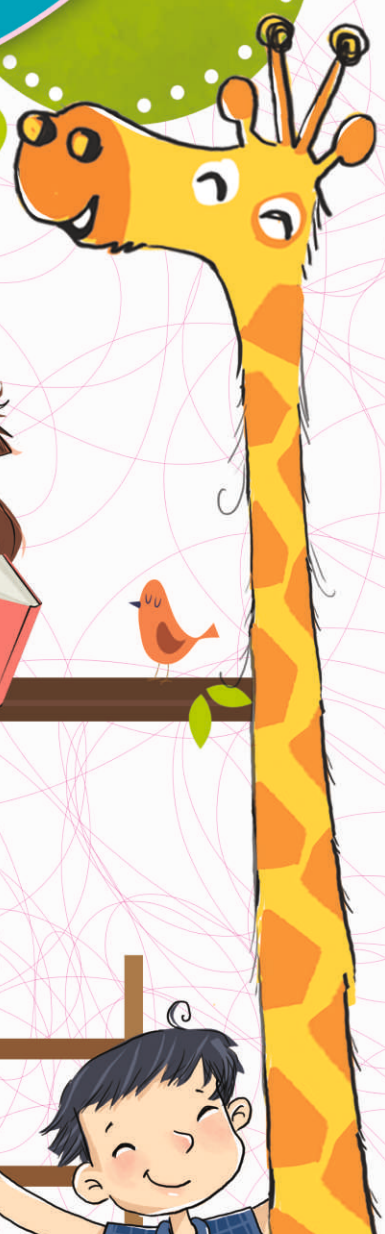
Frank
EMU BOOKS

Teacher's Handbook
Learning Maths 4



- Teaching-learning methods
- Homework tasks
- Answer key

FRANK EDUCATIONAL AIDS

CHAPTER 1

Number and Numeration

Lesson plan

OBJECTIVES

The students should know

(i) 5-digit number
(ii) Place value and face value
(iii) Reading and writing 5-digit numbers
(iv) 6-digit numbers
(v) International place value system
(vi) Short and expanded form
(vii) Comparison of numbers
(viii) Ascending and descending order
(ix) Successor and Predecessor

Pre-Requisite Knowledge: The students should have the basic knowledge of 1-digit, 2-digit, 3-digit and 4-digit numbers as they have studied in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, smart-board/projector, gemoetrical board and pointer.

Method of Teaching: The following topics of this chapter will be taught in the class-taking some simple examples.

(i) **5-digit number:**
Smallest 5-digit number is 10000
Greatest 5-digit number is 99999

(ii) **Place value and face value**
Place value of 7 is 45782 is 700
Face value of 7 in 45782 is 7

(iii) **6-digit number:**
Smallest 6-digit number is 100000
Greatest 6-digit number is 999999

(iv) **Indian place value system:**

Lakhs	Thousands		Ones		
L	TTh	Th	H	T	O
6	0	7	1	7	6
9	8	2	8	5	4

So, 607176 = 6,08,186

and 982854 = 9,82,854

(v) **International place value system**

HTh	TTh	Th	H	T	O
6	0	7	1	7	6
9	8	2	8	5	4

So, 607176 = 508, 186

and 982854 = 982, 854

Recapitulation: The whole chapter will be revised in the class by taking some practical problems and doubts will be removed immediately.

Home Assignment:

(A) From Text Book:

(i) Exercise 1.1 — Solve Q. No. 1 to 5 all parts

(ii) Exercise 1.2 — Solve Q. No. 1, 2, 3 all parts

(iii) Exercise 1.3 — Solve Q. No. 1 to 5 all parts

(iv) Exercise 1.4 — Solve Q. No. 1 to 6 all parts

(v) Exercise 1.6 — Solve Q. No. 1 to 5 all parts

(B) Extra Questions:

(1) Find the place value and face value of 3 in 63578

(2) Fill in the blanks

300,00 + _____ + 3000 + 600 + 20 + 6 = 313626

Textbook Solutions

Exercise 1.1

1.–8. Refer answers given on page 208.

9. a. Each number increases by 1000.

b. Each number increases by 1111.

c. Each number increases by 5.

d. Each number increases by 1100.

e. Each number increases by 50.

10 a

Th	H	T	O		
4	7	4	6	②	In tens place, 4 in 4746 is smaller than 8 in 4789.
4	6	4	7	①	In hundreds place, 6 is the smallest.
4	9	8	7	④	In hundreds place, 9 is the largest.
4	7	8	9	③	

↓

(4 is same for all numbers)

∴ 4647 < 4746 < 4789 < 4987

b.–d. Similar working as above.

11. a.

Th	H	T	O	
1	8	6	3	③
1	8	8	6	① In tens place, 8 is the largest.
1	8	6	8	② In ones place, 8 in 1868 is larger than 3 in 1863.
1	6	8	8	④ In hundreds place, 6 is the smallest.

↓

(1 is same for all numbers)

∴ 1886 > 1868 > 1863 > 1688

b.–d. Similar working as above.

12–15. Refer answers on page 208.

Exercise 1.2

1.–2. Refer answers at the end of the book.

3. a. 65④00: Face value = 4

Place value = Face value × Place of the digit

= 4 × 100 (hundreds) = 400

b.–d. Similar working as above

e. 0 in 90665: Face value = 0

f. Similar working as above

Place value = 0 × 1000 (thousands) = 0

Exercise 1.3–1.5

Refer answers at the end of the book.

Exercise 1.6

1.–5. Refer answers on page 209.

6. a. Indian system: L TTh Th H T O
3 ⑥ 1 3 9 2 → 6 × 10,000 = 60,000

International system: HTh TTh Th H T O
3 ⑥ 1 3 9 2 → 6 × 10,000 = 60,000

b. Indian system: L TTh Th H T O
6 5 3 8 4 3 → 6 × 1,00,000 = 6,00,000

International system: HTh TTh Th H T O
6 5 3 8 4 3 → 6 × 100,000 = 600,000

7. a. 86352 = + 8 × 10000 + 6 × 1000 + 3 × 100 + 5 × 10 + 2 × 1

= + 80000 + 6000 + 300 + 50 + 2

b.–e. Similar working as above.

8.–9. Refer answers at the end of the book.

Exercise 1.7

1. a. 23421 ⩽ 422311 (5 digits < 6 digits)

b. 700765 ⩾ 432111 (compare the digits at lakhs place, 7 > 4)

c. 90433 ⩽ 94033 (as 0 < 4 in thousands place)

d. 34211 ⩽ 40021 (as 3 < 4 at ten thousands place)

e. 785321 ⩽ 873245 (as 7 < 8 at lakhs place)

f. 728320 ⩽ 729202 (as 8 < 9 at thousands place)

g. 908871 ⓢ 908817 (as 7 > 1 at tens place)

h. 65321 ⓢ 65313 (as 2 > 1 at tens place)

i. 109923 ⓢ 109903 (as 2 > 0 at tens place)

j. 82319 ⓢ 28313 (as 8 > 2 at ten thousands place)

2. To find the predecessor, we subtract 1 from the given number.

a. 70089 – 1 = 70088

b.–f. Similar working as above.

3. To find the successor, we add 1 to the given number.

a. 99999 + 1 = 100000

b.–f. Similar working as above.

4. & 5. Refer answers at the end of the book.

6. To make greatest 6-digit number, we arrange the given digits in descending order and remove the commas in between.

a. greatest 6-digit no. = **L TTh Th H T O**
9 7 6 5 3 0

b. greatest 6-digit no. = **L TTh Th H T O**
8 7 6 4 2 0

To make smallest 6-digit number we arrange the given digits in ascending order and remove the commas in between.

c. smallest 6-digit no. = **L TTh Th H T O**
1 2 6 7 8 9

d. smallest 5-digit no. = **TTh Th H T O**
1 5 6 7 8

7. Note that 0 can't take the left must place in case of writing the smallest number hence, we should write the other non-zero smallest number at the largest place.

a. Smallest 5 digit no. = 11459 (Repeat the greatest digit at higher places)
greatest 5 digit no = 99541 (Repeat the greatest digit)

b. Smallest 50 digit no. = 20038
greatest 5 digit no. = 88320

c. find similar working as above

8. a. Taking each digit twice we get smallest 6 digit no = 112255
and greatest 6 digit no. = 552211

b.-d. Similar working as above.

9. Refer answers at the end of the book.

Exercise 1.8

1. Rules for rounding off to nearest tens (or hundreds or thousands):

(*i*) If the digit at ones place is less than 5, replace the digit at ones place by 0, keeping all the other digits same.

(*ii*) If the digit at ones place is 5 or greater than 5, increase the tens place digit by 1 and replace the ones digit by 0.

a. 27$\underline{3}$ ⇒ Since 3 < 5 ∴ 273 is rounded off to 270

b. 43$\underline{8}$ ⇒ Since 8 > 5 ∴ 438 is rounded off to 440

c. 100$\underline{8}$ ⇒ Since 8 > 5 ∴ 1008 is rounded off to 1010

d. 217$\underline{3}$ ⇒ Since 3 < 5 ∴ 2173 is rounded off to 2170

e. 5815 ⇒ Since 5 = 5 ∴ 5815 is rounded off to 5820

f. 10695 ⇒ Since 5 = 5 ∴ 10695 is rounded off to 10700

g. 21529 ⇒ Since 9 > 5 ∴ 21529 is rounded off to 21530

h. 37452 ⇒ Since 2 < 5 ∴ 37452 is rounded off to 37450

2. Rules for rounding off to nearest hundreds:

(***i***) If the digit at tens place is less than 5, replace the digits at tens and ones place by 0, keeping all the other digits same.

(***ii***) If the digits at tens place is 5 or greater than 5, increase the hundreds place digit by 1 and replace the tens and ones digit by 0.

a. 416 ⇒ Since 1 < 5 ∴ 416 is rounded off to 400

b. 762 ⇒ Since 6 > 5 ∴ 762 is rounded off to 800

c. 931 ⇒ Since 3 < 5 ∴ 931 is rounded off to 900

d. 1097 ⇒ Since 9 > 5 ∴ 1097 is rounded off to 1100

e. 1354 ⇒ Since 5 = 5 ∴ 1354 is rounded off to 1400

f. 6720 ⇒ Since 2 < 5 ∴ 6720 is rounded off to 6700

g. 15481 ⇒ Since 8 > 5 ∴ 15481 is rounded off to 15500

h. 28550 ⇒ Since 5 = 5 ∴ 28550 is rounded off to 28600.

3. (*i*) For rounding off the numbers to nearest thousands the digit at hundreds place is less than 5, replace each one of digits at hundreds, tens and ones place by 0 and keep the remaining digits as it is.

(*ii*) If the digit at hundreds place is 5 or greater than 5, increase the digit at thousands place by 1 and replace each one of the digits at hundreds, tens and ones place by 0.

a. 3264 ⇒ Since 2 < 5 ∴ 3264 is rounded off to 3000

b. 7589 ⇒ Since 5 = 5 ∴ 7589 is rounded off to 8000

c. 8763 ⇒ Since 7 > 5 ∴ 8763 is rounded off to 9000

d. 10817 ⇒ Since 8 > 5 ∴ 10817 is rounded off to 11000

e. 21515 ⇒ Since 5 = 5 ∴ 21515 is rounded off to 22000

f. 49009 ⇒ Since 0 < 5 ∴ 49009 is rounded off to 49000

g. 52083 ⇒ Since 0 < 5 ∴ 52083 is rounded off to 52000

h. 74499 ⇒ Since 4 < 5 ∴ 74499 is rounded off to 74000

4. – 6. Refer answers at the end of the book.

Test your skills

MCQs refer to answer given in the book.

Apply your Skills

Problem Solving Assessment

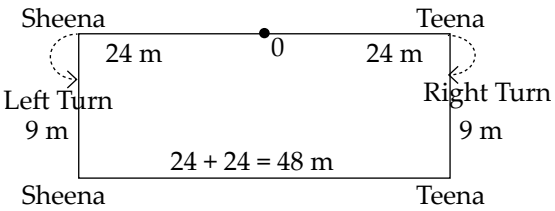
1.

T	O
	4
1	3
3	1
4	0

No. Of beads Thus the numbers so formed are 4, 13, 22, 31 and 40.

2. As 5 + 50 = 55; 50 + 55 = 105 ; 55 + 105 = 160, 50 the next two numbers will be 105 + 106 = 265 and 160 + 265 =425.

3. Suppose Sheena and Teena start their Movements form O and after Moving 24 m each they turn left and right respetively at points S and T. Later they move 9 m each. Finally the distance between their positions = 24 m + 24 m = 48 m



4. Refer to answer given in the book.

Value Based Questions

1. Refer to answer given in the book.

2. Total no. of students = 30

The number student s who contributed for thier 2 class mates = 30 - 2 = 28

Each contributed ₹14 extra, so the extra collection = ₹14 × 28 = ₹392

Value: Helping others.

HOTS

1. & 2. Refer to answer given in the book.

Mental Maths

1.—2. Refer to answer given in the book.

4. 835742 ⊵ 835724 (At tens place 4 > 2)

5. In 19455, hundreds digit 4 > 5 It in rounded off to the nearest thousands as 19000. (false)

CHAPTER 2

Roman Mumerals

Lesson plan

OBJECTIVES

The students should know

(i) Rules for writing Roman Numerals

(ii) Hindu-Arabic Numerals

Pre-Requisite Knowledge: The students should have the basic knowledge of small Roman Numerals as they have studied in their previous knowledge.

Teaching Aids: Writing board, maker, chalk, duster, charts, geometrical box, smart board/ projector and pointer.

Method of Teaching: The following topics will be taught in the class with some simple examples.

(i) Roman Numerals System has seven symbols

I	V	X	L	C	D	M
1	5	10	50	100	500	1000

(ii) **Rules of Writing Roman Numerals**

(a) II = I + I = 2, III = I + I + I =3, XX = 10 + 10 = 20

(b) LXVI = 50 + 10 + 5 + 1 = 66

(c) IV = 5 – 1 = 4, IX = 10 – 1 = 9, XC = 100 – 10 = 90

(d) XIV = 10 + 5 – 1 = 14, LXIX = 50 + 10 + 10 – 1 = 69

(iii) **Addition and Subtraction of Roman Numerals**

(a) XXX + XV = 30 + 15 = 45 = XLV

(b) L – VIII = 50 – 8 = 42 = XLII

(c) LXXX ÷ IV = 80 ÷ 4 = 20 = XX

(d) XII × III = 12 × 3 = 36 = XXXVI

Home Assignment:

(A) From Text Book:

(i) Exercise 2.1 — Solve Q. No. 1 to 8 all parts

(ii) Test your skills: Solve Q. No. 1 to 5

(B) Extra Questions:

(i) Fill in the blank:

(a) XXIX – XVIII = ...

(b) LXXV ÷ XV = ...

(c) XIX – IV = ...

(d) LXVI + XXX = ...

(ii) Write the following in Roman Numerals

(a) 63 (b) 59 (c) 72 (d) 108 (e) 69

Exercise 2.1

1. Refer answers at the end of the book.

2. a. XXX = 10 + 10 + 10 = 30

b. XXVI = 10 + 10 + 5 + 1 = 26

c. XXXIII = 10 + 10 + 10 + 1 + 1 + 1 = 33

d. XXXIX = 10 + 10 + 10 + (10 – 1) = 39

e. XLV = (50 – 10) + 5 = 45

f. XLVIII = (50 – 10) + 5 + 1 + 1 + 1 = 48

g. LIX = 50 + (10 – 1) = 59

h. LXIV = 50 + 10 + (5 – 1) = 64

i. LXXII = 50 + 10 + 10 + 1 + 1 = 72

j. LXXXI = 50 + 10 + 10 + 10 + 1 = 81

k. XCVI = (100 – 10) + 5 + 1 = 96

l. XCIX = (100 – 10)+ (10 – 1) = 99

3. a. 20 = 10 + 10 = X + X = XX

b. 19 = 10 + 9 = 10 + (10 – 1) = XIX

c. 28 = 10 + 10 + 8 = XXVIII

d. 37 = 10 + 10 + 10 + 5 + 1 + 1 = XXXVII

e. 48 = 40 + 8= (50 – 10) + 5 + 1 + 1 + 1 = XLVIII
f. 50 = L
g. 58 = 50 + 5 + 1 + 1 + 1 = LVIII
h. 66 = 50 + 10 + 5 + 1 = LXVI
i. 69 = 50 + 10 + (10 – 1) = LXIX
j. 75 = 50 + 10 + 10 + 5 = LXXV
k. 85 = 50 + 10 + 10 + 10 + 5 = LXXXV
l. 93 = (100 – 10) + 1 + 1 + 1 = XCIII

4. a. VII + ____ = XII
⇒ ____ = XII – V
= 8 – 5 = 3 (or III)

b. XVII + _____ = XXIII= _____
⇒ ____ = LXXVII + XVIII
= 77 + 18 = 95 (or XCV)

c. XXXVII + _____ = LXVII
⇒ 67 – 37 = _____
30 = (XXX)

d. XC + VII = XCVII

e. XXX – _____ = XVIII
⇒ _____ = XXX – XVIII
= 30 – 18 = 12 (or XII)

f. XXV – _____ = IX
⇒ _____ = XXV – IX
= 25 – 9 = 16 (or XVI)

g.–p. Refer answers at the end of the book.

