21 + 7 = 72

$$\text{Average age} = \frac{\text{Sum of ages of children}}{\text{Numbers of children}} = \frac{72}{6} = 12$$

7. Total distance covered by car = 23 km + 33 km + 36 km

= 92 km

Total time = 3 hours

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{92}{3} = 30\frac{2}{3} \text{ km/hr}$$

= 30.67 km/hr

8. Total runs scored = 46 + 81 + 0 + 64 + 95 = 286

No. of players = 5

$$\text{Average score of 5 players} = \frac{\text{Total runs scored}}{\text{No. of players}}$$

$$= \frac{286}{5} = 57.2$$

9. (a) Sunday has the lowest temperature and Tuesday has the highest temperature.

(b) Average minimum temperature

$$= \frac{\text{Sum of minimum tempeatures of days of week}}{\text{No. of days in week}}$$

$$= \frac{26.2 + 25.3 + 26 + 23.7 + 25 + 26.5 + 22}{7}$$

$$= \frac{2784.2}{7} = \frac{174.56}{7}$$

= 24.94°C

Average maximum temperature

$$= \frac{\text{Sum of maximum tempeatures of days of week}}{\text{No. of days in week}}$$

$$= \frac{35.6 + 36.5 + 30.1 + 32.6 + 36 + 33.26 + 32}{7} = \frac{236.06}{7}$$

= 33.72°C

10. Minimum temperature of town in week are 19°C, 20.3°C, 22°C, 18.9°C, 21.4°C, 18.8°C, 19°C

Average temperature of week $= \frac{19 + 20.3 + 22 + 18.9 + 21.4 + 18.8 + 19}{7}$

$= \frac{139.4}{7} = 19.91°C$

11. Price of 4 chairs are ₹ 362, ₹ 294, ₹ 305, ₹ 325

Average price of chair $= \frac{\text{Sum of prices of chairs}}{\text{Total number of chairs}}$

$= \frac{₹\ 362 + ₹\ 294 + ₹\ 305 + ₹\ 325}{4}$

$= ₹\ \frac{1286}{4} = ₹\ 321.50$

∴ Average price of chair is ₹ 321.50

12. The ages of 6 students are

12 years 3 months = (12 × 12) + 3 = 144 + 3 = 147 months

13 years 10 months = (13 × 12) + 10 = 156 + 10 = 166 months

11 years 8 months = (11 × 12) + 8 = 132 + 8 = 140 months

13 years = (13 × 12) = 156 months

9 years 6 months = (9 × 12) + 6 = 108 + 6 = 114 months

14 years 2 months = (14 × 12) + 2 = 168 + 2 = 170 months

Sum of ages = (147 + 166 + 140 + 156 + 114 + 170) months

= 893 months

Average age of 6 students $= \frac{\text{Sum of ages}}{\text{No. of students}} = \frac{893}{6}$

= 148.83 months

13. Even numbers between 20 and 34 are 22, 24, 26, 28, 30, 32.

Average of even numbers $= \frac{\text{Sum of even numbers between 20 and 34}}{\text{Total no. of even numbers b/w 20 and 34}}$

$= \frac{22 + 24 + 26 + 28 + 30 + 32}{6}$

$= \frac{162}{6} = 27$

Odd numbers between 20 and 34 are 21, 23, 25, 27, 29, 31, 33

Average of odd numbers $= \frac{\text{Sum of odd numbers between 20 and 34}}{\text{Total no. of even numbers b/w 20 and 34}}$

$$= \frac{21+23+25+27+29+31+33}{7}$$

$$= \frac{189}{7} = 27$$

None of the average is smaller.

14. Old numbers = 68, 54, 46, 12, 15, 38

$$\text{Average of old numbers} = \frac{\text{Sum of old numbers}}{\text{Total no. of old numbers}}$$

$$= \frac{68+54+46+12+15+38}{6}$$

$$= \frac{233}{6} = 38.83$$

New numbers are (68 – 7), (54 – 7), (46 – 7), (12 – 7), (15 – 7), (38 – 7)

New numbers are 61, 47, 39, 5, 8, 31

$$\text{Average of new numbers} = \frac{\text{Sum of new numbers}}{\text{Total no. of even numbers}}$$

$$= \frac{61+47+39+5+8+31}{6}$$

$$= \frac{191}{6} = 31.83$$

Difference between the average of old numbers and new numbers

= 38.83 – 31.83

= 7

15. There are 5 days

Total temperature (Monday – Friday) = 39.8°C × 5 = 199°C

There are 6 days

Total temperature (Sunday – Friday) = 38.2°C × 6

= 229.2°C

The difference between the two totals is the temperature on Sunday.

Temperature on Sunday

= Total temp (Sunday – Friday) – Total temp (Monday – Friday)

= 229.2°C – 199°C = 30.2°C

16. Age of Meena = 12 years

Age of Monu = 15 years

Age of Babita = 13 years

Age of Ria = 14 years

Age of Meena after 5 years = 12 + 5 = 17 years

Age of Monu after 5 years = 15 + 5 = 20 years

Age of Babita after 5 years = 13 + 5 = 18 years

Age of Ria after 5 years = 14 + 5 = 19 years

Average of their ages after 5 years $= \frac{17+20+18+19}{4} = \frac{74}{4} = 18.5$

= 18.5 years

17. Sum of first 10 numbers = Average of 10 numbers × 10

= 62 × 10 = 620

Sum of first 9 numbers = Average of first 9 numbers × 9

= 63 × 9 = 567

The 10^{th} number = Sum of first 10 numbers – Sum of first 9 numbers

= 620 – 567 = 53

Multiple Choice Questions

Tick (✓) the correct choice :

1. (b) **2.** (c) **3.** (b) **4.** (a) **5.** (b)

Chapter 12 : Percentage

Exercise-12.1

1. What percentage of the square is shaded?

a. $\frac{15}{100} = 15\%$ b. $\frac{38}{100} = 38\%$ c. $\frac{52}{100} = 52\%$

d. $\frac{38}{100} = 38\%$ e. $\frac{44}{100} = 44\%$ f. $\frac{16}{100} = 16\%$

2. Write the shaded part as percentage :

a. $\frac{3}{10} = \frac{3 \times 100}{10 \times 1000}$

$= 30\%$

b. $\frac{5}{10} = \frac{500}{1000}$

$= 50\%$

c. $\frac{7}{10} = \frac{700}{1000}$

$= 70\%$

d. $\frac{8}{10} = \frac{800}{1000}$

$= 80\%$

3. Colour the parts shown :

Do yourself

Exercise-12.2

1. Express the following fraction as a percentage :

a. $\frac{6}{10}$

Multiply numerator and denominator by 100.

$= \frac{6}{10} \times \frac{100}{100} = \frac{600}{1000} = \frac{60}{100} = 60\%$

b. $\frac{1}{5}$

Multiply numerator and denominator by 100.

$= \frac{1 \times 100}{5 \times 100} = \frac{20}{100} = 20\%$

c. $\frac{4}{6}$

Multiply numerator and denominator by 100.

$= \frac{4 \times 100}{6 \times 100} = \frac{400}{6 \times 100} = \left(\frac{200}{3}\right) \times \frac{1}{100}$

$= \left(66\frac{2}{3}\right)\%$

d. $\frac{5}{8}$

Multiply numerator and denominator by 100.

$= \frac{5 \times 100}{8 \times 100} = \frac{5 \times 25}{2 \times 100} = \frac{125}{2} \times \frac{1}{100} = 62\frac{1}{2}\%$

e. $\frac{5}{12}$

Multiply numerator and denominator by 100.

$= \frac{5 \times 100}{12 \times 100} = \frac{500}{12 \times 100} = \frac{125}{3 \times 100} = 41\frac{2}{3}\%$

f. $\frac{2}{5}$

Multiply numerator and denominator by 100.

$= \frac{2 \times 100}{5 \times 100} = \frac{2 \times 20}{100} = \frac{40}{100} = 40\%$

2. Convert the following into percentage :

a. $7\frac{1}{4} = \frac{(7 \times 4) + 1}{4} = \frac{28 + 1}{4} = \frac{29}{4}$

Multiply numerator and denominator by 100.

$= \frac{29 \times 100}{4 \times 100} = \frac{29 \times 25}{100} = \frac{725}{100} = 725\%$

b. $2\frac{2}{5} = \frac{(2 \times 5) + 2}{5} = \frac{12}{5}$

Multiply numerator and denominator by 100.

$= \frac{12 \times 100}{5 \times 100} = \frac{12 \times 20}{100} = \frac{240}{100} = 240\%$

c. $2\frac{13}{25} = \frac{(25 \times 2) + 13}{25} = \frac{(50 + 13)}{25} = \frac{63}{25}$

Multiply numerator and denominator by 100.

$= \frac{63 \times 100}{23 \times 100} = \frac{63 \times 4}{100} = \frac{252}{100} = 252\%$

d. $1\frac{18}{20} = \frac{(20 \times 1) + 18}{20} = \frac{38}{20}$

Multiply numerator and denominator by 100.

$= \frac{38 \times 100}{20 \times 100} = \frac{38 \times 5}{100} = \frac{190}{100} = 190\%$

e. $\frac{9}{50}$

Multiply numerator and denominator by 100.

$= \frac{9 \times 100}{50 \times 100} = \frac{9 \times 2}{100} = \frac{18}{100} = 18\%$

f. $9\frac{4}{25} = \frac{(25 \times 9) + 4}{25} = \frac{(225 + 4)}{25} = \frac{229}{25}$

Multiply numerator and denominator by 100.

$\frac{229 \times 100}{25 \times 100} = \frac{229 \times 4}{100} = \frac{916}{100} = 916\%$

3. Convert the following whole numbers to percentage :

a. 4

Multiply numerator and denominator by 100.

$4 \times \frac{100}{100} = 400\%$

b. 6

Multiply numerator and denominator by 100.

$6 \times \frac{100}{100} = 600\%$

c. 25

Multiply numerator and denominator by 100.

$\frac{25}{100} \times 100 = 2500\%$

d. 7

Multiply numerator and denominator by 100.

$\frac{7 \times 100}{100} = 700\%$

e. 8

Multiply numerator and denominator by 100.

$\frac{8 \times 100}{100} = 800\%$

f. 16

Multiply numerator and denominator by 100.

$\frac{16 \times 100}{100} = 1600\%$

4. Express the following as percentage :

a. $5.36 = \frac{536}{100} = 536\%$

b. $4.6 = \frac{46}{10}$ Multiply numerator and denominator by 10.

$= \frac{460}{100} = 460\%$

c. $0.158 = \frac{158}{1000} = \left(\frac{158}{100}\right) \times \frac{1}{10} = 15.8\%$

d. $0.7 = \frac{7}{10}$

Multiply numerator and denominator by 10.

$\frac{7 \times 10}{10 \times 10} = \frac{70}{100} = 70\%$

e. 0.037

$\frac{37}{1000} = \frac{37}{100} \times \frac{1}{10} = 3.7\%$

f. 0.43

$\frac{43}{100} = 43\%$

5. Express the following percentages into decimals :

a. $75\% = \frac{75}{100} = 0.75$

b. $31\% = \frac{31}{100} = 0.31$

c. $225\% = \frac{225}{100} = 2.25$

d. $5.4\% = \frac{5.4}{100} = \frac{54}{1000} = 0.0054$

e. $7.1\% = \frac{71}{100}\% = \frac{71}{1000} = 0.0071$

f. $26.3\% = \frac{26.3}{100} = \frac{263}{1000} = 0.263$

6. Convert the following percentages into fractions in lowest form :

a. $63\% = \frac{63}{100}$

b. $6.5\% = \frac{65}{10 \times 100} = \frac{65}{1000} = \frac{13}{200}$

c. $8\% = \frac{8}{100} = \frac{2}{25}$

d. $1.32\% = \frac{1.32}{100} = \frac{132}{10000} = \frac{33}{2500}$

e. $7\frac{1}{2}\% = \frac{15}{2}\% = \frac{15}{2 \times 100} = \frac{7.5}{100} = \frac{75}{1000} = \frac{3}{40}$

f. $0.5\% = \frac{5\%}{10} = \frac{5}{1000} = \frac{1}{200}$

7. Fill in the blanks :

a. 21 out of 100 = 21%

b. 35 out of 100 = 35%

c. 12 out of 20 = 60%

d. $\frac{13}{100} = 13\%$

e. $\frac{27}{100} = 27\%$

f. $\frac{4}{100} = 4\%$

g. $\frac{11}{100} = 11\%$

h. $\frac{4}{5} = 80\%$

i. $\frac{5}{8} = 62\frac{1}{2}\%$

j. $\frac{7}{15} = 46\frac{2}{3}\%$

k. 0.6 = 60%

l. 0.05 = 5%

NCERT Corner

Some percentages are very common. Here are a few. And fill the last one.

Percentage	10%	20%	25%	50%	75%
Fraction	$\frac{1}{10}$	$\frac{1}{5}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$

Exercise-12.3

1. Find the value of the following :

a. $\frac{20}{100} \times 60 = \frac{1}{5} \times 60 = \frac{60}{5} = 12$

b. $\frac{25}{100} \times 48 = \frac{48}{4} = 12$

c. 80% of 150

$= \frac{80}{100} \times 150 = \frac{4}{5} \times 150 = 4 \times 30 = 120$

d. 125% of 10

$= \frac{125}{100} \times 10 = \frac{5}{4} \times 10 = \frac{5}{2} \times 5 = \frac{25}{2} = 12\frac{1}{2}$

e. 175% of 3000

$= \frac{175}{100} \times 3000 = 175 \times 30 = 5250$

f. 50% of 1000

$= \frac{50}{100} \times 1000 = \frac{1}{2} \times 1000 = 500$

g. 25% of 100

$= \frac{25}{100} \times 100 = 25$

h. 230% of 100

$= \frac{230}{100} \times 100 = 230$

i. 70% of 50

$= \frac{70}{100} \times 50 = \frac{70}{2} = 35$

2. Find the value of the following :

a. 33% of ₹ 400

$\frac{33}{100} \times 400 = 33 \times 4 = ₹\ 132$

b. 22% of ₹ 400

$\frac{22}{100} \times 400 = 22 \times 4 = ₹\ 88$

c. 80% of 225 g

$\frac{80}{100} \times 225 = \frac{4}{5} \times 225 = 4 \times 45 = 180$ g

d. 6% of 60 litres

$6\% \times 60 = \frac{6}{100} \times 60 = \frac{6 \times 6}{10} = \frac{36}{10} = 3.6$ litres

e. 20% of 100 marks

$= \frac{20 \times 100}{100} = 20$ marks

f. 60% of 100 mm

$\frac{60}{100} \times 100$ mm = 60 mm

g. 40% of 365 days

$= \frac{2}{5} \times 365 = 2 \times 73 = 146$ days

h. 2.5% of 300 kg

$= \frac{2.5}{100} \times 300 = 2.5 \times 3 = 7.5$ kg

i. 12% of ₹ 9000

$\frac{12}{100} \times 9000 = 12 \times 90 = ₹\ 1080$

3. a. Let x% of 80 is 16.

$\frac{x}{100} \times 80 = 16$

Multiply by 100 on both sides.

$$\frac{10x \times 80}{100} = 1600$$

$$80x = 1600$$

Divide by 80 on both sides.

$$x = \frac{1600}{80} = 20$$

So, 20% of 80 is 16.

b. Let x% of ₹ 200 is ₹ 20.

$$\frac{x}{100} \times 200 = 20$$

Multiply by 100 on both sides of equation

$$\Rightarrow \frac{100 \times x \times 200}{100} = 20 \times 100$$

$$\Rightarrow 200x = 2000$$

Divide by 200 on both sides of equation.

$$x = \frac{2000}{200} = 10$$

So, 10% of ₹ 200 is ₹ 20.

c. Let x% of 150 m is 30 m.

$$\Rightarrow \frac{x}{100} \times 150 = 30$$

Multiply by 100 on both sides of equation

$$\Rightarrow \frac{100x \times 150}{100} = 30 \times 100$$

$$\Rightarrow 150x = 3000$$

Divide by 150 on both sides of equation.

$$\frac{150x}{150} = \frac{3000}{150}$$

$$x = 20$$

So, 20% of 150 m is 30 m.

d. Let x% of 400 g is 2 kg.

$$\frac{x}{100} \times 400 = 2000$$

Multiply by 100 on both sides of equation.

$$\frac{100x \times 400}{100} = 2000 \times 100$$

$400\,x = 200000$

Divide by 400 on both sides of equation.

$$x = \frac{200000}{400} = 500$$

So, 500% of 400 g is 2 kg.

4. Find the number whose :

a. Let the number be x.

$$\frac{15}{100} \times x = 45$$

Multiply by 100 on both sides of equation.

$$100 \times \frac{15}{100} \times x = 4500$$

$15x = 4500$

Divide by 15 on both sides of equation.

$$x = \frac{4500}{15} = 300$$

The number whose 15% is 45 is 300.

b. Let the number be x.

$$\frac{20}{100} \times x = 18$$

Multiply by 100 on both sides of equation.

$$100 \times \frac{20}{100} x = 1800 \Rightarrow 20x = 1800$$

Divide by 20 on both sides of equation.

$$x = \frac{1800}{20} = 90$$

So, 20% of 90 is 18.

c. Let 25% of x is 8.

$$\Rightarrow \frac{25}{100} \times x = 8$$

Multiply by 100 on both sides of equation.

$$\Rightarrow 100 \times \frac{25}{100} \times x = 800$$

$$\Rightarrow 25x = 800$$

$\Rightarrow$ Divide by 25 on both sides of equation.

$x = \frac{800}{25} = 32$

So, 25% of 32 is 8.

d. Let 20% of x is 20.

$\frac{20}{100} \times x = 20$

Multiply by 100 on both sides of equation.

$100 \times \frac{20}{100} \times x = 20 \times 100$

$20x = 2000$

Divide by 20 on both sides of equation.

$x = 2000 \div 20 = 100$

So, 20% of 100 is 20.

e. Let 25% of x is 75.

$\frac{25}{100} \times x = 75$

Multiply by 100 on both sides of equation.

$100 \times \frac{25}{100} x = 7500$

$25x = 7500$

Divide by 25 on both sides of equation.

$x = \frac{7500}{25} = 300$

So, 25% of x is 300.

f. Let 16% of x is 72.

$\frac{16}{100} \times x = 72$

Multiply by 100 on both sides of equation.

$100 \times \frac{16}{100} \times x = 7200$

$16x = 7200$

Divide by 16 on both sides on equation.

$x = \frac{7200}{16} = 450$

So, 16% of 450 is 72.

Exercise-12.4

1. Take prize money = ₹ 800

Money earned by Rina = 30% of 800

$= \frac{30}{100} \times 800 = 30 \times 8 = 240$

So, money earned by Rina is ₹ 240.

2. Total no. of student in a class = 75

Number of boys $= \frac{60}{100} \times 75 = 60 \times \frac{3}{4} = 15 \times 3 = 45$

3. Number pencils purchased by shopkeeper = 650

Number of pencils which were broken $= \frac{12}{100} \times 650$

$= \frac{12}{2} \times 13 = \frac{156}{2} = 78$

4. 20% of 400 $= \frac{20}{100} \times 400 = 80$

15% of 450 $= \frac{15}{100} \times 450 = \frac{135}{2} = 67.5$

20% of 400 is more than 15% of 450.

5. Earning of David per month = 10000

Expenditure = ₹ 6000

Savings of David = Earning – Expenditure

= 10000 – 6000

= 4000

Money saved by David = ₹ 4000

Percent of this income he saves $= \frac{4000}{10000} \times 100 = 40\%$

6. Population of town = 76500

Number of women $= \frac{42}{100} \times 76500 = 42 \times 765$

= 32130

∴ No. of women = 32,130

7. Runs made by team = 450

Runs scored by captain = 135

Percentage of runs scored by captain of team $= \frac{135}{450} \times 100$

$= \frac{135}{450} \times 100 = \frac{135}{9} \times 2 = \frac{270}{9} = 30$

So, 30% of runs scared by captain of team.

8. List price of water = ₹ 1000

Discount = 18%

$\frac{18}{100} \times 1000 = 180$

Sale price = List price – 180 = 1000 – 180 = 820

9. Marks secured by Seema = 320

Total marks = 400

Percentage of marks secured by Seema in first team $= \frac{320}{400} \times 100 = 80\%$

Marks secured by Seema in second term = 360

Total marks in second term examination = 500

Percentage of marks in second term examination $= \frac{360}{500} \times 100$

$= 72\%$

$\therefore$ She performed better in first term examination.

10. Percentage of students come to school by bicycles = 45%

Total students in school = 2400

Number of students who come by bicycles to school

$$= \frac{45}{100} \times 2400 = 45 \times 24 = 1080$$

$\therefore$ 1080 students come by bicycles to school.

11. Price of book = ₹ 150

Price increased $= \frac{40}{100} \times 150 = 4 \times 15 = 60$

New price of book = Original price + Increased price

= ₹ 150 + 60 = ₹ 210

12. Percentage of marks got by Soniya = 90%

Maximum marks for test = 1050

Total marks got by Soniya

$$\Rightarrow \frac{90}{100} \times 1050 = 9 \times 105 = 945$$

Soniya's total marks is 945.

13. Total bulbs used = 1560

Number of yellow bulbs $= \frac{15}{100} \times 1560$

$$= \frac{15 \times 156}{10} = \frac{2340}{10} = 234$$

$\therefore$ 234 yellow bulbs were used to decorate the house.

14. Monthly income of Sumit = ₹ 7200

Money spend on household expenses = ₹ $\frac{80}{100} \times 7200$

$= ₹\ 80 \times 72$

$= ₹\ 5760$

Money he saved = Monthly income – Expenditure

$= ₹\ 7200 - ₹\ 5760$

$= ₹\ 1440$

15. Money collected for flood victims $= ₹\ 2500$

Contribution of Arun $= ₹\ \frac{15}{100} \times 2500$

$= ₹\ 15 \times 25 = ₹\ 375$

16. Weight of bag = 40 kg

Weight of suitcase $= \frac{60}{100} \times 40 = 6 \times 4 = 24$ kg

$\therefore$ Weight of suitcase = 24 kg

17. Height of Radhika = 150 cm

Heigh of Priyanka $= \frac{110}{100} \times 150 = 11 \times 15$ cm = 165 cm

18. Quantity of petrol in car = 32 *l*

Petrol used $= \frac{75}{100} \times 32 = \frac{3}{4} \times 32 = 3 \times 8 = 24$ *l*

Petrol left in car = 32 *l* – 24 *l* = 8 litres

19. Total students appeared for examination = 60

No. of students passed = 24

No. of students failed = 60 – 24 = 36

Percentage of students passed $= \frac{24}{60} \times 100 = \frac{240}{6} = 40\%$

Percentage of students failed $= \frac{36}{60} \times 100 = \frac{360}{6} = 60\%$

20. Salary of Manish before increment $= ₹\ 1250$

Salary of Manish after increment $= ₹\ 1750$

Salary increased $= ₹\ (1750 - 1250) = ₹\ 500$

Percentage of increase in his salary $= \frac{500}{1250} \times 100$

$= \frac{5000}{125} = 40\%$

21. Marks scored by boy = 475

Total marks = 500

Percentage of marks he scored $= \frac{475}{500} \times 100 = \frac{475}{5} = 95\%$

Multiple Choice Questions

Tick (✓) the correct choice :

1. (c) **2.** (a) **3.** (c) **4.** (c) **5.** (c) **6.** (b) **7.** (c) **8.** (a) **9.** (b)

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a. Number of families having 3 cars $= \frac{24}{100} \times 200$

$= 48$

Number of families having more than 3 cars $= \frac{11}{100} \times 200 = 11 \times 2 = 22$

No. of families having 3 and more than 3 cars in all = 48 + 22 = 70

b. No. of families having 2 cars $= \frac{19}{100} \times 200 = 19 \times 2 = 38$

No. of families having no cars $= \frac{21}{100} \times 200 = 21 \times 2 = 42$

No. of families which have 2 cars than those that have no cars

$= 42 - 38 = 4$

c. No. of families having 1 car $= \frac{25}{100} \times 200 = 25 \times 2 = 50$

No. of families having no cars $= \frac{21}{100} \times 200 = 42$

$\frac{\text{Families with 1 car}}{\text{Families with no car}} = \frac{50}{42} = 1.19$

So, the number of families with 1 car is 1.19 times the number of families with no cars.

Test Exercise

1. a. $\frac{1}{4} \times 100 = \frac{100}{4} = 25\%$ b. $\frac{1}{5} \times 100 = \frac{100}{5} = 20\%$

c. $\frac{1}{10} \times 100 = \frac{100}{10} = 10\%$ d. $\frac{1}{50} \times 100 = \frac{100}{50} = 2\%$

2. a. 12.5

$= \frac{125}{10}$ Multiply numerator and denominater by 10.

$= \frac{125 \times 10}{10 \times 10} = \frac{1250}{100} = 1250\%$

b. 2.8

$= \frac{28}{10}$ Multiply numerator and denominated by 10.

$= \frac{280}{100} = 280\%$

c. 0.75

Multiply numerator and denominater by 100.

$= \frac{75}{100} = 75\%$

d. 9.2

$= \frac{92}{10}$ Multiply numerator and denominater by 10.

$= \frac{92 \times 10}{10 \times 10} = \frac{920}{100} = 920\%$

3. a. ₹ 1 = 100 paise, so

$\frac{60}{100} \times 100 = 60\%$

b. 1 cm = 10 mm, so

$\frac{2}{10} \times 100 = \frac{1}{5} \times 100 = 20\%$

c. Since 1 km = 1000 m

So, $\frac{250}{1000} \times 100 = 25\%$

d. Since, 1 kg = 1000 g

So, $\frac{400}{2000} \times 100 = \frac{100}{5} = 20\%$

4. a. $5\% = \frac{5}{100}$

Divide numerator and denominator by their HCF which is 5.

$= \frac{5 \div 5}{100 \div 5} = \frac{1}{20}$

b. $15\% = \frac{15}{100}$

Divide numerator and denominator by their HCF which is 5.

$= \frac{15 \div 5}{100 \div 5} = \frac{3}{20}$

c. $45\% = \frac{45}{100}$

Divide numerator and denominator by their HCF which is 5.

$= \frac{45 \div 5}{100 \div 5} = \frac{9}{20}$

d. $150\% = \frac{150}{100} = \frac{15}{10}$

Divide numerator and denominator by their HCF which is 5.

$= \frac{15 \div 5}{10 \div 5} = \frac{3}{2}$

5. a. $45\% = \frac{45}{100} = 0.45$ b. $20\% = \frac{20}{100} = 0.20$

c. $125\% = \frac{125}{100} = 1.25$ d. $8\% = \frac{8}{100} = 0.08$

6. a. $\frac{25}{100} \times 100 = 25$ b. $\frac{15}{100} \times 100 = 15$ cm

So, 25% of 100 is 25.

c. 2 km = 2 × 1000 m = 2000 m

d. $\frac{75}{100} \times$ ₹ 200 = ₹ (75 × 2) = ₹ 150

7. a. $\frac{40}{80} \times 100 = \frac{100}{2} = 50\%$

b. ₹ 1 = 100 p $\Rightarrow$ ₹ 10 = 10 × 100 p = 1000 p

$\frac{75}{1000} \times 100 = \frac{7500}{1000} = \frac{75}{10} = 7.5$

So, 75 p of ₹ 10 is 7.5%.

c. Since, 1 km = 1000 m, 3 km = 3 × 1000 m = 3000 m

$\frac{600 \text{ m}}{3000 \text{ m}} \times 100 = \frac{600}{30} = 20\%$

8. Total seats = 10000

Seats occupied = 7500

Seats empty = 10000 – 7500 = 2500

Percentage of seats occupied $= \frac{7500}{10000} \times 1000$

$= 75\%$

Percentage of seats empty $= \frac{2500}{10000} \times 100 = 25\%$

9. Vishwas scored 165 marks and failed by 33 marks so, passing marks is

Passing marks = 165 + 33 = 198 marks

The passing marks is 44% of total maximum marks (M).

$$\frac{44}{100} \times M = 198$$

$$0.44\, M = 198$$

$$M = \frac{198}{0.44} = \frac{19800}{44} = 450$$

So, the maximum marks is 450.

10. Population of town in 2018 = 368040

Increased population $= 12\frac{1}{2}\%$ of 368040

$$= \frac{25}{2 \times 100} \times 368040$$

$$= \frac{9201000}{200} = 46005$$

Population in 2019 = Population in 2018 + Increased Population

= 368040 + 46005

= 414045

11. Shiva's salary per month = ₹ 12000

Increment in salary = 10.4% of 12000

$$= \frac{10.4}{100} \times 12000 = 10.4 \times 120$$

= 1248

Now, his salary will be ₹ (12000 + 1248)

= ₹ 13248

12. Total pens = 450

No. of pens which are broken $= \frac{8}{100} \times 450 = \frac{8 \times 45}{10} = \frac{360}{10} = 36$

No. of pens which were not broken = Total pens – Pens which were broken

= 450 – 36 = 414

13. Money saved by Rajeev $= \frac{12}{100} \times 13000 = 12 \times 130$ = ₹ 1560

Expenditure = Earnings – Savings = ₹ 13000 – ₹ 1560 = ₹ 11440

14. Cost of steel almirah = ₹ 6500

Price of almirah increases by 10.5% of 6500

$$= ₹ \frac{10.5}{100} \times 6500 = ₹\ 10.5 \times 65 = ₹\ 682.5$$

Increased price of steel almirah = ₹ 6500 + ₹ 682.5

= ₹ 7182.50

15. Weight of Neeraj = 75 kg

Weight of Saurabh $= \frac{112}{100} \times 75 = \frac{8400}{100}$

= 84 kg

16. Total money Mohit had = ₹ 25000

Money given to his sister $= ₹ \frac{12.5}{100} \times 25000$

$= ₹ \frac{125 \times 25000}{1000}$

= ₹ 125 × 25 = ₹ 3125

Money given to his son $= \frac{15}{100} \times 25000 = 15 \times 250$

= ₹ 3750

Money given to his mother = 25000 – (3125 + 3750)

= ₹ 25000 – 6875

= ₹ 18125

17. Cost of pen = ₹ 28

Reduction in price $= ₹ \frac{12}{100} \times 28 = ₹ \frac{336}{100} = ₹ 3.36$

Now, cost of pen = ₹ 28 – ₹ 3.36 = ₹ 24.64

Chapter 13 : Profit and Loss

Exercise-13.1

1. Fill in the blanks :

a.	C.P. = ₹ 1000,	S.P. = ₹ 900;	Loss = ₹ 100
b.	C.P. = ₹ 500,	S.P. = ₹ 400;	Loss = ₹ 100
c.	C.P. = ₹ 600,	S.P. = ₹ 700;	profit = ₹ 100
d.	C.P. = ₹ 400,	S.P. = ₹ 500;	profit = ₹ 100
e.	C.P. = ₹ 300,	S.P. = ₹ 400;	profit = ₹ 100
f.	C.P. = ₹ 200,	S.P. = ₹ 300;	profit = ₹ 100
g.	C.P. = ₹ 700,	S.P. = ₹ 900;	profit = ₹ 200
h.	C.P. = ₹ 600,	S.P. = ₹ 300;	Loss = ₹ 300

2. Find profit or loss in each of the following cases :

a. C.P. = ₹ 1000, S.P. = ₹ 1200

Since, C.P. < S.P. there is a profit.

Profit = S.P. – C.P. = ₹ (1200 – 1000) = ₹ 200

b. C.P. = ₹ 3000, S.P. = ₹ 1500

Since, C.P. > S.P. there is a loss.

Loss = C.P. – S.P. = ₹ (3000 – 1500) = ₹ 1500

c. C.P. = ₹ 200, S.P. = ₹ 100

Since, C.P. < S.P. there is a loss.

Loss = C.P. – S.P. = ₹ 200 – 100 = ₹ 100

d. C.P. = ₹ 300, S.P. = ₹ 400

Since, S.P. > C.P. there is a profit.

Profit = S.P. – C.P. = ₹ 400 – 300 = ₹ 100

e. C.P. = ₹ 700, S.P. = ₹ 500
Since, C.P. > S.P. there is a loss.
Loss = C.P. – S.P, = ₹ 700 – 500 = ₹ 200

f. C.P. = ₹ 600, S.P. = ₹ 900
Since, S.P. < C.P. there is a profit.
Profit = S.P. – C.P. = ₹ 900 – 600 = ₹ 300

g. C.P. = ₹ 365, S.P. = ₹ 625
Since, S.P. < C.P. there is a profit.
Profit = S.P. > C.P. = ₹ 625 – 365 = ₹ 260

h. C.P. = ₹ 470, S.P. = ₹ 300
Since, C.P. < S.P. there is a loss.
Loss = C.P. – S.P. = ₹ 470 – 300 = ₹ 170

i. C.P. = ₹ 390, S.P. = ₹ 490
Since, S.P. < C.P. there is a profit.
Profit = S.P. – C.P. = ₹ 490 – 390 = ₹ 100

3. Cost of 10 pens = ₹ 100
Cost of 1 pen = ₹ 100 ÷ 10 = ₹ 10
Selling price of 1 pen = ₹ 12
Since, S.P. > C.P. there is a profit.
Cost price of 10 pens = ₹ 100
Selling price of 10 pens = No. of pens × S.P. of a pen
= 10 × 12 = ₹ 120
Profit = S.P. of 10 pens – C.P. of 10 pens
= ₹ 120 – ₹ 100 = ₹ 20

4. Cost price of 1 egg = ₹ 2.50
No. of eggs = 12
Total C.P. of eggs = 12 × 2.50 = ₹ 30
Selling price of 1 egg = ₹ 3
S.P. of 12 eggs = ₹ 12 × 3 = ₹ 36
Since S.P. > C.P. there is a profit.
Profit = S.P. of 12 eggs – C.P. of 12 eggs
= ₹ 36 – ₹ 30 = ₹ 6

5. Cost price of TV = ₹ 8300
Selling price of TV = ₹ 9000
Since, S.P. of TV is greater than C.P. of TV, there is a profit.
Profit = (S.P. of TV) – (C.P. of TV) = ₹ 9000 – ₹ 8300 = ₹ 700

6. Cost price of laptop = ₹ 30257
Money spent in repairing = ₹ 425
Total price of laptop = ₹ 30257 + ₹ 425 = ₹ 30682

Selling price of laptop = ₹ 30,500

Since, S.P. of laptop is less than the total price of laptop so there is a loss.

Loss = ₹ 30,682 – ₹ 30,500 = ₹ 182

7. Cost price of 20 dozen bananas = ₹ 750

S.P. of 1 dozen banana = ₹ 35

S.P. of 20 dozen bananas = ₹ 35× 20 = ₹ 700

Since C.P. of 20 dozen bananas is more than that of S.P. of 20 dozen bananas so, there is a loss.

Loss = C.P. – S.P. = ₹ 750 – ₹ 700 = ₹ 50

8. Cost price of second-hand car = ₹ 6,40,600

Money spent on repairing = ₹ 20,570

Total price of second hand car = ₹ 6,40,600 + ₹ 20,570

= ₹ 6,61,170

Selling price of second hand car = ₹ 687250

Since selling price of second hand car is more than that of total price of second hand car so, there is a gain.

Gain = ₹ (6,87,250 – 6,61170) = ₹ 26,080

9. Cost price of 1 book = ₹ 60

Cost price of 10 books = ₹ (60 × 10) = ₹ 600

Cost price of 1 magazine = ₹ 40

Cost price of 60 magazines = ₹ (40 × 60) = ₹ 2400

Total cost price of 10 books and 60 magazines = ₹ 600 + ₹ 2400 = ₹ 3000

S.P. of 1 book = ₹ 50

S.P. of 10 books = ₹ (50 × 10) = ₹ 500

S.P. of 1 magazines = ₹ 50

S.P. of 60 magazines = ₹ (50 × 60) = ₹ 3000

Total selling price of 10 books and 60 magazines = ₹ 500 + ₹ 3000 = ₹ 3500

Since, total S.P. of books and magazines is greater than that of total C.P. of books and magazines.

So, there is a gain.

Gain = ₹ (3500 – 3000) = ₹ 500

Exercise-13.2

1. Fill in the blanks :

a.	C.P. = ₹ 500,	Loss = ₹ 100	S.P. = ₹ 400
b.	S.P. = ₹ 670,	Loss = ₹ 200	C.P. = ₹ 870
c.	C.P. = ₹ 300,	Profit = ₹ 50	S.P. = ₹ 350
d.	C.P. = ₹ 400,	Profit = ₹ 75	S.P. = ₹ 475
e.	S.P. = ₹ 800,	Loss = ₹ 100	C.P. = ₹ 900
f.	S.P. = ₹ 950,	Profit = ₹ 150	C.P. = ₹ 800
g.	C.P. = ₹ 650,	Loss = ₹ 200	S.P. = ₹ 450

2. Find the cost price (C.P.) :

a. S.P. = ₹ 900; Loss = ₹ 331.40
C.P. = S.P. + Loss = ₹ 900 + ₹ 331.40 = ₹ 1231.4

b. S.P. = ₹ 3691; Profit = ₹ 690.95
C.P. = S.P. – Profit = ₹ 3691 – ₹ 690.95
C.P. = ₹ 3000.05

c. S.P. = ₹ 10,000; Loss = ₹ 88.80
C.P. = S.P. + Loss = ₹ 10000 + ₹ 88.80 = ₹ 10088.80

d. S.P. = ₹ 6900; Profit = ₹ 100
C.P. = S.P. – Profit = ₹ 6900 – ₹ 100 = ₹ 6800

e. S.P. = ₹ 875; Loss = ₹ 35
C.P. = S.P. + Loss = ₹ 875 + ₹ 35 = ₹ 910

f. S.P. = ₹ 7055.00; Loss = ₹ 501.25
C.P. = S.P. + Loss = ₹ 7055 + ₹ 501.25 = ₹ 7556.25

g. S.P. = ₹ 835.65; Profit = ₹ 12.75
C.P. = S.P. – Profit = ₹ 835.65 – ₹ 12.75 = ₹ 822.9

h. S.P. = ₹ 8050.25; Profit = ₹ 80.25
C.P. = S.P. – Profit = ₹ 8050.25 – ₹ 80.25 = ₹ 7970

3. Find the selling price (S.P.) :

a. C.P. = ₹ 2235.25; Profit = ₹ 30.75
S.P. = C.P. + Profit = ₹ 2235.25 + ₹ 30.75
S.P. = ₹ 2266

b. C.P. = ₹ 475; Profit = ₹ 18
S.P. = C.P. + Profit = ₹ 475 + ₹ 18 = ₹ 493

c. C.P. = ₹ 825.50; Loss = ₹ 7.50
S.P. = C.P. – Loss = ₹ 825.50 – ₹ 7.50 = ₹ 818

d. C.P. = ₹ 925.25; Loss = ₹ 3.35
S.P. = C.P. – Loss = ₹ 925.25 – ₹ 3.25 = ₹ 921.90

e. C.P. = ₹ 12,000; Profit = ₹ 125.50
S.P. = C.P. + Profit = ₹ 12000 + ₹ 125.50 = ₹ 12125.50

f. C.P. = ₹ 630; Profit = ₹ 18.30
S.P. = C.P. + Profit = ₹ 630 + ₹ 18.30 = ₹ 648.30

g. C.P. = ₹ 9756; Loss = ₹ 385.90
S.P. = C.P. – Loss = ₹ 9756 – ₹ 385.90 = ₹ 9370.10

h. C.P. = ₹ 3875.50; Loss = ₹ 489.45
S.P. = C.P. – Loss = ₹ 3875.50 – ₹ 489.45 = ₹ 3386.05

4. Cost price of chair = ₹ 810
Selling price of chair = ₹ 900
Find (S.P. of chair) > (C.P. of chair) so, is there is a gain.
Gain = S.P. – C.P. = ₹ 900 – ₹ 810 = ₹ 90

5. Cost price of scooter = ₹ 34,537
Money spent on repairing = ₹ 835
Total selling price of scooter price of scooter = ₹ 34547 + ₹ 835 = ₹ 35372
Since, selling price of scooter is greater than its total price so, there is a profit.
Profit = ₹ 38430 – ₹ 35372 = ₹ 3058

6. Cost price of second hand car = ₹ 3,20,000
Money spent on repairing = ₹ 30,000
Total price of second hand car = ₹ 3,20,000 + ₹ 30,000
= ₹ 3,50,000
Selling price of second hand car = ₹ 3,10,455
Since, selling price is less than the total price of second hand car. So Aman bears a loss of (₹ 3,50,000 – ₹ 3,10,455) = ₹ 39545

7. Cost price of 10 dozen bananas = ₹ 650
Selling price of 1 piece of banana = ₹ 8.30
Selling price of 120 pieces (10 dozen) of bananas = ₹ 830 × 120 = ₹ 996
Since, S.P. of 10 dozen bananas is more than its cost price.
So, shopkeeper bears profit equals to profit = ₹ 996 – ₹ 650 = ₹ 346

8. Cost price of wrist watch = ₹ 1550
Profit = ₹ 120
Selling price = Cost price + profit
= ₹ 1550 + ₹ 120 = ₹ 1670
So, selling price of wrist watch is ₹ 1670.

9. Cost price of refrigerator = ₹ 9,990
Profit = ₹ 450
Selling price of refrigerator = (Cost price of refrigerator) + (Profit)
= ₹ 9990 + ₹ 450 = ₹ 10,440

10. Cost price of mobile = ₹ 12,250
Loss = ₹ 200
Selling price of mobile = Cost price of mobile – Loss
= ₹ 12250 – ₹ 200
= ₹ 12050

11. Selling price of television set = ₹ 5625
Loss = ₹ 475
Cost price of television set = Selling price + Loss
= ₹ 5625 + ₹ 475
= ₹ 6100

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Do it yourself

Exercise-13.3

1. Find the profit or loss percent, if :

a. CP = ₹ 360; SP = ₹ 240

Since, C.P. > S.P., there is a loss.

$$\text{Loss Percent} = \left(\frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}} \times 100\right) = \left(\frac{₹\,360 - ₹\,240}{₹\,360} \times 100\right)$$

$$= \frac{120}{360} \times 100 = \frac{100}{3} = 33.33\%$$

b. CP = ₹ 3,000 ; SP = ₹ 3600

Since, S.P. > C.P., there is a profit.

$$\text{Profit\%} = \left(\frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100\right) = \frac{₹\,3600 - ₹\,3000}{₹\,3000} \times 100$$

$$= \frac{₹\,600}{₹\,3000} \times 100 = \frac{1}{5} \times 100 = 20\%$$

c. CP = ₹ 250; SP = ₹ 300

Since, S.P. > C.P., so there is a profit.

$$\text{Profit\%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 = \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100$$

$$= \left(\frac{₹\,300 - ₹\,250}{₹\,250}\right) \times 100 = \frac{₹\,50}{₹\,250} \times 100 = \frac{100}{5} = 20\%$$

d. CP = ₹ 2250 ; SP = ₹ 1795

Since, C.P. > S.P., so there is a loss.

$$\text{Loss\%} = \left(\frac{\text{Loss}}{\text{C.P.}} \times 100\right) = \left(\frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}} \times 100\right)$$

$$= \left(\frac{2250 - 1795}{2250}\right) \times 100$$

$$= \frac{₹\,455}{₹\,2250} \times 100 = \frac{182}{9} = 20.22\%$$

e. CP = ₹ 3856; SP = ₹ 2642

Since C.P. > S.P., there is a loss.

$$\text{Loss\%} = \left(\frac{\text{Loss}}{\text{C.P.}} \times 100\right) = \left(\frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}} \times 100\right)$$

$$= \left(\frac{₹\,3856 - ₹\,2642}{₹\,3856}\right) \times 100$$

$$= \left(\frac{1214}{3856}\right) \times 100$$

$$= 0.3148 \times 100 = 31.48\%$$

f. CP = ₹ 675; SP = ₹ 900

Since, S.P. > C.P., there is a profit.

$$\text{Profit\%} = \left(\frac{\text{Profit}}{\text{C.P.}} \times 100\right) = \left(\frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100\right)$$

$$= \left(\frac{₹\ 900 - ₹\ 675}{₹\ 675}\right) \times 100$$

$$\text{Profit\%} = \frac{225}{675} \times 100$$

$$= 0.3333 \times 100 = 33.33\%$$

2. Find the profit or loss, if :

a. CP = ₹ 750, Profit% = ₹ 5%

$$\text{Profit\%} = \left(\frac{\text{Profit}}{\text{C.P.}} \times 100\right) \Rightarrow 5 = \left(\frac{\text{Profit}}{750} \times 100\right)$$

$$\Rightarrow 5 = \text{Profit} \times \left(\frac{100}{750}\right)$$

$$\text{Profit} = ₹\left(\frac{5 \times 750}{100}\right) = ₹\left(\frac{3750}{100}\right) = ₹\ 37.50$$

b. CP = ₹ 1500; Profit% = ₹ 10%

$$\text{Profit\%} = \left(\frac{\text{Profit}}{\text{C.P.}} \times 100\right) \Rightarrow 10 = \frac{\text{Profit}}{1500} \times 100$$

$$10 = \frac{\text{Profit}}{15} \Rightarrow \text{Profit} = ₹\ (10 \times 15) = ₹\ 150$$

c. CP = ₹ 800; Loss% = ₹ 15%

$$\text{Loss\%} = \left(\frac{\text{Loss}}{\text{C.P.}} \times 100\right) \Rightarrow 15 = \left(\frac{\text{Loss}}{800} \times 100\right)$$

$$15 = \text{Loss} \Rightarrow \text{Loss} = ₹\ (15 \times 8) = ₹\ 120$$

d. CP = ₹ 10,500; Loss% = ₹ 30%

$$\text{Loss\%} = \left(\frac{\text{Loss}}{\text{C.P.}} \times 100\right) \Rightarrow 30 = \frac{\text{Loss}}{10500} \times 100$$

$$\Rightarrow 30 = \frac{\text{Loss}}{105} \Rightarrow \text{Loss} = ₹\ (30 \times 105) = ₹\ 3150$$

e. CP = ₹ 775; Profit% = 75%

$$\text{Profit\%} = \left(\frac{\text{Profit}}{\text{C.P.}} \times 100\right) \Rightarrow 75 = \frac{\text{Profit}}{775} \times 100$$

$$75 = \frac{\text{Profit} \times 4}{51} \Rightarrow \text{Profit} = ₹\ \frac{75 \times 31}{4} = ₹\ \frac{2325}{4} = ₹\ 581.25$$

f. CP = ₹ 25000; Loss% = 12

$$\text{Loss\%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 \Rightarrow 12 = \frac{\text{Loss}}{25000} \times 100$$

$$\Rightarrow 12 = \frac{\text{Loss}}{250} \Rightarrow \text{Loss} = ₹\,(12 \times 250) = ₹\,3000$$

3. Determine the SP, if :

a. CP = ₹ 400; Profit% = ₹ 2%

$$\text{Profit\%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 \Rightarrow 2 = \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100$$

$$\Rightarrow 2 = \left(\frac{\text{S.P.} - 400}{400}\right) \times 100 \Rightarrow 2 = \frac{\text{S.P.} - 400}{4}$$

$$\Rightarrow 8 = \text{S.P.} - 400 \Rightarrow \text{S.P.} = ₹\,408$$

b. CP = ₹ 750; Loss = ₹ 5%

$$\text{Loss\%} = \left(\frac{\text{Loss}}{\text{C.P.}} \times 100\right) \Rightarrow \text{Loss} = \left(\frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}} \times 100\right)$$

$$\Rightarrow 5 = \frac{750 - \text{S.P.}}{750} \times 100$$

$$\Rightarrow 5 = (750 - \text{S.P.}) \times \frac{2}{15}$$

$$\Rightarrow 5 \times 15 = (750 - \text{S.P.})2$$

$$\Rightarrow \frac{75}{2} = 750 - \text{S.P.}$$

$$\Rightarrow \text{S.P.} = ₹\left(750 - \frac{75}{2}\right) = ₹\,750 - 37.5 = ₹\,712.5$$

c. CP = ₹ 200; Profit = ₹ 10%

$$\text{Profit\%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 = \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100$$

$$10 = \left(\frac{\text{S.P.} - 200}{200}\right) \times 100 \Rightarrow \frac{\text{S.P.} - 200}{2} = 10$$

$$\Rightarrow \quad \text{S.P.} - 200 = 20$$

$$\Rightarrow \quad \text{S.P.} = ₹\,200 + ₹\,20 = ₹\,220$$

d. CP = ₹ 500; Loss = ₹ 20

$$\text{Loss\%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 = \left(\frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}}\right) \times 100$$

$$= \left(\frac{500 - \text{S.P.}}{500}\right) \times 100$$

$$\Rightarrow \quad 20 = \left(\frac{500 - \text{S.P.}}{5}\right)$$

$$\Rightarrow \quad 100 = 500 - \text{C.P.}$$

S.P. = 500 – 100 = ₹ 400

e. CP = ₹ 800; Profit = ₹ 12%

$$\text{Profit\%} = \left(\frac{\text{Profit}}{\text{C.P.}} \times 100\right) \Rightarrow 12 = \left(\frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100\right)$$

$$\Rightarrow 12 = \left(\frac{\text{S.P.} - 800}{800}\right) \times 100$$

$$\Rightarrow 96 = \text{S.P.} - 800$$

$$\Rightarrow \text{S.P.} = ₹\ 80 + ₹\ 96 = ₹\ 896$$

f. CP = ₹ 450; Profit% = ₹ 17

$$\text{Profit\%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 \Rightarrow 17 = \left(\frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100\right)$$

$$17 = \left(\frac{\text{S.P.} - 450}{450}\right) \times 100$$

$$17 = \frac{2}{9}(\text{S.P.} - 450) \Rightarrow \frac{17 \times 9}{2} = \text{S.P.} - 450$$

$$\Rightarrow \frac{153}{2} = \text{S.P.} - 450 \Rightarrow \text{S.P.} = 450 + \frac{153}{2}$$

S.P. = ₹ 450 + ₹ 76.5 = ₹ 526.50

4. Determine the C.P., if :

a. S.P. = ₹ 135, Gain% = 8

$$\text{Gain\%} = \left(\frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100\right) \Rightarrow 8 = \left(\frac{135 - \text{C.P.}}{\text{C.P.}} \times 100\right)$$

$$\Rightarrow \frac{8}{100} = \frac{135}{\text{C.P.}} - 1$$

$$\Rightarrow 1 + \frac{8}{100} = \frac{135}{\text{C.P.}} \Rightarrow \frac{108}{100} = \frac{135}{\text{C.P.}}$$

$$\Rightarrow 108\ \text{C.P.} = 135 \times 100$$

$$\Rightarrow \text{C.P.} = ₹\ \frac{13500}{108} = ₹\ 125$$

b. S.P. = ₹ 336, Gain = 12%

$$\text{Gain\%} = \left(\frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100\right) \Rightarrow 12 = \left(\frac{336 - \text{C.P.}}{\text{C.P.}}\right) \times 100$$

$$\Rightarrow \frac{12}{100} = \frac{336 - \text{C.P.}}{\text{C.P.}} \qquad \Rightarrow \frac{12}{100} = \frac{336}{\text{C.P.}} - 1$$

$$\Rightarrow 1 + \frac{12}{100} = \frac{336}{\text{C.P.}}$$

$$\Rightarrow \frac{100 + 12}{100} = \frac{336}{\text{C.P.}} \qquad \Rightarrow \frac{112}{100} = \frac{336}{\text{C.P.}}$$

$$\Rightarrow 112\ \text{C.P.} = 336 \times 100$$

$\Rightarrow$ C.P. $= \dfrac{336 \times 100}{112} =$ ₹ 3 × 100 = ₹ 300

c. S.P. = ₹ 1302, Loss% = 7

$$\text{Loss\%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 \Rightarrow 7 = \left(\frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}}\right) \times 100$$

$$\Rightarrow \quad \frac{7}{100} = \frac{\text{C.P.} - 1302}{\text{C.P.}} \Rightarrow 1 - \frac{1302}{\text{C.P.}}$$

$$\Rightarrow \quad \frac{1302}{\text{C.P.}} = 1 - \frac{7}{100} = \frac{100 - 7}{100} = \frac{93}{100}$$

$$\Rightarrow \quad \frac{1302}{\text{C.P.}} = \frac{93}{100} \Rightarrow 1302 \times 100 = 93 \text{ C.P.}$$

$$\Rightarrow \quad \text{C.P.} = \frac{1302 \times 100}{93} =$$ ₹ 14 × 100 = ₹ 1400

d. S.P. = ₹ 330.75, loss% $= \dfrac{11}{2}$

$$\text{Loss\%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 \Rightarrow \frac{11}{2} = \frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}} \times 100$$

$$\Rightarrow \frac{11}{2} = \left(1 - \frac{\text{S.P.}}{\text{C.P.}}\right) \times 100$$

$$\Rightarrow \frac{11}{2} = \left(1 - \frac{330.75}{\text{C.P.}}\right) \times 100$$

$$\Rightarrow \frac{11}{2 \times 100} = 1 - \frac{330.75}{\text{C.P.}}$$

$$\Rightarrow \frac{11}{200} = 1 - \frac{330.75}{\text{C.P.}}$$

$$\Rightarrow \frac{330.75}{\text{C.P.}} = 1 - \frac{11}{200} = \frac{200 - 11}{20} = \frac{189}{200}$$

$$\Rightarrow \frac{330.75}{\text{C.P.}} = \frac{189}{200} \Rightarrow 189 \text{ C.P.} = 330.75 \times 200$$

$$\text{C.P.} = \frac{330.75 \times 200}{189} =$$ ₹ $\dfrac{66150}{189} =$ ₹ 350

5. Selling price of car = ₹ 91680

$$\text{Loss\%} = 4\frac{1}{2} = \frac{9}{2}$$

$$\text{Loss\%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 = \left(\frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}}\right) \times 100$$

$$\frac{9}{2} = \left(1 - \frac{\text{S.P.}}{\text{C.P.}}\right) \times 100 \Rightarrow \frac{9}{2} = \left(1 - \frac{91680}{\text{C.P.}}\right) \times 100$$

$$\Rightarrow \frac{9}{2\times 100} = 1 - \frac{91680}{\text{C.P.}}$$

$$\Rightarrow \frac{9}{200} = 1 - \frac{91680}{\text{C.P.}} \Rightarrow 1 - \frac{9}{200} = \frac{91680}{\text{C.P.}}$$

$$\Rightarrow \frac{200-9}{200} = \frac{91680}{\text{C.P.}}$$

$$\Rightarrow \frac{191}{200}\text{C.P.} = \frac{91680}{\text{C.P.}} \Rightarrow \text{C.P.}\ \frac{91680\times 200}{191}$$

$$\text{C.P.} = ₹\ \frac{18336000}{191} = ₹\ 96000$$

$\therefore$ Cost price of car = ₹ 96000

6. Selling price of bat = ₹ 25.56

$$\text{Gain\%} = 6\frac{1}{2} = \frac{13}{2}$$

Let price of bat bought is x.

$$\frac{13}{2} = \frac{\text{Gain}}{\text{C.P.}}\times 100 \quad \Rightarrow \frac{13}{2} = \left(\frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}}\right)\times 100$$

$$\Rightarrow \frac{13}{2\times 100} = \frac{(25.56 - x)}{x}$$

$$\Rightarrow \frac{13}{200} = \frac{25.56}{x} - 1$$

$$\Rightarrow 1 + \frac{13}{200} = \frac{25.56}{x}$$

$$\Rightarrow \frac{200+13}{200} = \frac{25.56}{x}$$

$$\Rightarrow \frac{213}{200}x = 25.56$$

$$\Rightarrow 213x = 25.56 \times 200$$

$$\Rightarrow x = \frac{25.56\times 200}{213}$$

$$x = \frac{5112}{213} = 24$$

$\therefore$ The bat is bought for ₹ 24.