5.–6. Refer answers at the end of the book.

7. a. XIX = 10 + 9 = 19
Before numeral = 19 – 1 = 18 = XVIII
After numeral = 19 + 1 = 20 = XX

b. XXX = 30
Before numeral = 30 – 1 = 29 = XXIX
After numeral = 30 + 1 = 31 = XXXI

c. L = 50
Before numeral = 50 – 1 = 49
= (50 – 10) + (10 – 1) = XLIX
After numeral = 50 + 1 = 51= LI

d. XC = (100 – 10) = 90
Before numeral = 90 – 1 = 89 = LXXXIX
After numeral = 90 + 1 = 91
= (100 – 10) + 1 = XCI

8. a. XXI (= 21) ⋖ 24
b. IX (= 9) ⋖ 11
c. XXXII (= 32) ⋗ 22
d. LIX (= 59) ⋍ 59

9.–10. Refer answers at the end of the book.

Test Your Skills

MCQs Refer answers at the end of the book.

Mental Maths

1. a. XXIX – XVII = 29 – 18 = 11 (or XI)
b. LXVI + XXX = 66 + 30 = 96 (or XCVI)]
c. XIXXIV = 19 × 4 = 76 (or LXXVI)
d. LXXV ÷ XV = 75 ÷ 15 = 5 (or V)

2.–5. Refer answer given in the book.

Apply Your Skills

Problem Solving Assessment

1.–4. Refer answer given in the book.

Value Based Questions

1. Each child got 3 colour pens and & colour pencils.

Reema Distributed (XCVII – VII) XC (or 90) pens and LXVIII – VIII = L × (or 60) pencils in all

a. 50 number of poor children in her locality = 90 ÷ 3 or 60 ÷ 2 = 30

b. 60 pencils c. 90 pens

value : care for poor, social and helping attitude

HOTS

Across 1. one more than 3 + ens = 3 × 10 + 1 = 31 or (XXXI)

3. one less than four times five = 4 × 5 – 1 = 19 or (XIX)

4. 5 added to nine = 5 + 9 = 14 or (XIV)

Down 1. Successor of 28 = 28 + 1 = 29 or (XXIX)

2. Two more than two times ten = 2 × 10 + 2 = 22 or (XXII)

5. 3 added to three times three = 3 +3 × 3 = 12 (XII)

6. The greatest 1-digit composite number = 9 or (IX)

[1] X	[2] X	[5] X	[6] I
X	[3] X	I	X
I	I	I	
[4] X	I	V	

CHAPTER 3

Additions

Lesson plan

OBJECTIVES

The students should know

(i) Addition of 5-digit and 6-digit numbers

(a) without grouping (b) with grouping

(ii) Properties of addition

(iii) Word Problems

Pre-Requisite Knowledge: The students should have the basic knowledge of the process of addition of 2-digit, 3-digit or 4 digit numbers as they have done in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, smart-board/projector, geometrical board and pointer.

Method of Teaching: The methods of addition of 6-digits number taught in the class by taking simple examples.

(i) Addition of 5-digit and 6-digit number (without regrouping)

Example: Find the sum of

53215, 2310 and 12223

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

Step I: 5 + 0 + 3 = 8,

Step II: 1 + 1 + 2 = 4

Step III: 2 + 3 + 2 = 7

Step IV: 3 + 2 + 2 = 7

Step V: 5 + 1 = 6

(ii) **Properties of Addition**

(a) When 0 is added to a number, the sum is the number itself.

5565 + 0 = 5565, 0 + 5565 = 5565

(b) When 1 is added to the number, we get the next number i.e. its successor

85234 + 1 = 85235, 87939 + 1 = 87940

(c) **Commutative Property:** If order of the numbers is changed, then the sum remains same.

25689 + 25387 = 25387 = 25387 + 25689 = 51076

(d) **Associative Property:** The sum of three numbers does not change even if their grouping is changed.

54230 + (2460 + 3484) = (54230 + 2460) + 3484

$\Rightarrow$ 54230 + 5944 = 56690 + 3484

$\Rightarrow$ 60174 = 60174

Recapitulation: The whole chapter will be revised in the class by taking extra simple examples and the problems of the students will be solved accordingly

Home Assignment:

(A) From Text Book:

(i) Exercise 3.1 — Solve Q. No. 1 to 5

(ii) Exercise 3.2 — Solve Q. No. 1, 2, 3 all parts

(iii) Exercise 3.3 — Solve Q. No. 1, 2, 3 all parts

(iv) Exercise 3.6 — Solve Q. No. 1 to 5

(B) Extra Questions:

(1) A number is 25980 more than the greatest 5-digit number. Find the number.

(2) Fill in the blanks

3542 + (_____ + 2465) = (_____ + 2468) + _____

Exercise 3.1

1. **a.**
$$\begin{array}{r} 2364 \\ +5412 \\ \hline 7776 \end{array}$$

b.
$$\begin{array}{r} 6251 \\ +2543 \\ \hline 8794 \end{array}$$

c.
$$\begin{array}{r} \overset{1}{} \\ 7092 \\ +4810 \\ \hline 11902 \end{array}$$

d.
$$\begin{array}{r} \overset{1\,1\,1}{} \\ 5562 \\ 327 \\ +561 \\ \hline 6450 \end{array}$$

e.
$$\begin{array}{r} 4323 \\ 5134 \\ +\ 21 \\ \hline 9478 \end{array}$$

f.
$$\begin{array}{r} \overset{1\,1\,1}{} \\ 2842 \\ 1369 \\ +\ 432 \\ \hline 4643 \end{array}$$

2.
$$\begin{array}{lr} \text{Distance travelled from city A to city B} = & 350 \text{ km} \\ \text{Distance travelled from city B to city C} = & +5643 \text{ km} \\ \text{Total distance travelled} & 5993 \text{ km} \end{array}$$

The total distance travelled by the train is 5993 km.

3.
$$\begin{array}{lr} \text{No. of boys in school} = & 5621 \\ \text{No. of girls in school} = & +4325 \\ \text{Total students} & 9946 \end{array}$$

There are 9946 students altogether in the school.

4.
$$\begin{array}{lr} \text{Soaps produced by 1}^{st}\text{ factory} = & \overset{1\,1}{} 4524 \\ \text{Soaps produced by 2}^{nd}\text{ factory} = & 2162 \\ \text{Soaps produced by 3}^{rd}\text{ factory} = & +\ 833 \\ \text{Total soaps produced} & 7519 \end{array}$$

In all, the factories produced 7519 soaps in a day.

5. Refer answers at the end of the book. [Note: Arrangement may vary]

Exercise 3.2

1. Refer answers at the end of the book.

2. a.
$$\begin{array}{r} 23891 \\ +15102 \\ \hline 38993 \end{array}$$
Number sentence =
23891 + 15102 = 38993

b.
$$\begin{array}{r} 43021 \\ +23715 \\ \hline 66736 \end{array}$$
Number sentence =
43021 + 23715 = 66736

c.
$$\begin{array}{r} 35245 \\ 23412 \\ +\ 1021 \\ \hline 59678 \end{array}$$
Number sentence =
35245 + 23412 + 1021 = 59678

d.
$$\begin{array}{r} 56123 \\ 32150 \\ +10324 \\ \hline 98597 \end{array}$$
Number sentence =
56123 + 32150 + 10324 = 98597

e. 432403
+454052
886455
Number sentence =
432403 + 454052 = 886455

f. 854613
+123275
977888
Number sentence =
854613 + 123275 = 977888

g. 752302
13425
+31271
796998
Number sentence =
752302 + 13425 + 31271 = 796998

h. 521255
130303
+241220
892778
Number sentence =
521255 + 130303 + 241220 = 892778

3. **a.** 12123
+24456
36579

b. 43211
100458
+55010
198679

c. 230842
+527106
757948

d. 101020
111222
+200100
412342

For number name, refer answers at the end of the book.

Exercise 3.3

1. Refer answers at the end of the book.

2. a. ①①
26214
+56923
83137
Number sentence =
26214 + 56923 = 83137

b. ①①
42564
+65472
108036
Number sentence =
42564 + 65472 = 108036

c. ①①①①
34573
30013
+ 7887
72473
Number sentence =
34573 + 30013 + 7887 = 72473

d. ①①① ①
324815
81653
+ 4525
410993
Number sentence =
324815 + 81653 + 4525 = 410993

e. ①
562327
+287462
849789
Number sentence =
562327 + 287462 = 849789

f. ①①①
534125
+425891
960016
Number sentence =
534125 + 425891 = 960016

g. ②①①①①
258049
154273
+ 95817
508139
Number sentence =
258049 + 154273 + 95817 = 508139

h. ①①①①②
536218
326788
+ 70649
933655
Number sentence =
536218 +326788 + 70649 = 933655

3. a. 22000
+44000
66000

b. ①①
207000
234176
+488602
929778

c. ①② ①
305738
23412
+40906
370056

d. ① ①
56923
513342
+221014
791279

For number name, refer answers at the end of the book.

Exercise 3.4 & 3.5

1. Refer answers at the end of the book.

Exercise 3.6

1. Largest 6-digit no. = 999999
Smallest 5-digit no. = +10000
Sum = 1009999

2. ①①①
Blue pens produced = 456890
Red pens produced = +365202
Total pens produced = 822092
Total pens produced by the factory is 822092

3. ①①
No. of men = 31124
No. of women = 30089
No. of children = +6321
Total population = 67534
The total population of the town is 67534.

4. ①①①
Money spent to buy a flat = ₹905674
Money spent to buy a car = + ₹54680
Total money spent = ₹960354

5. ① ①①
No. of boys = 343439
No. of girls = +284680
Total no. of students = 628119
628119 students appeared for the examination.

6. To find the number, we add 25984 to the greatest 5-digit number = ①①①①
Greatest 5-digit no. = 99999
Exceed by = +25984
Bigger no. = 125983
∴ The bigger number is 125983.

7. ①①①①
Cost of TV = ₹14896
Extra cost = + ₹9595
Cost of Laptop = ₹24491
The total cost of TV and Laptop is ₹39387.

①①
Cost of TV = ₹14896
Cost of Laptop = +₹24491
Total cost = ₹39387

8. Votes for 1st candidate = 109017 (carries: ①②①②)
Votes for 2nd candidate = 96825
Votes for 3rd candidate = 77006
Invalid votes = + 1922
No. of votes polled = 284720

Exercise 3.7

12. a. (*i*) In a school, there are 4158 boys and 5292 girls. Find the number of total students in the school.

(*ii*) How much will you get if you add 4158 and 5292?

(*iii*) The difference of two numbers is 5292. If the smaller number is 4158, find the larger number.

b. (*i*) A refill manufacturing company produces 2604 red refills, 3153 black refills and 8175 blue refills in a month. Find the total number of refills produced in a month?

(*ii*) Add 2604 to the sum of 3153 and 8175.

(*iii*) In a school library, 2604 Science books, 3153 English books are 8175 Hindi books and arranged in various racks. How many books are there in the library?

c.–d. Similar working as above.

Exercise 3.8

1. a. Actual sum: 54 + 27 = 81 — Estimated sum: 50 + 30 = 80

Difference = 81 – 80 = 1.
Estimation is very close.

b. Estimated sum: 90 + 70 = 160 — Actual sum: 92 + 65 = 157

Difference = 160 – 157 = 3.
Estimation is very close.

c. Estimated sum: 170 + 420 = 590 — Actual sum: 173 + 415 = 588

Difference = 590 – 588 = 2.
Estimation is very close.

d. Estimated sum: 620 + 970 = 1590 — Actual sum: 619 + 973 = 1592 (carry: ①)

Difference = 1592 – 1590 = 2.
Estimation is very close.

e. Estimated sum: 90 + 40 + 50 = 180 — Actual sum: 89 + 43 + 45 = 177 (carry: ①)

Difference = 180 – 177 = 3.
Estimation is very close.

f. Estimated sum: 150 + 70 + 70 = 290 (carry: ①) — Actual sum: 148 + 66 + 73 = 287 (carry: ①)

Difference = 290 – 287 = 3.
Estimation is very close.

g. Estimated sum Actual sum

①	①①
420	421
880	882
+150	+149
1450	1452

Difference = 1452 – 1450 = 2.
Estimation is very close.

h. Estimated sum Actual sum

①	①①
680	675
830	829
+340	+343
1850	1847

Difference = 1850 – 1847 = 3.
Estimation is very close.

2. a. Estimated sum Actual sum

	①
300	315
+400	+428
700	743

Difference = 743 – 700 = 43.
Estimation is very close.

b. Estimated sum Actual sum

700	671
+500	+527
1200	1198

Difference = 1200 – 1198 = 2.
Estimation is very close.

c. Estimated sum Actual sum

	①
5100	5140
+1700	+1698
6800	6838

Difference = 6838 – 6800 = 38.
Estimation is very close.

d. Estimated sum Actual sum

	①
1000	1007
+2600	+2638
3600	3645

Difference = 3645 – 3600 = 45.
Estimation is very close.

e. Estimated sum Actual sum

	①①
700	694
200	245
+400	+357
1300	1296

Difference = 1300 – 1296 = 4.
Estimation is very close.

f. Estimated sum Actual sum

	①
300	292
400	401
+700	+736
1400	1429

Difference = 1429 – 1400 = 29.
Estimation is very close.

g. Estimated sum Actual sum

	①②
4200	4218
3100	3057
+2400	+2376
9700	9651

Difference = 9700 – 9651 = 49.
Estimation is very close.

h. Estimated sum Actual sum

②	①①①
1800	1792
8900	8915
+7300	+7284
18000	17991

Difference = 18000 – 17991 = 9.
Estimation is very close.

3. a. Estimated sum Actual sum

	①①
6000	6094
+4000	+4317
10000	10411

Difference = 10411 – 10000 = 411.
Estimation is close.

b. Estimated sum Actual sum

	①
9000	9249
+2000	+2404
11000	11653

Difference = 11653 – 11000 = 653.
Estimation is close.

c. Estimated sum Actual sum

	①①
5000	4818
+4000	+3507
9000	8325

Difference = 9000 – 8325 = 675.
Estimation is close.

d. Estimated sum Actual sum

	①
6000	6410
+7000	+6664
13000	13074

Difference = 13074 – 13000 = 74.
Estimation is close.

e. Estimated sum Actual sum

	①①①
3000	2825
4000	3511
+4000	+4399
11000	10735

Difference = 11000 – 10735 = 265.
Estimation is close.

f. Estimated sum Actual sum

	①①
4000	4262
3000	3455
+2000	+1612
9000	9329

Difference = 9329 – 9000= 329.
Estimation is close.

g. Estimated sum Actual sum

	②①①
2000	1921
2000	1546
+9000	+8645
13000	12112

Difference = 13000 – 12112 = 888.

Estimation is close.

4. Rounding off to nearest hundreds

No. of Boys = 12<u>2</u>4	⟶	1200
No. of Girls = 10<u>7</u>3	⟶	+1100
Total no. of students	⟶	2300

5. Rounding off to nearest thousands

Wheat produced = 4<u>8</u>15	⟶	5000 kg
Rice produced = 3<u>7</u>92	⟶	4000 kg
Jowar produced = 5<u>6</u>53	⟶	+6000 kg
Total Produce	⟶	15000 kg

HOTS

Refer answer given at the end of the book

Mental Maths

1. 326648 = 50000 =376648

5. Greatest no = 876520
Smallest no = + 205678
sum = 1082198

2.-4. Refer answer given at the end of the book

Test your skills

MCOs: 1.-5. Reger answers given at the end of the book.

Apply your skills

Problem Solving Assessment

1. Given a = 1, b = 2, c =3, ...z = 26

SO b c d e = 2 3 4 5
and l m n = +1 2 1 3 1 4
Sum b e d e + l m n = 1 2 3 6 5 9

2. As 1 + 1 = 2, 1 + 2 = 3, 2 + 3 = 5, 3 + 5 = 8, and 5 + 8 = 13 so next terms are:

8 + 13 = 21, 13 + 21 = 34, 21 + 34 = 55, 34 + 55 = 89, and 89 = 55 = 144.

3. No of 1st round qualified participants = 7 2 9 5 0
No of 1st round disqualified participants = 4 5 9 8 0
No. of absent participants = +3 4 5 6
Total registered candidates = 1 2 2 3 8 9

4. As R E S U L T so L E T
code = 7 9 8 2 0 6 0 9 6

5 Refer answer given a t the end of the book.

Value Based Questions

1. Contribution of students = ₹39,560
Contribution of Principal = ₹15000
Contribution of teachers = ₹48540
Total donation = ₹103100

2. Produced of toys in 1st year = 36750
Produced of toys in 2nd year = 98770
Produced of toys in 3rd year = 99850
Total production is 3 years = 235370
No of toys donated by the owner = 235370 ÷ 2 = 117685 toys value: Humanity

CHAPTER 4

Subtraction

Lesson plan

OBJECTIVES

The students should know
(i) Minuend and Subtrahend
(ii) Subtracting 6-digit numbers
(a) Without borrowing (b) with borrowing
(iii) Properties of subtraction
(iv) Word Problems

Pre-Requisite Knowledge: The students should have the basic knowledge of subtraction of 2-digit, 3-digit, 4-digit and 5-digit numbers as they have alone in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, smart-board/projector, geometrical board and pointer.