7. Selling price of goods = ₹ 3840

Let cost price be x.

$$\text{Profit} = \frac{x}{5}$$

$$\text{S.P.} = \text{C.P.} + \text{Profit} = 3840 = x + \frac{x}{5}$$

$\Rightarrow 3840 = \left(\frac{5x + x}{5}\right) \Rightarrow 3840 = \frac{6x}{5}$

$\Rightarrow 3840 \times 5 = 6x$

$x = \frac{3840 \times 5}{6} = \frac{19200}{6} = 3200$

So, cost price of goods is ₹ 3200.

8. Cost price of pen = ₹ 75

Selling price of pen = ₹ 80

$\text{Profit} = \frac{\text{Profit}}{\text{C.P.}} \times 100$

Profit = S.P. – C.P. = ₹ 80 – ₹ 75 = ₹ 5

$\text{Profit\%} = \frac{5}{75} \times 100 = \frac{5}{3} \times 4 = \frac{20}{3}$

$\text{Profit\%} = 6\frac{2}{3}$

9. Cost price of saree = ₹ 5000

Selling price of saree = ₹ 4500

$\text{Loss\%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}} \times 100$

$= \frac{(5000 - 4500)}{5000} \times 100$

$= \frac{500}{50} = 10$

Her loss % is 10.

10.

Cost price of 1 kg of ordinary rice	= ₹ 20
Quantity of ordinary rice bought	= 30 kg
C.P. of 30 kg of ordinary rice	= ₹ 30 × 20 = ₹ 600
Cost price of 1 kg of Basmati rice	= ₹ 50
Quantity of Basmati rice bought	= 80 kg
C.P. of 80 kg of Basmati rice	= ₹ 50 × 80 = ₹ 4000
Total cost price of both type of rice	= ₹ 600 + ₹ 4000 = ₹ 4800
Selling price of 1 kg of rice	= ₹ 45
Selling price of 110 kg of rice	= ₹ 45 × 110 = ₹ 4950

Since, cost price is less than the selling price, so there occurs a gain.

Profit = S.P. – C.P. = ₹ 4950 – ₹ 4600 = ₹ 350

$\text{Gain\%} = \frac{\text{Gain}}{\text{C.P.}} \times 100 = \frac{350}{4600} \times 100 = \frac{350}{46} = \frac{175}{23}$

$= 7\frac{14}{23}$

11. Cost price of bicycle = ₹ 1250

Money spent on its repairing = ₹ 250

Total price of bicycle = ₹ 1250 + ₹ 250 = ₹ 1500

$$\text{Profit\%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 \Rightarrow 5 = \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100$$

$$\Rightarrow \frac{1500 \times 5}{100} = \text{S.P.} - 1500$$

$$\Rightarrow 75 = \text{S.P.} - 1500$$

S.P. = 1500 + 75 = ₹ 1575

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) **2.** (a) **3.** (b) **4.** (b) **5.** (a)

Chapter 14 : Speed, Distance and Time

Exercise-14.1

1. Complete the table :

Distance (d)	Time taken (t)	Speed (s)
1600 m	80 sec	20 m/sec
420 m	30 sec	14 m/sec
680 km	8 hours	85 km/hr
325 km	13 hours	25 km/hr
500 km	10 hours	50 km/hr
744 m	12 sec	62 m/sec

2. Find speed, when :

a. Distance = 75 km, time = 3 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{75 \text{ km}}{3 \text{ hr}} = 25 \text{ km/hr}$$

b. Distance = 120 km, time = 4 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{120 \text{ km}}{4 \text{ hr}} = 30 \text{ km/hr}$$

c. Distance = 300 km, time = 15 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{300 \text{ km}}{15 \text{ hr}} = 20 \text{ km/hr}$$

d. Distance = 400 km, time = 2 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{400 \text{ km}}{2 \text{ hr}} = 200 \text{ km/hr}$$

3. Find the speed :

a. Distance covered by train = 600 km

Time taken by train = 4 hours

$$\text{Speed of train} = \frac{\text{Distance covered by train}}{\text{Time taken by train}}$$

$$= \frac{600 \text{ km}}{4 \text{ hr}} = 150 \text{ km/hr}$$

b. Distance covered by boy = 8 km

Time taken by boy = 2 hours

$$\text{Speed of boy} = \frac{\text{Distance covered by boy}}{\text{Time taken by boy}}$$

$$= \frac{8 \text{ km}}{2 \text{ hr}} = 4 \text{ km/hr}$$

c. Distance covered by car = 225 km

Time taken by car = 5 hours

$$\text{Speed of car} = \frac{\text{Distance covered by train}}{\text{Time taken by train}}$$

$$= \frac{225 \text{ km}}{5 \text{ hr}} = 45 \text{ km/hr}$$

d. Distance covered by cyclist = 35 km

Time taken by cyclist = 5 hours

$$\text{Speed of cyclist} = \frac{\text{Distance covered by cyclist}}{\text{Time taken by cyclist}}$$

$$= \frac{35 \text{ km}}{5 \text{ hr}} = 7 \text{ km/hr}$$

4. Find the distance :

a. Speed of bus = 70 km/hr

Time taken by bus = 8hours

Distance covered by bus = Speed of bus × time taken

= 70 km/hr × 8 hr

= 560 km

b. Speed of car = 85 km/m

Time taken by car = 7 hours

Distance covered by car = Speed of car × Time taken by car

= 85 km/hr × 7 hours

= 595 km

5. Speed of bus = 85 km/hr

Total distance = 382.5 km

$$\text{Time taken by bus} = \frac{\text{Distance covered by bus}}{\text{Speed of bus}}$$

$$= \frac{382.5 \text{ km}}{85 \text{ km / hr}} = 4.5 \text{ hours}$$

$\therefore$ Time taken by bus to cover a distance of 382.5 km is 4.5 hours or 4 hours 30 minutes.

6. Speed of aeroplane = 840 km/hr

Time taken by aeroplane = 3.5 hours

Distance covered by aeroplane = Speed of aeroplane × Time taken by bus

= 840 km/hm × 3.5 hours

= 2940 km

7. Distance between New Delhi and Kolkata is 1638 km.

Time taken by train to cover required distance is 18 hours

Average speed of train

$$= \frac{\text{Total distance travelled by train from Delhi to Kolkata}}{\text{Total time taken}}$$

$$= \frac{1638 \text{ km}}{18 \text{ hr}} = 91 \text{ km/hr}$$

8. Time taken by car from Delhi to Agra = 4 hours

Distance between Delhi and Agra is 204 km.

$$\text{Average speed} = \frac{\text{Distance b/ w Delhi \& Agra}}{\text{Total time taken by car}}$$

$$= \frac{204 \text{ km}}{4 \text{ hr}} = 51 \text{ km/hr}$$

NCERT Corner

S. No.	Trains	Distance	Time	Speed
1.	Flying Mail	110 km	1 hr	110 km/hr
2.	Sher-e-Punjab	106 km	1 hr	106 km/hr
3.	Shatabdi Exp.	174.6 km	1 hr	174.6 km/hr
4.	Rajdhani Exp	140 km	1 hr	140 km/hr
5.	Jammu Mail	100 km	1 hr	100 km/hr

Complete the above table and fill up the blanks given below whenever possible :

1. The fastest train is **Shatabdi Exp**.
2. The slowest train is **Jammu Mail**.
3. **Shanghai Maglav** is the fastest train in the world.
4. **Concorde** is the fastest passenger plane.
5. **Peregrine falcon** is the fastest animal.
6. **Peregrine falcon** is the fastest bird.

If I travel a distance of 60 km in 1 hour, then my speed will be 60 km/hr kilometers per hour. (km/hr)

Exercise-14.2

1. Fill in the blanks :

a. 1 km/h = 5/8 m/s

b. 45 km/h = 12.5 m/s

c. 50 m/sec = 180 km/h

d. 120 m/sec = 43.2 km/h

2. Express in m/sec :

a. 90 km/hr

Since, 1 km/hr $= \frac{5}{18}$ m/sec

90 km/hr $= \frac{5}{18} \times 90$ m/sec = 5 × 5 m/sec

= 25 m/sec

b. 72 km/hr

Since, 1 km/hr $= \frac{5}{18}$ m/sec

So 72 km/hr $= \frac{5}{18} \times 72 = 5 \times 4$ m/sec = 20 m/sec

c. 36 km/hr

Since, 1 km/hr $= \frac{5}{18}$ m/sec

So, 36 km/hr $= 36 \times \frac{5}{18}$ m/sec = 2 × 5 m/sec = 10 m/sec

d. 45 km/hr

Since, 1 km/hr $= \frac{5}{18}$ m/sec

So, 45 km/hr $= \frac{5}{18} \times 45 = \frac{225}{18}$ m/sec = 12.5 m/sec

e. 144 km/hr

1 km/hr $= \frac{5}{18}$ m/sec

So, 144 km/hr $= 144 \times \frac{5}{18} = 8 \times 5$ m/sec = 40 m/sec

3. Express in km/hr :

a. 25 m/sec

Since, 1 m/sec $= \frac{18}{5}$ km/hr

25 m/sec $= \frac{18}{5} \times 25$ km/hr = 18 × 5 km/hr

= 90 km/hr

b. 95 m/sec

$1 \text{ m/sec} = \frac{18}{5} \text{ km/hr}$

$95 \text{ m/sec} = \frac{18}{5} \times 95 \text{ km/hr} = 18 \times 15 \text{ km/hr}$

$= 342 \text{ km/hr}$

c. 100 m/sec

$1 \text{ m/sec} = \frac{18}{5} \text{ km/hr}$

$100 \text{ m/sec} = \frac{18}{5} \times 100 \text{ km/hr} = 18 \times 20 \text{ km/hr}$

$= 360 \text{ km/hr}$

d. 45 m/sec

$1 \text{ m/sec} = \frac{18}{5} \text{ km/hr}$

$45 \text{ m/sec} = \frac{18}{5} \times 45 \text{ km/hr} = 18 \times 9 \text{ km/hr}$

$= 162 \text{ km/hr}$

e. 35 m/sec

$1 \text{ m/sec} = \frac{18}{5} \text{ km/hr}$

$35 \text{ m/sec} = \frac{18}{5} \times 35 \text{ km/hr} = 18 \times 7 \text{ km/hr}$

$= 126 \text{ km/hr}$

4. Distance travelled by truck from Delhi to Chandigarh = 360 km

Time taken = 5 hours

$$\text{Speed of truck} = \frac{\text{Distance covered by truck}}{\text{Time taken by truck}}$$

$$= \frac{360 \text{ km}}{5 \text{ hr}} = 72 \text{ km/hr}$$

$72 \text{ km/hr} = 72 \times \frac{5}{18} = 4 \times 5 \text{ m/s} = 20 \text{ m/sec}$

5. Distance covered by train = 24000 m

Time taken by train = 30 second

$$\text{Speed of train} = \frac{\text{Distance}}{\text{Time}} = \frac{24000}{30} = 800 \text{ m/sec}$$

$80 \text{ m/sec} = 800 \times \frac{18}{5} = 160 \times 18 \text{ km/m}$

$= 2880 \text{ km/hr}$

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) **2.** (c) **3.** (b) **4.** (c) **5.** (b)

Chapter 15 : Simple Interest

Exercise-15.1

1. Compare the table :

a. $P = 5250, R = 10\%, T = 4$ years

$$I = \frac{P \times R \times T}{100} = \frac{5250 \times 10 \times 4}{100} = 525 \times 4 = ₹\ 2100$$

b. $P = 1250, R = 12\%, T = 2$ years

$$I = \frac{P \times R \times T}{100} = \frac{1250 \times 12 \times 2}{100} = \frac{30000}{100} = ₹\ 300$$

c. $P = 4500, R = 15\%, T = 7$ years

$$I = \frac{P \times R \times T}{100} = \frac{4500 \times 15 \times 7}{100} = 45 \times 15 \times 7 = ₹\ 4725$$

d. $P = 3000, R = 9\%, T = 8$ years

$$I = \frac{P \times R \times T}{100} = \frac{3000 \times 9 \times 8}{100} = 30 \times 72 = ₹\ 2160$$

e. $P = 5500, R = 6\%, T = 3$ years

$$I = \frac{P \times R \times T}{100} = \frac{5500 \times 6 \times 3}{100} = 55 \times 18 = ₹\ 990$$

f. $P = 4000, R = 5\%, T = 9$ years

$$I = \frac{P \times R \times T}{100} = \frac{4000 \times 5 \times 9}{100} = 40 \times 45 = ₹\ 1800$$

g. $P = 900, R = 12\%, T = 12$ years

$$I = \frac{P \times R \times T}{100} = \frac{900 \times 12 \times 12}{100} = 9 \times 144 = ₹\ 1296$$

h. $P = 3675, R = 10\%, T = 6$ years

$$I = \frac{P \times R \times T}{100} = \frac{3675 \times 10 \times 6}{100} = \frac{220500}{100} = ₹\ 2205$$

i. $P = 6800, R = 12\%, T = 5$ years

$$I = \frac{P \times R \times T}{100} = \frac{6800 \times 12 \times 5}{100} = 6800 \times 60 = ₹\ 4080$$

j. $P = 16500, R = 8\%, T = 3$ years

$$I = \frac{P \times R \times T}{100} = \frac{16500 \times 8 \times 3}{100} = ₹\ 3960$$

k. $P = 25100, R = 4\%, T = 4$ years

$$I = \frac{P \times R \times T}{100} = \frac{25100 \times 4 \times 4}{100} = 251 \times 16 = ₹\ 4016$$

l. $P = 50350, R = 2\%, T = 15$ years

$$I = \frac{P \times R \times T}{100} = \frac{50350 \times 2 \times 15}{100} = \frac{1510500}{100} = ₹\ 15105$$

2. Find the simple interest :

a. $P = ₹\ 3000, T = 2$ years, $R = 5\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{3000 \times 2 \times 5}{100} = \frac{30000}{100} = ₹\ 300$$

b. $P = ₹\ 5000, T = 5$ years, $R = 10\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{5000 \times 10 \times 5}{100} = \frac{250000}{100} = ₹\ 2500$$

c. $P = ₹\ 2600, T = 3$ years, $R = 8\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{2600 \times 8 \times 3}{100} = 26 \times 24 = ₹\ 624$$

d. $P = ₹\ 1800, T = 2\frac{1}{2} = \frac{5}{2}$ years, $R = 5\frac{1}{2}\% = \frac{11}{2}\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{1800 \times \frac{11}{2} \times \frac{5}{2}}{100} = \frac{18 \times 11 \times 5}{4}$$

$$= \frac{990}{4} = ₹\ 247.50$$

e. $P = ₹\ 10{,}000, T = 2\frac{1}{2}$ years, $R = 8\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{10000 \times 8 \times \frac{5}{2}}{100} = 100 \times 20 = ₹\ 2000$$

f. $P = ₹\ 8000, T = 2$ years 4 months $= 2\frac{1}{3}$ years, $R = 7\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{8000 \times 7 \times \frac{7}{3}}{100} = \frac{80 \times 49}{3} = ₹\ \frac{3920}{3}$$

S.I. = ₹ 1306.66

3. Principle = ₹ 18000, Rate = 4%, $T = 5$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{18000 \times 4 \times 5}{100} = 180 \times 20 = ₹\ 3600$$

Jagdish will get ₹ 3600 interest after 5 years.

4. Principle = ₹ 4000, Rate = 12%, $T = 4$ years $= T$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{4000 \times 12 \times 4}{100} = 40 \times 48 = ₹\ 1920$$

So, Shivani will get ₹ 1920 interest after 4 years.

5. Principle = ₹ 1000, Rate = 3%, $T = 4\frac{1}{2}$ years $= \frac{9}{2}$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{1000 \times 3 \times \frac{9}{2}}{100} = \frac{10 \times 27}{2} = 5 \times 27 = ₹\ 135$$

Manjeet will get ₹ 135 simple interest.

6. Principle = ₹ 18000, Rate = 8%, $T = 3\frac{1}{2}$ years $= \frac{7}{2}$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{18000 \times 8 \times \frac{7}{2}}{100}$$

S.I. = 180 × 28 = ₹ 5040

∴ Ajay should pay ₹ 5040 as interest to bank.

7. Principle = ₹ 4000, R = 4%, Time = 7 months 15 days

$$15 \text{ days} = \left(\frac{15}{30}\right) \text{month} = \left(\frac{1}{2}\right) \text{months}$$

$$7.5 \text{ months} = \frac{7.5}{12} \text{ years}$$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{4000 \times 4 \times 7.5}{100 \times 12} = \frac{120000}{1200} = 100$$

∴ Interest he get after 7 months and 15 days is ₹ 100.

8. Principle = ₹ 7200, R = 7%, $T = 11$ months 15 days $= \frac{11.5}{12}$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{7200 \times 7 \times 11.5}{100 \times 12} = \frac{72 \times 7 \times 11.5}{12}$$

$$\text{S.I.} = \frac{5796}{12} = ₹\ 483$$

∴ Ram should pay back an interest of ₹ 483 to the Rakesh.

NCERT Corner

1. Total amount at end of year = ₹ 4000 + ₹ 1560 – ₹ 1376 – ₹ 1500 + ₹ 235
   = ₹ 2919
2. Rate = 5%, Principle = ₹ 2919
   $$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{2919 \times 5 \times 1}{100} = \frac{14595}{100} = ₹\ 145.95$$
3. Amount = $P + I$
   = 2919 + 145.95 = ₹ 3064.95

Exercise-15.2

1. Find the amount if :

a. Principle = ₹ 800, Rate = 6%, $T = 3$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{800 \times 6 \times 3}{100} = 8 \times 6 \times 3 = ₹\ 144$$

Amount = Principle + Interest

= 800 + 144 = ₹ 944

b. P = ₹ 2490, Rate = 5%, $T = 1\frac{1}{3} = \frac{4}{3}$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{2490 \times 5 \times \frac{4}{3}}{100} = \frac{49800}{300} = ₹\ 166$$

Amount = Principle + Interest

= ₹ 2490 + ₹ 166 = ₹ 2656

c. P = ₹ 6550, Rate = 2.5%, $T = 6$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{6550 \times 2.5 \times 6}{100} = \frac{98250}{100} = ₹\ 982.5$$

Amount = Principle + Interest

= ₹ 6550 + ₹ 982.5 = ₹ 7532.50

2. Principle = ₹ 5000, T = 4 years, Rate = 4%,

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{5000 \times 4 \times 4}{100} = \frac{50 \times 4 \times 4}{100} = 50 \times 16 = ₹\ 800$$

Amount = P + S.I. = ₹ 5000 + ₹ 800 = ₹ 5800

The amount he will get after 4 years is ₹ 5800.

3. Principle = ₹ 4800, $T = 5$ years, R = 8%

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{48000 \times 8 \times 5}{100} = 480 \times 40 = ₹\ 19200$$

Amount = Simple interest + Principle

= ₹ 19200 + ₹ 48000 = ₹ 67200

4. Principle = ₹ 21000, Time = 8 months $= \frac{8}{12} = \frac{2}{3}$ years, $T = 12\frac{1}{2}\% = \frac{25}{2}\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{21000 \times \frac{25}{2} \times \frac{2}{3}}{100} = \frac{21000 \times 50}{600}$$

$$= \frac{210 \times 50}{6} = \frac{10500}{6} = 1750$$

Amount = P + S.I. = ₹ 21000 + ₹ 1750 = ₹ 22750

Aditya should pay back ₹ 22750 to clear its debt.

5. Principle = ₹ 3160, Rate $= 3\frac{1}{2} = \frac{7}{2}\%$, $T = 2$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{3160 \times \frac{7}{2} \times 2}{100} = \frac{3160 \times 7}{100} = \frac{22120}{100}$$

S.I. = ₹ 221.2

She will earn an interest of ₹ 221.2 after 2 years.

6. Principle = ₹ 900, $T = 2$ years, $R = 5\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{900 \times 5 \times 2}{100} = 9 \times 5 \times 2 = ₹\ 90$$

$A = P + \text{S.I.} = ₹\ 900 + ₹\ 90 = ₹\ 990$

$\therefore$ Arvind should pay back ₹ 990.

7. Principle = ₹ 3600, $T = \frac{5}{2}$ years, $R = 4\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{3600 \times \frac{5}{2} \times 4}{100} = \frac{1800 \times 20}{100}$$

S.I. = 18 × 20 = ₹ 360

Amount = P + S.I. = ₹ 3600 + ₹ 360 = ₹ 3960

$\therefore$ The amount the will get back from bank at the end of $2\frac{1}{2}$ years in ₹3960.

8. Principle = ₹ 10000 = P, $R = 6\%$, $T = 3$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{10000 \times 6 \times 3}{100} = 100 \times 18 = ₹\ 1800$$

Amount = P + S.I. = 10000 + 1800 = ₹11800

$\therefore$ the amount that she will get from after 3 years = ₹ 11,800

9. P = ₹ 2000, $T = 5$ years, $R = 6\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{2000 \times 6 \times 5}{100} = 20 \times 6 \times 5 = ₹\ 600$$

Amount = Principle + Interest

= ₹ 2000 + ₹ 600 = ₹ 2600

$\therefore$ She will get an amount of ₹ 2600 after 5 years.

10. Principle = ₹ 10000, $R = 10\%$, $T = 7$ years 4 months $= 7 + \frac{4}{12} = 7\frac{1}{3}$ years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{10000 \times 10 \times \frac{22}{3}}{100} = \frac{1000 \times 22}{3} = \frac{22000}{3} = 7333.33$$

Amount = Principle + S.I.

= ₹ 10000 + ₹ 7333.33 = ₹ 17333.33

$\therefore$ The amount the man will get back from the company at end of 7 years 4 months is ₹ 47333.33.

11. Principle = ₹ 5000 = P, $T = 4$ years, $R = 4\%$

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{5000 \times 4 \times 4}{100} = 50 \times 16 = ₹\ 800$$

Amount = S.I. + P = ₹ 800 + ₹ 5000 = ₹ 5800

$\therefore$ Rohit will receive an amount of ₹ 5800 after 4 years.