Method of Teaching: The following methods of subtraction will be taught in the class taking some simple examples.

(i) **Subtraction without borrowing:**

Example: Subtract 3540 from 39680

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

Step I: 0 – 0 = 0
Step II: 8 – 4 = 4
Step III: 6 – 5 = 1
Step IV: 9 – 3 = 6
Step V: = 3

(ii) **Subtraction with borrowing**

Example: Subtract 39185 from 42356

	TTh	Th	H	T	O
	$\not{4}^{3}$	12	$\not{3}^{2}$	15	6
+	3	9	1	8	5
		3	1	7	1

Properties of Subtractions:

(i) When we subtract 0 from a number, it remains same.

8523 – 0 = 8523

(ii) When we subtract 1 from a number, we get its previous number or its predecessor

5321 – 1 -= 5320

Recapitulation: The whole chapter will be revised in the class with same simple examples and the problem of the students will be removed immediately.

Home Assignment:

(A) From Text Book:

(i) Exercise 4.1 — Solve Q. No. 1 to 5 all parts
(ii) Exercise 4.2 — Solve Q. No. 1 to 3 all parts
(iii) Exercise 4.3 — Solve Q. No. 1 to 4 all parts
(iv) Exercise 4.5 — Solve Q. No. 1 to 4

(B) Extra Questions:

(1) What should be subtracted from 23580 to get 19689?
(2) Subtract 6740 from 88625.

Exercise 4.1

Refer answers on page 210–211.

2. **a.** $\begin{array}{r} 1238 \\ -231 \\ \hline 1007 \end{array}$ **b.** $\begin{array}{r} {}^{2}\not{3}\,{}^{1}0\,8\,4\,1 \\ -\,2\,9\,1\,0 \\ \hline 9\,3\,1 \end{array}$ c. $\begin{array}{r} 5463 \\ -2311 \\ \hline 3152 \end{array}$ **g.** $\begin{array}{r} 7458 \\ -6235 \\ \hline 1223 \end{array}$

h. $\begin{array}{r} {}^{8}\not{9}\,{}^{9}\not{0}\not{0}\,{}^{1}0\,0\,5 \\ -\,2\,3\,9\,3 \\ \hline 6\,6\,1\,2 \end{array}$ **f.** $\begin{array}{r} 6\,{}^{0}\not{1}\,{}^{1}\not{7}\,0\,0 \\ -\,5\,0\,8\,3 \\ \hline 1\,0\,8\,7 \end{array}$ d. $\begin{array}{r} {}^{4}\not{5}\,{}^{1}0\,2\,{}^{3}\not{4}\,{}^{1}0\,3 \\ -\,4\,7\,1\,6 \\ \hline 5\,2\,7 \end{array}$ **e.** $\begin{array}{r} {}^{5}\not{6}\,{}^{9}\not{0}\not{0}\,{}^{9}\not{0}\,{}^{1}0\,{}^{1}0 \\ -\,2\,4\,1\,8 \\ \hline 3\,5\,8\,2 \end{array}$

3. 'Less than' means we have to do subtraction.

a. $\begin{array}{r} 9867 \\ -\,400 \\ \hline 9467 \end{array}$ **b.** $\begin{array}{r} 6532 \\ -1000 \\ \hline 5532 \end{array}$ **c.** $\begin{array}{r} {}^{5}\not{6}\,{}^{1}0\,0\,0 \\ -\,\,100 \\ \hline 5\,9\,0\,0 \end{array}$ **d.** $\begin{array}{r} 2550 \\ -\,550 \\ \hline 2000 \end{array}$

e. $\begin{array}{r} 8996 \\ -\,900 \\ \hline 8096 \end{array}$ **f.** $\begin{array}{r} {}^{6}\not{7}\,{}^{1}0\,{}^{4}\not{5}\,{}^{1}0\,0 \\ -\,\,7\,2\,5 \\ \hline 6\,7\,2\,5 \end{array}$

4. **a.** To find subtrahend, we subtract difference from the minuend

$\therefore$ Minuend $\longrightarrow$ 4579
Difference $\longrightarrow$ −2341
Subtrahend $\longrightarrow$ 2238

b. To find the difference, we subtract subtrahend from the minuend

$\therefore$ Minuend $\longrightarrow$ $6\,4\,{}^{7}\not{8}\,{}^{1}0\,5$
Subtrahend $\longrightarrow$ $-2\,3\,1\,7$
Difference $\longrightarrow$ $4\,1\,6\,8$

4. a. Total people = $\begin{array}{r} {}^{4}\not{5}\,{}^{9}\not{0}\,{}^{9}\not{0}\,{}^{1}0\,0 \\ -\,2\,8\,6\,4 \\ \hline 2\,1\,3\,6 \end{array}$

No. of women & children =
Difference

2136 men are there in the city.

b. First we find the difference of 9056 and 4860, and then subtract the answer from 6000.

Step 1:

$\begin{array}{r} {}^{8}\not{9}\,{}^{9}\not{0}\,{}^{1}0\,5\,6 \\ -\,4\,8\,6\,0 \\ \hline 4\,1\,9\,6 \end{array}$

Step 2:

$\begin{array}{r} {}^{5}\not{6}\,{}^{9}\not{0}\,{}^{9}\not{0}\,{}^{1}0\,0 \\ -\,4\,1\,9\,6 \\ \hline 1\,8\,0\,4 \end{array}$

c. We find the difference of 7898 and 5634.

$\begin{array}{r} 7898 \\ -5634 \\ \hline 2264 \end{array}$

Hence, 2264 should be added to 5634 to get 7898.

d. Greatest no. using 6, 3, 4, 7 = $7\,{}^{5}\not{6}\,{}^{1}0\not{4}\,{}^{1}0\,3$
Smallest no. using 6, 3, 4, 7 = $-3\,4\,6\,7$
Difference $4\,1\,7\,6$

e. First we find the amount spent on stationary items and uniforms.

$\therefore$ Money spent on stationary = ₹1460

Money spent for uniforms = +₹2370

Total money spent = ₹3830

Now we subtract the sum from ₹7500.

Money Raj had = ₹7500

Money spent = −₹3830

Total left = ₹3670

f. First we find the sum of 4573 and 2416.

$$\begin{array}{r} 4573 \\ +2416 \\ \hline 6989 \end{array}$$

Now we subtract 5935 from the sum.

$$\begin{array}{r} 6989 \\ -5935 \\ \hline 1054 \end{array}$$

Exercise 4.2

1. Refer answers on page 211.

2. a. $66479 - 14472 = 52007$

b. $55889 - 13763 = 42126$

c. $880006 - 60006 = 820000$

d. $994765 - 250504 = 744261$

e. $988765 - 325230 = 663535$

f. $976678 - 236662 = 740016$

3. a. $58521 - 32110 = 26411$

b. $294567 - 83144 = 211423$

c. $758749 - 124518 = 634231$

For number names, refer answers on page 211.

Exercise 4.3

1. Refer answers on page 211.

2. a. $92132 - 58788 = 33344$

b. $9772100 - 676778 = 9044422$

c. $3120699 - 99999 = 212700$

d. $3477601 - 215964 = 1317797$

e. $59101800 - 176969 = 4142111$

f. $7201600001 - 5432119 = 1783882$

3. a. $47557 - 25432 = 22125$

b. $9582104 - 43215 = 9149999$

c. $80250478 - 634561 = 190917$

For number names, refer answers at the end of the book.

3. a.
$$\begin{array}{r} 47557 \\ -\,25432 \\ \hline 22125 \end{array}$$

b.
$$\begin{array}{r} 95\overset{7}{\cancel{8}}\overset{\textcircled{1}1}{\cancel{2}}\overset{\textcircled{1}0}{\cancel{1}}4 \\ -\;\;4321\,5 \\ \hline 914999 \end{array}$$

c.
$$\begin{array}{r} \overset{7}{\cancel{8}}\,\textcircled{1}2\,\overset{4}{\cancel{5}}\,\textcircled{1}478 \\ -\,6345\,61 \\ \hline 190917 \end{array}$$

For number names, refer answers at the end of the book.

4. a.
$$\begin{array}{r} \overset{4}{\cancel{5}}\,\textcircled{1}3\,\overset{7}{\cancel{8}}\,\overset{9}{\cancel{0}}\,\textcircled{1}02 \\ -\,2\,8\,7\,9\,7 \\ \hline 2\,5\,0\,0\,5 \end{array}$$

b.
$$\begin{array}{r} 6\,\overset{6}{\cancel{7}}\,\overset{\textcircled{1}0}{\cancel{1}}\,\textcircled{1}078 \\ -\,4\,6\,8\,9\,4 \\ \hline 2\,0\,2\,8\,4 \end{array}$$

c.
$$\begin{array}{r} 8\,\overset{7}{\cancel{8}}\,\overset{\textcircled{1}5}{\cancel{0}}\,\overset{5}{\cancel{6}}\,\textcircled{1}61 \\ -\;\;6\,2\,5\,7\,7 \\ \hline 8\,1\,8\,0\,8\,4 \end{array}$$

d.
$$\begin{array}{r} \overset{2}{\cancel{3}}\,\textcircled{1}5\,8\,\overset{5}{\cancel{6}}\,\overset{\textcircled{1}0}{\cancel{1}}\,\textcircled{1}08 \\ -\,2\,6\,3\,4\,4\,9 \\ \hline 9\,5\,1\,6\,9 \end{array}$$

e.
$$\begin{array}{r} 7\,\overset{5}{\cancel{6}}\,\textcircled{1}029\,87 \\ -\,2\,4\,9\,6\,2\,4 \\ \hline 5\,1\,3\,3\,6\,3 \end{array}$$

f.
$$\begin{array}{r} 98\,\overset{3}{\cancel{4}}\,\textcircled{1}234 \\ -\,6\,3\,3\,5\,2\,3 \\ \hline 3\,5\,0\,7\,1\,1 \end{array}$$

Exercise 4.4–4.5

Refer answers at the end of the book

Exercise 4.6

1. Now, Runs scored by Anil = 13934
Runs scored by Sunil = −12506
Difference = 1428 runs
As 13934 > 12506 Anil scored more runs.

2. Total money in bank account = ₹$\overset{7}{\cancel{8}}\,\overset{\textcircled{1}4}{\cancel{5}}\,\overset{\textcircled{1}7}{\cancel{8}}\,\textcircled{1}19$
Cost of computer & mobile phone = −₹36980
Money left in bank account = ₹48839

3. Total apples harvested = $4\,\overset{4}{\cancel{5}}\,\textcircled{1}2\,\overset{1}{\cancel{2}}\,\textcircled{1}1$
Apples sold = −12313
Apples left = 32908

4. One number = $\overset{6}{\cancel{7}}\,\overset{\textcircled{1}1}{\cancel{2}}\,\textcircled{1}1\,\overset{2}{\cancel{3}}\,\overset{\textcircled{1}5}{\cancel{6}}\,\textcircled{1}05$
Difference = −348197
The other no. = 373168

5. Total people in a city = $84\,\overset{3}{\cancel{4}}\,\overset{\textcircled{1}5}{\cancel{6}}\,\overset{\textcircled{1}4}{\cancel{5}}\,\textcircled{1}02$
No. of people moved away = −522689
People left in the city = 321963

6. To get the greater number, we find the difference between the two numbers

$$\begin{array}{r} 6\,\overset{7}{\cancel{8}}\,\overset{\textcircled{1}1}{\cancel{2}}\,\overset{\textcircled{1}0}{\cancel{1}}\,\textcircled{1}035 \\ -\,4\,1\,9\,7\,6\,2 \\ \hline 2\,6\,2\,3\,7\,3 \end{array}$$

So, 682135 is greater than 419762 by 262373.

9. Sum of two nos. = 299897
One no. = −103842
Other no. = 196055

10. Total income = ₹2 4 4 5 0 0
Father's Income = − ₹1 7 6 8 9 0
Mothers income = ₹ 6 7 6 1 0

Exercise 4.7

c. (*i*) Out of 7536 books in a library, 3178 are in English section. Find the number of books in Hindi section.

(*ii*) By how much is 3178 less than 7536?

(*iii*) In a panchayat ward election, 7536 votes were polled in all. If the losing candidate got 3178 votes, how many votes did the winning candidate get?

e. (*i*) What must be added to 6740 to get 88625?

(*ii*) In a monthly income of ₹88,625, Ashok saves only ₹6740. How much money did he spend in all?

(*iii*) In a population survey, it was found that there are 88625 males and 6740 children in a city. Find the number of females in the city.

a., b., c., & f. Similar working as above.

Exercise 4.9

1. a.

Estimated difference	Actual difference
90	8
−70	9 0 3
20	− 6 9
	2 4

b.

Estimated difference	Actual difference
1 0 6 0	0 5
− 9 0	1 6 0 1
7 0	− 8 5
	7 6

c.

Estimated difference	Actual difference
2	2
3 3 0 2 0	3 3 0 1 9
− 1 2 9 0	− 1 2 8 7
2 0 3 0	2 0 3 2

d.

Estimated difference	Actual difference
5	5
6 0 0 9 0	6 0 0 9 1
− 5 1 7 0	− 5 1 6 7
9 2 0	9 2 4

2. a.

Estimated difference	Actual difference
500	529
−200	−203
300	326

b.

Estimated difference	Actual difference
900	7
−500	8 0 5 6
400	− 4 7 3
	3 8 3

c.

Estimated difference	Actual difference
6	7
7 0 0 0	6 9 8 0 7
− 2 4 0 0	− 2 4 2 8
4 6 0 0	4 5 5 9

d.

Estimated difference	Actual difference
9600	0
−4200	9 6 1 0 5
5400	− 4 2 0 8
	5 4 0 7

3. a.

Estimated difference	Actual difference
1000	1200 9
−1000	− 1 0 1 8
0	1 9 1

b.

Estimated difference	Actual difference
5000	5 0 3 5 6
−3000	− 2 9 1 4
2000	2 4 4 2

c.

Estimated difference	Actual difference
5000	5 0 4 8 0
−4000	− 3 8 6 1
1000	1 6 1 9

d.

Estimated difference	Actual difference
46000	4 6 0 0 0 9
−34000	− 3 4 4 6 7
12000	1 1 5 4 2

4. On rounding off to nearest hundreds.

Visitors on Tuesday = 9953 ⟶ 10000

Visitors on Monday = 8269 ⟶ − 8300

1700

Approximately, 1700 more people visited Red Fort on Tuesday than on Monday.

5. 24751 is rounded off to 25000.

16297 is rounded off to 16000.

No. of boys	=	25000	No. of boys=		24751
No. of girls	=	− 16000	No. of girls=		− 16297
Estimated difference	=	9000	Actual difference	=	8454

Exercise 4.9

1. a.

5 0 2 4 0 0 7		1 4 0 4 8	
− 1 4 0 4 8	⟶	+ 3 8 3 5 9	
3 8 3 5 9		5 2 4 0 7	(Minuend)

b.

5 7 5 5 0 1		1 5 2 1 5	
− 1 5 2 1 5	⟶	+ 4 2 3 3 6	
4 2 3 3 6		5 7 5 5 1	(Minuend)

c.

1200 9		3 2 4 9 7	
− 1 0 1 8	⟶	+ 2 6 7 7 3	
1 9 1		5 9 2 7 0	(Minuend)

d.