Multiple Choice Questions

Tick (✓) the correct choice :

1. (b) **2.** (c) **3.** (c) **4.** (a) **5.** (a)

Chapter 16 : Money and Bills

Exercise-16.1

1. Convert into paise :

a. ₹ 0.55

Since, ₹ 1 = 100 p, so, ₹ 0.55 = 0.55 × 100 = 55 paise

b. ₹ 6.40

Since, ₹ 1 = 100 p, so. ₹ 6.40 = 6.40 × 100 = 640 paise

c. ₹ 9.85

₹ 9.85 = ₹ 9.85 × 100 paise = 985 paise

d. ₹ 0.79

₹ 0.79 = 0.79 × 100 paise = 79 paise

e. ₹ 0.89

₹ 0.89 = 0.89 × 100 paise = 89 paise

f. ₹ 2.93

₹ 2.93 = 2.93 × 100 paise = 293 paise

2. Convert into rupees :

a. 45 paise

Since, 1 paise = $₹ \frac{1}{100}$

45 paise = $\frac{45}{100}$ = ₹ 0.45

b. 780 paise

780 paise = $₹ \frac{780}{100}$ = ₹ 7.80

c. 16 paise

16 paise = $₹ \frac{16}{100}$ = ₹ 0.16

d. 9380 paise

9380 paise = $₹ \frac{9380}{100}$ = ₹ 93.80

e. 61351

61351 paise = $\frac{61351}{100}$ = ₹ 613.51

f. 920 paise

920 paise = $\frac{920}{100}$ = ₹ 9.20

Exercise-16.2

1. Add the following :

a. ₹ 357.63 + ₹ 29.89

		1	1	1		
	₹	3	5	7	.	6	3
+ ₹		2	9	.	8	9
	₹	3	8	7	.	5	2

So, ₹ 357.63 + ₹ 29.89
= ₹ 387.52

b. ₹ 56.50 + ₹ 123.90

		1	1	1		
	₹	1	2	3	.	9	0
+ ₹		5	6	.	5	0
	₹	1	8	0	.	4	0

So, ₹ 56.50 + ₹ 123.90
= ₹ 180.40

c. ₹ 69.39 + ₹ 45.72

		1	1	1	
	₹	6	9	.	3	9
+	₹	4	5	.	7	2
₹	1	1	5	.	1	1

So, ₹ 69.39 + ₹ 45.72
= ₹ 115.11

d. ₹ 967.50 + ₹ 216.75

			1	1		
	₹	9	6	7	.	5	0
+	₹	2	1	6	.	7	5
₹	1	1	8	4	.	2	5

So, ₹ 967.50 + ₹ 216.75
= ₹ 1184.25

e. ₹ 126.50 + ₹ 675.15

		1	1			
	₹	1	2	6	.	5	0
+	₹	6	7	5	.	1	5
	₹	8	0	1	.	6	5

So, ₹ 126.50 + ₹ 675.15
= ₹ 801.65

f. ₹ 371.70 + ₹ 145.75

		1		1		
	₹	3	7	1	.	7	0
+	₹	1	4	5	.	7	5
	₹	5	1	7	.	4	5

So, ₹ 371.70 + ₹ 145.75
= ₹ 517.45

2. Subtract the following :

a. ₹ 225.65 – ₹ 65.63

		1	12			
	₹	~~2~~	~~2~~	5	.	6	5
–	₹		6	5	.	6	3
	₹	1	6	0	.	0	2

So, ₹ 225.65 – ₹ 65.63 = ₹ 160.02

b. ₹ 360.20 – ₹ 284.50

		2	15	9	12		
	₹	~~3~~	~~6~~	~~0~~	.	~~2~~	0
–	₹	2	8	4	.	5	0
	₹		0	7	5	.	7	0

So, ₹ 360.20 – ₹ 284.50 = ₹ 75.70

c. ₹ 1000 – ₹ 290.20

		0	9	9	9	10	
	₹	~~1~~	~~0~~	~~0~~	~~0~~	.	~~0~~	0
–	₹		2	9	0	.	2	0
	₹		7	0	9	.	8	0

So, ₹ 1000 – ₹ 290.20 = ₹ 709.80

d. ₹ 110.75 – ₹ 89.11

		0	10	10		
₹	~~1~~	~~1~~	~~0~~	.	7	5
₹ –		8	9	.	1	1
₹		2	1	.	6	4

So, ₹ 110.75 – ₹ 89.11 = ₹ 21.64

e. ₹ 400 – ₹ 375.20

		3	9	9	10		
	₹	~~4~~	~~0~~	~~0~~	.	~~0~~	0
–	₹	3	7	5	.	2	0
	₹	0	2	4	.	8	0

So, ₹ 400 – ₹ 375.20 = ₹ 24.80

f. ₹ 1000 – ₹ 686.75

		0	9	9	9		9	10
	₹	~~1~~	~~0~~	~~0~~	~~0~~	.	~~0~~	~~0~~
–	₹		6	8	6	.	7	5
	₹		3	1	3	.	2	5

So, ₹ 1000 – ₹ 686.75 = ₹ 313.25

3. ₹ 25.45 + ₹ 173.89

			1		1	
	₹	1	7	3	.	8	9
+	₹		2	5	.	4	5
	₹	1	9	9	.	3	4

So, ₹ 25.45 + ₹ 173.89 = ₹ 199.34

4. ₹ 500 ₹ 345.56

		4	9	9		9	10
	₹	~~5~~	~~0~~	~~0~~	.	~~0~~	~~0~~
–	₹	3	4	5	.	5	6
	₹	1	5	4	.	4	4

So, ₹ 500 – ₹ 345.56 = ₹ 154.44

5. ₹ 189.67 + ₹ 344.20

		1	1	
	₹	1	8	9 . 6 7
+ ₹		3	4	4 . 2 0
	₹	5	3	3 . 8 7

So, ₹ 189.67 + ₹ 344.20 = ₹ 533.87

Exercise-16.3

1. Price of purse = ₹ 607.50
Price of birthday card = ₹ 67.50
Total amount she spent = ₹ 607.50 + ₹ 67.50
Total amount spent by her = ₹ 675

		1	1	
	₹	6	0	7 . 5 0
+ ₹			6	7 . 5 0
	₹	6	7	5 . 0 0

2. Price of old scooter = ₹ 5095
Money spent on repairing = ₹ 563.50
Total money spent on scooter = ₹ 5095 + ₹ 563.50
∴ Total money spent by Mr. Sharma on scooter
= ₹ 5658.50

			1	
	₹	5	0	9 5 . 0 0
+ ₹			5	6 3 . 5 0
	₹	5	6	5 8 . 5 0

3. Price of potatoes = ₹ 30.30
Price of onion = ₹ 25.75
Price of tomatoes = ₹ 15.70
Total money spent by her = ₹ 30.30 + ₹ 25.75 + ₹ 15.70
= ₹ 71.75

		1	1	
		3	0	3 0
		2	5	7 5
+		1	5	7 0
		7	1	7 5

4. Money Rohan had = ₹ 1000
Price of shoes = ₹ 805.75
Amount left with him = ₹ 1000 – ₹ 805.75
= ₹ 194.25

		0	9	9	9	9 10
	₹	~~1~~	~~0~~	~~0~~	~~0~~	. ~~0~~ ~~0~~
– ₹		8	0	5	7	5
	₹	1	9	4	2	5

5. Price of table lamp = ₹ 649.50
Money given to shopkeeper = ₹ 1000
Money returned by shopkeeper to Nidhi
= ₹ 1000 – ₹ 649.50
= ₹ 350.50
∴ Shopkeeper must return ₹ 350.50 to Nidhi.

		0	9	9	9	10
	₹	~~1~~	~~0~~	~~0~~	~~0~~	. ~~0~~ 0
– ₹		6	4	9	5	0
	₹	3	5	0	5	0

6. Money got by Deepak form father = ₹ 500
Money spent on leather belt = ₹ 277
Money spent on wallet = ₹ 150.75
Money left with him = ₹ 500 – (₹ 277 + ₹ 150.75)
= ₹ 500 – ₹ 427.75
= ₹ 72.25
Money left with Deepak is ₹ 72.25.

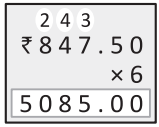
		4	9	9	9	10
	₹	~~5~~	~~0~~	~~0~~	~~0~~	. ~~0~~ ~~0~~
– ₹		4	2	7	7	5
	₹	0	7	2	2	5

		1		
	₹	2	7	7 . 0 0
+ ₹		1	5	0 . 7 5
	₹	4	2	7 . 7 5

Exercise-16.4

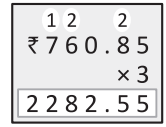
1. Multiply the following :

a. ₹ 847.50 × 6



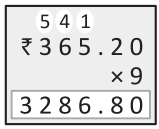
So, ₹ 847.50 × 6 = ₹ 5085

b. ₹ 760.85 × 3



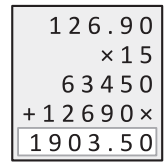
So, ₹ 760.85 × 3 = ₹ 2282.55

c. ₹ 365.20 × 9



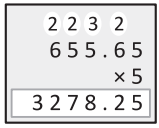
So, ₹ 365.20 × 9 = ₹ 3286.80

d. 126.90 × 15



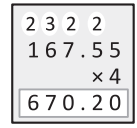
So, 126.90 × 15 = 1903.50

e. 655.65 × 5



So, 655.65 × 5 = 3278.25

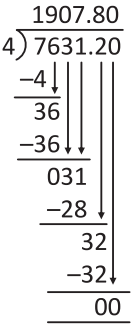
f. 167.55 × 4



So, 167.55 × 4 = 670.20

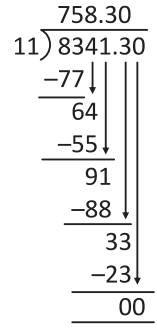
2. Divide the following :

a. ₹ 7631.20 ÷ 4



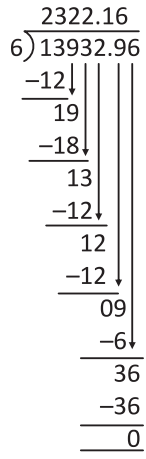
So, ₹ 7631.20 ÷ 4 = ₹ 1907.80

b. ₹ 8341.30 ÷ 11



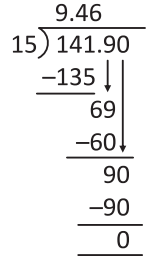
So, ₹ 8341.30 ÷ 11 = ₹ 758.30

c. ₹ 13932.96 ÷ 6



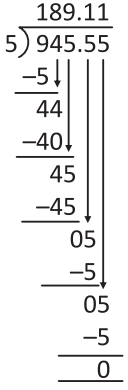
So, ₹ 13932.96 ÷ 6 = ₹ 2322.16

d. ₹ 141.90 ÷ 15



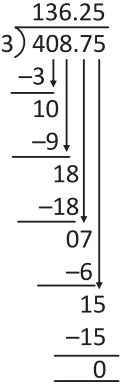
So, ₹ 141.90 ÷ 15 = ₹ 9.46

e. ₹ 945.55 ÷ 5



So, ₹ 945.55 ÷ 5 = ₹ 189.11

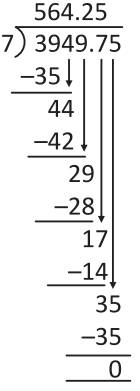
f. ₹ 408.75 ÷ 3



So, ₹ 408.75 ÷ 3 = ₹ 136.25

Exercise-16.5

1. Cost of 7 notebooks = ₹ 3949.75
Cost of 1 notebook = ₹ 3949.75 ÷ 7



∴ Cost of 1 notebook = ₹ 564.25

2. Number of packets of milk = 8
Price of 1 packet of milk = ₹ 24.50
Cost of 8 packets = 24.50 × 8
= ₹ 196

```
  3 4
 24.50
    ×8
 19600
```

3. Number of silver cups = 12
Cost of 1 silver cup = ₹ 1095.70
Cost of 12 silver cups = ₹ 1095.70 × 12
= ₹ 1348.40

```
  1095.70
     ×12
  2119140
+ 109570×
 13148.40
```

4. Cost of 1 pen = ₹ 6
Total money = ₹ 176.20

$$\text{No. of pens which can be bought} = \frac{\text{Total money}}{\text{Cost of 1 pen}}$$

$$= ₹\frac{176.20}{6}$$

= 29.36 = 29

Amount spent = Cost of 1 pen × No. of pens
= ₹ 6 × 29 = ₹ 174
Amount left = Total money – Amount spent
= ₹ 176.20 – ₹ 174
= ₹ 2.20

```
   29.36
6) 176.20
  –12
   56
  –54
    22
   –18
     40
    –36
      4
```

5. Amount spent in buying 25 kg rice = ₹ 5096.25
Quantity of rice = 25 kg
Cost of 1 kg rice = ₹ 5096.25 ÷ 25
= ₹ 203.85

```
    203.85
25) 5096.25
   –50
    096
   –75
    212
   –200
     125
    –125
       0
```

6. Cost price of bangle box = ₹ 25.97
Cost price of cosmetics = ₹ 500
Money spent by her = ₹ 25.97 + 500
= ₹ 525.97

```
  500.00
+  25.97
 525.97
```

7. Money paid for 5 balls = ₹ 105
Money paid for 2 bats = ₹ 630.50
Total money to be paid = ₹ 105 + ₹ 630.50
= ₹ 735.50

```
  630.50
+ 105.00
 735.50
```

Money paid by Rahul to shopkeeper = ₹ 900
Money returned by shopkeeper to Rahul = ₹ 900 – ₹ 735.50
= ₹ 164.50

```
  8 9 9 10
 ~~900.00~~
–735.50
 164.50
```

8. Money borrowed by Neha from Sandhya = ₹ 800
Money returned to Sandhya = ₹ 355
Amount of money she have to return = ₹ 800 – ₹ 355
= ₹ 445

7 9 10
₹ 8 0 0
– ₹ 3 5 5
₹ 4 4 5

9. Price of 2 kg potatoes purchased by Monika = ₹ 18.35
Price of 2.5 kg onion purchased by Monika = ₹ 30.50
Price of 1 kg tomatoes purchased by Monika = ₹ 25
Total price of vegetables = ₹ 18.35 + ₹ 30.50 + ₹ 25
= ₹ 73.85

₹ 1 8 . 3 5
₹ 3 0 . 5 0
+ ₹ 2 5 . 0 0
₹ 7 3 . 8 5

Total money given to vegetables seller by Monika = ₹ 100
Amount of money she will get back from him = ₹ 100 ₹ 73.85
= ₹ 26.15

0 9 9 9 10
1 0 0 . 0 0
– 7 3 . 8 5
2 6 . 1 5

10. Money spent by Rahul in buying 2 shirts = ₹ 815
Money spent by Rahul in buying 1 jeans = ₹ 630
Total money spent by him = ₹ 815 + ₹ 630
= ₹ 1445

8 1 5
+ 6 3 0
1 4 4 5

NCERT Corner

1. Tick (✓) the correct option :

a. ₹ 23.05 = 2350 p or 2305 p ✓
b. 7035 p = ₹ 7.35 or ₹ 70.35 ✓
c. 6 coins of ₹ 5 = ₹ 10 or ₹ 30 ✓
d. Ten twenty five paise coins = 250 p ✓ or 25 p

2. Complete the bill given below and find the total :

S.N.	Item	Quantity	Cost per metre (₹)	Total cost (₹)
1.	Brown silk cloth	5 m	60.00	300
2.	Pink cotton	3.5 m	38.00	133
3.	Polyster	4 m	50.00	200
4.	Rayon Cloth	6 m	25.00	150
			Grand Total	2783

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) 2. (b) 3. (b)

Chapter 17 : Measurement

Exercise–17.1

1. Express in cm :

a. 3.16 m
Since, 1 m = 100 cm
3.16 m = 3.16 × 100 cm = 316 cm

b. 3.42 m
Since, 1 m = 100 cm
3.42 m = 3.42 × 100 cm = 342 cm

c. 7.75 m
Since, 1 m = 100 cm

d. 27.076 m
1 m = 100 cm

7.75 m = 7.75 × 100 m = 775 cm

e. 42.44 m
42.44 m = 42.44 × 100 cm
= 4244 cm

f. 75.08 m
1 m = 100 cm
75.08 m = 75.08 × 100 cm
= 7508 cm

g. 0.009 m
Since, 1 m = 100 cm
0.009 m = 0.009 × 100 cm
= 0.9 cm

h. 367.5 m
Since, 1 m = 100 cm
367.5 m = 367.5 × 100 cm
= 36750 cm

2. Express in hm :

a. 2.355 km
1 km = 10 hm
2.355 km = 2.355 × 10 hm
= 23.55 hm

b. 47.86 km
1 km = 10 hm
47.86 km = 437.86 × 10 hm
= 478.6 hm

c. 35.250 km
1 km = 10 hm
35.250 km = 35.250 × 10 hm
= 352.50 hm

d. 9.003 km
1 km = 10 hm
9.003 km = 9.003 × 10 hm
= 90.03 hm

e. 7.075 km
1 km = 10 hm
7.075 km = 7.075 × 10 hm
= 70.75 hm

f. 7.878 km
1 km = 10 hm
7.878 km = 7.878 × 10 hm
= 78.78 hm

g. 0.9 km
1 km = 10 hm
0.9 km = 0.9 × 10 hm = 9 hm

h. 0.104 km
1 km = 10 hm
0.104 km = 0.104 × 10 hm
= 1.04 hm

3. Express in dag :

a. 3.127 kg
Since, 1 kg = 100 dag
3.127 kg = 3.127 × 100 dag
= 312.7 dag

b. 7.779 kg
Since, 1 kg = 100 dag
So, 7.779 kg = 7.779 × 100 dag
= 777.9 dag

c. 96.750 kg
1 kg = 100 dag
96.750 kg = 96.750 × 100 dag
= 9675 dag

d. 0.358 kg
1 kg = 100 dag
0.358 kg = 0.358 × 100 dag
= 35.8 dag

e. 8.65 kg
1 kg = 100 dag
8.65 × 100 dag = 865 dag

f. 84.050 kg
1 kg = 100 dag
84.050 kg = 84.050 × 100 dag
= 8405 dag

g. 7.392 kg
1 kg = 100 dag

h. 37.065 kg
1 kg = 100 dag

7.392 kg = 7.392 × 100 dag
= 739.2 dag

37.065 kg = 37.065 × 100 dag
= 3706.5 dag

4. Express in mg :

a. 3.164 g
Since, 1 g = 1000 mg
So, 3.164 g = 3.164 × 1000 mg
= 3164 mg

b. 0.185 g
1 g = 1000 mg
0.185 g = 0.185 × 1000 mg
= 185 mg

c. 9.009 g
1 g = 1000 mg
9.009 g = 9.009 × 1000 mg
= 9009 mg

d. 17.006 g
1 g = 1000 mg
17.006 g = 17.006 × 1000 mg
= 17006 mg

e. 5.570 g
1 g = 1000 mg
5.570 g = 5.570 × 1000 mg
= 5570 mg

f. 97.450 g
1 g = 1000 mg
97.450 g = 97.450 × 1000 mg
= 97450 mg

g. 0.008 g
1 g = 1000 mg
0.008 g = 0.008 × 1000 mg
= 8 mg

h. 0.950 g
1 g = 1000 mg
0.950 g = 0.950 × 1000 mg
= 950 mg

5. Express in dl :

a. 6.542 /
1 litre = 10 dl
So, 6.54 / = 6.542 × 10 dl
= 65.42 dl

b. 32.750 /
1 / = 10 dl, 32.750 /
= 32.750 × 10 dl
= 327.50 dl

c. 8.616 /
1 / = 10 dl, 8.616 / = 8.616 × 10 dl
= 86.16 dl

d. 0.5 /
1 / = 10 dl, 0.5 / = 0.5 × 10 dl = 5 dl

e. 38.950 /
1 / = 10 dl, 38.950 /
= 38.950 × 10 dl = 389.50 dl

f. 0.25 /
1 / = 10 dl, 0.25 / = 0.25 × 10 dl
= 2.5 dl

g. 9.65 /
1 / = 10 dl, 9.65 / = 9.65 × 10 dl
= 96.5 dl

h. 6.003 /
1 / = 10 dl, 6.003 / = 6.003 × 10 dl
= 60.03 dl

6. Convert and express your answer in decimals :

a. 38 dam 46 cm to dam
1 cm = dam

$$46 \text{ cm} = 46 \times \frac{1}{1000} \text{ dam} = 0.046 \text{ dam}$$

38 dam 46 cm = 38 dam + 0.046 dam
= 38.046 dam

b. 8 hm 350 dm to hm

$$1 \text{ dm} = \frac{1}{1000} \text{ hm}$$

$350\,dm = 350 \times \frac{1}{1000}\,hm = 0.350\,hm$

$8\,hm\,350\,dm = 8\,hm + 350\,dm$

$= 8\,hm + 0.350\,hm = 8.350\,hm$

c. 17 dg 6 mg to dg

$1\,mg = \frac{1}{100}\,dg,\ 6\,mg = \frac{6}{100}\,dg = 0.06\,dg$

$17\,dg\,6\,mg = 17\,dg + 6\,mg = 17\,dg + 0.06\,dg$

$= 17.06\,dg$

d. 23 dag 96 cg to dag

$1\,cg = \frac{1}{1000}\,dag$

$96\,cg = \frac{96}{1000}\,dag = 0.096\,dag$

$23\,dag\,96\,cg = 23\,dag + 96\,cg = 23\,dag + 0.09\,dag$

$= 23.096\,dag$

e. 30 dl 5 ml to dl

Since, $1\,ml = \frac{1}{100}\,dl$

$5\,ml = 5 \times \frac{1}{100}\,dl = \frac{5}{100}\,dl = 0.05\,dl$

$30\,dl\,5\,ml = 30\,dl + 5ml = 30\,dl + 0.05\,dl = 30.5\,dl$

f. 16 kl 35 /

Since, 1 kl = 1000 /

16 kl = 16 × 1000 / = 16000 /

16 kl 35 / = 16 kl + 35 / = 16000 / + 35 / = 16035 /

NCERT Corner

1. a. 456 cm < 5 m
   b. 55 cm + 200 cm > 200 cm + 54 cm
   c. 6 m 5 cm < 6 m 50 cm
   d. 2 m 150 cm < 3 m 50 cm
   e. 238 cm = 138 cm + 1 m
2. a. Height of tallest statue in world = 182 m
   Height of Statue of Liberty = 93 m
   Difference between their heights = 182 m – 93 m
   = 89 m
   b. Statue of Liberty, U.S.A. and the motherland calls Russia have the least difference in their heights.
   c. Statue of Unity, India and Christ the Redeemer, Brazil have the largest difference in their heights.
   d. The motherland calls, Russia is the statue whose height of doubled equals to height of Statue of Unity, India.

Exercise–17.2

1. Add the following :

a. 121 m 13 cm + 97 m 5 cm + 21 m 21 cm

So, 121 m 13 cm + 97 m 05 cm + 21 m 21 cm
= 239 m 39 cm

	m	cm
	1	
	121	13
	97	05
+	21	21
	239	39

b. 219.70 m + 85.39 m + 2.73 m
Thus, 219.70 m + 85.39 m + 2.73 m
= 307.82 m

	1 1 1		1		
	2	1 9	.	7	0
		8 5	.	3	9
+		2	.	7	3
	3	0 7	.	8	2 m

c. 13 km 583 m + 10 km 5 m + 15 km 26 m
Thus, 13 km 583 m + 10 km 5 m + 15 km 26 m
= 38 km 614 m

	km	m
		1 1
	13	583
	10	005
+	15	026
	38	614

d. 4 km + 8.099 km + 14.586 km
So, 4 km + 8.099 km + 14.586 km
= 26.685 km

	km	m
	1	1 1
	04	.000
	08	.099
+	14	.586
	26	.685

e. 56.7 cm + 63.2 cm + 56.7 cm
So, 56.7 cm + 63.2 cm + 56.7 cm
= 176.6 cm

	cm
	1 1
	56.7
	63.2
+	56.7
	176.6

f. 25.70 m + 13.80 m + 14.02 m
25.70 m + 13.80 m + 14.02 m
= 53.52 m

	m
	1 1
	25.70
	13.80
+	14.02
	53.52

2. Subtract the following :

a. 86.85 m – 52.39 m

	m
	7 15
	86.~~8~~~~5~~
–	52.39
	34.36

So, 86.85 m – 52.39 m
= 34.46 m

b. 10.0 km – 3.965 km

	0 9	9	9	9	10
	~~1~~	~~0~~	.	~~0~~	~~0~~ ~~0~~
–	3	9	6	5	
	6	0	3	5	

So, 10.0 km – 3.965 km
= 6.035 km

c. 39.7 cm – 21.9 cm

	8 17
	3 ~~9~~ . ~~7~~
–	2 1 . 9
	1 7 . 8

So, 39.7 cm 21.9 cm
= 17.8 cm

d. 11 km 527 m – 9 km 75 m

	km	m
	0 11	4 12
	~~11~~	~~5 2~~ 7
–	9	7 5
	2	4 5 2

Thus, 11 km 527 m 9 km 75 m
= 2 km 452 m

e. 101 m 19 cm – 49 m 32 cm

	m	cm
	100	119
	~~1 0 1~~	~~1 9~~
–	4 9	3 2
	5 1	8 7

Thus, 101 m 19 cm – 49 m 32 cm
= 51 m 87 cm

f. 19 cm – 15 cm 8 mm

	m	cm
	18	10
	~~1 9~~ .	~~0 0~~
–	1 5 .	0 0
	3 .	0 2

So, Thus, 19 cm – 15 cm 8 mm
= 3 cm 2 mm

3. Add the following. Give your answer in kg and gm :

a. 6315 g + 2817 g + 178 g

	1	1	2	
	6	3	1	5
	2	8	1	7
+		1	7	8
	9	3	1	0

So, 6315 g + 2817 g + 178 g
= 9310 g

b. 5 kg 25 g + 835 g + 12 kg 5 g

	kg		g	
			1	
	5		0	2 5
	0		8	3 5
+	1	2	0	0 5
	1	7	8	6 5

Thus, 5 kg 25 g + 835 g + 12 kg 5 g
= 17 kg 865 g

c. 18 kg 706 g + 75 kg 9 g + 13 kg 91 g

	kg		g	
	1		1	1
	1	8	7	0 6
	7	5	0	0 9
+	1	3	0	9 1
	1	0 6	8	0 6

So, 18 kg 706 g + 75 kg 9 g + 13 kg 91 g = 106 kg 806 g

d. 13 kg 325 g + 12 kg + 14 kg 981 g

	kg		g	
	1	1	1	
	1	3	3	2 5
	1	2	0	0 0
+	1	4	9	8 1
	4	0	3	0 6

So, 13 kg 325 g + 12 kg + 14 kg 981 g = 40 kg 306 g

4. Subtract the following :

a. 9.690 kg – 6.75 kg

	8	1690
	~~9~~	. ~~690~~
–	6	. 750
	2	. 940

Thus, 9.690 kg – 6.75 kg = 2.940 kg

b. 18 g 690 mg – 12 g 150 mg

	km	m
	18	690
–	12	150
	6	540

Thus, 18 g 690 mg – 12 g 150 mg = 6 g 540 mg

c. 18 kg 500 g – 9 kg 750 g

	kg	g
	17	1500
	~~18~~	~~500~~
–	9	750
	8	750

Thus, 18 kg 500 g – 9 kg 750 g = 8 kg 750 g

d. 3 kg 160 g – 390 g

	kg	g
	2	1165
	~~3~~	~~160~~
–	0	390
	2	770

Thus, 3 kg 160 g – 390 g = 2 kg 770 g

5. Add the following :

a. 3 / 275 ml, 8.685 /, 14.5 /

	l		ml
	1	1 1	
	3	. 275	
	8	. 685	
+	14	. 500	
	26	. 460	

Thus, 3 / 275 ml + 8.685 / + 14.5 / = 26.460 /

b. 1 / 450 ml, 80.692 /, 3.721 /

	l		ml
	1	1	
	1	. 450	
	80	. 692	
+	3	. 721	
	85	. 863	

Thus, 1 / 450 ml + 80.692 / + 3.721 / = 85.863 /

c. 6 / 498 ml, 14 / 506 ml, 7 / 98 ml

	l		ml
	1 1	2 2	
	6	498	
	14	506	
+	7	098	
	28	102	

Thus, 6 / 498 ml + 14 / 506 ml + 7 / 98 ml = 28 / 102 ml

d. 25 l 50 ml, 7 l 9 ml, 9 l 931 ml

	l	ml
	2	1
	25	050
	7	109
+	9	931
	41	990

Thus, 25 l 50 ml + 7 l 9 ml + 9 l 931 ml = 41 l 990 ml

6. Subtract the following :

a. 17 l – 15 l 396 ml

	l	ml
	16	1000
	~~17~~	~~000~~
–	15	396
	1	604

Thus, 17 l – 15 l 396 ml = 1 l 604 ml

b. 2 l 630 ml – 985 ml

	l	ml
	1	1630
	~~2~~	~~630~~
–	0	985
	1	645

Thus, 2 l 630 ml – 985 ml = 1 l 645 ml

c. 21 l – 18 l 215 ml

	l	ml
	20	1000
	~~21~~	~~000~~
–	18	215
	2	785

Thus, 21 l – 18 l 215 ml = 2 l 785 ml

d. 12319 ml = 12 l 319 ml

	l	ml
	20	7 16
	~~19~~	7~~80~~
–	12	319
	7	481

19 l 780 ml – 12 l 319 ml
So, 19 l 780 ml – 12319 ml = 7 l 461 ml

Exercise–17.3

1. Length of 1st roll of ribbon = 60 m 65 cm
Length of 2nd roll of ribbon = 88 m 75 cm
Length of 3rd roll of ribbon = 38 m 82 cm

	m	cm
	1 2	1
	60	~~6~~5
	88	75
+	38	82
	188	22

Thus, the total length of the ribbons = 188 m 22 cm

2. Weight of mangoes = 5 kg 200 g
Weight of guavas = 4 kg 800 g
Weight of watermelon = 5 kg 750 g

	kg	g
	5	200
	4	800
+	5	750
	15	750

Thus, total weight of fruits is 15 kg 750 g

3. Length of rope = 500 m
Length of one piece of rope = 148.94 m
Length of other piece
= Total length of rope – Length of one piece
= 500 m – 148.94 m
= 351.06 m

	4	9 9	9 10
	~~5~~	~~0 0~~	~~.0 0~~
−	1	4 8	. 9 4
	3	5 1	. 0 6

4. Total quantity of juice = 2.5 l
Quantity of juice consumed = 1 l 800 ml
= 1.800 l
Quantity of juice left = 2.5 l – 1 l 800 ml
= 700 ml

	l	ml
	1	1500
	~~2~~	~~5 0 0~~
−	1	8 0 0
	0	7 0 0

5. Weight of box = 12.650 kg
Weight of dry fruits = 9 kg 800 g
= 9.800
Weight of empty box = Weight of box – Weight of dry fruits
= 12.650 – 9.800
= 2.850 kg
Since 1 kg = 1000 g, 2.850 kg = 2.850 × 1000 g
= 2850 g
Weight of empty box = 2850 g

	l	ml
	11	1650
	~~1 2~~	~~. 6 5 0~~
−	9	. 8 0 0
	2	. 8 5 0

6. Quantity of milk bought on Monday = 2 l 450 ml
Quantity of milk bought on Tuesday = 3 l 140 ml
Total milk bought = 2 l 450 ml + 3 l 140 ml
= 5 l 590 ml

	l	ml
	2	4 5 0
+	3	1 4 0
	5	5 9 0

7. Weight of potatoes = 5 kg 500 g
Weight of tomatoes = 2 kg 250 g
Weight of onions = 1 kg
Total weight = 5 kg 500 g + 2 kg 250 g + 1 kg
= 8 kg 750 g

	kg	g
	5	5 0 0
	2	2 5 0
+	1	0 0 0
	8	7 5 0

8. Length of cloth sold to 1st customers = 2 m 15 cm
Length of cloth sold to 2nd customers = 1 m 25 cm
Length of cloth sold to 3rd customers = 90 cm
Total quantity of cloth sold = 2 m 15 cm + 1 m 25 cm + 90 cm
= 4 m 30 cm

	m	cm
	1	1
	2	1 5
	1	2 5
+	0	9 0
	4	3 0

9. Weight of wheat purchased from 1st place = 55 kg 225 g
Weight of wheat purchased from 2nd place = 20 kg
Weight of wheat sold = 60 kg
Weight of wheat left = (55 kg 225 g + 20 kg) – 60 kg
= 75 kg 225 g – 60 kg
= 15 kg 225 g

	kg	g
	7 5	2 2 5
−	6 0	0 0 0
	1 5	2 2 5

	kg	g
	5 5	2 2 5
−	2 0	0 0 0
	7 5	2 2 5

10. Amount of water Vicky drink $= 4\,l\,125\,ml = 4\,l + \frac{125}{1000}\,l$

$= 4\,l + 0.125\,l$

$= 4.125\,l$

Amount of water Raman drink $= 5\,l\,500\,ml$

$= 5\,l + \frac{500}{1000}\,l$

$= 5\,l + 0.500\,l = 5.500\,l$

$$\begin{array}{r} {\scriptstyle 4\ 9\ 10} \\ 5.\not{5}\not{0}\not{0} \\ -\ 4.125 \\ \hline 1.375 \end{array}$$

Raman can drink more water than Vickey by $(5.500\,l - 4.125\,l)$

$= 1.375\,l$ or $1\,l\,357\,ml$

Exercise–17.4

1. Multiply the following :

a. $36.9\,cm \times 5$

$$\begin{array}{r} {\scriptstyle 3\ 14} \\ 36.9 \\ \times\ 5 \\ \hline 184.5 \end{array}$$

So, $36.9\,cm \times 5 = 184.5\,cm$

b. $21.97\,m \times 3$

$$\begin{array}{r} {\scriptstyle 2\ \ 2} \\ 21.97 \\ \times\ 3 \\ \hline 65.91 \end{array}$$

So, $21.97\,m \times 3 = 65.91\,m$

c. $25.98\,dm \times 3$

$$\begin{array}{r} {\scriptstyle 1\ 2\ 2} \\ 25.98 \\ \times\ 3 \\ \hline 77.94 \end{array}$$

So, $25.90\,dm \times 3 = 77.94\,dm$

d. $1.683\,km \times 9$

$$\begin{array}{r} {\scriptstyle 6\ \ 7\ 2} \\ 1.683 \\ \times\ 9 \\ \hline 15.147 \end{array}$$

So, $1.683\,km \times 9 = 15.147\,km$

e. $3\,km\,5\,hm\,6\,dam\,8\,m \times 11$

$33\,km\,55\,hm\,66\,dam\,88\,m$

⑧

$33\,km\,55\,hm\,66\,dam\,8\,m$ ∴ $1\,dam = 10\,m$

$33\,km\,55\,hm\,74\,dam\,8\,m$

⑦ ∴ $10\,dam = 1\,hm$

$33\,km\,55\,hm\,4\,dam\,8\,m$

$33\,km\,62\,hm\,4\,dam\,8\,m$

⑥ ∴ $10\,hm = 1\,km$

$33\,km\,2\,hm\,4\,dam\,8\,m$

$39\,km\,2\,hm\,4\,dam\,8\,m$

f. $13\,cm\,8\,mm \times 5$

$1\,mm = 0.1\,cm$, $8\,mm = 0.8\,cm$

$(13\,cm + 0.8\,cm) \times 5$

$= 13.8 \times 5\,cm$

$= 69\,cm$

$$\begin{array}{r} {\scriptstyle 1\ 4} \\ 13.8 \\ \times\ 5 \\ \hline 69.0 \end{array}$$

2. Multiply the following :

a. 20.806 kg × 17

20.806
× 17
145642
+20806×
353.702

= 353.702 kg

b. 15.060 kg × 9

4 5
15.060
× 9
135.540

= 135.540 kg

c. 4 kg 85 g = 4000 g + 85 g = 4085 g

4085 g × 15 =

4085
× 15
20425
+4085×
61275

So, 4085 g × 15 = 6127 g = $\frac{61275}{1000}$ = 61.275

4 kg 85 g × 15 = 61 kg 275 g

d. 4 kg 2 hg 6 dag 5 g

×.7

28 kg 14 hg 42 dag 35 g

③

28 kg 14 hg 42 dag 5 g (∵ 10 g = 1 dag)

28 kg 14 hg 45 dag 5 g

④

28 kg 14 hg 5 dag 5 g (∵ 10 dag = 1 hg)

28 kg 18 hg 5 dag 5 g

①

28 kg 8 hg 5 dag 5 g (∵ 10 hg = 1 kg)

29 kg 8 hg 5 dag 5 g

e. 0.536 kg × 21

So, 0.536 kg × 21 = 11.256 kg

0.536
× 21
0536
1072×
11.256

f. 5 kg 120 g × 5

5 kg 120 g = 5000 g + 120 g = 5120 g

5 kg 120 g = 5120 g × 120 g = 25600 gm

Since, 1000 g = 1 kg

So, 5 kg 120 g = 25 kg 600 g

5120
× 5
25600

3. Find the product and express your answer in litres :

a. 323 ml × 9

323 ml × 9 = 2907 ml

Since 1000 ml = 1 l

So, 2907 ml = 2907 ÷ 1000

= 2 l 907 ml

2 2
323
× 9
2907

b. 5 ml × 17

So, 5 ml × 17 = 85 ml

3
17
× 5
85

c. 493 ml × 25

```
      4 9 3
      × 2 5
    2 4 6 5
+   9 8 6 ×
  1 2 3 2 5
```

493 ml × 25 = 12325 ml

Since, 1000 ml = 1 *l*

So, 12325 ml = 12 *l* and 325 ml

d. 16 *l* 75 ml × 12

```
   1 6 0 7 5
       × 1 2
   3 2 1 5 0
+1 6 0 7 5 ×
 1 9 2 9 0 0
```

16 *l* = 16000 ml, 16 *l* 75 ml = 16075 ml

16 *l* 75 ml × 12

So, 16 *l* 75 ml × 12 = 16075 ml × 12 = 192900 ml

So, 16 *l* 75 ml = 192 *l* and 900 ml

e. 21 *l* 800 ml × 13

```
   2 1 8 0 0
       × 1 3
   6 5 4 0 0
+2 1 8 0 0 ×
 2 8 3 4 0 0
```

21 *l* 800 ml = 21 *l* + 800 ml = 21000 ml + 800 ml

= 21800 ml

So, 21 *l* 800 ml × 13 = 21800 ml × 13 = 283400 ml

= 283 *l* 400 ml

f. 1623 ml × 18

```
   1 6 2 3
     × 1 8
 1 2 9 8 4
+1 6 2 3 ×
 2 9 2 1 4
```

So, 1623 ml × 18 = 29214 ml

Since, 1000 ml = 1 *l*

So, 29214 ml = 29 *l* 214 ml

4. Divide the following :

a. 39.6 m by 4

```
    9.9 m
4 ) 39.6
   -36↓
     36
    -36
      0
```

So, 39.6 m ÷ 4 = 9.9 m

b. 276.3 cm by 3

```
    92.1 cm
3 ) 276.3
   -27↓
     06
     -6
     03
     -3
      0
```

So, 276.3 cm ÷ 3 = 92.1 cm

c. 0.01864 km by 8

$$\begin{array}{r} 0.00233\ \text{km} \\ 8\overline{)\,0.01864} \\ -16\downarrow \\ \hline 26 \\ -24\downarrow \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

So, 0.01864 km ÷ 8 = 0.00233 km

Since, 1 km = 1000 m

0.00233 km = 0.00233 × 1000 = 2.33 m

d. 3.762 km by 10

$$\begin{array}{r} 0.3762\ \text{km} \\ 10\overline{)\,3.762} \\ -30\downarrow \\ \hline 76 \\ -70\downarrow \\ \hline 62 \\ -60 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

So, 3.762 km ÷ 10 = 0.3762 km

5. Find the quotient :

a. 56080 g ÷ 8

$$\begin{array}{r} 7010\ \text{g} \\ 8\overline{)\,56080} \\ -56\downarrow\downarrow \\ \hline 008 \\ -8\downarrow \\ \hline 00 \\ -0 \\ \hline 0 \end{array}$$

So, 56080 g ÷ 8 = 7010 g
= Quotient

b. 16.745 kg ÷ 5

$$\begin{array}{r} 3.349\ \text{kg} \\ 5\overline{)\,16.745} \\ -15\downarrow \\ \hline 17 \\ -15\downarrow \\ \hline 24 \\ -20\downarrow \\ \hline 45 \\ -45 \\ \hline 0 \end{array}$$

So, 16.745 kg ÷ 5 = 3.349 kg
= Quotient

c. 25.209 kg ÷ 9

$$\begin{array}{r} 2.801 \\ 9\overline{)25.209} \\ -18 \\ \hline 72 \\ -72 \\ \hline 009 \\ -9 \\ \hline 0 \end{array}$$

So, Quotient = 2.801 kg

d. 13.488 kg ÷ 12

$$\begin{array}{r} 1.124\ \text{kg} \\ 12\overline{)13.488} \\ -12 \\ \hline 14 \\ -12 \\ \hline 28 \\ -24 \\ \hline 48 \\ -48 \\ \hline 0 \end{array}$$

So, Quotient = 1.124 kg

6. Find the quotient :

a. 19.275 l ÷ 5

$$\begin{array}{r} 3.855\ l \\ 5\overline{)19.275} \\ -15 \\ \hline 42 \\ -40 \\ \hline 27 \\ -25 \\ \hline 25 \\ -25 \\ \hline 0 \end{array}$$

Quotient = 3.855 l

b. 81.312 l ÷ 11

$$\begin{array}{r} 7.392\ l \\ 11\overline{)81.312} \\ -72 \\ \hline 43 \\ -33 \\ \hline 101 \\ -99 \\ \hline 22 \\ -22 \\ \hline 0 \end{array}$$

Quotient = 7.392 l

c. 97.0421 l ÷ 11

$$\begin{array}{r} 8.822\ l \\ 11\overline{)97.0421} \\ -88 \\ \hline 90 \\ -88 \\ \hline 24 \\ -22 \\ \hline 22 \\ -22 \\ \hline 0 \\ \hline 1 \end{array}$$

Quotient = 8.822 l

d. 5.895 l ÷ 3

$$\begin{array}{r} 1.965\ l \\ 3\overline{)5.895} \\ -3 \\ \hline 28 \\ -27 \\ \hline 19 \\ -18 \\ \hline 15 \\ -15 \\ \hline 0 \end{array}$$

Quotient = 1.956 l

Exercise–17.5

1. No. of shirts = 10

Total length of cloth = 24 m

Cloth required to make 1 shirt $= \dfrac{\text{Total length cloth}}{\text{No. of Shirts}}$

$= \dfrac{24}{10} = 24 \div 10$

Cloth required to make 1 shirt = 2.4 m

= 2 m 40 cm

$$\begin{array}{r} 2.4 \\ 10\overline{)\,24} \\ -20 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

2. Total no. of families = 5

Weight of rice = 48 kg 700 g = 48000 g + 700 g

= 48700 g

$$\begin{array}{r} 9740\text{ kg} \\ 5\overline{)\,48700} \\ -45 \\ \hline 37 \\ -35 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

Quantity of rice each family gets = 48700 g ÷ 5

Each family will get 9740 kg or 9 kg 740 g.

3. Quantity of milk each booth gets 450.56 l

Number of booths = 143

Quantity of milk supplied to all booths = 450.56 × 143

= 64430.08 *l*

$$\begin{array}{r} 450.56 \\ \times 143 \\ \hline 135168 \\ 180224\times \\ +45056\times\times \\ \hline 64430.08 \end{array}$$

4. Distance covered by car in a day = 486.94 km

Distance covered by car in 23 days = 4864.94 × 12 km

= 11199.62 km

$$\begin{array}{r} 486.94 \\ \times 23 \\ \hline 146082 \\ +97388\times \\ \hline 11199.62 \end{array}$$

5. Weight of bag of sugar = 48 kg 700 g

= 48000 g + 700 g

= 48700 g

Weight of 17 such bags = 48700 × 17

Weight of 17 such bags = 827900 g

= 827 kg 900 g

$$\begin{array}{r} 48700 \\ \times 17 \\ \hline 340900 \\ +48700\times \\ \hline 827900 \end{array}$$

6. Cloth needed for 1 shirt = 2 m 40 cm

= 200 cm + 40 cm

= 240 cm

No. of shirts = 12

Cloth required to make 12 shirts = 240 cm × 12 = 2880 cm

= 28 m 80 cm

$$\begin{array}{r} 240 \\ \times 12 \\ \hline 480 \\ +240\times \\ \hline 2880 \end{array}$$

7. Weight of a tin of biscuit = 1 kg 750 g
= 1750 g
Weight of 7 tins biscuits = 1750 g × 7
= 10250 g
= 12 kg 250 g

```
  3 3
  1 7 5 0
      × 7
1 2 2 5 0
```

8. Total length of cloth = 8 m 54 cm
= 800 cm + 54 cm
= 854 cm
No. of pieces = 7
Length of each piece of cloth = (854 ÷ 7) = 122 cm
= 100 cm + 22 cm
= (1 m 22 cm)

```
   122 cm
7) 854
  −7↓
   15
  −14↓
    14
   −14
     0
```

9. Total quantity of soup = 8 l 785 ml = 8000 ml + 785 ml
= 8785 ml
No. of people = 7
Quantity of soup given of each person = 8785 ÷ 7
= 1255 ml
= 1
= 1000 ml + 255 ml
= 1 l 255 m

```
   1255 ml
7) 8785
  −7↓
   17
  −14↓
    38
   −35↓
     35
    −35
      0
```

10. Length of cloth to stitch 1 shirt = 2.25 m
Cloth required to stitch 17 shirts = 2.25 m × 17
= 38.25 m

```
  2 . 2 5
    × 1 7
  1 5 7 5
+ 2 2 5 ×
  3 8 . 2 5
```

11. No. of tanks = 32
Total quantity of petrol = 4242.56 l
Oil stored in each tank = 4242.56 ÷ 32
= 132.58 l

```
   132.58 l
32) 4242.56
  −32↓
    104
   −96↓
     82
    −64↓
     185
    −160↓
      256
     −256
        0
```

12. No. of packets = 45

Total quantity of tea = 49 kg 950 g = 49000 g + 950 g = 49950 g

Quantity of tea in each packet = (49950 g ÷ 45)

$= 1110\text{ g} = \frac{1110}{1000}\text{ kg}$

= 1.11 kg

∴ Each packet contains 1.11 kg of tea.

```
      1110g
45 ) 49950
    -45
      49
     -45
       45
      -45
       00
```

13. Total distance travelled = 1582.4 km

No. of days = 4

Distance travelled in 1 day = 1582.4 km ÷ 4

= 395.6 km

```
    395.6 km
4 ) 1582.4
   -12
     38
    -36
      22
     -20
       24
      -24
        0
```

14. No. of toffees = 25

Weight of 25 toffees = 275 g

Weight of 1 toffee = 275 ÷ 25 = 11 g

```
      11g
25 ) 275
    -25
      25
     -25
       0
```

Weight of 80 toffees = 11 g × 80

= 880 g

```
   8 0
 × 1 1
   8 0
 8 0 ×
 8 8 0
```

15. Length of a saree = 5.672 m

Length of 50 sarees = 5.672 × 50

= 283.600 m

```
     5 . 6 7 2
         × 5 0
       0 0 0 0
 + 2 8 3 6 0 ×
 2 8 3 . 6 0 0
```

16. Length of road = 28.500 km = 28500 m

No. of days = 30

Length of road constructed in 1 day = 28500 ÷ 30

= 950 m

```
      950 m
30 ) 28500
    -270
      150
     -150
       00
```

Multiple Choice Questions

Tick (✓) the correct choice :

1. (b) 2. (a) 3. (b) 4. (c) 5. (a) 6. (a) 7. (a)

Test Exercise

1. Fill in the blanks :

a. Length of a pen = 14 cm = **140** mm
b. Height of a side table = 0.32 m = **32** cm
c. Distance between two metro stations = 1.6 km = **1600** m
d. Weight of some mangoes = 2,500 g = **2.5** kg
e. Weight of a gold coin = 2 g = **2000** mg
f. Weight of a pair of earrings = 14 dg = **1.4** g
g. A can of cold drink = 300 mL = **0.300** L
h. A bottle of water = 2.5 L = **2500** mL

2. Find the sum :

a. 7 hm 18 m + 11 hm 21 m + 9 km 4 m
Since, 1 km = 10 hm, 9 km = 90 hm

So, 7 hm 18 m + 11 hm 21 m + 9 km 4 m
= 108 hm 43 m

	hm	m
		1
	7	18
	11	21
+	90	04
	108	43

b. 23 kg 75 g + 54 kg + 18 kg 150 g
So, 23 kg 75 g + 54 kg + 18 kg 150 g
= 95 kg 225 g

	kg	g
	1	1
	23	075
	54	000
+	18	150
	95	225

c. 82 / 125 ml + 16 / 204 ml
82 / 125 ml + 16 / 204 ml
= 98 / 329 ml

	l	*ml*
	82	125
+	16	204
	98	329

d. 6 dam 98 cm + 29 dam 16 cm
So, 6 dam 98 cm + 29 dam 16 cm
= 35 dam 114 cm

	dam	cm
	1	1
	6	98
+	29	16
	35	114

3. Find the difference :

a. 104 m 20 cm – 63 m 95 cm

	m	cm
	103	120
	~~104~~	~~20~~
–	63	95
	40	25

So, 104 m 20 cm – 63 m 95 cm
= 40 m 25 cm

b. 97 g – 82 g 415 mg

	g	mg
	96	1000
	~~97~~	~~000~~
–	82	415
	14	585

So, 97 g – 82 g 415 mg
= 14 g 585 mg

c. 84 dal 26 ml – 49 dal 135 ml

dal	ml
83	10026
~~84~~	~~26~~
– 49	135
34	9891

So, 84 dal 26 ml – 49 dal 135 ml
= 34 dal 9891 ml

d. 75 *hl* – 58 hl 96 *l* 75 hl

hl	l
74	100
~~75~~	~~00~~
– 58	96
16	4

So, 75 hl – 58 hl 96 *l*
= 16 hl 4 *l*

4. Simplify the following :

a. 38 km 124 m × 26

38 km 124 m
× 26
988 km 3224 m

38
× 26
228
+ 76 ×
988

124
× 26
744
+ 248 ×
3224

Since, 1 km = 1000 m, 3224 m = 3000 m + 224 m
= 3 km 224 m

(988 + 3) km = 991 km 224 m

So, 38 km 124 m × 26 = 991 km 224 m or 991.224 km

b. 49 g 126 mg × 72

49 g 126 mg
× 72
3528 g 9072 mg

49
× 72
98
+ 343 ×
3528

126
× 72
252
+ 882 ×
9072

Since, 1000 mg = 1 g, 9072 mg = 9 g 72 mg
= (3528 + 9) g

72 mg = 3537 g 72 mg or 3537.072 g

So, 49 g 126 mg × 72 = 3537 g 72 mg or 3537.072 g

c. 72 dag 15 cg × 48

72 dag 15 cg
× 48
3456 dag 720 cg

72
× 48
576
+ 288 ×
3456

15
× 48
120
+ 60 ×
720

Since, 1 cg = $\frac{1}{1000}$ dag, 720 cg = 0.720 dag

So, 72 dag × 15 cg = 3456 dag 720 cg or 3456.720 dag

d. 83 *l* 436 ml ÷ 12

Since, 1 *l* = 1000 ml, so 83 *l* = 83 × 1000 ml = 83000 ml

83 *l* 436 ml = 83000 ml + 436 ml = 83436 ml

So, 83 *l* 435 ml ÷ 12 = 6953 ml

Since, 1000 ml = 1 *l*, 6953 ml = 6.935 *l*

6953 ml = 6 l 953 ml

So, 83 *l* 436 ml ÷ 12 = 6.953 *l* or 6 *l* 953 ml

```
      6953
12 ) 83436
    –72
     114
    –108
      63
     –60
      36
     –36
       0
```

e. 28 m 80 cm ÷ 15

Since, 1 m = 100 cm, 28 m = 2800 cm

28 m 80 cm = 2800 cm + 80 cm

= 2880 cm

28 m 80 cm ÷ 15 = 2880 cm ÷ 15

= 192 cm

28 m 80 cm ÷ 15 = 192 cm

= 1.92 m or 1 m 92 cm

```
   192 cm
15)2880
  -15
  138
 -135
   30
  -30
    0
```

f. 201 kl 348 l ÷ 94

1 kl = 1000 l, 201 kl = 201 × 1000 l

= 201000 l

So, 201 km 348 l = 201348 l

201 kl 348 l ÷ 94 = 201348 l ÷ 94 = 2142 l

= 2.142 kl or 2 kl 142 l

```
   2142 l
94)201348
  -188
   133
   -94
    394
   -376
    188
   -188
      0
```

5. Height of Meena = 1 m 30 cm

Height of Sita = 1 m 75 cm

Difference b/w their heights = 1 m 75 cm – 1 m 30 cm

So, difference between their heights = 45 cm = 0.45 m

m	ml
1	75
– 1	30
0	45

6. Weight of school bag = 5 kg 450 g

Weight of book to be added = 750 g

Weight of school bag now = 5 kg 450 g + 750 g

= 6 kg 200 g

kg	g
(1)	
5	450
+ 8	750
6	200

7. Quantity of milk = 3 l

Quantity of milk used = 1 l 450 ml

Milk left = 3 l – 1 l 450 ml

= 1 l 550 ml

l	ml
2	1000
~~3~~	~~000~~
– 1	400
1	550

8. Height of Mehul = 1.9 m

Height of Paritosh = 1.75 m

Difference between their heights = 1.9 m – 1.75 m

= 0.15 m = 15 cm

So, Mehul is taller than Paritosh by 15 cm.