3701901		7 4 3 6 6	
− 7 4 3 6 6	⟶	+ 2 9 7 5 4 5	
2 9 7 5 4 5		3 7 1 9 1 1	(Minuend)

e.
$$\begin{array}{r} {\scriptstyle 7\ \ 8}\\ 7\,8\,0\,9\,4\,9\\ -\ 6\,7\,5\,1\,9\,0\\ \hline 1\,0\,5\,7\,5\,9 \end{array} \longrightarrow \begin{array}{r} {\scriptstyle 1\ \ 1}\\ 6\,7\,5\,1\,9\,0\\ +\ 1\,0\,5\,7\,5\,9\\ \hline 7\,8\,0\,9\,4\,9 \end{array}$$ (Minuend)

f.
$$\begin{array}{r} {\scriptstyle 8\ 1\ \ 4}\\ 9\,2\,1\,3\,5\,0\,8\\ -\ 5\,2\,8\,1\,8\,2\\ \hline 3\,9\,5\,3\,2\,6 \end{array} \longrightarrow \begin{array}{r} {\scriptstyle 1\ 1\ \ 1}\\ 5\,2\,8\,1\,8\,2\\ +\ 3\,9\,5\,3\,2\,6\\ \hline 9\,2\,3\,5\,0\,8 \end{array}$$ (Minuend)

Exercise 4.10

1. a. *Step 1:*
$$\begin{array}{r} {\scriptstyle 1}\\ 4\,5\,3\,2\,3\\ +\,8\,5\,6\,7\,3\\ \hline 1\,3\,0\,9\,9\,6 \end{array}$$

Step 2: Now we subtract 55432 from the sum.
$$\begin{array}{r} {\scriptstyle 1\ 2}\\ 1\,3\,0\,0\,9\,9\,6\\ -\ 5\,5\,4\,3\,2\\ \hline 7\,5\,5\,6\,4 \end{array}$$

b.
$$\begin{array}{r} 8\,5\,6\,6\,4\\ -\,1\,2\,1\,3\,1\\ \hline 7\,3\,5\,3\,3 \end{array} \longrightarrow \begin{array}{r} 7\,3\,5\,3\,3\\ +\ 3\,0\,0\,1\\ \hline 7\,6\,5\,3\,4 \end{array}$$

c.
$$\begin{array}{r} {\scriptstyle 2\ \ 7}\\ 3\,0\,2\,8\,0\,1\,7\\ -\ 2\,5\,4\,9\,1\\ \hline 7\,3\,2\,6 \end{array} \longrightarrow \begin{array}{r} {\scriptstyle 1\ 1}\\ 7\,3\,2\,6\\ +\,4\,6\,8\,4\,0\\ \hline 5\,4\,1\,6\,6 \end{array}$$

d.
$$\begin{array}{r} 3\,4\,1\,1\,3\\ +\ 2\,8\,3\,1\\ \hline 3\,6\,9\,4\,4 \end{array} \longrightarrow \begin{array}{r} {\scriptstyle 5}\\ 7\,8\,9\,6\,0\,0\\ -\,3\,6\,9\,4\,4\\ \hline 4\,2\,0\,1\,6 \end{array}$$

e.
$$\begin{array}{r} 2\,6\,5\,8\,9\\ -\ 4\,1\,1\,2\\ \hline 2\,2\,4\,7\,7 \end{array} \longrightarrow \begin{array}{r} {\scriptstyle 1\ 1\ 1\ 1}\\ 2\,2\,4\,7\,7\\ +\,3\,9\,8\,7\,7\\ \hline 6\,2\,3\,5\,4 \end{array}$$

f.
$$\begin{array}{r} {\scriptstyle 1}\\ 7\,9\,2\,6\,3\\ +\,3\,0\,0\,0\,7\\ \hline 1\,0\,9\,2\,7\,0 \end{array} \longrightarrow \begin{array}{r} {\scriptstyle 8\ 1\ 1\ 5}\\ 7\,9\,2\,6\,0\,3\\ -\,4\,8\,2\,7\,6\\ \hline 3\,0\,9\,8\,7 \end{array}$$

2. a. First find the sum of 12725 and 46891.
$$\begin{array}{r} {\scriptstyle 1\ 1}\\ 1\,2\,7\,2\,5\\ +\,4\,6\,8\,9\,1\\ \hline 5\,9\,6\,1\,6 \end{array}$$

Now, find the difference of 82600 and the sum.
$$\begin{array}{r} {\scriptstyle 7\ 1\ 1\ 5\ \ 9}\\ 8\,2\,6\,0\,0\,0\\ -\ 5\,9\,6\,1\,6\\ \hline 2\,2\,9\,8\,4 \end{array}$$

b. First find the difference of the two numbers.
$$\begin{array}{r} {\scriptstyle 7\ 1\ 1}\\ 3\,8\,4\,2\,0\,5\,6\\ -\,1\,2\,5\,7\,9\,1\\ \hline 2\,5\,8\,4\,6\,5 \end{array}$$

Now, find the sum of the two numbers.
$$\begin{array}{r} {\scriptstyle 1\ 1\ 1\ 1}\\ 3\,8\,4\,2\,5\,6\\ +\,1\,2\,5\,7\,9\,1\\ \hline 5\,1\,0\,0\,4\,7 \end{array}$$

Now we subtract the difference of the two numbers from the sum of two numbers.
$$\begin{array}{r} {\scriptstyle 4\ 1\ 0\ \ 9\ \ 9}\\ 5\,1\,0\,0\,0\,4\,7\\ -\ 2\,5\,8\,4\,6\,5\\ \hline 2\,5\,1\,5\,8\,2 \end{array}$$

c. Cost of car = ₹135000
Money spent on maintenance = +₹ 95000
Total cost = ₹230000

Selling price of the car = 300000
Cost price of the car = −230000
Gain = 20000

d. We first find the sum of 284512 and 473125.

$$\begin{array}{r} 184512 \\ +\,473125 \\ \hline 757637 \end{array}$$

Now subtract this sum from 885362.

$$\begin{array}{r} 885362 \\ -\,757637 \\ \hline 127725 \end{array}$$

e. First, find the sum of 655324 and 91839

$$\begin{array}{r} 655324 \\ +\,91839 \\ \hline 747163 \end{array}$$

Then find the sum of 814926 and 66046 =

$$\begin{array}{r} 814926 \\ +\,66046 \\ \hline 880972 \end{array}$$

Now, find the difference between the two sums.

$$\begin{array}{r} 880972 \\ -\,747163 \\ \hline 133809 \end{array}$$

f. We first find the total production of toys in 1st week and 2nd week.

∴ Toys produced in 1st week = 47579
Toys produced in 2nd week = +28064
75643

Now we subtract the sum from the total production of toys in a month.

Total production = 4200000
Toys produced in 1st and 2nd week = −75643
66357

Test Your Skills

Multiple choice questions

1.-5. Refer answers given at the end of the book.

Apply Your Skills

Problem solving Assessment

1. No of outlets in up = 12630
No of outlets in Maharashtra = 18937
No of outlets in Kerala = 66357
Total outlets = 46939

Out of them 9876 outlets are closed, remaining outlets are

$$\begin{array}{r} {}^{3}\cancel{4}\,{}^{\textcircled{1}1}\cancel{0}\,{}^{9}\cancel{6}\,{}^{9}\textcircled{1}3\ 9 \\ -\ 9\ 8\ 7\ 6\ 0 \\ \hline 3\ 7\ 0\ 6\ 3 \end{array}$$

2. Cost of an LCD TV = ₹5 7, 7 5 0
Cost of a car = ₹3 5 0 0 0 0
Total cost = ₹4 0 7 7 5 0
But Abhay has ₹256750 only, so he needs

$$\begin{array}{r} ₹4\,0\,7\,7\,5\,0 \\ -\ ₹2\,5\,6\,7\,5\,0 \\ \hline ₹1\,5\,1\,0\,0\,0 \end{array}$$

3. The number of votes secured by C = 94576
B got 46871 votes less than that of C, SO number of votes secured by B is

$$\begin{array}{r} {}^{8}\cancel{9}\,{}^{\textcircled{1}3}\cancel{4}\,\textcircled{1}5\ 7\ 6 \\ -\ 4\ 6\ 8\ 7\ 1 \\ \hline 4\ 7\ 7\ 0\ 5 \end{array}$$

Hence, the number of cotes secured by A is

$$\begin{array}{r} 4\ 7\ 7\ 0\ 5 \\ +\ 1\ 5\ 0\ 0\ 0 \\ \hline 6\ 2\ 7\ 0\ 5 \end{array}$$

(More votes than that of B)

4. Hint: First find total cost price and total selling price. Then get their difference which is ₹1300

Value Based Questions

1. No. of Pages read by Razia on Monday and Tuesday = 90 + 130 = 220
Total no. of pages in the novel = 450
Hence the no. of Pages read by her brother = 450 – 220 = 230
His brother showed family values.

2. The amount of water stored in the storage tank =

$$1\,{}^{5}\cancel{0}\cancel{6}\,2\,{}^{8}\cancel{9}\,\textcircled{1}5\ L$$

After leakage, water left in the storage tank

$$-\ 1\,\cancel{4}\ 9\ 5\ 6\ 0\ L$$

So the amount of water collected in the rain harvesting tank

$$1\,\cancel{1}\ 3\ 3\ 5\ 5\ L$$

Rohan Shows social responsibility

3. Order of milk = $1\ 8\ {}^{5}\cancel{6}\ {}^{9}0\ \textcircled{1}4$ L
Availabilaty of mail = $-\ 1\ 5\ 3\ 0\ 7$ L
Amount of water mixed in milk = $3\ 2\ 9\ 7$ L
The milkman shows dishonesty

HOTS

1. For 10 correct answer, marks obtained = 10 × 4 = 40
For 9 correct and 1 incorrect answer = 9 × 4 – 1 = 36 – 1 = 35
For 8 correct and 2 incorrect answer = 8 × 4 – 2 × 1 = 32 – 2 = 30
For 7 correct and 3 incorrect answer = 7 × 4 – 3 × 1 = 28 – 3 = 25
For 6 correct and 4 incorrect answer = 6 × 4 – 4 × 1 = 24 – 4 = 20
Raman needs more than 20 marks, so he must answer at least 7 questions correctly.

2.

Time	Populations of village A	Population of village B
After 1 Year	– 2000 every year	+ 4000 every year
	90000	54000
After 2 years	88000	58000
After 3 years	86000	62000
After 4 Years	84000	66000
After 5 Years	82000	70000
After 6 Years	80000	74000
After 7 Years	78000	78000

After 7 years, population of village A and B will be same.

Mental Maths

Refer answer at the end of the book.

CHAPTER 5

Multiplication

Lesson plan

OBJECTIVES

The students should know

(i) Properties of multiplication

(ii) Word problems

(iii) Estimating the product

(iv) Multiplication using Lattics squares

Pre-Requisite Knowledge: The students should have the basic knowledge of simple multiplication as they have studied in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, smart-board/projector, geometrical board and pointer.

Method of Teaching: The following methods will be taught in the class with simple examples.

(i) **Properties of Multiplication:**

(a) If we multiply any number with 0, it gives always 0.

(b) If we multiply any number by 1, then the number will remain same.

(c) **Commutative Property:** If we change the order of two numbers to be multiplied, then the result is same.

(i) $253 \times 12 = 12 \times 253 = 3036$

(ii) $70 \times 30 = 30 \times 70 = 2100$

(d) **Associative property:** If the grouping of the numbers is changed, then the product is same

$8 \times (7 \times 6) = (8 \times 7) \times 6 = 336$

(e) **Distributive Property:**

(a) $250 \times 125 = 250 \times (100 + 25 + 5)$

$= 250 \times 100 + 250 \times 20 + 250 \times 5$

$= 25000 + 5000 + 1250$

$= 31250$

Recapitulation: The whole chapter will be revised in the class taking some simple examples and the problem of the students will be solved immediately.

Home Assignment:

(A) From Text Book:

(i) Exercise 5.2 — Solve Q. No. 1 to 5

(ii) Exercise 5.3 — Solve Q. No. 1, 2, 3 all parts

(iii) Exercise 5.4 — Solve Q. No. 1 and 2 all parts

(iv) Exercise 5.5 — Solve Q. No. 1 to 10

(B) Extra Questions:

(1) Using distributive property solve the following

(a) 3856×125 (b) 2562×251

(2) Solve the following using associative property

$25 \times (36 \times 10) = (25 \times 36) \times 10$

Exercise 5.1

a. $\begin{array}{r} {\scriptstyle ④}\\ 75\\ \times\ 8\\ \hline 600 \end{array}$ b. $\begin{array}{r} {\scriptstyle ⑥}\\ 97\\ \times\ 9\\ \hline 873 \end{array}$ c. $\begin{array}{r} {\scriptstyle ②②}\\ 167\\ \times\ 3\\ \hline 501 \end{array}$ d. $\begin{array}{r} {\scriptstyle ②③}\\ 235\\ \times\ 7\\ \hline 1645 \end{array}$ e. $\begin{array}{r} {\scriptstyle ②}\\ 462\\ \times\ 4\\ \hline 1848 \end{array}$

f. $\begin{array}{r} {\scriptstyle ①①}\\ 1222\\ \times\ 8\\ \hline 9776 \end{array}$ g. $\begin{array}{r} {\scriptstyle ①①①}\\ 2336\\ \times\ 3\\ \hline 7008 \end{array}$ h. $\begin{array}{r} {\scriptstyle ②①}\\ 1743\\ \times\ 3\\ \hline 11229 \end{array}$ i. $\begin{array}{r} {\scriptstyle ①①}\\ 4673\\ \times\ 2\\ \hline 9346 \end{array}$ j. $\begin{array}{r} {\scriptstyle ①④}\\ 7138\\ \times\ 5\\ \hline 35690 \end{array}$

Exercise 5.2

1.–3. Refer answer at the end of the book.

4. a. $35 \times 30 = (35 \times 3) \times 10 = 105 \times 10 = 1050$

b. $117 \times 40 = (117 \times 4) \times 10 = 468 \times 10 = 4680$

c. $175 \times 60 = (175 \times 6) \times 10 = 1050 \times 10 = 10500$

d. $95 \times 300 = (95 \times 3) \times 100 = 285 \times 100 = 28500$

e. $185 \times 800 = (185 \times 8) \times 100 = 1480 \times 100 = 148000$

f. $223 \times 600 = (223 \times 6) \times 100 = 1338 \times 100 = 133800$

g. $416 \times 400 = (416 \times 4) \times 100 = 1664 \times 100 = 166400$

5. Refer answers on page 211.

Exercise 5.3

1. a.
$$\begin{array}{r} {\scriptstyle 1\,1} \\ {\scriptstyle 6\,5} \\ 176 \\ \times\,29 \\ \hline {\scriptstyle 1\,1} \\ 1584 \\ +3520 \\ \hline 5104 \end{array}$$

b.
$$\begin{array}{r} {\scriptstyle 1} \\ {\scriptstyle 5\,2} \\ 273 \\ \times\,28 \\ \hline 2184 \\ +5460 \\ \hline 7644 \end{array}$$

c.
$$\begin{array}{r} {\scriptstyle 1} \\ 937 \\ \times\,12 \\ \hline 1874 \\ +9370 \\ \hline 11244 \end{array}$$

d.
$$\begin{array}{r} {\scriptstyle 3\,4} \\ {\scriptstyle 4\,4} \\ 878 \\ \times\,56 \\ \hline {\scriptstyle 1} \\ 5268 \\ +43900 \\ \hline 49168 \end{array}$$

e.
$$\begin{array}{r} {\scriptstyle 1} \\ {\scriptstyle 3\,2} \\ 564 \\ \times\,25 \\ \hline {\scriptstyle 1\,1} \\ 2820 \\ +11280 \\ \hline 14100 \end{array}$$

f.
$$\begin{array}{r} {\scriptstyle 2\,1} \\ {\scriptstyle 2\,1} \\ 674 \\ \times\,33 \\ \hline 2022 \\ +20220 \\ \hline 22242 \end{array}$$

g.
$$\begin{array}{r} {\scriptstyle 1} \\ {\scriptstyle 2\,3\,3} \\ 2345 \\ \times\,27 \\ \hline {\scriptstyle 1\,1} \\ 16415 \\ +46900 \\ \hline 63315 \end{array}$$

h.
$$\begin{array}{r} {\scriptstyle 1\,1\,1} \\ {\scriptstyle 3\,5\,3} \\ 2585 \\ \times\,26 \\ \hline {\scriptstyle 1} \\ 15510 \\ +51700 \\ \hline 67210 \end{array}$$

i.
$$\begin{array}{r} {\scriptstyle 7\,7\,4} \\ 4896 \\ \times\,18 \\ \hline {\scriptstyle 1\,1\,1} \\ 39168 \\ +48960 \\ \hline 88128 \end{array}$$

j.
$$\begin{array}{r} {\scriptstyle 1\,1} \\ {\scriptstyle 2\,2} \\ 3278 \\ \times\,23 \\ \hline {\scriptstyle 1\,1} \\ 9834 \\ +65560 \\ \hline 75394 \end{array}$$

k.
$$\begin{array}{r} {\scriptstyle 2\,3\,2} \\ 5243 \\ \times\,19 \\ \hline {\scriptstyle 1} \\ 47187 \\ +52430 \\ \hline 99617 \end{array}$$

l.
$$\begin{array}{r} {\scriptstyle 2\ 1} \\ 7613 \\ \times\,14 \\ \hline 30452 \\ +76130 \\ \hline 106582 \end{array}$$

2. a.
$$\begin{array}{r} {\scriptstyle 1} \\ {\scriptstyle 2} \\ 208 \\ \times\,23 \\ \hline 624 \\ +4160 \\ \hline 4784 \end{array}$$

b.
$$\begin{array}{r} {\scriptstyle 1} \\ {\scriptstyle 4} \\ 705 \\ \times\,38 \\ \hline 5640 \\ +21150 \\ \hline 26790 \end{array}$$

c.
$$\begin{array}{r} {\scriptstyle 1\ 5} \\ 2309 \\ \times\,16 \\ \hline {\scriptstyle 1} \\ 13854 \\ +23090 \\ \hline 36944 \end{array}$$

d.
$$\begin{array}{r} {\scriptstyle 1} \\ {\scriptstyle 3} \\ 3006 \\ \times\,25 \\ \hline 15030 \\ +60120 \\ \hline 57510 \end{array}$$

3. Refer answers at the end of the book.

Exercise 5.4

1. a.
$$\begin{array}{r} {\scriptstyle 4\,4} \\ 467 \\ \times\,161 \\ \hline {\scriptstyle 1\,1} \\ 467 \\ 28020 \\ +46700 \\ \hline 75187 \end{array}$$

b.
$$\begin{array}{r} {\scriptstyle 1} \\ {\scriptstyle 5} \\ 761 \\ \times\,139 \\ \hline {\scriptstyle 1\,1} \\ 6849 \\ 22830 \\ +76100 \\ \hline 105779 \end{array}$$

c.
$$\begin{array}{r} 510 \\ \times\,106 \\ \hline 3060 \\ 0000 \\ +51000 \\ \hline 54060 \end{array}$$

d.
$$\begin{array}{r} {\scriptstyle 1\,4} \\ {\scriptstyle 2\,7} \\ {\scriptstyle 2\,6} \\ 528 \\ \times\,698 \\ \hline {\scriptstyle 1\,1} \\ 4224 \\ 47520 \\ +316800 \\ \hline 368544 \end{array}$$

e.
$$\begin{array}{r} 3074 \\ \times\ 189 \\ \hline 27666 \\ 245920 \\ +307400 \\ \hline 580986 \end{array}$$

f.
$$\begin{array}{r} 1429 \\ \times\ 303 \\ \hline 4287 \\ 00000 \\ +428700 \\ \hline 432987 \end{array}$$

g.
$$\begin{array}{r} 2009 \\ \times\ 156 \\ \hline 12054 \\ 100450 \\ +200900 \\ \hline 313404 \end{array}$$

h.
$$\begin{array}{r} 1232 \\ \times\ 540 \\ \hline 0000 \\ 49280 \\ +616000 \\ \hline 665280 \end{array}$$

2. a.
$$\begin{array}{r} 373 \\ \times\ 425 \\ \hline 1865 \\ 7460 \\ +149200 \\ \hline 158525 \end{array}$$

b.
$$\begin{array}{r} 1065 \\ \times\ 115 \\ \hline 5325 \\ 10650 \\ +106500 \\ \hline 122475 \end{array}$$

3. a.
$$\begin{array}{r} 407 \\ \times\ 112 \\ \hline 814 \\ 4070 \\ +40700 \\ \hline 45584 \end{array}$$

b.
$$\begin{array}{r} 1710 \\ \times\ 217 \\ \hline 11970 \\ 17100 \\ +342000 \\ \hline 371070 \end{array}$$

For answers in words, refer answers on page 212.