	1.90
–	1.75
	0.15

9. Height of jump = 3 cm

Total distance = 171 cm

Number of jumps = 171 cm ÷ 3

= 57 cm

```
  57
3)171
 -15
  21
 -21
   0
```

Chapter 18 : Time and Temperature

Exercise–18.1

1. Fill in the boxes :

	12–hour clock	24–hour clock
a.	7 : 30 a.m.	0730 hours
b.	6 : 30 a.m.	0630 hours
c.	02 : 00 p.m.	14 : 00 hours
d.	8 : 30 p.m.	2030 hours

2. Write the following time in terms of a.m., p.m., noon or midnight :

a. 04 : 00 p.m. b. 07 : 00 a.m. c. 02 : 00 p.m.
d. 09 : 35 a.m. e. 01 : 00 a.m. f. 12 : 00 noon

Exercise–18.2

1. Convert the following :

a. 8 minutes into seconds
Since, 1 minute = 60 seconds, 8 min = 60 × 8 sec = 480 seconds

b. 1 hour 5 min 4 sec
Since, 1 hr = 60 min = 3600 seconds
1 hr = 3600 sec
Also, 1 min = 60 sec, 5 min = 5 × 60 sec = 300 sec
So, 1 hour 5 min 4 sec = 3600 sec + 300 sec + 4 sec = 3904 sec

c. 16 hours
Since, 1 hr = 60 min, 16 hours = 60 × 16 min = 960 min

d. 6 hours 9 minutes
Since, 1 hr = 60 minutes, 6 hours = 6 × 60 min = 360 min
6 hours 9 minutes = 360 min + 9 min = 369 minutes

e. 3 days
Since, 1 day = 2 hours, 3 days = (24 × 3) hours = 72 hours

f. 6 days 19 hours
Since, 1 day = 24 hours, 6 days = 24 × 6 hours = 144 hours
6 days 19 hours = 144 hours + 19 hours = 163 hours

2. Convert the following :

a. 720 sec
Since, 60 sec = 1 min, so 720 sec
= (720 ÷ 60) min
= 12 min
So, 720 sec = 12 min

$$\begin{array}{r} 12 \\ 60\overline{)\,720} \\ -60\downarrow \\ \hline 120 \\ -120 \\ \hline 0 \end{array}$$

b. 8766 seconds
Since, 1 m = 60 sec
8766 sec = (8766 ÷ 60) min
= 146.1 minutes
= 146 min + 0.1 minutes

$$\begin{array}{r} 146.1 \\ 60\overline{)\,8766} \\ -60\downarrow \\ \hline 276 \\ -240\downarrow \\ \hline 366 \\ -360 \\ \hline 60 \\ -60 \\ \hline 0 \end{array}$$

Since 1 min = 60 sec, 0.1 min = 0.1 × 60 = 6 sec
So, 146.1 min = 146 min and 6 seconds

c. 480 minutes
1 hr = 60 min, so 480 min = 480 min ÷ 60
So, 480 minutes = 8 hours

$$\begin{array}{r} 8 \\ 60\overline{)480} \\ -480 \\ \hline 0 \end{array}$$

d. 684 minutes
1 hr = 60 min, 684 min = 684 ÷ 60 hours
684 minutes = 11.4 hours = 11 hours + 0.4 hours
0.4 hours = $\frac{4}{10} \times 60$ min = 24 minutes
So, 684 minutes = 11 hours 24 minutes

$$\begin{array}{r} 11.4 \\ 60\overline{)684} \\ -60\downarrow \\ \hline 84 \\ -60 \\ \hline 240 \\ -240 \\ \hline 0 \end{array}$$

e. 960 hours
Since, 1 day = 24 hours, 960 hours
= (960 ÷ 24) days
Since, 960 hours = 40 days

$$\begin{array}{r} 40 \\ 24\overline{)960} \\ -96\downarrow \\ \hline 00 \end{array}$$

f. 560 days
1 week = 7 days
560 days = (560 ÷ 7) weeks
= 80 weeks

$$\begin{array}{r} 80 \\ 7\overline{)560} \\ -56\downarrow \\ \hline 00 \end{array}$$

Exercise–18.3

1. Add the following. Note that hrs is written for hours, mins for minutes and secs for seconds :

a. Since, 60 sec = 1 min
15 min 30 sec + 9 min 40 sec
= 24 min 70 sec
= 25 min 10 sec

mins	sec
15	30
+ 9	40
24	70

b. 2 hrs 45 min + 4 hrs 50 min
= 6 hrs 95 min
= (6 + 1) hrs 35 min
= 7 hrs 35 min

hrs	min
2	45
+ 4	50
6	95

c. 2 hr 38 min + 3 hrs 49 min
= 5 hrs 87 min
= (5 + 1) hrs 27 min
= 6 hrs 27 min

hrs	min
2	38
+ 3	49
5	87

2. Find the following differences :

a.

mins	sec
52	140
~~53~~	~~40~~
– 10	52
42	88

b.

hrs	min
51	35
~~52~~	~~35~~
–17	59
34	36

c.

hrs	min	sec
72	114	90
~~73~~	~~55~~	~~30~~
–18	58	51
54	56	39

3. Add the following :

a. 26 min 30 sec + 35 min 46 sec

mins	sec
26	30
+ 35	46
61	76

Since, 60 sec = 1 min

76 sec = (60 + 16) sec

= 1 min 16 sec

(61 min + 1 min) 16 sec = 62 min 16 sec

So, 26 min 30 sec + 35 min 46 sec = 62 min 16 sec

b. 5 hours 48 min + 35 hours 32 min

hrs	min
5	48
+ 35	32
40	80

Since, 80 min = 60 min + 20 min

= 1 hr 20 min

So, 40 hrs 80 min = (40 + 1) hr 20 min

= 41 hr 20 min

So, 5 hours 48 min + 35 hours 32 min

= 41 hr 20 min

c. 17 hours 45 minutes + 46 hours 48 minutes

hrs	min
17	45
+ 46	48
63	95

Since 93, min = 60 min + 33 min

=1 hr 33 min

So, 63 hrs 93 min = (63 + 1) hrs 33 min

= 64 hours 33 min

d. 8 years 7 months + 2 years 11 months

years	months
8	7
+ 2	11
10	18

Since, 12 months = 1 year

So, 18 months = 12 months + 6 months

= 1 year 6 months

10 years 18 months = (10 + 1) years 6 months

= 11 years 6 months

∴ 8 years 7 months + 2 years 11 months = 11 years 6 months

4. Subtract the following :

a. 54 min 34 sec – 45 min 48 sec

mins	sec
53	94
~~54~~	~~34~~
– 45	48
8	46

So, 54 min 34 sec – 45 min 48 sec = 8 min 46 sec

b. 48 hours 54 minutes – 30 hours 34 min

hrs	min
48	54
– 30	34
18	20

So, 48 hours 54 min – 30 hours 34 min = 18 hours 20 min

c. 48 min 38 sec – 12 min 36 sec

min	sec
48	38
– 12	36
36	2

So, 48 min 38 sec – 12 min 36 sec = 36 min 2 sec

d. 19 years 1 months 16 years 8 months

years	months
18	13
~~19~~	~~1~~
– 16	8
2	5

So, 19 years 1 months – 16 years 8 months = 2 years 5 months

5. Calculate the time :

a. Time from 2:05 p.m. to 9:05 p.m. = 7 hours
Time from 9:05 p.m. to 10:00 p.m. = 55 minutes
So, time from 2:05 p.m. to 10 o'clock night = 7 hours 55 minutes

b. Time from 10:34 p.m. to 12:00 a.m. = 1 hour 26 min
Time from 12:00 a.m. to 6:47 a.m. = 6 hours 47 min
So, time from 10:34 p.m. to 6:47 a.m. = 1 hr 26 min + 6 hr 47 min
= 8 hours 13 minutes

c. Time from 8:55 a.m. to 12:00 p.m. = 3 hours 5 minutes
Time from 12:00 p.m. to 2:35 p.m. = 2 hours 35 minutes
So, total time = 3 hours 5 minutes + 2 hours 35 minutes
= 5 hours 40 minutes

d. Time from 7:35 p.m. to 12:00 a.m. = 4 hours 25 minutes
Time from 12:00 a.m. to 10:30 a.m. = 10 hours 30 minutes
So, time from 7:35 p.m. on Sunday to 10:30 a.m. on Monday
= 4 hours 25 minutes + 10 hours 30 minutes
= 14 hours 55 minutes

6. Find the total number of days :

a. January has 31 days.
Days from 17 Jan. to Jan. 31 (inclusive)
= 31 + 17 + 1 = 15 days
2004 is a leap year, so February has 29 days
Days from March 1 to March 30 (inclusive) = 30 days
Total days from 17 January 2004 to 30 March 2004
= 15 + 29 + 30 = 74 days

b. June has 30 days. Days from 27 June to June 30 (inclusive)
= 30 – 27 + 1 = 4 days
Days from 1 July to 29 July inclusive = 29
Total no. of days from 27 June to 29 July = 4 + 29 = 33 days

c. November has 30 days. Days from 13 Nov. to 30 Nov. (inclusive)
= 30 – 13 + 1 = 18 days
Days from 1 Dec. to 15 Dec. (inclusive) = 15 days
So, days from 13 November 2009 to 15 December 2009
= 18 + 15 = 33 days

d. October has 31 days. Days from 10 October to 31 October (inclusive)
= 31 – 10 + 1 = 22 days
November has 30 days.
Days from 1 Dec. to 15 Dec. (inclusive) = 15 days
So, total number of days from 10 October 2008 to 15 December 2008
= 22 + 30 + 15 = 67 days

7. August has 31 days.
Days from 15 August to 31st August = 31 – 15 + 1 = 17 days
September has 30 days.
October has 31 days.
Days in November 30.
Duration of course = 31 days + 17 + 30 + 31 + 30 = 108 days

8. Vinay started physical exercise at 6:25 a.m.
Vinay finished exercise at 7:35 a.m.
Duration of physical exercise = 7:35 – 6:25
= 1 hour 10 minutes

hrs		min
7	:	35
– 6	:	25
1	:	10

9. Timing for going to school = 8:30 a.m.
Time duration = 4 hours 30 min
The time, he comes back at = 8:30 a.m. + 4 hours 30 min
= 1 pm

10. Time at which Shweta departs from home = 7:55 p.m.
Time in which the reaches market = 8:15 p.m.
The time duration she walked for = 8:15 p.m. – 7:55 p.m.
= 20 minutes

7		75
~~8~~	:	~~15~~
– 7	:	55
0	:	20

11. Time at which sports news starts = 2:40 p.m.
Time duration of sports news = 20 minutes
Time at which sports news finishes = 2:40 p.m. + 20 min
= 3 p.m.

12. Time at which Juhi left her home = 8:30 a.m. = 8:30
Time at which she comes back at home = 2:15 p.m. = 14:15
Time at which she was away from home = 14:15 – 8:30
= 5 hours 45 min

13. Time at which Mayank goes for morning walk = 6:15 a.m.

Time duration of his walk = 1 hour 15 minutes
Time at which he comes back = 6:15 a.m. + 1 hour = 7:15 a.m.
7:15 a.m. + 15 min = 7:30 a.m.
Mayank comes back at 7:30 a.m.

14. Aeroplane left Chennai at 1750 hours
Aeroplane reaches Kolkata at 2030 hours
From 1750 hours to 1800 hours is 10 minutes
From 1800 hours to 2000 hours is 2 hours
From 2000 hours to 2030 hours is 30 min
Total time duration = 10 min + 2 hours + 30 min
= 2 hours 40 min

15. The time at which bus leaves Delhi = 6:15 a.m.
Time duration from Delhi to Chandigarh = 5 hours 30 minutes
6:15 a.m. + 5 hours = 11:15 a.m.
11:15 a.m. + 30 minutes = 11:45 a.m.
The bus reaches Chandigarh at 11:45 a.m.

Exercise–18.4

1. a. The train leaves from Delhi station at 4:30 a.m.

b. Total distance from Delhi to Haridwar station
= 10 km + 15 km + 15 km + 35 km + 30 km + 30 km + 40 km + 335 km
= 210 km

c. Time taken to reach Modinagar from Delhi
= 0628 – 0430
= 6 hr 28 min – 4 hr 30 min
= 1 hour 58 min

d. Time taken to reach Haridwar from Meerut
= 1030 – 0720
= 10 hours 30 minutes – 7 hours 20 min
= 3 hours 10 minutes

hr	min
10	30
– 7	20
3	10

e. Total time taken by train to reach its destination
= 1030 – 0430
= 6 hours

Exercise–18.5

1. Convert the following to degrees Fahrenheit (°F) :

a. 37°C
$= 37 \times \frac{9}{5} = \frac{333}{5} = 66.6°C$
= 66.6° + 32° = 98.6°F

b. 81°C
$= 81 \times \frac{9}{5} = \frac{729}{5} = 145.8°C$
= 145.8° + 32° = 177.8°F

c. 75°C
$= 75 \times \frac{9}{5} = 15 \times 9 = 135°C$
= 135° + 32° = 167°F

d. 130°C
$= 130 \times \frac{9}{5} = 26 \times 9 = 234°C$
= 234° + 32° = 266°F

e. 95°C

$= 95 \times \frac{9}{5} = 19 \times 9 = 171°C$

$= 171° + 32° = 203°F$

f. 100 °C

$= 100 \times \frac{9}{5} = 20 \times 9 = 180°C$

$= 180° + 32° = 212°F$

2. Convert the following to degrees Celsius (°C) :

a. 113°F

$= 113°F - 32°F = 81°F$

$= 81 \times \frac{5}{9} = 9 \times 5 = 45°C$

b. 167°F

$= 167°F - 32°F = 135°F$

$= 135 \times \frac{5}{9} = 15 \times 5 = 75°C$

c. 140°F

$= 140°F - 32°F = 108°F$

$= 108 \times \frac{5}{9} = 12 \times 5 = 60°C$

d. 104°F

$= 104°F - 32°F = 72°F$

$= 72 \times \frac{5}{9} = 8 \times 5 = 40°C$

e. 221°F

$= 221°F - 32°F = 189°F$

$= 189 \times \frac{5}{9} = 21 \times 5 = 105°C$

f. 98.6°F

$= 98.6°F - 32°F = 66.6°F$

$= 66.6 \times \frac{5}{9} = \frac{333}{9} = 37°C$

3. Fill in the blanks :

a. A person who has fever will have a body temperature more than **98.6**°F.

b. A doctor uses a **clinical** thermometer to measure temperature.

c. If the temperature on Monday was 41°C and it increased by 1.3°C on Tuesday, then the temperature was **42.3°C** on Tuesday.

d. **32**°F is also known as freezing point of water.

e. The water in the kettle was boiling. Its temperature was **212**°F.

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Let us find out

1. 5:35 a.m.
2. 5:55 a.m.
3. 20 minutes
4. a. 27 minutes
   b. 5 hours
   c. 2 hours 15 minutes
5. a. Rani
   b. Raghav

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) 2. (b) 3. (a)

Chapter 19 : Lines and Angles

Exercise–19.1

1. Fill in the blanks :

a. A **line** segment can be measured.

b. A **ray** has one end point.

c. A line has **no** end points.

d. **Intersection** lines meet at a point.

e. The distance between two **parallel** lines remains same throughout.

2. Classify the following as line, point, line segment and ray :

a. Ray $\overrightarrow{PQ}$ b. Point X

c. Line $\overleftrightarrow{MN}$ d. Line segment $\overleftrightarrow{CD}$

3. Name the line segments in each f of the following :

a. PO, ON, NM, MP

b. PQ, PR, QR

c. AB, BC, CD, DE, EF, FG, GH, HA

4. Classify as parallel, intersecting or perpendicular for each pair of lines :

a. Parallel lines

b. Perpendicular lines

c. Intersecting lines

Exercise–19.2

1. Name each of the following angles. Also identify the vertex and arms in each angle :

a. $\angle$MON Vertex $\rightarrow$ O, Arms $\rightarrow$ ON, OM

b. $\angle$XYZ Vertex $\rightarrow$ Y, Arms $\rightarrow$ YZ, YX

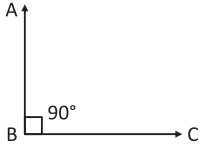
c. $\angle$RQP Vertex $\rightarrow$ Q, Arms $\rightarrow$ QP, QR

2. Use a protractor to find the measurement of the following angles :

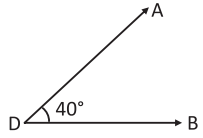
a. 40° b. 15° c. 90° d. 30° e. 70° f. 120°

3. Draw the following angles using a protractor :

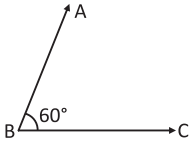
a. 90°



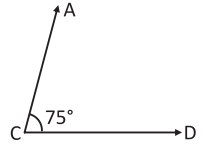
b. 40°



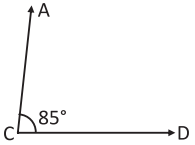
c. 60°



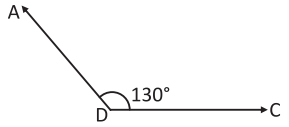
d. 75°



e. 85°



f. 130°



4. From the given figure, list the points which are :

a. X, J, K, L b. P, Q, L c. I, M, D, N

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a. half b. one fourth c. three fourth
d. 5 e. 60

Exercise–19.3

1. Identify the angles as acute, right, obtuse, straight, reflex or complete without measuring them:

a. Obtuse angle b. Right angle c. Acute angle
d. Straight angle e. Acute angle f. Reflex angle

2. Classify the angles as acute, straight, reflex, zero, right or complete using their measures :

a. Obtuse angle b. Acute angle c. Obtuse angle
d. Reflex angle e. Zero angle f. Acute angle
g. Obtuse angle h. Reflex angle

3. State True (T) or false (F) :

a. False b. True c. False d. True

4. Which of the following pairs of angles are complementary?

a. 65°, 25° b. 55°, 35°

5. Which of the following pairs of angles are supplementary?

a. 95°, 85° b. 128°, 52° c. 72°, 108°

6. Find the complement of the following angles.

a. 32°
Complement of $32° = 90° - 32° = 58°$
b. 46°
Complement of $46° = 90° - 46° = 44°$
c. 24°
Complement of $24° = 90° - 24° = 66°$
d. 17°
Complement of $17° = 90° - 17° = 73°$

7. Find the supplement of the following angles.

a. 124°
Supplement of $124° = 180° - 124° = 56°$
b. 32°
Supplement of $32° = 180° - 32° = 148°$
c. 90°
Supplement of $90° = 180° - 90° = 90°$
d. 84°
Supplement of $84° = 180° - 84° = 96°$

Multiple Choice Questions

Tick (✓) the correct choice :

1. (b) 2. (b) 3. (a)

Chapter 20 : Circles, Triangles and Quadrilaterals

Exercise-20.1

1. Study the given figure and fill in the blanks :

a. O b. OQ c. POQ d. AB

e. ACB f. ARB g. X, O, S

2. Find the diameter of the circle whose radius is :

a. Radius = 3.2 cm = R

Diameter of circle = $2R = 2 \times 3.2$ cm = 6.4 cm

b. 12 cm

Radius = 12 cm = R

Diameter = $2 \times$ Radius = 2×12 cm = 24 cm

c. Radius = 8.2 cm = R

Diameter = $2R = 2 \times 8.2$ cm = 16.4 cm

d. Radius = 6.3 cm = R

Diameter = $2R = 2 \times 6.3$ cm = 12.6 cm

e. Radius = 9.6 cm = R

Diameter = $2 \times R = 2 \times 9.6$ cm = 19.2 cm

3. Find the radius of the circle whose diameter is :

a. Diameter = 18 cm

Diameter = 2 × Radius $\Rightarrow$ Radius $= \dfrac{\text{Diameter}}{2}$

b. Diameter = 15.2 cm

Radius $= \dfrac{\text{Diameter}}{2} = \dfrac{15.2}{2} = 7.6$ cm

c. Diameter = 30.6 cm

Radius $= \dfrac{\text{Diameter}}{2} = \dfrac{30.6}{2} = 15.3$ cm

d. Diameter = 22 cm

Radius $= \dfrac{\text{Diameter}}{2} = \dfrac{22}{2} = 11$ cm

e. Diameter = 132 cm

Radius $= \dfrac{\text{Diameter}}{2} = \dfrac{132}{2} = 66$ cm

4. Find the circumference of the circle whose diameter is (Given : π = 22/7)

a. Diameter = 63 cm, Radius $= \left(\dfrac{\text{Diameter}}{2}\right) = \dfrac{63}{2}$ cm

Circumference of circle $= 2 \times \dfrac{22}{7} \times R$

$= 2 \times \frac{22}{7} \times \frac{63}{2} = 22 \times 9 \text{ cm} = 198 \text{ cm}$

b. Diameter = 5.6 cm, Radius $= \left(\frac{\text{Diameter}}{2}\right) = \frac{5.6}{2}$ cm = 2.8 cm

Circumference of circle $= 2\pi R = 2 \times \frac{22}{7} \times 28 = 2 \times 22 \times 0.4$

$= 44 \times 0.4$

$= 17.6$ cm

c. Diameter = 2.8 cm, Radius $= \frac{\text{Diameter}}{2} = \frac{2.8}{2}$ cm = 1.4 cm

Circumference of circle $= 2 \times \frac{22}{7} \times 1.4 = 2 \times 22 \times 0.2$ cm

$= 44 \times 0.2$ cm $= 8.8$ cm

d. Diameter = 10.5 cm, Radius $= \frac{\text{Diameter}}{2} = \frac{10.5}{2}$ m = 5.25 cm

Circumference of circle $= 2 \times \frac{22}{7} \times 5.25 = \frac{44}{7} \times 5.25$

$= 44 \times 0.75$ cm $= 33$ cm

e. Diameter = 21 cm, Radius $= \frac{\text{Diameter}}{2} = \frac{21}{2}$ cm = 10.5 cm

Circumference of circle $= 2 \times \frac{22}{7} \times 10.5$ cm $= \frac{44}{7} \times 10.5$

$= 44 \times 1.5$ cm $= 66$ cm

5. Find the circumference of the circle whose radius is :

a. 2.4 cm

Radius = 2.4 cm, Circumference of circle $= 2 \times \frac{22}{7} \times 2.4$ cm

$= \frac{44 \times 2.4}{7}$ cm

$= \frac{105.6}{7}$ cm = 15.085 cm = 15.1 cm

b. 6.3 cm

Radius = 6.3 cm

Circumference of circle $= 2 \times \frac{22}{7} \times 6.3$ cm $= 2 \times 22 \times 0.9$

$= 44 \times 0.9$ cm

$= 39.6$ cm

c. 49.7 cm

Radius = 49.7 cm, Circumference of circle $= 2 \times \frac{22}{7} \times 49.7$ cm

$= 44 \times 7.1$ cm

$= 312.4$ cm

d. 14.7 cm

Radius = 14.7 cm

Circumference of circle $= 2 \times \frac{22}{7} \times 14.7 = 44 \times 2.1$ cm $= 92.4$ cm

e. 8.22 cm

Radius = 8.22 cm

Circumference of circle $= 2 \times \frac{22}{7} \times 8.22$

$= \frac{44 \times 8.22}{7} = \frac{361.68}{7}$

$= 51.66$ cm $= 51.7$ cm

6. Find the diameter of the circle whose circumference is :

a. 33 cm

Circumference = 33 cm

$2 \times \frac{22}{7} \times$ Radius $= 33$ cm $\Rightarrow \frac{44R}{7} = 33$ cm

$R = \frac{33 \times 7}{44} = \frac{3 \times 7}{4} = \frac{21}{4} = 5.25$ cm

Diameter = 2 × Radius = 2 × 5.25 cm = 10.5 cm

b. 450 cm

Circumference = 450 cm

$\Rightarrow 2 \times \frac{22}{7} \times R = 450 \Rightarrow \frac{44R}{7} = 450$

$\Rightarrow R = \frac{450 \times 7}{44} = \frac{3150}{44} = 71.59$ = Radius

Diameter = 2 × Radius = 2 × 71.59 = 143.18 cm = 143.2 cm

c. 26.4 cm

Circumference = 26.4 cm

$\Rightarrow 2 \times \frac{22}{7} \times R = 26.4 \Rightarrow \frac{44R}{7} = 26.4$

$R = \frac{26.4 \times 7}{44} = \frac{184.8}{44} = 4.2$ cm = Radius

Diameter = 2 × Radius = 2 × 4.2 cm = 8.4 cm

d. 21.7 cm

Circumference = 21.7 cm

$$2 \times \frac{22}{7} \times R = 21.7 \Rightarrow \frac{44R}{7} = 21.7$$

$$R = \frac{21.7 \times 7}{44} = \frac{151.9}{44} = 3.45 \text{ cm} = \text{Radius}$$

Diameter = 2 × Radius = 2 × 3.45 cm = 6.9 cm

e. 660 cm

Circumference = 660 cm

$$2 \times \frac{22}{7} \times R = 660 \Rightarrow \frac{44R}{7} = 660$$

$$R = \frac{660 \times 7}{44} = \frac{4620}{44} = 105 \text{ cm}$$

Diameter = 2 × Radius = 2 × 105 cm = 210 cm

7. Find the radius of the circle whose circumference is :

a. 22 cm

Circumference = 22 cm

$$2 \times \frac{22}{7} \times R = 22 \Rightarrow \frac{44}{7} \times R = 22$$

$$R = \frac{22 \times 7}{44} = \frac{7}{2} = 3.5 \text{ cm} = \text{Radius}$$

b. 44 cm

Circumference = 44 cm

$$2 \times \frac{22}{7} \times R = 44 \Rightarrow \frac{44}{7} \times R = 44 \Rightarrow R = \frac{44 \times 7}{44} = 7 \text{ cm}$$

Radius = 7 cm

c. Circumference = 132 cm

$$\Rightarrow 2 \times \frac{22}{7} \times R = 132 \Rightarrow \frac{44R}{7} = 132$$

$$R = \frac{132 \times 7}{44} = 3 \times 7 \text{ cm} = 21 \text{ cm} = \text{Radius}$$

d. Circumference = 10.6 cm

$$\Rightarrow 2 \times \frac{22}{7} \times R = 10.6 \Rightarrow \frac{44R}{7} = 10.6$$

$$R = \frac{10.6 \times 7}{44} = \frac{74.2}{44} = 1.686 \text{ cm} = 1.7 = \text{Radius}$$

e. Circumference = 26.4 cm

$$\Rightarrow 2 \times \frac{22}{7} \times R = 26.4 \Rightarrow \frac{44R}{7} = 26.4$$

$$R = \frac{7 \times 26.4}{44} = \frac{184.8}{44} = 4.2 \text{ cm}$$

8. Find the area of the circle, if :

a. Radius = 3.5 cm = R

$$\text{Area of circle} = \pi R^2 = \frac{22}{7} \times 3.5 \times 3.5 \text{ cm}^2$$

$$= 22 \times 0.5 \times 3.5 \text{ cm}^2 = 11 \times 3.5 \text{ cm}^2 = 38.5 \text{ cm}^2$$

b. Radius = 4.9 cm = R

$$\text{Area of circle} = \pi R^2 = \frac{22}{7} \times 4.9 \times 4.9 \text{ cm}^2$$

$$= 22 \times 0.7 \times 4.9 \text{ cm}^2$$

$$= 22 \times 0.7 \times 4.9 \text{ cm}^2$$

$$= 75.46 \text{ cm}^2$$

c. diameter = 6.3 cm

$$2R = 2 \text{ Radius} = 6.3 \Rightarrow R = \frac{6.3}{2} \text{ cm} = 3.15 \text{ cm}$$

$$\text{Area of circle} = \pi R^2 = \frac{22}{7} \times 3.15 \times 3.15 \text{ cm}^2 = \frac{22}{7} \times 9.9225$$

$$= \frac{218.295}{7} \text{ cm}^2 = 31.185 \text{ cm}^2 = 31.2 \text{ cm}^2$$

d. Diameter = 8.4 cm

$$\text{Radius} = \frac{\text{Diameter}}{2} = \frac{8.4}{2} \text{ cm} = 4.2 \text{ cm}$$

$$\text{Area of circle} = \pi R^2 = \frac{22}{7} \times 4.2 \times 4.2 = \frac{17.64 \times 22}{7}$$

$$= \frac{388.08}{7} \text{ cm}^2 = 55.44 \text{ cm}^2$$

e. Radius = 9.1 cm

$$\text{Area of circle} = \pi R^2 = \frac{22}{7} \times 9.1 \times 9.1 \text{ cm}^2$$

$$= \frac{22}{7} \times 82.81 = \frac{1821.82}{7}$$

$$= 260.26 \text{ cm}^2$$

f. Diameter = 11.2 cm

$$\text{Radius} = \frac{\text{Diameter}}{2} = \frac{11.2}{2} \text{ cm} = 5.6 \text{ cm} = R$$

$$\text{Area of circle} = \pi R^2 = \frac{22}{7} \times 5.6 \times 5.6 \text{ cm}^2$$

$$= \frac{22 \times 31.36}{7} = \frac{689.92}{7} \text{ cm}^2$$

$$= 98.56 \text{ cm}^2$$

Exercise-20.2

1. In ΔABC, name :

a. AB, BC, AC b. A, B, C c. $\angle A, \angle B, \angle C$

2. Classify the triangles according to the measurement of their sides :

a. Equilateral triangle b. Isosceles triangle

c. Scalene triangle d. Isosceles triangle

3. Classify the triangles according to measurement of their angles :

a. Obtuse-angled triangle

b. Right-angled triangle

c. Acute-angled triangle

d. Right-angled triangle

4. Find the missing angle in each triangle :

a. Let missing angle be x.

$\angle A + \angle B + \angle x = 180^\circ$

(Angle sum property)

$90^\circ + 40^\circ + x = 180^\circ$

$130^\circ + x = 180^\circ$

$x = 180^\circ - 130^\circ = 50^\circ$

$\therefore$ Missing angle = 50°

b. Let missing angle be x.

$\angle P + \angle Q + \angle R = 180^\circ$

(Angle sum property)

$x + 110^\circ + 30^\circ = 180^\circ$

$x + 140^\circ = 180^\circ$

$x = 180^\circ - 140^\circ = 40^\circ$

$\therefore$ Missing angle is 40°.

c. Let missing angle be 'a'.

$\angle x + \angle y + \angle a = 180^\circ$

(Angle sum property)

$60^\circ + 60^\circ + a = 180^\circ$

$120^\circ + a = 180^\circ$

$a = 180^\circ - 120^\circ = 60^\circ$

Therefore, missing angle = 60°

5. In which of the following cases, a triangle, possible with the given set of angles?

a. 30°, 50°, 100°

30° + 50° + 100° = 180°

Since, the sum of all angles of triangle is 180° then triangles can be formed with given set of angles.

b. 40°, 60°, 80°

40° + 60° + 80° = 180°

Since, the sum of all angles of triangle is 180°.

Hence, a triangle can be formed with given set of angles.

c. 30°, 110°, 40°

30° + 110° + 40° = 180°

Since, given angles satisfy angle sum property of triangle. Hence, a triangle can be formed with given set of angles.

d. 90°, 20°, 80°

90° + 20° + 80° ≠ 180°

Since, given angles does not satisfy angle sum property of triangle.

Hence, a triangle be cannot be formed with given angles.

e. 130°, 20°, 30°

130° + 20° + 30° = 180°

Since, given angles satisfy property of triangle.

Hence, a triangle be formed with given angle.

f. 60°, 60°, 60°

60° + 60° + 60° = 180°

Since, given angles satisfy property of triangle.

Hence, a triangle can be formed with given angles.

6. In which cases a triangle is possible, if its sides are?

a. 4 cm, 4 cm, 5 cm

4 cm + 4 cm > 5 cm

4 cm + 5 cm > 4 cm

Since sum of any 2 sides of triangle is greater than third side. So, a triangle can be formed with given sides.

b. 6 cm, 4 cm, 7 cm

6 cm + 4 cm > 7 cm

4 cm + 7 cm > 6 cm

6 cm + 7 cm > 4 cm

Since, it satisfies property of triangle. So a triangle can be formed with given sides.

c. 7 cm, 7 cm, 9 cm

7 cm + 7 cm > 9 cm

7 cm + 9 cm > 7 cm

Since, it satisfies property of triangle so a triangle can be formed with given sides.

d. 9 cm, 9 cm, 9 cm

9 cm + 9 cm > 9 cm

Since, it satisfies property of triangle so, a triangle can be formed with given sides.

e. 5 cm, 12 cm, 13 cm

5 cm + 12 cm > 13 cm

12 cm + 13 cm > 5 cm

5 cm + 13 cm > 12 cm

Since, it satisfies property of triangle so, a triangle can be formed with given sides.

f. 6 cm, 8 cm, 10 cm

6 cm + 8 cm > 10 cm

8 cm + 10 cm > 6 cm

6 cm + 10 cm > 8 cm

Since, it satisfies property of triangle so, a triangle can be formed with given sides.

7. Write 'true' or 'false' for these statements :

a. False b. True c. False d. True

Exercise-20.3

1. In the given figure, *ABCD* is a quadrilateral. Name :

a. AB, BC, CD, DA b. $\angle A, \angle B, \angle C, \angle D$

c. $(AB, CD), (AD, BC)$

2. *ABCD* is a parallelogram.

What special name would you give it if :

a. Rhombus b. Rectangle c. Square

3. Find the missing angle for the given quadrilaterals :

a. $\angle A = 100^\circ, \angle B = 65^\circ, \angle C = 80^\circ$

Let $\angle D = x$

Applying angle sum property of quadrilateral.

$\angle A + \angle B + \angle C + \angle D = 360^\circ$

$100^\circ + 65^\circ + 80^\circ + x = 360^\circ$

$165^\circ + 80^\circ + x = 360^\circ$

$245^\circ + x = 360^\circ$

$x = 360^\circ - 245^\circ = 115^\circ$

$\angle D = 115^\circ$

b. $\angle P = 75^\circ, \angle Q = 75^\circ, \angle R = 105^\circ$

Applying angle sum property of quadrilateral.

$\angle P + \angle Q + \angle R + \angle S = 360^\circ$

$75^\circ + 75^\circ + 105^\circ + \angle S = 360^\circ$

$150^\circ + 105^\circ + \angle S = 360^\circ$

$255^\circ + \angle S = 360^\circ$

$\angle S = 360^\circ - 255^\circ = 105^\circ$

c. $\angle W = 64°$, $\angle X = 138°$, $\angle Y = 110°$

Applying angle sum property of quadrilateral.

$\angle W + \angle X + \angle Y + \angle Z = 360°$

$64° + 138° + 110° + \angle Z = 360°$

$312° + \angle Z = 360°$

$\angle Z = 360° - 312° = 48°$

d. $\angle L = 90°$, $\angle M = 90°$, $\angle N = 90°$

Applying angle sum property of quadrilateral.

$\angle L + \angle M + \angle N + \angle O = 360°$

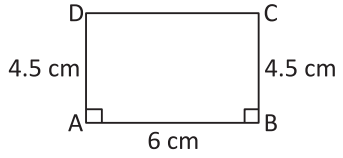
$90° + 90° + 90° + \angle O = 360°$

$270° + \angle O = 360°$

$\angle O = 360° - 270° = 90°$

4. Construct the following :

a. Steps of Construction



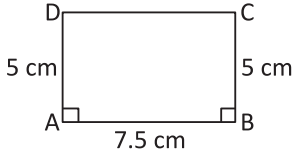
Step 1 : Draw a line segment $AB = 6$ cm.

Step 2 : Place your protractor at point *A* and then at point *B* and draw angles of 90° at each point.

Step 3 : Use a compass with radius 4.5 cm and place it at point A and B and make intersections at point D and C.

Step 4 : Join *CD*.

b. Steps of Construction



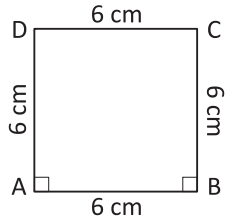
Step 1 : Draw a line segment $AB = 7.5$ cm.

Step 2 : Place your protractor at point *A* and then at point *B* and draw angles of 90° at each point.

Step 3 : Use a compass with radius 5 cm and place it at point *A* and *B* and make intersections at point *D* and *C*..

Step 4 : Join *CD*.

c. Steps of Construction



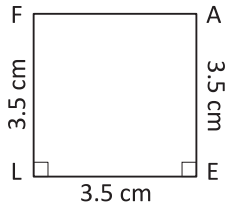
Step 1 : Draw a line segment $AB = 6$ cm.

Step 2 : Place your protractor at point *A* and then at point *B* and draw angles of 90° at each point.

Step 3 : Use a compass with radius 6 cm and place it at point *D* and *C*.

Step 4 : Join *CD*.

d. Steps of Construction



Step 1 : Draw a line segment $\angle E = 3.5$ cm.

Step 2 : Place your protractor at point *L* and then at point *E* and draw angles of 90° at each point.

Step 3 : Use a compass with radius 3.5 cm and place it at point *F* and *A*.

Step 4 : Join *AF*.

NCERT Corner

1. a, g **2.** b, e, f **3.** b, f **4.** b, f **5.** d

Multiple Choice Questions

Tick (✓) the correct choice :

1. (a) **2.** (c) **3.** (b) **4.** (c)

Chapter 21 : Perimeter, Area and Volume

Exercise–21.1

1. Find the perimeter of the following figures :

a. Perimeter = Sum of all sides
$= 4\text{ cm} + 5\text{ cm} + 4\text{ cm} + 5\text{ cm}$
$= 18\text{ cm}$

b. Perimeter of given fig = Sum of all sides
$= 3\text{ cm} + 2\text{ cm} + 2.5\text{ cm} + 2.5\text{ cm} + 2\text{ cm}$
$= 12\text{ cm}$

c. Perimeter of given fig = Sum of all sides
$= 4\text{ cm} + 4\text{ cm} + 1.5\text{ cm} + 4\text{ cm} + 4\text{ cm} + 1.5\text{ cm}$
$= 19\text{ cm}$

2. Find the measure of the indicated line segment in the following figures :

a. Perimeter = 18.6 cm
Perimeter = Sum of all sides
$18.6 = \overline{BA} + \overline{AE} + \overline{ED} + \overline{DC} + \overline{CB}$
$18.6 = 4.8\text{ cm} + 3.2\text{ cm} + 2.4\text{ cm} + 3.8\text{ cm} + BC$
$18.6 = 14.2 + BC$
$\overline{BC} = 18.6 - 14.2 = 4.4\text{ cm}$

b. Perimeter = 20.1 cm
Perimeter = Sum of all sides
$= 4.5\text{ cm} + 3.6\text{ cm} + 3.6\text{ cm} + \overline{YZ}$
$20.1 = 11.7\text{ cm} + \overline{YZ}$
$\overline{YZ} = 20.1\text{ cm} - 11.7\text{ cm} = 8.4\text{ cm}$

c. Perimeter = 17 cm
Perimeter = Sum of all sides $= \overline{LM} + \overline{LN} + \overline{MN}$
$17 = 5.8\text{ cm} + 6.4\text{ cm} + \overline{MN}$
$17 = 12.2\text{ cm} + \overline{MN}$
$\overline{MN} = 17 - 12.2 = 4.8\text{ cm}$

3. The sides of some squares are given below. Find their perimeter using the formula :

a. Side = 7 cm
Perimeter = $4 \times \text{side} = 4 \times 7 = 28\text{ cm}$

b. Side = 8.3 m
Perimeter = $4 \times \text{side} = 4 \times 8.3 = 33.2\text{ m}$

c. Side = 14 cm
Perimeter = $4 \times \text{side} = 4 \times 14 = 56\text{ cm}$

d. Side = 9.5 cm
Perimeter = $4 \times \text{side} = 4 \times 9.5 = 38\text{ cm}$

e. Side = 125 m
Perimeter = $4 \times \text{side} = 4 \times 125 = 500\text{ m}$

f. Side = 6.4 m
Perimeter = $4 \times \text{side} = 4 \times 6.4 = 25.6\text{ cm}$

4. The length and breadth of some rectangles are given. Find their perimeter using the formula :

a. l = 4.5 cm, b = 6 cm
Perimeter of rectangle $= 2 \times (l + b) = 2 \times (4.5 + 6)$
$= 2 \times (10.5) = 21$ cm

b. l = 18 cm, b = 13 cm
Perimeter of rectangle $= 2 \times (l + b) = 2 \times (18 + 13)$
$= 2 \times 31$ cm $= 62$ cm

c. l = 6.5 m b = 11 m
Perimeter of rectangle $= 2 \times (l + b) = 2 \times (6.5 + 11)$
$= 2 \times (17.5) = 35$ m

d. l = 11 m, b = 21 m
Perimeter of rectangle $= 2 \times (l + b) = 2 \times (11 + 21)$
$= 2 \times (32) = 64$ cm

e. l = 8.125 m, b = 9.50 m
Perimeter of rectangle $= 2 \times (l + b) = 2 \times (8.125 + 9.50)$
$= 2 \times (17.625) = 35.25$ cm

f. l = 65 cm, b = 35 cm
Perimeter of rectangle $= 2 \times (l + b) = 2 \times (65 + 35)$
$= 2 \times (100) = 200$ cm

5. Complete the table :

a.

Side of square (a)	Perimeter of square (4a)
4.5 cm	$4a = 4 \times 4.5 = 18$ cm
$4a = 624 \Rightarrow a = 156$ m	624 m
9.25 cm	$4a = 4 \times 9.25 = 37$ cm
$4a = 216 \Rightarrow a = 54$ cm	216 m

b.

Length	Breadth	Perimeter of rectangle
140 cm	$2 \times (L+B) = 400$ $\Rightarrow L+B = 200$ $140 + B = 200$ $\Rightarrow B = 200 - 140 = 60$	400 cm
4.3 m	2.8 m	$2 \times (4.3 + 2.8)$ $= 14.2$
$2 \times (L + B) = 190$ $L + B = 95$ $L = 95 - 30 = 65$ m	30 m	190 m
$2 \times (L + B) = 68$ $L + B = 34$ $L = 34 - 15 = 19$ m	15 m	68 m

6. Perimeter of square = 64 m
Let length of each side of square be a.m.

$4a = 64$

$a = \frac{64}{4} = 16\text{ m}$

So, the length of each side of square is 16 m.

$\therefore$ length of its side is 16 m.

7. Length of lace required equals to perimeter of rectangular table cloth.

So, perimeter of table cloth $= 2 \times (\text{length} + \text{breadth})$

Since, length = 25 cm, breadth = 16 cm

Perimeter of table cloth $= 2 \times (25 + 16)$

$= 2 \times 41 = 82$ cm

Required length of lace = 82 cm

8. Side of square park = 110 m

Perimeter of square park $= 4 \times$ side of park

$= 4 \times 110\text{ m} = 440\text{ m}$

Cost of fencing 1 m length of park = ₹15

Cost of fencing the whole park $= ₹(15 \times 440)$

$= ₹6600$

9. Equal sides of triangle = 25 cm

Third side of triangle = 36 cm

Perimeter of triangle = Sum of all sides

$= 25\text{ cm} + 25\text{ cm} + 36\text{ cm}$

$= 86$ cm

$\therefore$ Perimeter of triangle is 86 cm.

10. Length of picture = 5.5 cm = L

Breadth of picture = 4.8 cm = B

Length of ribbon required = Perimeter of picture frame

$= 2 \times (L + B)$

$= 2 \times (5.5\text{ cm} + 4.8\text{ cm})$

$= 2 \times 10.3 = 20.6$ cm

Length of ribbon required to frame a picture = Perimeter of frame

Length of ribbon required to frame 4 pictures $= 4 \times$ (Perimeter of frame)

$= 4 \times 20.6$ cm

$= 82.4$ cm

Mental Maths

Area of fig. ABCDEFG = Area of rectangle (GDEF) + Area of figure (GCBA)

Area of rectangle FEDG $= FE \times ED = 51\text{ ft} \times 20\text{ ft}$

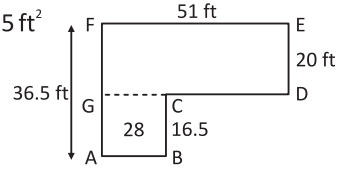
$= 1020\text{ ft}^2$

Area of rectangle GCBA $= AB \times BC = 28 \times 16.5\text{ ft}^2$

$= 462\text{ ft}^2$

Area of fig ABCDEFG $= 1020\text{ ft}^2 + 462\text{ ft}^2$

$= 1482\text{ ft}^2$



CD = GD – GC = 51 ft – 28 ft = 23 ft

Perimeter of fig ABCDEFG = AB + BC + CD + ED + EF + FG + GA

= 28 ft + 16.5 ft + 23 ft + 20 ft + 51 ft + 20 ft + 16.5 ft

= 175 ft

Cost of painting 1 sq. feet of room = ₹ 30

Cost of painting 1482 square feet = ₹ 482 × 30 = 44460 square feet

Exercise 21.2

1. a. Side of square = 2.2 cm

Area of square = $(\text{side of square})^2 = (2.2\text{ cm})^2$

$= 2.2\text{ cm} \times 2.2\text{ cm} = 4.84\text{ cm}^2$

b. Length of rectangle = 4.7 cm

Breadth of rectangle = 2.5 cm

Area of rectangle = Length × Breadth = 4.7 × 2.5 cm

$= 1175\text{ cm}^2$

c. Height of triangle = 2.5 cm = H

Base of triangle = 4 cm = B

Area of triangle $= \frac{1}{2} \times \text{Height} \times \text{Base}$

$= \frac{1}{2} \times 2.5 \times 4\text{ cm}^2$

$= 2.5 \times 2\text{ cm}^2 = 5\text{ cm}^2$

d. Area of square $= \text{Side} \times \text{Side} = (\text{Side})^2$

$= 3.9\text{ cm} \times 3.9\text{ cm}$

$= 15.21\text{ cm}^2$

2. Find the area of each of the following rectangles :

a. Length = 20 m = L and Breadth = 16 m = B

Area of rectangle = L × B = 20 m × 16 m = 320 m^2

b. Length = 21 m = L and Breadth = 14 m = B

Area of rectangle = L × B = 21 m × 14 m = 294 m^2

c. Length = 150 m = L and Breadth = 85 m = B

Area of rectangle = L × B = 150 cm × 85 cm = 12750 cm^2

d. Length = 4 m 250 cm = 4 m + 2.5 m + 6.5 m = L

Breadth = 2 m = B

Area of rectangle = Length × Breadth

= 6.5 m × 2 m

= 13 m^2

e. Length = 8 km = L, Breadth = 2 km 500 m = 2 km + 0.5 m

B = 2.5 km

Area = Length × Breadth = L × B = 8 km × 2.5 km

$= 20\text{ km}^2$

3. Find the length of the rectangle whose :

a. Let length be L.

Area = 832 m^2, Breadth = 26 m = B

Area of rectangle = Length × Breadth

$832 = L \times 26$

$\text{Length (L)} = \frac{832}{6} = 32 \text{ m}$

So, length of rectangle = 32 m

b. Let length be L.

Area = 300 m^2, Breadth = 15 m

Area of rectangle = Length × Breadth

$300 = L \times 15$

$L = \frac{300}{15} = 20 \text{ m}$

So, length of rectangle is 20 m.

c. Let length be L.

Area = 512 m^2, Breadth = 16 m^2 = B

Area of rectangle = L × B = 512

$L \times 16 = 512$

$L = \frac{512}{16} = 32 \text{ cm}^2$

So, length of rectangle = 32 cm

d. Let length be L Area of 2688 cm

Breadth = 48 cm = B

Area of rectangle = L × B = L × 48

$2688 = L \times 48$

$L = \frac{2688}{48} = 56 \text{ cm}$

So, length of rectangle = 56 cm

4. Find the breadth of the rectangle whose :

a. Let Breadth be B.

Area = 12750 m^2, Length = 150 m

Area of rectangle = Length × Breadth

$12750 = 150 \times B$

$B = \frac{12750}{150} = 85 \text{ m}$

So, breadth of rectangle = 85 m

b. Let Breadth be B.

Area = 5500 m^2, Length = 110 m

Area = L × B = 110 × B = 5500

$B = \frac{5500}{110} = 50$

So, breadth of rectangle = 50 m

c. Let Breadth be B.

Area = 800 cm^2, Length = 0.4 m

Area = $L \times B = 0.4 \times B$

$800 = 0.4 \times B$

$B = \frac{800}{0.4} = 2000$ cm

So, breadth of rectangle = 2000 m

d. Let Breadth be B.

Area = 1926 cm^2, Length = 107 m

Area = $L \times B = 107 \times B = 1926$

$107 \times B = 1926$

$B = \frac{1926}{107} = 18$

So, breadth of rectangle = 18 cm

6. Length of garden $= 900 \text{ cm} = \frac{900}{100} \text{ m} = 9 \text{ m}$

Breadth of garden $= 400 \text{ cm} = \frac{400}{100} = 4 \text{ m}$

Area of garden = Length of garden × Breadth of garden

$= 9 \text{ m} \times 4 \text{ m} = 36 \text{ m}^2$

7. Length of flower bed $= 7 \text{ m } 30 \text{ cm} = 700 \text{ cm} + 20 \text{ cm}$

$= 730$ cm

Breadth of flower bed $= 4 \text{ m } 50 \text{ cm} = 400 \text{ cm} + 50 \text{ cm}$

$= 450$ cm

Area of rectangular flower bed

= Length of flower bed × Breadth of flower bed

$= 730 \times 450 \text{ cm}^2$

$= 3,28,500 \text{ cm}^2$

8. Each side of square room $= 900 \text{ cm} = \frac{900}{100} \text{ m} = 9 \text{ m}$

Area of square room = (Side of square room)^2

$= (9 \text{ m}) = 81 \text{ m}^2$

9. Length of roof of house = 25 m

Breadth of roof of house = 15 m

Area of roof = Length × Breadth

$= 25 \text{ m} \times 15 \text{ m} = 375 \text{ m}^2$

Now, Length of tile $= 25 \text{ cm} = \frac{25}{100} \text{ m} = 0.25 \text{ m} = l$

Breadth of tile $= 10 \text{ cm} = \frac{10\text{m}}{100} = 0.10 \text{ m} = b$

Area of 1 tile $= l \times b = 0.25 \text{ m} \times 0.10 \text{ m} = 0.025 \text{ m}^2$

Thus, number of tiles required $= \frac{\text{Area of roof}}{\text{Area of 1 tile}}$

$= \frac{375\text{m}^2}{0.025} = 15000$

Cost of tiling 1 cm^2 = ₹ 0.08

Cost of tiling the roof having area = $375 \times 100 \times 100\ cm^2$

= ₹ $0.08 \times 375 \times 100 \times 100$

= ₹ 3,00,000

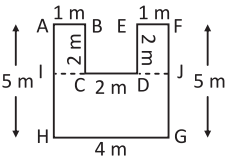
10. Find the area of the following figures :

a. Area of fig. ABCI = AB × BC = 1 m × 2 m = $2\ m^2$

Area of fig. EFJD = EF × FJ = 1 m × 2 m = $2\ m^2$

Area of fig. ICDJGH = HG × GI = 4 m × (5 – 2) m

= 4 m × 3 m = $12\ m^2$



Area of fig. ABCDEFGHI

= Area of fig. (ABCI) + Area of fig. (EFJD) + Area of fig. ICDJGH

= (2 + 2 + 12) m^2 = $16\ m^2$

b. Area of fig. (ABCD) = AB × BC = 14 m × 12 m = $168\ m^2$

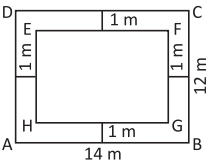
HG = 14 – 1 – 1 = 12 m, GF = 12 – 1 – 1 = 10 m^2

Area of fig. (EFGH) = HG × GF = 12 × 10 m = $120\ m^2$

Area of path = Area of fig. (ABCD) Area of fig. (EFGH)

= $168\ m^2 - 120\ m^2$

= $48\ m^2$



c. Area of rectangle (HG + FI) = HG × GF = 2 m × 1.5 m = 3 m

Area of rectangle (JIFEDK) = JE × ED = 4 × 1.5 m = $6\ m^2$

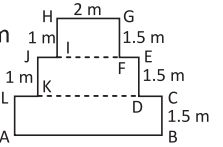
Area of rectangle (LKDCBA) = LC × CB = 6 × 1.5 m = $9\ m^2$

Area of fig. (ABCDEFGHIJKL)

= Area of rectangle (HGFI) + Area of rectangle (JIFEDK)

+ Area of rectangle (LKDBA)

= $3\ m^2 + 6\ m^2 + 9\ m^2 = 18\ m^2$



NCERT Corner

a. Area

No. of total square = 36

Area of each square = 1 cm^2

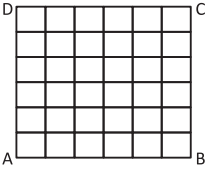
So, area of of 36 squares = 36 cm^2

Perimeter

No. of square in each side of ABCD = 6

So, it is also a square of side 6 cm.