Exercise 5.5

1. Cost of a book = ₹125
No. of tables = 55
Total cost = ₹(3425 × 55)
= ₹9375

$$\begin{array}{r} 125 \\ \times\ 75 \\ \hline 625 \\ +8750 \\ \hline 9375 \end{array}$$

2. Cost of a table = ₹3425
No. of books = 75
Total cost = ₹(125 × 75)
= ₹188375

$$\begin{array}{r} 3425 \\ \times\ 55 \\ \hline 17125 \\ +171250 \\ \hline 188375 \end{array}$$

3. Cost of a ticket = ₹15
No. of tickets sold = 347
Money collected = ₹(347 × 15)
= ₹5205

$$\begin{array}{r} 347 \\ \times\ 15 \\ \hline 1735 \\ +3470 \\ \hline 5205 \end{array}$$

4. No. of boxes = ₹350
Flowers in each box = 121
Total flowers packed
= ₹350 × 121
= ₹42350

$$\begin{array}{r} 350 \\ \times\ 121 \\ \hline 350 \\ 7000 \\ +35000 \\ \hline 42350 \end{array}$$

5. No. of days in February = 28
No. of hours in a day = 24
No. of minutes in an hour = 60
∴ No. of minutes in February = 28 × 24 × 60
= 28 × 1440 = 40320 min

$$\begin{array}{r} 1440 \\ \times\ 28 \\ \hline 11520 \\ +28800 \\ \hline 40320 \end{array}$$

6. Cards in pack = 52
No. of packs = 483
Total no. of cards = 483 × 52 = 25116

$$\begin{array}{r} 483 \\ \times\ 52 \\ \hline 966 \\ +24150 \\ \hline 25116 \end{array}$$

7. No. of passengers in a bus in one day = 164
No. of days in a year = 365
No. of passengers carried in a year = 365 × 164
= 59860

```
  365
 ×164
 1460
21900
+36500
59860
```

8. No. of kilometres = 234 km
No. of metres in 1 km = 1000 m
No. of metres in 234 km = (234 × 1000) m
= 234000 m

9. Sheets in a gross of paper = 144
No. of gross = 2874
Total sheets = 2874 × 144
= 413856

```
 2874
 ×144
 11496
114960
+287400
413856
```

10. Cost of a CD player = ₹2405
No. of CD players = 104
Total cost of CD players = ₹(2405 × 104)
= ₹250120

```
 2405
 ×104
 9620
 00000
+240500
250120
```

11. Toffees in a jar = 650
No. of jars = 317
Total toffees in all jars = 317 × 650
= 206050

```
  650
 ×317
 4550
 6500
+195000
206050
```

12. Weight of a box = 314 kg
No. of boxes = 163
Total weight of all boxes = 314 × 163 kg
= 51182 kg

```
  314
 ×163
  942
 18840
+31400
 51182
```

Exercise 5.6

a. (*i*) A pen costs ₹15. How much did a shopkeeper get if he sold 67 pens?

(*ii*) What will you get when you multiply 67 by 15?

(*iii*) How many minutes are there in 67 quarters of an hour?

b. (*i*) Can it be possible to multiply 836 by 245, by writing 245 on the top and 836 at the bottom? If yes, find the product?

(*ii*) If one ticket for reserved sleeper seats in train travelling from Delhi to Kerala costs ₹836, how much will 245 tickets costs?

(*iii*) Find the area of a rectangular field having length 836 m and breadth 245 m.

b. & c. Similar working as above.

Exercise 5.7

1. a. $60 \times 90 = 540$ **b.** $50 \times 30 = 1500$

c. $90 \times 50 = 4500$ **d.** $60 \times 30 = 1800$

e. $80 \times 40 = 3200$ **f.** $220 \times 30 = 6600$

2. a. $200 \times 100 = 20000$ **b.** $400 \times 300 = 120000$

c. $600 \times 100 = 60000$ **d.** $300 \times 300 = 90000$

e. $800 \times 300 = 240000$ **f.** $700 \times 300 = 210000$

3. 2375 is rounded off to 2400.

99 is rounded off to 100.

Now, no. of bags in godown = 2400

Weight of each bag = 100 kg

Total weight of all bags = 2400 × 100 kg

= 240000 kg

4. ₹5685 is rounded off to ₹56900.

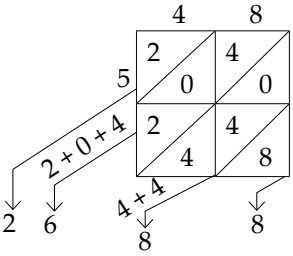
Now, cost of a bike = ₹56900

No. of bikes = 9

Total cost of a bikes = ₹(56900 × 9) = ₹512100

Exercise 5.8

1. a. By using lattice multiplication method

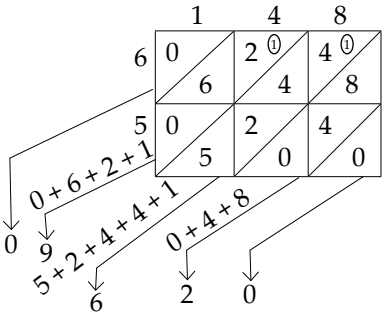


$\therefore$ $48 \times 56 = 2688$

By using column method

$$\begin{array}{r} 48 \\ \times 56 \\ \hline 288 \\ 2400 \\ \hline 2688 \end{array}$$

c By using lattice multiplication method

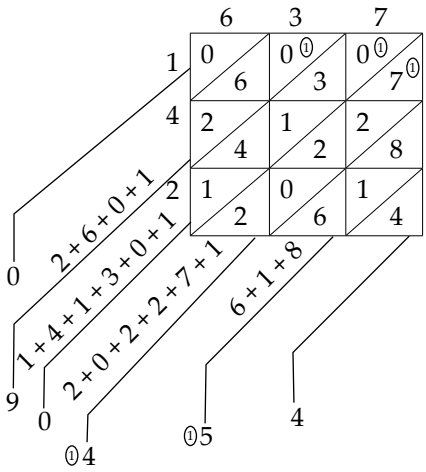


$\therefore$ $148 \times 65 = 9620$

By using column method

$$\begin{array}{r} 148 \\ \times 65 \\ \hline 740 \\ 8888 \\ \hline 9620 \end{array}$$

c. By using lattice multiplication method



By using column method

$$\begin{array}{r} 637 \\ \times 142 \\ \hline 1274 \\ 25480 \\ 63700 \\ \hline 90454 \end{array}$$

$\therefore$ $637 \times 142 = 90454$

b., d. & f. Similar working as above.

Test your Skills

Multiple Chouse Questions

1.-5. Refer answer at the end of the book.

Mental Maths

1. $15 \times 16 = 140$

2. $(5000 + 600 + 10 + 2) \times 3$ or $5612 \times 3 = 16836$

$= 15000 + 18000 + 30 + 6 = 16836$

3.-5. Refer answer at the end of the book.

Apply Your Skills

Problem Solving Assessment

1. No. of pages in a book = 160

No. of words written on each page = 2375

$\therefore$ Total no. of words in the book = $2375 \times 160 = 380000$

Hence total no. of words in 2 such books = $380000 \times 2 = 760000$

$$\begin{array}{r} 2375 \\ \times 160 \\ \hline 0000 \\ 142500 \\ 237500 \\ \hline 380000 \end{array}$$

2. & 3. Refer answer at the end of the book.

4. No. of check points between two destinations = 75

Distance between successive check points = 10 km 500 m = 10500 m

$\therefore$ The Distance between two destinations = $10500 \times 75 = 787500$ m

5. No. of days in a year = 365

Supply of feed per day to zoo = 425 kg

∴ Total supply of feed in year = 365 × 425 kg = 155125 kg

Now, cost of 1 kg feed = ₹10

∴ Total cost of feed for a year = ₹10 × 155125 = ₹1551250

```
  365
 ×425
 1825
 7300
146000
155125
```

Value Based Questions

1. No. of entitled elderly = 1450

Amount of pension for each people = 1450

so the sum distributed by government = ₹1000 × 1450 = ₹1450000

No. this is not sufficient for old people.

2. Monthly tuition fees = ₹3050

Monthly computer fees = ₹380

and monthly bus fees = ₹1500

Total fees fees for a mouth = ₹4900 × 12 = ₹58800

This, values annual school fees in ₹58800 Further,

Anees' annual fees was contributed by her four friends parents.

So the amount shared by each of them = ₹58800 ÷ 4 = ₹14,700

Value: Moral

HOTS

1. Refer answer at the end of the book.

2. As 8 × 2 + 2 × 5 = 26 so a is possible

As 9 × 2 + 5 = 23 so c. is possible

As 10 × 5 = 50 so d. is possible

There is no combination for 19 so b. is not possible.

CHAPTER 6

Division

Lesson plan

OBJECTIVES

The students should know

(i) Terms related to division

(ii) Relation between multiplication and division

(iii) Properties of division

(iv) Estimating the Quotient

(v) Word Problems

Pre-Requisite Knowledge: The students should have the basic knowledge of simple division as they have done in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, geometrical box, smart-board/ projector and the pointer.

Method of Teaching: The following methods of division will be taught in the class taking simple examples.

(i) **Dividend:** Which is to be divided.

(ii) **Divisor:** Which divides a given number.

(iii) **Quotient:** the answer we get after division.

(iv) **Relation between multiplication and division**

Divisor × Quotient + Remainder = Dividend

(v) **Properties of division**

(a) When a number is divided by itself, the answer is 1.

(b) When a number is divided by 1, the answer is the number itself.

(c) When 0 is divided by any number, we get 0

(d) Any number divided by 0 is not defined.

(vi) **Simplification:** We use DMAS for simplification

D = division, M = multiplication, A = addition, S = subtraction

Example: Simplify $8 + 2 \times 6 \div 2 - 3$

$$= 8 + 2 \times \frac{6}{2} - 3$$
$$= 8 + 2 \times 3 - 3$$
$$= 8 + 6 - 3$$
$$= 14 - 3 = 11$$

(Using DMAS)

Recapitulation: The whole chapter will be revised in the class taking some extra questions and the problem of the students will be solved accordingly.

Home Assignment:

(A) From Text Book:

(i) Exercise 6.2 — Solve Q. No. 1 and 2 all parts

(ii) Exercise 6.3 — Solve Q. No. 1, 2, 3 all parts

(iii) Exercise 6.4 — Solve Q. No. 1 to 4 all parts

(iv) Exercise 6.6 — Solve Q. No. 1 to 2 all parts

(B) Extra Questions:

(1) Find the remainder if 3852 is divided by 6

(2) Simplify using DMAS

$35 + 9 \div 3 \times 2 - 16$

Exercise 6.1

1. a. $38 \div 2$

$$\begin{array}{r|l} 2 & 38 \; (19 \\ & -2 \downarrow \\ & 18 \\ & -18 \\ & 00 \end{array}$$

Quotient = 19

Remainder = 0

b. $85 \div 5$

$$\begin{array}{r|l} 5 & 85 \; (17 \\ & -5 \downarrow \\ & 35 \\ & -35 \\ & 00 \end{array}$$

Q = 17

R = 0

c. $86 \div 2$

$$\begin{array}{r|l} 2 & 86 \; (43 \\ & -8 \downarrow \\ & 06 \\ & -6 \\ & 0 \end{array}$$

Q = 43

R = 0

d. $99 \div 3$

$3\overline{)99}\,(33$

$-9\downarrow$

09

-9

0

$Q = 33$

$R = 0$

e. $102 \div 4$

$4\overline{)102}\,(25$

$-8\downarrow$

22

-20

2

$Q = 25$

$R = 2$

f. $286 \div 2$

$2\overline{)286}\,(143$

$-2\downarrow$

08

$-8\downarrow$

06

-6

0

$Q = 143$

$R = 0$

g. $121 \div 3$

$3\overline{)121}\,(40$

$-12\downarrow$

01

$Q = 40$

$R = 0$

h. $117 \div 2$

$2\overline{)117}\,(58$

$-10\downarrow$

17

-16

1

$Q = 58$

$R = 1$

i. $726 \div 5$

$5\overline{)726}\,(145$

$-5\downarrow$

22

$-20\downarrow$

26

-25

1

$Q = 145$

$R = 2$

j. $883 \div 9$

$9\overline{)883}\,(98$

$-81\downarrow$

73

-72

1

$Q = 98$

$R = 1$

Exercise 6.2

Refer answers at the end of the book.

Exercise 6.3

1. a. $6150 \div 5$

$5\overline{)6150}\,(1230$

$-5\downarrow$

11

$-10\downarrow$

15

$-15\downarrow$

000

$Q = 1230$

$R = 0$

b. $5648 \div 2$

$2\overline{)5648}\,(2824$

$-4\downarrow$

16

$-16\downarrow$

04

$-4\downarrow$

08

-8

0

$Q = 2824$

$R = 0$

c. $8624 \div 4$

$4\overline{)8624}\,(2156$

$-8\downarrow$

06

$-4\downarrow$

22

$-20\downarrow$

24

-24

00

$Q = 2156$

$R = 0$

d. $8318 \div 7$

$7\overline{)8318}\,(1188$

$-7\downarrow$

13

$-7\downarrow$

61

$-56\downarrow$

58

-56

02

$Q = 459$

$R = 0$

e. $9223 \div 3$

$3\overline{)9223}\,(3074$

$-9\downarrow\downarrow$

022

$-21\downarrow$

13

-12

1

$Q = 3074$

$R = 1$

f. $1255 \div 6$

$6\overline{)1255}\,(209$

$-12\downarrow\downarrow$

055

-54

01

$Q = 209$

$R = 1$

g. $2442 \div 6$

$6\overline{)2442}\,(407$

$-24\downarrow\downarrow$

0042

-42

00

$Q = 407$

$R = 0$

h. $1377 \div 3$

$3\overline{)1377}\,(459$

$-12\downarrow$

17

$-15\downarrow$

27

-27

00

$Q = 459$

$R = 0$

i. $6642 \div 8$

$8\overline{)6642}\,(830$

$-64\downarrow$

24

$-24\downarrow$

02

$Q = 209$

$R = 2$

j. $2781 \div 9$

$9\overline{)2781}\,(309$

$-27\downarrow\downarrow$

0081

-81

00

$Q = 309$

$R = 0$

2. a. 7890 ÷ 5

```
5 | 7890 | 1578
  -5↓    |
   28    |
  -25↓   |
   39    |
  -35↓   |
    40   |
   -40   |
    00   |
```

Q = 1578
R = 0

Check:
Dividend = (Divisor × Quotient) + Remainder
= (5 × 1578) + 0
= 7890

b. 1266 ÷ 2

```
2 | 1266 | 633
 -12↓    |
  006    |
  -6↓    |
   06    |
   -6    |
    0    |
```

Q = 633
R. = 0

Check:
Dividend
= (D × Q) + R
= (2 × 633) + 0
= 1266

c. 2275 ÷ 7

```
7 | 2275 | 325
 -21↓    |
   17    |
 -14↓    |
   35    |
  -35    |
   00    |
```

Q = 325
R. = 0

Check:
Dividend
= (D × Q) + R
= (7 × 325) + 0
= 2275

d. 5080 ÷ 5

```
5 | 5080 | 1016
 -5↓↓    |
   08    |
  -5↓    |
   30    |
  - 30   |
    0    |
```

Q = 1016
R = 0

Check
Dividend
= (D × Q) + R
= (5 × 1016) + 0
= 5080

e. 1206 ÷ 6

```
6 | 1206 | 201
 -12↓↓   |
  006    |
   -6    |
    0    |
```

Q = 201
R = 0

Check
Dividend
= (D × Q) + R
= (6 × 201) + 0
= 1206

f. 4483 ÷ 6

```
6 | 4483 | 747
 -42↓    |
   28    |
  -24↓   |
   43    |
  -42    |
    1    |
```

Q = 747
R = 1

Check
Dividend
= (D × Q) + R
= (6 × 747) + 1
= 4482 + 1
= 4483

g. 1565 ÷ 2

```
2 | 1565 | 782
 -14↓    |
   16    |
 -16↓    |
   05    |
   -4    |
    1    |
```

Q = 782
R = 1

Check
Dividend
= (D × Q) + R
= (2 × 1565) + 1
= 1564 + 1
= 1565

h. 9314 ÷ 3

```
3 | 9314 | 3104
 -9↓     |
  03     |
 -3↓     |
  014    |
 -12     |
   2     |
```

Q = 3104
R = 2

Check
Dividend
= (D × Q) + R
= (3 × 3104) + 1
= 9312 + 2
= 9314

i. 3064 ÷ 9

```
9 | 3064 | 340
 -27↓    |
  36     |
 -36↓    |
   4     |
```

Q = 340
R = 4

Check
Dividend
= (D × Q) + R
= (9 × 3064) + 4
= 3060 + 4
= 3064

j. $1805 \div 2$

$2\overline{)1805}\,902$, $-18\downarrow\downarrow$, 005, -4, 1

Q = 902
R = 1

3. a. 7000 by 8

$8\overline{)7000}\,875$, $-64\downarrow$, 60, $-56\downarrow$, 40, -40, 0

Q = 875
R = 0

b. 9212 by 4

$4\overline{)9212}\,2303$, $-8\downarrow$, 12, $-12\downarrow$, 012, -12, 00

Q = 2303
R = 0

d. $6012 \div 3$

$3\overline{)6012}\,2004$, $-6\downarrow\downarrow\downarrow$, 012, -12, 00

Q = 2004
R = 0

f. $1017 \div 5$

$5\overline{)1017}\,203$, $-10\downarrow\downarrow$, 017, -15, 2

Q = 203
R = 2

4. $9\overline{)1044}\,116$, $-9\downarrow$, 14, $-9\downarrow$, 54, -54, 00

Q = 116
R = 0

Exercise 6.4

1. a. $12\overline{)47}\,3$, -36, 11

Q = 3
R = 11

Check: Dividend = (D × Q) + R
= (12 × 3) + 11
= 36 + 11 = 47

b. $13\overline{)75}\,5$, -65, 10

Q = 5
R = 10

Dividend = (13 × 5) + 10
= 65 + 10 = 75

c. $15\overline{)94}\,6$, -90, 4

Q = 6
R = 4

Dividend = (15 × 6) + 4
= 90 + 4 = 94

d. $39\overline{)887}\,22$, $-78\downarrow$, 107, -78, 29

Q = 22
R = 29

Dividend = (39 × 22) + 29
= 858 + 29 = 887

e. $28\overline{)913}\,32$, $-84\downarrow$, 73, -56, 17

Q = 32
R = 17

Dividend = (28 × 32) + 17
= 896 + 17 = 913

f. $33\overline{)784}\,23$, $-66\downarrow$, 124, -99, 25

Q = 23
R = 25

Dividend = (33 × 23) + 25
= 759 + 25 = 784

g. $15\overline{)270}\,(18$
$-15\downarrow$ Q = 18
120
-120 R = 0
00

Dividend = (15 × 18) + 0 = 270

h. $12\overline{)900}\,(75$
$-84\downarrow$ Q = 75
60
R = 0 -60
00

Dividend = (12 × 75) + 0 = 900

i. $40\overline{)360}\,(9$
-360 Q = 9
00
R = 0

Dividend = (40 × 9) + 0
= 360

j. $21\overline{)765}\,(36$
$-63\downarrow$ Q = 36
135
-126 R = 9
9

Dividend = (21 × 36) + 9
= 756 + 9 = 765

2. a. 91 ÷ 31

For estimating the quotieut, round off the numbers in tens, as 90 ÷ 3 that means 9 ÷ 3 = 3

b. Similar working as above

3. a. $17\overline{)6260}\,(368$
$-51\downarrow$ Q = 368
116
$-102\downarrow$ R = 4
140
-136
4

b. $79\overline{)8059}\,(102$
$-79\downarrow\downarrow$ Q = 102
159
-158 R = 1
1

c. $14\overline{)2389}\,(170$
$-14\downarrow$ Q = 170
98
$-98\downarrow$ R = 9
09

d. $37\overline{)8141}\,(220$
$-74\downarrow$ Q = 220
74
$-74\downarrow$ R = 1
01

e. $95\overline{)9500}\,(100$
$-95\downarrow\downarrow$ Q = 100
00
R = 0

f. $38\overline{)8008}\,(210$
$-76\downarrow$ Q = 210
40
$-38\downarrow$ R = 28
28

4. a. We have quotient = 487 and divisor = 12

Dividend = Q × D If R = 0
= 487 × 12 = 5844

b. We know that

Dividend = (Divisor × Quotient) + Remainder

Here, Divisor = 19, Remainder = 5 and Quotient = 63

∴ Dividend = (19 × 63) + 5 = 1197 + 5 = 1202

c. Dividend = 2940; Quotient = 35

We know that

Dividend = (Divisor × Quotient) + 0

or Dividend ÷ Quotient = Divisor

∴ 2940 ÷ 35 = Divisor ⇒ Divisor = 84

$35\overline{)2940}\,(84$
$-280\downarrow$
140
-140
0

Exercise 6.5

Refer answers at the end of the book.

Exercise 6.6

1. a. $117\overline{)445}\,(3$
-351
94
Q = 3
R = 94

b. $122\overline{)732}\,(6$
-732
00
Q = 6
R = 0

c. $125\overline{)940}\,(7$
-875
65
Q = 7
R = 65

d. $104\overline{)872}\,(8$
-832
40
Q = 8
R = 40

e. $218\overline{)1962}\,(9$
-1962
0
Q = 9
R = 0

f. $251\overline{)4609}\,(18$
$-251\downarrow$
2099
-2008
91
Q = 18
R = 91

g. $416\overline{)3790}\,(9$
-3744
46
Q = 9
R = 46

h. $125\overline{)6825}\,(54$
$-625\downarrow$
575
-500
75
Q = 54
R = 75

i. $256\overline{)4142}\,(16$
$-256\downarrow$
1582
-1536
46
Q = 16
R = 150

j. $385\overline{)1690}\,(4$
-1540
152
Q = 4
R = 150

2. Dividend = 861 and Divisor = 123

$\therefore$ $123\overline{)861}\,(7$
-861
00
Q = 7
R = 0

b. Dividend = (D × Q) + R
Here, D = 155, Q = 6 and R = 10
Now, Dividend = (155 × 6) + 10
= 930 + 10 = 940

c. Divisor = Dividend ÷ Quotient
Here, Dividend = 8927 and Q = 79
$\therefore$ Divisor = 8927 ÷ 79
Here, Divisor = 113.

$79\overline{)8927}\,(113$
$-79\downarrow$
102
$-79\downarrow$
237
-237
00

Exercise 6.7

1. Total no. of pencils = 1379
Pencils in a box = 3
No. of boxes needed = 1379 ÷ 3
Here, Q = 459 and R = 2
No. of boxes needed = 459 and pencils left 2.

$\therefore$ $3\overline{)1379}\,(459$
$-12\downarrow$
17
$-15\downarrow$
29
-27
2

2. Total no. of chairs = 1004
Chairs in a row = 9
No. of rows made = 1004 ÷ 9

i.e., $9\overline{)1004}\,(111$
$-9\downarrow$
10
$-9\downarrow$
14
-9
5

Q = 111
R = 5

111 rows can be made and 5 chairs are left.

3. Total no. of tins = 3682

No. of containers = 7

No. of tins in each container = 3682 ÷ 7

Q = 111

R = 5

```
7 ) 3682 ( 526
   -35↓
    18
   -14↓
     42
    -42
     00
```

526 tins were put in each container.

4. No. of tickets sold = 1146

No. of sections = 6

No. of people in each section = 1146 ÷ 6

191 person can sit in each section.

```
6 ) 1146 ( 191
   -6↓
    54
   -54↓
     6
    -6
     0
```

5. No. of sweets = 4275

Sweets in 1 packet = 75

No. of packets required = 4275 ÷ 75 = 57

57 packets are required to pack 4275 sweets.

```
75 ) 4275 ( 57
   -375↓
    525
   -525
     0
```

6. Total minutes = 2520 min.

Minutes in an hour = 60

∴ No. of hours in 2520 mins = 2520 ÷ 60 = 42 hours

42 hours are there in 2520 minutes.

```
60 ) 2520 ( 42
   -240↓
    120
   -120
     0
```

7. Product of two numbers = 1820

One number = 35

Other no. = 1820 ÷ 35 = 52

```
35 ) 1820 ( 52
   -175↓
     70
    -70
     00
```

8. No. of days = 1575

Days in a week = 7

∴ No. of weeks in 1575 days = 1575 ÷ 7

= 225 weeks

```
7 ) 1575 ( 225
   -14↓
    17
   -14↓
     35
    -35
     00
```

9. Total cost of shirts = ₹8832

No. of shirts = 23

Cost of each shirt = ₹(8832 ÷ 23)

= ₹384

Each shirt costs ₹384.

```
23 ) 8832 ( 384
   -69↓
    193
   -184↓
     92
    -92
     00
```

10. No. of apples = 816

No. of people = 102

Share of each person = (816 ÷ 102) apples = 8 apples

102) 816 (8
−816
0

11. Total balloons = 3625

Balloons in a packet = 145

No. of packets required to pack

3625 balloons = 3625 ÷ 145 = 25

145) 3625 (25
−290↓
725
−725
0

12. Total length of wire = 7025 m

Length of each piece of wire = 120 m

To get the required no. of pieces that will be cut off from 7025 m wire = 7025 ÷ 120= 58

120) 7025 (58
−600 ↓
1025
−960
065

Since Q = 58 and R = 65 ∴ 58 pieces can be cut off and 65 wire will remain.

Exercise 6.8

1. a. (i) Out of 850 invitee in a marriage function, seats are arranged in a group of 10 for them to sit. How many groups are formed?

(ii) Divide 850 by 10 mentally and find the quotient.

(iii) ₹850 is divided among 10 students. How much amount did each student get?

c. (i) 3318 books are to be arranged in 79 racks. How many books will each rack contain?

(ii) If 79 tennis balls costs ₹3318, what is the cost of a ball?

(iii) The total weight of 79 bags of rice is 3318 kg. What is the weight of each bag?

b., d. and f. Similar working as above.

Exercise 6.9

a. 83 ÷ 17	= 80 ÷ 20	= 4		b.	86 ÷ 27	= 90 ÷ 30	= 3
c. 62 ÷ 17	= 60 ÷ 20	= 3		d.	194 ÷ 23	= 190 ÷ 20	= 9
e. 255 ÷ 25	= 260 ÷ 30	= 8		f.	575 ÷ 55	= 580 ÷ 60	= 9
g. 3608 ÷ 52	= 3610 ÷ 50	= 72		h.	7615 ÷ 15	= 7620 ÷ 20	= 381
i. 1825 ÷ 27	= 1830 ÷ 30	= 61					

Exercise 6.10

We should follow DMAS (Division, Multiplication, Addition, Subtraction) rule while solving problems.

a. 9 + 2 + 1 + 5 – 3 – 1	= 17 – 3 – 1	= 14 – 1	=13
b. 600 ÷ 8 + 3 + 2	= 75 + 3 + 2	= 80	
c. 5 + (2 × 3 × 1) + 4	= 5 + 6 + 4	= 15	
d. 5 × 684 ÷ 4 – 2	= 5 × 171 – 2	= 855 – 2	= 853
e. 666 ÷ 6 + 1 + 5	= 111 + 1 + 5	= 117	
f. 500 ÷ 10 × 4 + 8 – 1	= 50 × 4 + 8 – 1	= 200 + 8 – 1	= 208 – 1 = 207

g. $472 - 270 \div 10 = 472 - 27 = 445$

h. $629 + 132 \div 3 \times 5 = 629 + 44 \times 5 = 629 + 220 = 849$

i. $215 + 405 \times 48 \div 8 - 34 = 215 + 405 \times 6 - 34 = 215 + 2430 - 34 = 2645 - 34 = 2611$

Test your Skills

Multiple Choice Questions

1.-5. Refer answers at the end of the book.

HOTS

1. Refer answers at the end of the book.

2. We Have $7 + 2 - 8 \times 2 \div 6$

Replacing the sings $+ \rightarrow \times \rightarrow \div$, $\div \rightarrow -$ and $- \rightarrow +$ we get

$7 \times 2 + 8 \div 2 - 6$

$= 7 \times 2 + 4 - 6$

$= 18 - 6 = 12$

Apply your skills

Problem Solving Assessment

1. Dividend = 3153, Quotient = 36 and Remainder = 21

We know that Dividend = Divisor × Quotient + Remainder

So first subtract 21 from 3153 and then divide result by 36

$3132 - 21 = 2132$

and $3132 \div 36 = 87$

$\therefore$ Divisor = 87

$$\begin{array}{r|l} 36 & 3132 \\ & -288\downarrow \\ \hline & 252 \\ & -252 \\ \hline & 0 \end{array} \quad 87$$

2. Refer answer at the end of the book.

3. For Mohit,

Cost of 1 DVD player = ₹5149

so cost of 4 DVD players = ₹5149 × 4 = ₹20596

For Safina, Cost of 4 DVD player = ₹2059 + ₹1960 = ₹22556

so cost of 1 DVD players = ₹22556 ÷ 4 = ₹5639

4. Cost of 1 ticket for 1st class seat = ₹225

Total collection form the sale of tickets = ₹73125

Number tickets sold = 73125 ÷ 225 = 325

$$\begin{array}{r|l} 225 & 37125 \\ & -675 \\ \hline & 562 \\ & -450 \\ \hline & 1125 \\ & 1125 \\ \hline & 0 \end{array} \quad 87$$

Now. Total no. of people = 450

So number of seats allotted in balcony = 450 – 325

= 125

Value Based Questions

1. a. In each carton, there are 6 boxes containing rows with 4 apples in each.
That means, total apples in a carton = 6 × 6 × 4 apples = 144 apples

b. since 100 cartons are arranged in 10 layers,
so number of cartons in each layer = 100 ÷ 10 = 10 cartons

c. No of apples in 1 carton = 144
No of cartons loaded in a truck = 100
So no of apples loaded in a truck = 144 × 100 = 14400
so no of apples loaded in 5 truck = 5 × 14400 = 72000 apples

d. Value: helping attitude/helpful nature

Mental Maths

1. As 756 ÷ 42 = 18 and 13 × 3 = 39

$\therefore$ 756 ÷ 42 < 13 × 13

2. 354 $\xrightarrow{\text{Rounding off in100s}}$ 400

58 $\xrightarrow{\text{Rounding off in 10s}}$ 60

Now 400 divided by 60 given the quotient as 6

3. Largest 4-digit no. = 9999

divisible 9999 by 12, we get

$\therefore$ Required 4- digit no. = 9999 – 3

```
12 ) 9999 ( 833
    -96
     39
    -36
     39
     36
      3
```

4.-5. Refer answers given at the end of the book

CHAPTER 7

Multiples and Factors

Lesson plan

OBJECTIVES

The students should know

(i) Multiple of a number
(ii) Properties of multiples
(iii) Least Common Multiples (LCM)
(iv) Factors and the properties of factors
(v) Highest Common Factor (HCF)
(vi) Prime and Composite numbers
(vii) Prime factorisation

Pre-Requisite Knowledge: The students should have the basic knowledge of multiples and factors of small numbers as they have done in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, smart-board/projector, geometrical box and the pointer.

Method of Teaching: The following topics and sub-topics will be taught in the class taking some simple examples

(i) Multiple of a number = The number × buy counting number

(ii) **Properties of multiple:**

(a) Every number is a multiple of 1.

(b) The first and smallest multiple of a number is the number itself.

(c) Multiple of a number is exactly divisible by it.

(d) Every multiple of a number is great or equal to the number.

(iii) **Least Common Multiple (LCM)**

Example: Find the LCM of 6, 8 and 12

Multiples of 6 are : 6, 12, 18, (24), 30, 36, 42, ...

Multiples of 8 are : 8, 16, (24), 40, 48, ...

Multiples of 12 are : 12, (24), 36, 48, 60

$\therefore$ Least common multiple is 24

$\therefore$ LCM = 24

(iv) **Highest Common Factors (HCF)**

Example: Find the HCF of 40, 56 and 24

Factors of 40 = (1), (2), (4), 5, (8), 10, 20, 40

Factors of 56 = (1), (2), (4), 7, (8), 14, 28, 56

Factors of 24 = (1), (2), 3, (4), 6, (8), 12, 24

Hence, HCF = 8 (The highest common factor)

Recapitulation: The whole chapter will be revised in the class taking some simple examples and the problem of the students will be solved immediately.