Then, perimeter of ABCD = 4 × 6 = 24 cm



B. Number of total square = 24

Area of each square = 1 cm^2

So, area of 24 squares = 24 cm^2

No. of squares in length AB = 4.

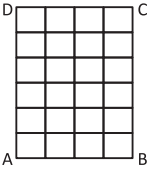
So, length = 4 cm = l

No. of squares in breadth BC = 6, so breadth.

BC = 6 cm = b

So, perimeter of fig. ABCD = 2 × (l + b) = 2 × (4 + 6)

= 2 × 10 = 20 cm

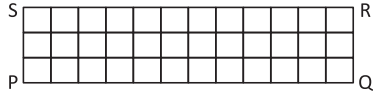


c. **Area**

No. of total squares = 36

Area of each square = 1 cm^2

So, area of 36 squares = 36 cm^2



Perimeter

No. of squares in length PQ = 12, so length = 12 cm

No. of squares in breadth QR = 3, so breadth = 3 cm

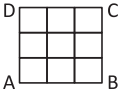
Perimeter of PQRS = 2 × (l + b) = 2 × (12 + 3) = 2 × 15 = 30 cm

d. **Area**

No. of total squares = 9

Area of each squares = 1 cm^2

So, area of 9 squares = 9 cm^2



Perimeter

No. of squares in each side of ABCD = 3

So, it is also a square of side 3 cm.

Then perimeter of ABCD = 4 × 3 = 12 cm

e. No. of total squares = 30

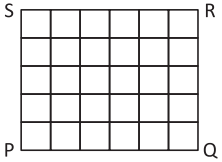
Area of each square = 1 cm^2

Perimeter

So, area of 30 squares = 30 cm^2

No. of squares in length PQ of rectangle = 6, so length = 6 cm = l

No. of square in breadth QR of rectangle = 5, so breadth = 5 cm = b



Perimeter of rectangle PQRS = 2 × (l + b)

= 2 × (6 + 5)

= 2 × 11 = 22 cm

Exercise–21.3

1. a. Length of cuboid = 4 cm = L

Breadth of cuboid = 1 cm = B

Height of cuboid = 2 cm = H

Volume of cuboid = Length of cuboid × Breadth of cuboid × Height of cuboid

= 4 cm × 1 cm × 2 cm

= 8 cm^3

b. Length of cuboid = 5 cm

Breadth of cuboid = 5 cm

Height of cuboid = 7 cm

Volume of cuboid = Length of cuboid × Breadth of cuboid × Height of cuboid

= 5 cm × 5 cm × 7 cm

= 175 cm^3

c. Side of cube = 1.5 cm

Volume of cube = (Side of cube) = 1.5 cm × 1.5 cm × 1.5 cm = 3.375 cm

2. a. Edge of cube = 5 cm
Volume of cube = (Edge of cube)^3 = 5 cm × 5 cm × 5 cm
= 125 cm^3

b. Edge of cube = 4 m
Volume of cube = (Edge of cube)^3 = (4 m)^3 = 4 cm × 4 cm × 4 cm
= 64 cm^3

c. Edge of cube = 6 m
Volume of cube = (Edge of cube)^3 = (6 m)^3 = 6 m × 6 m × 6 m
= 216 cm^3

d. Edge of cube = 7 m
Volume of cube = (Edge of cube)^3 = (7 m)^3 = 7 m × 7 m × 7 m
= 343 cm^3

e. Edge of cube = 9 m
Volume of cube = (Edge of cube)^3 = (9 m)^3 = 9 m × 9 m × 9 m
= 729 cm^3

3. a. Length of cuboid = 5 m = L
Breadth of cuboid = 4 m = B
Height of cuboid = 3 m = H
Volume of cuboid = L × B × H = 5 m × 4 m × 3 m
= 60 m^3

b. Length of cuboid = 12 m = L
Breadth of cuboid = 5 m = B
Height of cuboid = 4 m = H
Volume of cuboid = L × B × H = 12 m × 5 m × 4 m
= 240 m^3

c. Length of cuboid = 2.5 m = L
Breadth of cuboid = 2 m = B
Height of cuboid = 1.5 m = H
Volume of cuboid = L × B × H = 2.5 m × 2 m × 1.5 m
= 7.5 m^3

d. Length of cuboid = 48 cm = L
Breadth of cuboid = 36 cm = B
Height of cuboid = 24 cm = H
Volume of cuboid = L × B × H = 48 cm × 36 cm × 24 cm
= 4,1472 cm^3

4. Length of cuboid = 15 cm = L
Breadth of cuboid = 12 cm = B
Height of cuboid = 10 cm = H
Volume of cuboid = L × B × H = 15 cm × 12 cm × 10 cm
= 1800 cm^3
Since, volume of cube is 3 times that of volume of cuboid.
So, volume of cube = 3 × Volume of cuboid

$= 3 \times 1800$

$= 5400\ cm^3$

5. Edge of cube $= 11\ m$

Volume of cube $= (\text{Edge of cube})^3 = (11)^3\ m^3$

$= 11 \times 11 \times 11\ m^3 = 1331\ m^3$

Since, volume of cuboid $= 5 \times (\text{Volume of cube})$

$= 5 \times 1331\ m = 6655\ m^3$

6. Edge of cube $= 12\ m = 1200\ cm$

Volume of cube $= (\text{Edge of cube})^3 = (1200\ cm)^3$

$= 1200 \times 1200 \times 1200\ cm^3$

$= 1728000000\ cm^3$

Length of cuboid $= 8\ m = 800\ cm$

Breadth of cuboid $= 6\ m = 600\ cm$

Height of cuboid $= L \times B \times H = 800 \times 600 \times 400\ cm$

$= 192000000\ cm^3$

Since, $\frac{\text{Volume of Cube}}{\text{Volume of cuboid}} = \frac{1728000000}{192000000} = 9$

7. Length of cuboid $= 48\ m = L$

Breadth of cuboid $= 32\ m = B$

Height of cuboid $= 24\ m = H$

Volume of cuboid $=$ Length of cuboid $\times$ Breadth of cuboid $\times$ Height of cuboid

$= 48\ m \times 32\ m \times 24\ m$

$= 36864\ m^3$

Edge of cube $= 16\ m$

Volume of cube $= (\text{Edge of cube})^3 = (16\ m)^3$

$= 16\ m \times 16\ m \times 16\ m = 4096\ m^3$

Ratio of volume of cuboid to that of cube

$= \frac{36864}{4096} = \frac{9}{1} = 9 : 1$

8. Length of vessel $= 8\ cm = L$

Breadth of vessel $= 4\ cm = B$

Height of vessel $= 10\ cm = H$

Volume of vessel $=$ Length $\times$ Breadth $\times$ Height

$= 8\ cm \times 4\ cm \times 10\ cm$

$= 320\ cm^3$

Volume of milk pured in cuboidal vessel is $320\ m^3$.

Multiple Choice Questions

Tick (✓) the correct choice :

1. (c) **2.** (c) **3.** (b) **4.** (b)

Chapter 22 : Data Handling

Exercise–22.1

1. A local bookshop issues books on five days of the week. Read the table carefully and answer the questions :

a. 13 b. Tuesday, Thursday

c. Friday d. 97

2. The following are the number of children in the families of 20 students of class V.

Number of children in 20 families		
Number of children	**Tally Marks**	**Frequency**
1	𝍸 ||||	9
2	𝍸 |||	8
3	|||	3

Answer the following questions :

b. 9 c. 3 d. 9 e. 8

3. Complete the tables :

a.

Name of Colours (Observation)	Number of Students (Frequency)	Tally Marks
Red	18	𝍸 𝍸 𝍸 |||
Pink	13	𝍸 𝍸 |||
Green	10	𝍸 𝍸
Blue	9	𝍸 ||||
Yellow	12	𝍸 𝍸 ||
Orange	8	𝍸 |||
Black	7	𝍸 ||

b.

Name of Animals (Observation)	Number of Animals (Frequency)	Tally Marks
Elephant	4	||||
Lion	2	||
Deer	16	𝍸 𝍸 𝍸 |
Monkey	8	𝍸 |||
Crane	24	𝍸 𝍸 𝍸 𝍸 ||||
Crocodile	3	|||

4. Arrange the following shapes in tabular form using tally marks :

Shapes	No. of Shapes	Tally Marks
Square	9	𝍸 ||||
Rectangle	9	𝍸 ||||
Circle	10	𝍸 𝍸
Triangle	10	𝍸 𝍸

5. The following table represents the number of mobiles of different brands in a shop. Read the table carefully and answer the questions that follow :

a. Least Karbon, Highest Samsung b. 12

c. Micromax d. Nokia e. 128

Exercise–22.2

1. The number of trees of different types planted inside the garden of the town is shown in the following table :

Tree	Number of Trees	= 50 trees = 25 trees
Mango		
Neem		
Banyan		
Peepal		
Palm		

2. The ice–cream parlor sells a certain number of ice–creams on five days of the week as follows :

Day	Number of Ice–cream
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

a. Wednesday, Thursday

b. 240 ice–creams were sold in week

c. Friday

d. Aug. sale of ice–cream across week $= \left(\frac{32 + 48 + 40 + 40 + 80}{5}\right)$

$= \frac{240}{5} = 48$

3. Rahul's marks in annual exams are as follows :

Subject	Marks	= 10 marks = 5 marks
Hindi		
English		
Mathematics		
Science		
Social Studies		

a. Mathematics b. Social Studies

c. Total marks he secured = 75 + 80 + 85 + 75 + 70 = 385

d. Average score = $\frac{\text{Total Marks}}{\text{No. of Subjects}} = \frac{385}{5} = 77$

4. The following pictograph shows the number of students in Blue Heaven School. Using pictograph answer the questions that follow :

a. No. of students in class III is 45.

b. No. of students in class V is 51.

c. Students are more in class V than class I.

d. 9 students are there in class III than class I.

e. Total strength of Blue heaven school = 36 + 48 + 45 + 30 + 51
= 210 students

f. 21 students are less in class IV than in class V.

NCERT Corner

1. Friday
2. Total two–wheelers she record over three days = 69
3. No. of fewer two–wheelers which were seen on Wednesday than on Monday = 24 – 12 = 12
4. No. of two wheelers which were see more on Friday than on Wednesday = 36 – 12 = 24
5.

Day	Number of two–wheelers = 6 two–wheelers
Monday	
Wednesday	
Friday	

Exercise–22.3

1. The bar graph here shows the total number of students of Class V who attended class during the week.

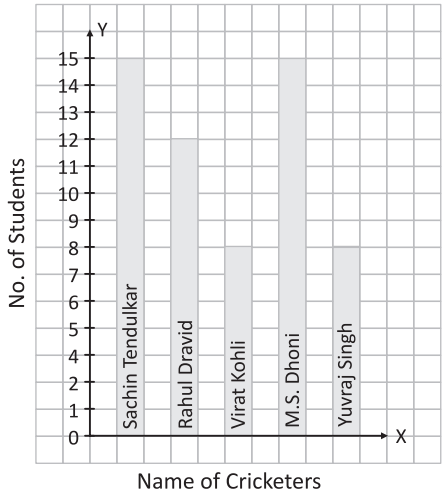
Answer the questions that follow :

a. Wednesday, 20 b. Friday , 90 c. Tuesday

d. 60 e. 300 students

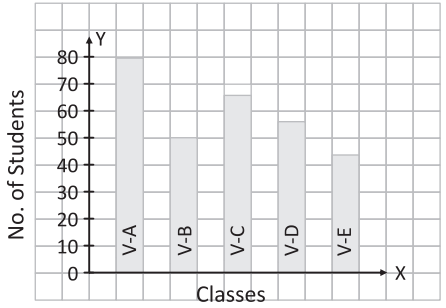
2. The following table shows the favourite cricketer of a group of 50 students:

an Y-axis
1 cm = 1 student



3. The following data is about the number of students in each section of class V given below :

On Y axis
1 cm = student



Exercise–22.4

1. The students of class V voted for their favourite ice–cream flavour. The data has been represented as a pie–chart given below. Study the pie chart and answer the following questions :

a. Chocolate b. Strawberry c. Vanilla

d. Strawberry < Mango < Vanilla < Chocolate

2. A survey was conducted about the kinds of snacks popular among the students. The data has been represented as a pie–chart given below. Study the pie chart and answer the questions given below :

a. Pizza b. Chips c. Biscuit

d. Pizza > Biscuits > Samosas > Burger > Chips

Multiple Choice Questions

Tick (✓) the correct choice :

1. (c) **2.** (a) **3.** (b) **4.** (a)

Chapter 23 : Reasoning : Verbal & Non–Verbal and Logical

Exercise–23.1

1. c	2. d	3. c	4. d	5. c
6. c	7. d	8. b	9. d	10. a
11. c	12. c	13. d	14. b	15. a

Exercise–23.2

Q. (1–6) : Tick (✓) the odd one from the following letters :

1. **Pattern :** Both letters increase by + 2

C → E, G → I, K → M, O → Q

Ri does not follow + 2, option (b) RU

2. **Pattern :** Second lettes is + 3 from first AD, EH, IL, QT follow it

MN = + 1 option (a) MN

3. **Pattern :** First letter + 2 → Second letter AC, BD, CE, DF follows

EH = + 3 Option (b)

4. **Pattern :** Ist letter increases (A, B, C, D, F)

Last letter decreases (Z, Y, X, W, V)

All follows except AZZ (Second Z not decreasing pattern)

Option (b) AZZ

5. **Check alphabet positions**

EJO (5, 10, 15) → + 5 TYD (20, 25, 4) → + 5

INS (9, 14, 19) → + 5 XCH (24, 3, 8) → + 5

MSX (13, 19, 24) → + 6

Option (d) MSX

6. **Pattern :** First pair increasing, last pair decreasing ABZX, CDXW, EFVU, IJRQ follow GHST break the pattern.

Option (c) GHST.

Q. (7–12) : Tick (✓) the odd one out :

7. Yeast is not an action option (b) Yeast

8. Option (d) Sun

Sun is a star, other are planets.

9. First three are circle terms, diagonal is not. Option (d) Diagonal

10. Roar, hiss, neigh are animal sounds

Thumb is body part

Option (a) Thumb

11. First three are currencies

Vatican is a place

Option (d) Vatican

12. River, lake, sea are all natural water bodies pool is manmade.

Option (c) Pool

Q. (13–19) : Tick (✓) the odd one :

13. All are squares of odd numbers except 36.

$36 = 6^2$ (even)

Option (b) 36

14. **Pattern** $\rightarrow 5 \times 2 = 10, 10 \times 3 = 30, 30 \times 4 = 120, 120 \times 4 = 480$
Next term should be multiplication by $5 = 120 \times 5 = 600$ breaks pattern.
Option (a) 480

15. **Check digit sums :**
$761 = 14, 913 = 13, 615 = 12, 772 = 16, 865 = 19, 557 = 17$
Only 772 has repeating digits and different pattern. Option (a)

16. Numbers decreases by 20.
$99 \rightarrow 79 \rightarrow 59 \rightarrow 39 \rightarrow 19$
But 29 must be appeared instead of 39.
Option (b)

17. Only ED 18 breaks multiplication pattern.
Letter pattern
BC $\rightarrow$ B is followed by C (forward alphabetical order)
FG $\rightarrow$ F is followed by G (forward order)
HI $\rightarrow$ H is followed by I (forward order)
JK $\rightarrow$ J is followed by K (forward order)
ED $\rightarrow$ E is followed by D (reverse order)
So, all pairs have consecutive letters in forward alphabetical order except ED which is in reverse order.
Option (b) ED 18

18. AZ9 $\rightarrow$ A (1) + Z (26) = 27
CX8 $\rightarrow$ C (3) + X (24) = 27
GT (6) $\rightarrow$ G (7) + T (20) = 27
Here, AZ, CX, GT are opposite pairs.
But W, E is not an opposite pairs.
But WE is not an opposite pairs. so WE 9 is odd.
Option (c) WE 9

19. **Numbers :** $111 \rightarrow 222 \rightarrow 444 \rightarrow 666 \rightarrow 88$
Usually it should be
$111 \rightarrow 222 \rightarrow 333 \rightarrow 444 \rightarrow 555$
But 444 comes too early
Letters $A \rightarrow D \rightarrow G \rightarrow J \rightarrow M$ (+ 3 each step)
Letters are correct but number pattern breaks
So, 444 G is odd one.
Option (a) 444 G

Q. (20–30) : Tick (✓) the odd one from the following figures :

20. d 21. d 22. c 23. d 24. a 25. b 26. c 27. c 28. d 29. d 30. c

Exercise–23.3

Q. (1–12) : Complete the number series given below :

1. **Pattern :** Each number = (Previous × 2) + 1
$(3 \times 2) + 1 = 7$
$(7 \times 2) + 1 = 15$
$(15 \times 2) + 1 = 31$

$(31 \times 2) + 1 = 63$

$(63 \times 2) + 1 = 127$

Option (a) 63

2. **Differences :** $58 - 56 = 2, 62 - 58 = 4, 70 - 62 = 8, 86 - 70 = 16$

Pattern : Difference is multiplication by 2.

Next differences : 32, 64

$86 + 32 = 118, 118 + 64 = 182$

option (d0 118, 182

3. **Differences :** $5.2 - 2.1 = 3.1, 8.4 - 5.2 = 3.2, 11.7 - 8.4 = 3.3, 15.1 - 11.7 = 3.4$

Next differences are 3.5, 3.6

So, $15.1 + 3.5 = 18.6, 18.6 + 3.6 = 22.2$

4. **Pattern :** $2^3 = 8, 3^3 = 27, 4^3 = 64$

Next no. after 64 is next integer 5.

Sequence : 2, 8, 3, 27, 4, 64, 5.

Option (c) (64, 5)

5. There are square numbers

$100 = 10^2, 144 = 12^2, 196 = 14^2$

Next : $16^2 = 256, 18^2 = 324, 20^2 = 100$

Option (b) (256, 324)

6. **Differences :** $5 - 2 = 3, 9 - 5 = 4$

Pattern : Differences increases by 1.

Next differences : 5, 6, 7

$9 + 5 = 14$ Check : $14 + 6 = 20, 20 + 7 = 27$

Option (a) 14

7. **Differences :** $7 - 3 = 4, 15 - 7 = 8, 27 - 15 = 12, 43 - 27 = 16$

Pattern : Differences increases by 4.

Next difference = 20

So, $43 + 20 = 63$

Option (b) 63

8. **Differences :** $50 - 41 = 9, 41 - 34 = 7$

Pattern : Differences decreasing by 2.

Next differences : 5, 3, 1

So, $34 - 5 = 29$

Check : $29 - 3 = 26, 26 - 1 = 25$

Option (a) 29

9. $\frac{2}{3}, \frac{4}{7}, \frac{7}{13}, \frac{11}{21}$

Numerators : 2, 4, 7, 11

Differences : + 2, + 3, + 4

Next : + 5

$11 + 5 = 16$

Denominators : 3, 7, 13, 21

Differences : + 4, + 6, + 8

Next difference (+ 10)
So, 21 + 10 = 31
Option (d) $\frac{16}{31}$

10. **Numerators** : 1, 4, 9, 16, 25, 36
These are square numbers : $1^2, 2^2, 3^2, 4^2, 5^2, 6^2$
Next term : $7^2 = 49$
Denominators : 22, 23, 24, 25, 26, 27
Next term : 28
Option (c) $\frac{49}{28}$

11. Pattern increases by 0.11
5.55 + 0.11 = 5.66
5.66 + 0.11 = 5.77
Option (b) 5.66, 5.77

12. **Rule :** Number $\rightarrow$ square root
$\sqrt{25} = 5, \sqrt{36} = 6$
So, $\sqrt{49} = 7$
49 Option (a).

Q. (13–16) : Complete the letter series given below :

13. **Alphabet positions :** A (1), B (2), D (4), G (7)
Differences : + 1, + 2, + 3
Next differences : + 4, + 5
G + 4 = K, K + 5 = P
Option (b) K, P

14. **Positions :** B(2), E(5), H(8), K(11), N(14)
Pattern : Position increasing by + 3
Next item : 14 + 3 = Q, 17 + 3 = T
Q, T Option (a)

15. **First letters :** B, D, F, H $\rightarrow$ (+ 2) $\rightarrow$ J, L
Second letters : A, C, E, G $\rightarrow$ (+ 2) $\rightarrow$ I, K
Pairs becomes : BA, DC, FE, HG, JI, LK
Only JI appears Option (c).

16. **Positions :** A(1) C (3)
D(4) F (6)
G(7) I (9)
J(10) L (12)
Pattern : Positions of alphabet increases by 2 that is + 3.
Next terms : M(13) O (15) $\rightarrow$ MO
P (16) R (18) $\rightarrow$ PR
MO, PR Option (b)

Q. (18–19) : Complete the letter–number series given below :

18. Letters increase by 3.
AB → DE → GH → JK → MN → PQ
Numbers decrease by 1.
50, 49, 48, 47 → 46, 45
MN46, PQ45 Option (a)

19. Letters go backward
Z, Y, X, W → V, U
Numbers increases by (+ 100)
100, 200, 300, 400 → 500, 600
V (500), U (600) Option (c)

Exercise–23.4

1. A → H (+ 7)
F → L (+ 6)
Apply same rule to PX
P + 7 = W, X + 6 = D
They follow the mirror (opposite alphabet)
A → Z, B → Y, C → X
AF → HL
So, apply to PX
P → K, X → C
Option (d) VY

2. E → W, D → V
Both are opposite letters in alphabet.
Apply to BC
B → Y, C → X
Option (d), YX

3. C → X, Q → J
Again these are opposite alphabets.
Apply to RL
R → I, L → O
Option (d) IO

4. A → Z, F → U
Reverse alphabetical rule is applied here.
Option (d) FA

5. A → Y, B → Z
These are opposite letters.
So, E → V, G → T
Option (b) TV

6. **Pattern :** Each letter moves 3 letters backward
Z → W, Y → U, X → U
Now check the second pair.

Q + 3 → T, P + 3 → S, O + 3 → R

So, the missing term is TSR.

7. **Observe the pattern :** From the first number, 25 is subtracted to get the second number.

525 – 25 = 500, 425 – 25 = 400

Applying the same rule.

850 – 25 = 825

8. **Pattern :** Subtraction of 20

523 – 20 = 503, 405 – 20 = 385

999 – 20 = 979

Option (d) = 979

9. Since, group name of fish is shoal.

Option (b) shoal.

10. Shell covers an egg.

Peel covers an orange.

Option (b) orange.

11. Opposite relation is present that is Up → Descent, Down → Ascent

Option (a) ascent.

12. Buy → Sell (Opposite)

Receive → pay

Option (d) pay

Exercise–23.5

A. **Decode the following messages :**

1.

×	+	0
C	A	N

K	A	G
Y	O	U

E	9	9
S	E	E

F	6	9
T	H	E

9	0	9	1	K
E	N	E	N	Y

2.

K	9	E
Y	E	S

5
I

×	+	0
C	A	N

3.

8	5	D	9
F	I	R	E

K	A	G	D
Y	O	U	R

7	G	O
G	U	N

4.

7	A
G	O

+	9	9	+	÷
A	H	E	A	D

B. **Using the same codes given on the previous page, write the codes of the following messages :**

1.

E	N	E	M	Y
9	0	9	1	K

I	S
5	E

C	L	E	V	E	R
X	2	9	H	9	D

2.

T	U	R	N
F	G	D	O

C	A	N	O	N
X	+	O	A	O

T	O
F	A

W	E	S	T
I	9	E	F

3.

V	I	C	T	O	R	Y
H	5	X	F	A	D	K

I	S
5	E

O	U	R	S
A	G	D	E

4.

S	E	N	D
E	9	0	÷

M	O	R	E
1	A	D	9

S	O	L	D	I	E	R	S
E	A	Q	÷	5	9	D	E

C. Give the correct code :

1. If L O O K is coded as 1 2 2 3
   then K O O L is coded as 3 2 2 1
2. If B E E is coded as 3 * *
   and A N T is coded as 7 8 9
   then B A T is coded as 3 7 9
3. If R A T is coded as # 0 7
   and C A T is coded as * 0 7
   then C A R is coded as * @ #

Exercise–23.6

1. Find out the missing number :

Notice the pattern

$8 \rightarrow 4 \rightarrow 2 \rightarrow 1$ (Each number is obtained by division by 2)

So, the missing number should be $1 \times 2 = 8$.

Option (b)

2. Find out the missing number :

Check the pattern using the first two figures 1st figure : $4; 9 \rightarrow 26$

$4 + 9 = 13$

$13 \times 2 = 26$

2nd figure : $9 + 16 = 25, 25 \times 2 = 50$

So, rule :

Bottom no. = (Top 1 number + Top 2 number) × 2

3rd figure : $20 \times 2 = 40$

Option (d) 4

3. Find out the missing number :

Pattern : Left term – Middle term = Right term + 4

Row 1 : $15 - 6 = 9, 9 - 4 = 5$

Row 2 : $13 - 3 = 10, 10 - 1 = 9$

Row 3 : $8 - 2 = 6$

Row 4 : $20 - 7 = 13$

So, option (d) 1.

4. Find out the missing number :

In fig. (1) pattern :

$15 \times 5 = 75$ and $6 \times 3 = 18$

Now, $75 + 18 = 93$

In fig. (3) pattern :

$4 \times 8 = 32$ and $18 \times 1 = 18$

Now, $32 + 18 = 50$

In figure (2) pattern
$7 \times 5 = 35$ and $9 \times 6 = 54$
So, $35 + 54 = 89$
Option (d) 89

5. Find out the missing number :
In fig. (1) Pattern : $(5 \times 3) + 4 = 19$
In fig. (3) Pattern : $(6 \times 4) + 5 = 24 + 5 = 29$
In fig. (2) Pattern : $(7 \times 5) + 6 = 35 + 6 = 41$
Option (c) 41

6. Find out the missing number :
Ist column = $(4 \times 2) - 1 = 8 - 1 = 7$
2nd column = $(5 \times 3) - 3 = 15 - 3 = 12$
3rd column = $(8 \times 7) - 3 = 42 - 3 = 39$
Option (c) 39

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