Home Assignment:

(A) From Text Book:

(i) Exercise 7.1 — Solve Q. No. 1 to 5 all parts

(ii) Exercise 7.2 — Solve Q. No. 1 to 6 all parts

(iii) Exercise 7.4 — Solve Q. No. 1 to 4 all parts

(iv) Exercise 7.5 — Solve Q. No. 1 and 2 all parts

(B) Extra Questions:

(1) Find the LCM of 6, 8, 18 and 24

(2) Find the HCF of 36, 24, 18

(3) Write the prime factors of 72 using Factor Tree Method.

Exercise 7.1

1.–2. Refer answers on page 212.

3. a. $5 = 5 \times 1 = 5$; $5 \times 2 = 10$; $5 \times 3 = 15$; $5 \times 4 = 20$

b. $14 = 14 \times 1 = 14$; $14 \times 2 = 28$; $14 \times 3 = 42$; $14 \times 4 = 56$

c.-d. Similar working as above

4. a. Fifth multiple of $9 = 9 \times 5 = 45$

b. Fifth multiple of $20 = 20 \times 5 = 100$

c. Fifth multiple of $31 = 31 \times 5 = 155$

d. Fifth multiple of $50 = 50 \times 5 = 250$

5.–6. Refer answers at the end of the book.

7. a. Multiples of 2 = 2, 4, (6), 8, 10, (12), 14, 16, (18), 20
Multiples of 3 = 3, (6), 9, (12), 15, (18), 21, 24, 27, 30

b. Multiples of 6 = 6, 12, (18), 24, 30, (36), 42, 48, (54), 60
Multiples of 9 = 9, (18), 27, (36), 45, (54), 63, 72, 81, 90

c. Multiples of 5 = 5, 10, 15, 20, 25, (30), 35, 40, 45, 50
Multiples of 7 = 7, 14, 21, 28, (35), 42, 49, 56, 63, 70

d. Multiples of 4 = 4, 8, (12), 16, 20, (24), 28, 32, (36), 40
Multiples of 6 = 6, (12), 18, (24), 30, (36), 42, 48, 54, 60

8. Multiples of 8 greater than 40 and less than 72 are
$8 \times 6 = 48$; $8 \times 7 = 56$; $8 \times 8 = 64$

Exercise 7.2

Refer answers at the end of the book.

Exercise 7.3

1. a. Multiples of 2 = 2, 4, (6), 8, 10, ...
Multiples of 3 = 3, (6), 9, 12, ...
Hence L.C.M. of 2 and 3 = 6.

b. Multiples of 6 = (6), 12, ...
Multiples of 2 = 2, 4, (6), 8, ...
L.C.M. of 2 and 6 is 6.

c. Multiples of 4 = 4, 8, 12, 16, 20, 24, 28, 32, (36), 40, ...
Multiples of 9 = 9, 18, 27, (36), 45, ...
L.C.M. of 4 and 9 is 36.

d. Multiples of 6 = 6, 12, 18, 24, 30, 36, 42, (48), 54, ...
Multiples of 16 = 16, 32, (48), 64, ...
L.C.M. of 6 and 16 = 48.

e. Multiples of 5 = 5, (10), 15, ...
Multiples of 2 = 2, 4, 6, 8, (10), 12, ...
L.C.M. of 5, 2 and 10 = 10.
L.C.M. of 5, 10 and 15 = 30.

f. Multiples of 5 = 5, 10, 15, 20, 25, (30), 35,...
Multiples of 10 = (10), 20, ...
Multiples of 10 = (30), 40, 50...

g. Multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, (36)...
Multiples of 9 = 9, 18, 27, (36)...
Multiples of 12 = 12, 24, (36), 48, ...
L.C.M. of 3, 9 and 12 = 36.

h. Multiples of 12 = 12, 24, (36), 48, ...
Multiples of 9 = 9, 18, 27, (36), 45, ...
Multiples of 6 = 6, 12, 18, 24, 30, (36), 42, ...
L.C.M. of 12, 9 and 6 = 36.

i. Multiples of 12 = 12, 24, 36, 48, (60), 72, ...
Multiples of 15 = 15, 30, 45, (60), 75, ...
L.C.M. of 15 and 12 = 60.

i. Multiples of 12 = 12, 24, 36, 48, 60, 72, 84, 69, 108, 120, 132, 144, 156, 168, (180)...
Multiples of 15 = 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, (180), 195...
Multiples of 18 = 18, 36, 54, 68, 72, 90, 126, 144, 162, (180)
L.C.M. of 15, 12and 18 =180.

j. Similar working as above.

2. a. To find the next time both tankers will visit on the same day, we find the LCM of 4 & 5.
∴ Multiples of 4 = 4, 8, 12, 16, (20), 24, ...
Multiples of 5 = 5, 10, 15, (20), 25, ...
L.C.M. of 4 and 5 = 20
Hence, both the tanker will visit on 20th day from today.

b. We find L.C.M. of 10 and 5.
Now, Multiples of 10 = (10), (20), 30, 40, 50, ...
Multiples of 5 = 5, (10), 15, (20), 25, ...
Since L.C.M. of 5 and 10 = 10
∴ Mrs. Sharma will water both the plants on 10th day from today.

Exercise 7.4

1. a. Factors of 12 = 12 × 12
= 2 × 6
= 4 × 3
Hence, factors of 12 are
1, 2, 3, 4, 6 and 12

b. 32 = 1 × 32
= 2 × 16
= 4 × 8
Hence, factors of 32 are
1, 2, 4, 8, 16 and 32.

c. 40 = 1 × 40
= 2 × 20
= 4 × 10
= 5 × 8
Hence, factors of 40 are
1, 2, 4, 5, 8, 10, 20 and 40.

d. 56 = 1 × 56
= 2 × 28
= 4 × 14
= 7 × 8
Hence factors are
1, 2, 4, 7, 8, 14, 28 and 56.

e. Similar working as above.

2.–3. Refer answers on page 213.

4. a. Factors of 14 = (1), 2, (7), 14
Factors of 21 = (1), 3, (7), 21
Common factors of 14 and 21 are 1 and 7.

b. Factors of 12 = (1), (2), 3, (4), 6, 12
Factors of 16 = (1), (2), (4), 8, 16
Common factors of 12 and 16 are 1, 2 and 4.

c. Factors of 10 = (1), 2, (5), 10
Factors of 15 = (1), 3, (5), 15
Factors of 25 = (1), (5), 25
Common factors of 10, 15 and 25 = 1 and 5.

d. Factors of 27 = (1), (3), (9), 27
Factors of 36 = (1), 2, (3), 4, (9), 12, 18, 36
Factors of 45 = (1), (3), 5, (9), 15, 45
Common factors of 27, 36 and 45 = 1, 3 and 9.

5. a. Factors of 8 = (1), (2), (4), 8
Factors of 12 = (1), (2), 3, (4), 6, 12
Common factors of 8 and 12 = 1, 2, 4
∴ HCF of 8 and 12 = 4

b. Factors of 10 = (1), (2), (5), (10)
Factors of 20 = (1), (2), 4, (5), (10), 20
Common factors of 10 and 20 = 1, 2, 5, 10
∴ HCF of 10 and 20 = 10

c. Factors of 15 = ①, 3, ⑤, 15
Factors of 20 = ①, 2, 4, ⑤, 10, 20
Common factors of 15 and 20 = 1, 5
∴ HCF of 15 and 20 = 5

d. Factors of 40 = ①, ②, ④, 5, ⑧, 10, 20, 40
Factors of 48 = ①, ②, 3, ④, 6, ⑧, 12, 16, 24, 48
Common factors of 40 and 48 = 1, 2, 4, 8
∴ HCF of 40 and 48 = 8

e. Factors of 16 = ①, ②, ④, 8, 16
Factors of 12 = ①, ②, 3, ④, 6, 12
Common factors of 16 and 12 = 1, 2, 4
∴ HCF of 12 and 16 = 4

f. Factors of 9 = ①, ③, 9
Factors of 12 = ①, 2, ③, 4, 6, 12
Common factors = 1, 3
∴ HCF of 9 and 12 = 3

g. Factors of 16 = ①, ②, ④, ⑧, 16
Factors of 24 = ①, ②, 3, ④, 6, ⑧, 12, 24
Common factors = 1, 2, 4, 8
∴ HCF of 16 and 24 = 8

h. Factors of 22 = ①, ②, 11, 22
Factors of 14 = ①, ②, 7, 14
Common factors of 14 and 21= 1, 2
∴ HCF of 14 and 22 = 2

Exercise 7.5

1. a) 216 and c) 724 are divisible by 2 as they have even number at units place.

2. a. 246: 2 + 4 + 6 = 12
Since 12 is a divisible by 3, therefore 246 is divisible by 3.
b. 612: 6 + 1 + 2 = 9
Since 9 is a multiple of 3, therefore 612 is divisible by 9.
c. 400: 4 + 0 + 0 = 4
Since 4 is not multiple of 3, therefore 400 is not divisible by 3.

3. a. 818: 8 + 1 + 8 = 17
As 17 is not multiple of 9, therefore 818 is not divisible by 9.
b. 963: 9 + 6 + 3 = 18
As 18 is multiple of 9, therefore, 963 is divisible by 9.
c. 180: 1 + 8 + 0 = 9
As 9 is multiple of 9, therefore, 180 is divisible by 9.

4. a) 920 and c) 580 are divisible by 5 as they have 0 in units place.

5. a. As 2 × 5 = 10, ∴ the nos. can be 20, 40.
b. As L.C.M. of 9 and 6 = 18 ∴ the nos. can be 18 and 36.
c. As L.C.M. of 2, 5 and 10 = 10, ∴ the nos. can be 20 and 30.
(Answers may vary)

6. Refer answers at the end of the book.

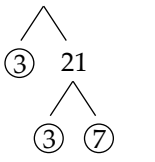
Exercise 7.7

1. b. 24
② 12
② 6
② ③
24 = 2 × 2 × 2 × 3

c. 48
② 24
② 12
② 6
② ③
48 = 2 × 2 × 2 × 2 × 3

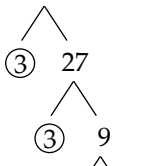
d. 54
② 27
③ 9
③ ③
54 = 2 × 3 × 3 × 3

e. 63



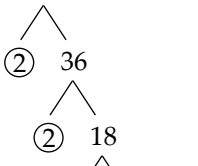
63 = 3 × 3 × 7

f. 81



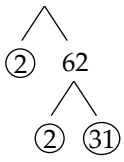
81 = 3 × 3 × 3 × 3

g. 72



72 = 2 × 2 × 2 × 3 × 3

h. 124



124 = 2 × 2 × 31

2. a.

2	36
2	18
3	9
3	3
	1

36 = 2 × 2 × 3 × 3

b.

2	84
2	42
3	21
7	7
	1

84 = 2 × 2 × 3 × 7

c.

3	96
2	32
2	16
2	8
2	4
2	2
	1

96 = 3 × 2 × 2 × 2 × 2 × 2

d.

2	112
2	56
2	28
2	14
7	7
	1

112 = 2 × 2 × 2 × 2 × 7

e.

2	120
2	60
2	30
3	15
5	5
	1

120 = 2 × 2 × 2 × 3 × 5

f.

2	150
3	75
5	25
5	5
	1

150 = 2 × 3 × 5 × 5

Exercise 7.8

1. a.

(2)	12, 18
3	6, 9
	2, 3

Prime factorization of 12 = 2 × 2 × 3

Prime factorization of 18 = 2 × 3 × 3

HCF = 2 × 3 = 6

b.

(2)	10, 20
5	5, 10
	1, 2

Or 10 = 2 × 5 × 1

20 = 2 × 5 × 2

HCF of 10 and 20 = 2 × 5 = 10

c.

(3)	36, 81
(3)	12, 27
	4, 9

Or 36 = 3 × 3 × 4

81 = 3 × 3 × 9

HCF of 36 and 81 = 3 × 3 = 9

d.

(7)	28, 35
	4, 5

Or 28 = 7 × 4

35 = 7 × 5

HCF of 28 and 35 = 7

e.

2	48, 64
2	24, 32
2	12, 16
2	6, 8
	3, 4

Or $48 = 2 \times 2 \times 2 \times 2 \times 3$
$64 = 2 \times 2 \times 2 \times 2 \times 4$

HCF of 48 and 64
$= 2 \times 2 \times 2 \times 2 = 16$

f.

2	30, 42
3	15, 21
	5, 7

Or $30 = 2 \times 3 \times 5$
$42 = 2 \times 3 \times 7$

HCF of 30 and $42 = 2 \times 3 = 6$

g.

3	60, 90
2	20, 30
5	10, 15
	2, 3

Or $30 = 3 \times 2 \times 5 \times 2$
$90 = 3 \times 2 \times 5 \times 3$

HCF of 30 and $90 = 3 \times 2 \times 5 = 30$

2. a.

5	10, 15
2	2, 3
3	1, 3
	1, 1

Or $10 = 5 \times 2$
$15 = 5 \times 3$

LCM of 10 and 15
$= 5 \times 2 \times 3 = 30$

b.

3	9, 24
3	3, 8
2	1, 8
2	1, 4
2	1, 2
	1, 1

Or $9 = 3 \times 3$
$24 = 3 \times 3 \times 2 \times 2 \times 2$

LCM of 9 and 24
$= 3 \times 3 \times 2 \times 2 \times 2 = 72$

c.

3	6, 9
3	2, 3
2	2, 1
	1, 1

Or $6 = 3 \times 2$
$9 = 3 \times 3$

LCM of 6 and 9
$= 3 \times 3 \times 2 = 18$

d.

3	15, 24
5	5, 8
2	1, 8
2	1, 4
2	1, 2
	1, 1

Or $15 = 3 \times 5$
$24 = 3 \times 2 \times 2 \times 2$

LCM of 15 and 24
$= 3 \times 5 \times 2 \times 2 \times 2 = 120$

3.

Test Your Skills

Multiple choice Questions

1.-5. Refer answers given at the end of the book.

Apply your skills

problem Solving Assessment

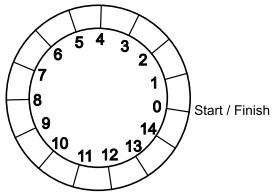
1. Consider the numbers 57 and 75
Their sum = 57 + 75 = 132 which in divisible by 11.
Again take the numbers 62 and 26.
Their sum = 62 + 26 = 88, which in divisible by 11

2. As 34a5 has ones digit 5, so any digit out of 0-9 can be inserted in tons place so that the number is divisible by 5.

3. Markings are made after every 10th metre

SO the distance from starting point to 7th point = 10 × 7 = 70 m

and from staring point to 9th point = 10 × 9 = 90 m



4. No. of boxes bought by the shopkeeper = 20

No. of packets in each box = 12

So total no - of packets bought = 20 × 12 = 240

Now 8 packets are placed in 240 ÷ 8 = 30 boxes.

5. Refer answers given at the end of the book.

Value based Questions

1. Refer answer given at the end of the book.

2. ??????

HOTS

1. a.

9 × 7	4 × 7	13 × 7	11 × 7	10 × 7	12 × 7	18 × 7	12 × 7	13 × 7
63	28	91	77	70	84	126	84	91
H	Y	D	E	R	A	B	A	D

b. Similar working as above.

Mental Maths

1.-5. Refer answers given at the end of the book.

CHAPTER 8

Fractions

Lesson plan

OBJECTIVES

The students should know

(i) Numerator and denominator of a fractions

(ii) Equivalent fractions and their properties

(iii) Type of fractions

(iv) Comparison of fractions

(v) Ascending and descending order of fractions

(vi) Mixed fraction

(vii) Addition and subtraction of fractions

Pre-Requisite Knowledge: The students should have the basic knowledge of fractions, their types and properties as they have studied in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, geometrical box, smart-board/ projector and the pointer.

Method of Teaching: The following topics of this chapter will be taught in the class.

(i) Fraction = $\frac{\text{Numerator}}{\text{Denominator}}$

(ii) **Proper fraction:** If numerator is less than the denominator e.g $\frac{2}{3}, \frac{1}{3}, \frac{2}{5}, ...$

(iii) **Improper fractions:** If numerator is greater than the denominator e.g. $\frac{5}{2}, \frac{7}{3}, \frac{9}{5}, ...$

(iv) **Equivalent fractions**

e.g. $\frac{1}{2}, \frac{2}{4}, \frac{4}{8}, \frac{5}{10}$ etc.

(v) **Like fractions:** Which have the same denominator

e.g, $\frac{2}{6}, \frac{3}{6}, \frac{4}{6}$ etc.

(vi) **Unlike fractions:** Which have different denominator

e.g. $\frac{1}{5}, \frac{2}{6}, \frac{3}{7}, \frac{4}{9}$ etc.

(vii) **Ascending order of a fractions**

e.g. Arranging $\frac{1}{4}, \frac{1}{5}$ and $\frac{3}{10}$ in ascending order

LCM of 4, 5, 10 = 20

$\therefore \quad \frac{1}{4} = \frac{1\times5}{4\times5} = \frac{5}{20}, \frac{1}{5} = \frac{1\times4}{5\times4} = \frac{4}{20}$ and $\frac{3}{10} = \frac{3\times2}{10\times2} = \frac{6}{20}$

Now $4 < 5 < 6$

$\therefore \quad \frac{1}{5} < \frac{1}{4} < \frac{3}{10}$

Similarly $\frac{3}{10} > \frac{1}{4} > \frac{1}{5}$ is the descending order

Recapitulation: The whole chapter will be revised in the class by taking simple examples and the problems of the students will be solved accordingly.

Home Assignment:

(A) From Text Book:

(i) Exercise 8.1 — Solve Q. No. 1 to 4 all parts

(ii) Exercise 8.2 — Solve Q. No. 1 to 5

(iii) Exercise 8.3 — Solve Q. No. 1, 2 and 3 all parts

(iv) Exercise 8.5 — Solve Q. No. 1, 2 and 3 all parts

(B) Extra Questions:

(1) Arrange the following fractions in their ascending and descending order

$\frac{2}{3}, \frac{4}{5}$ and $\frac{3}{7}$

(2) Write the equivalent fraction of

(a) $\frac{2}{3}$ (b) $\frac{1}{4}$ (c) $\frac{2}{5}$ (d) $\frac{3}{8}$

Exercise 8.1

1.–4. Refer answers at the end of the book.

Exercise 8.2

1. No. of green rocks = 2
No. of brown rocks = 9
Total no. of rocks = 2 + 9 = 11
$\therefore$ The fraction of green rocks = $\frac{2}{11}$.

2. Total cups poured in the pot = 7 + 12 = 19
No. of cups of milk = 12
$\therefore$ The fraction of in milk liquid is = $\frac{12}{19}$

3. Total pencils = 8
Sharpened pencils = 2
Pencils not sharpened = 8 – 2 = 6
$\therefore$ The fraction of pencils not sharpened = $\frac{6}{8}$ or $\frac{3}{4}$

4. Total fishes = 6
No. of goldfish = 3
No. of fish that are not goldfish = 6 – 3 = 3
$\therefore$ The fraction of fish that are not goldfish = $\frac{3}{6}$ or $\frac{1}{2}$

5. Total no. of poems = 6
No. of poems about animals = 1
No. of poems not about animals = 6 – 1 = 5
$\therefore$ The fraction of poems not about animals = $\frac{5}{6}$

Exercise 8.3

1. a. $\frac{1}{5} = \frac{1\times1}{5\times1}, \frac{1\times2}{5\times2}, \frac{1\times3}{5\times3}$
$= \frac{1}{5}, \frac{2}{10}, \frac{3}{15},$

b. $\frac{3}{7} = \frac{3\times1}{7\times1}, \frac{3\times2}{7\times2}, \frac{3\times3}{7\times3}$
$= \frac{3}{7}, \frac{6}{14}, \frac{9}{21}$

c. $\frac{5}{6} = \frac{5\times1}{6\times1}, \frac{5\times2}{6\times2}, \frac{5\times3}{6\times3}$
$= \frac{5}{6}, \frac{10}{12}, \frac{15}{18}$

d. Similar working as above

2. a. $\frac{3}{4} \times \frac{6}{12} \Rightarrow 3 \times 12 \square 6 \times 4 \Rightarrow 36 \neq 24$

Since the products are not equal, the fractions are not equivalent.

b. $\frac{2}{3} \times \frac{8}{12} \Rightarrow 2 \times 12 \square 8 \times 3 \Rightarrow 24 = 24$

As the products are equal, hence the fractions are equivalent.

c. $\frac{8}{10} \times \frac{40}{50} \Rightarrow 8 \times 50 \square 40 \times 10 \Rightarrow 400 = 400$

Since the products are same, hence the fractions are equivalent.

d. $\frac{2}{3} \times \frac{42}{54} \Rightarrow 2 \times 54 \square 3 \times 42 \Rightarrow 108 \neq 126$

As the products are not equal, hence the fractions are not equivalent.

e. $\frac{5}{8} \times \frac{60}{96} \Rightarrow 5 \times 96 \square 8 \times 60 \Rightarrow 480 = 480$

As both the products are same, $\therefore$ the fractions are equivalent.

3. a. $\frac{1}{6} = \frac{1 \times 7}{6 \times 7} = \frac{7}{\boxed{42}}$ b. $\frac{5}{6} = \frac{5 \times 12}{6 \times 12} = \frac{\boxed{60}}{72}$ c. $\frac{13}{15} = \frac{13 \times 2}{15 \times 2} = \frac{26}{\boxed{30}}$

d. $\frac{10}{50} = \frac{10 \times 10}{50 \times 10} = \frac{\boxed{100}}{500}$ e. $\frac{15}{21} = \frac{15 \div 3}{21 \div 3} = \frac{\boxed{5}}{7}$ f. $\frac{15}{\boxed{20}} = \frac{3 \times 5}{4 \times 5}$

g. $\frac{3}{8} = \frac{3 \times 3}{8 \times 3} = \frac{9}{\boxed{24}}$ h. $\frac{36}{\boxed{66}} = \frac{6 \times 6}{11 \times 6}$

Exercise 8.4

1. Refer answers at the end of the book.

2. Like fractions have the same denominator.

a. like b. unlike c. unlike d. unlike

3. Improper fractions are those fractions in which numerator is greater than denominator.

$\therefore \frac{9}{7}, \frac{15}{7}$ and $\frac{9}{5}$ are improper fractions.

4. Proper fractions are those fractions in which numerator is less than the denominator.

$\therefore \frac{1}{4}, \frac{8}{27}$ and $\frac{5}{16}$ are proper fractions.

Exercise 8.5

1. For questions a, b, d, e, g, h and i, since the denominators are same, the fraction having larger numerator is the greater fraction.

For questions c, f and j, since the numerators are same, the fraction having smaller denominator is the greater fraction.

a. $\frac{3}{9} < \frac{5}{9}$ b. $\frac{2}{5} < \frac{3}{5}$ c. $\frac{1}{2} > \frac{1}{7}$ d. $\frac{1}{11} < \frac{3}{11}$ e. $\frac{5}{6} > \frac{2}{6}$

f. $\frac{1}{6} > \frac{1}{8}$ g. $\frac{3}{9} > \frac{1}{9}$ h. $\frac{5}{5} > \frac{2}{5}$ i $\frac{1}{9} < \frac{7}{9}$ j. $\frac{5}{7} > \frac{5}{9}$

2. When the denominators are same, then the fraction with larger numerator is greater than the others.

a. $\frac{5}{12} < \frac{6}{12} < \frac{8}{12}$ **b.** $\frac{1}{5} < \frac{1}{4} < \frac{1}{3} < \frac{1}{2}$ **c.** $\frac{1}{5} < \frac{3}{5} < \frac{4}{5} < \frac{6}{5}$

d. $\frac{2}{9} < \frac{2}{8} < \frac{2}{7} < \frac{2}{5}$ **e.** $\frac{1}{8} < \frac{3}{8} < \frac{5}{8} < \frac{7}{8}$ **f.** $\frac{1}{10} < \frac{1}{6} < \frac{1}{5} < \frac{1}{2}$

When the numerators are same, then the fraction with smaller denominator is greater than the others.

3. We follow the rules mention in Q. 2.

In descending order of fractions we arrange the fractions from bigger to smaller.

a. $\frac{7}{12} > \frac{6}{12} > \frac{5}{12}$ **b.** $\frac{6}{9} > \frac{4}{9} > \frac{3}{9} > \frac{2}{9}$ **c.** $\frac{1}{5} > \frac{1}{6} > \frac{1}{7} > \frac{1}{8}$

d. $\frac{2}{3} > \frac{2}{5} > \frac{2}{7} > \frac{2}{9}$ **e.** $\frac{6}{7} > \frac{4}{7} > \frac{3}{7} > \frac{2}{7}$ **f.** $\frac{7}{9} > \frac{5}{9} > \frac{2}{9} > \frac{1}{9}$

Exercise 8.6

1. a. LCM of 7 and 5 = 35

$\frac{5}{7} = \frac{5}{7} \times \frac{5}{5} = \frac{25}{35}$ and $\frac{2}{5} = \frac{2}{5} \times \frac{7}{7} = \frac{14}{35}$

$\therefore$ 25 ⓢ 14

Thus, $\frac{5}{7}$ ⓢ $\frac{2}{5}$

g. LCM of 15 and 12 = 3 × 5 × 4 = 60

$\frac{11}{15} = \frac{11}{15} \times \frac{4}{4} = \frac{44}{60}$ and $\frac{5}{12} = \frac{5}{12} \times \frac{5}{5} = \frac{25}{60}$

$\therefore$ 44 ⓢ 25

Thus, $\frac{11}{15}$ ⓢ $\frac{5}{12}$

3	1 5 ,
	12
	5, 4

c. LCM of 2 and 3 = 6

$\frac{1}{2} = \frac{1}{2} \times \frac{3}{3} = \frac{3}{6}$ and $\frac{1}{3} = \frac{1}{3} \times \frac{2}{2} = \frac{2}{6}$

$\therefore$ 3 ⓢ 2

Thus, $\frac{1}{2}$ ⓢ $\frac{1}{3}$

d. LCM of 3 and 5 = 15

$\frac{2}{3} = \frac{2}{3} \times \frac{5}{5} = \frac{10}{15}$ and $\frac{4}{5} = \frac{4}{5} \times \frac{3}{3} = \frac{12}{15}$

$\therefore$ 10 ⓣ 12

Thus, $\frac{2}{3}$ ⓣ $\frac{4}{5}$

e. LCM of 7 and 11 = 77

$\frac{3}{7} = \frac{3}{7} \times \frac{11}{11} = \frac{33}{77}$ and $\frac{4}{11} = \frac{4}{11} \times \frac{7}{7} = \frac{28}{77}$

$\therefore$ 33 ⓢ 28

Thus, $\frac{3}{7}$ ⓢ $\frac{4}{11}$

f. LCM of 9 and 12 = 3 × 3 × 4 = 36

$\frac{4}{9} = \frac{4}{9} \times \frac{4}{4} = \frac{16}{36}$ and $\frac{7}{12} = \frac{7}{12} \times \frac{3}{3} = \frac{21}{36}$

$\therefore$ 16 ⓣ 21

Thus, $\frac{4}{9}$ ⓣ $\frac{7}{12}$

3	9, 12
	3, 4

g. LCM of 1 and 5 = 5

$\frac{1}{1} = \frac{1}{1} \times \frac{5}{5} = \frac{5}{5}$ and $\frac{2}{5} = \frac{2}{5} \times \frac{1}{1} = \frac{2}{5}$

$\therefore$ 5 ⓢ 2

Thus, 1 ⓢ $\frac{2}{5}$

h. LCM of 12 and 2 = 2 × 6 =12

$\frac{3}{12} = \frac{3}{12} \times \frac{1}{1} = \frac{3}{12}$ and $\frac{1}{2} = \frac{1}{2} \times \frac{6}{6} = \frac{6}{12}$

$\therefore$ 3 ⓣ 6

Thus, $\frac{3}{12}$ ⓣ $\frac{1}{2}$

2	12, 2
	6, 1

We can also solve the fractions by cross-multiplication method.

1. a. $\frac{5}{7} \times \frac{2}{5}$ $\Rightarrow$ 5 × 5 ◯ 2 × 7 = 25 ⓢ 14 $\Rightarrow$ $\frac{5}{7}$ ⓢ $\frac{2}{5}$

h. $\frac{1}{1} \times \frac{2}{5}$ $\Rightarrow$ 1 × 5 ◯ 2 × 1 = 5 ⓢ 2 $\Rightarrow$ 1 ⓢ $\frac{2}{5}$

c. $\frac{1}{2} \times \frac{1}{3} \Rightarrow 1 \times 3 \bigcirc 1 \times 2 = 3 \otimes 2 \Rightarrow \frac{1}{2} \otimes \frac{1}{3}$

d. $\frac{2}{3} \times \frac{4}{5} \Rightarrow 2 \times 5 \bigcirc 4 \times 3 = 10 \otimes 12 \Rightarrow \frac{2}{3} \otimes \frac{4}{5}$

e. $\frac{3}{7} \times \frac{4}{11} \Rightarrow 3 \times 11 \bigcirc 4 \times 7 = 33 \otimes 28 \Rightarrow \frac{3}{7} \otimes \frac{4}{11}$

f. $\frac{4}{9} \times \frac{7}{12} \Rightarrow 4 \times 12 \bigcirc 7 \times 9 = 48 \otimes 56 \Rightarrow \frac{4}{9} \otimes \frac{7}{12}$

g. $\frac{11}{15} \times \frac{5}{12} \Rightarrow 11 \times 12 \bigcirc 5 \times 15 = 132 \otimes 75 \Rightarrow \frac{11}{15} \otimes \frac{5}{12}$

h. $\frac{3}{12} \times \frac{1}{2} \Rightarrow 3 \times 2 \bigcirc 1 \times 12 = 6 \otimes 12 \Rightarrow \frac{3}{12} \otimes \frac{1}{2}$

2. Refer answers at the end of the book.

3. a. L.C.M. of 5, 10 and 20 = 20.

$\frac{2}{5} = \frac{2 \times 4}{5 \times 4} = \frac{8}{20}$; $\frac{3}{10} = \frac{3 \times 2}{10 \times 2} = \frac{6}{20}$; $\frac{18}{20} = \frac{18 \times 1}{20 \times 1} = \frac{18}{20}$

$\therefore \frac{6}{20} < \frac{8}{20} < \frac{18}{20}$ or $\frac{3}{10} < \frac{2}{5} < \frac{18}{20}$

b. L.C.M. of 2, 5 and 7 = 70

$\frac{1}{2} = \frac{1 \times 35}{2 \times 35} = \frac{35}{70}$; $\frac{1}{5} = \frac{1 \times 14}{5 \times 14} = \frac{14}{70}$; $\frac{1}{7} = \frac{1 \times 10}{7 \times 10} = \frac{10}{70}$

$\therefore \frac{10}{70} < \frac{14}{70} < \frac{35}{70}$ or $\frac{1}{7} < \frac{1}{5} < \frac{1}{2}$

c. $\frac{1}{7}, \frac{1}{11}, \frac{1}{8} \Rightarrow \frac{1}{11} < \frac{1}{8} < \frac{1}{7}$

d. L.C.M. of 3, 7, 5 = 105.

$\therefore \frac{2}{3} = \frac{2 \times 35}{3 \times 35} = \frac{70}{105}$; $\frac{2}{7} = \frac{2 \times 15}{7 \times 15} = \frac{30}{105}$; $\frac{3}{5} = \frac{3 \times 21}{5 \times 21} = \frac{63}{105}$

Now arranging in ascending order

$\Rightarrow \frac{30}{105} < \frac{63}{105} < \frac{70}{105}$ or $\frac{2}{7} < \frac{3}{5} < \frac{2}{3}$

e. L.C.M. of 2, 32 is 32. $\therefore \frac{1}{2} = \frac{1 \times 16}{2 \times 16} = \frac{16}{32}$

Now $\frac{1}{32} < \frac{4}{32} < \frac{16}{32}$ or $\frac{1}{32} < \frac{4}{32} < \frac{1}{2}$

f. L.C.M. of 5 & 7 = 35

$\therefore \frac{6}{7} = \frac{6 \times 5}{7 \times 5} = \frac{30}{35}$; $\frac{3}{5} = \frac{3 \times 7}{5 \times 7} = \frac{21}{35}$; $\frac{5 \times 5}{7 \times 5} = \frac{25}{35}$

Now $\frac{21}{35} < \frac{25}{35} < \frac{30}{35}$ or $\frac{3}{5} < \frac{5}{7} < \frac{6}{7}$

g. L.C.M. of 8, 5, 4 = 40

Now, $\frac{1}{8}=\frac{1\times5}{8\times5}=\frac{5}{40}$; $\frac{2}{5}=\frac{2\times8}{5\times8}=\frac{16}{40}$; $\frac{1}{4}=\frac{1\times10}{4\times10}=\frac{10}{40}$

$\therefore \frac{5}{40}<\frac{10}{40}<\frac{16}{40}$ or $\frac{1}{8}<\frac{1}{4}<\frac{2}{5}$

h. L.C.M. of 4, 8 and 16 = 16

Now, $\frac{1}{4}=\frac{1\times4}{4\times4}=\frac{4}{16}$; $\frac{7}{8}=\frac{7\times2}{8\times2}=\frac{14}{16}$; $\frac{3}{16}=\frac{3\times1}{16\times1}=\frac{3}{16}$

$\therefore \frac{3}{16}<\frac{4}{16}<\frac{14}{16}$ or $\frac{3}{16}<\frac{1}{4}<\frac{7}{8}$

4. First of all we will change the unlike fractions into like fractions by using L.C.M. method and then we compare the fractions.

a. L.C.M. of 3, 9 and 7 = 63

Now, $\frac{2}{3}=\frac{2\times21}{3\times21}=\frac{42}{63}$; $\frac{7}{9}=\frac{7\times7}{9\times7}=\frac{49}{63}$; $\frac{3}{7}=\frac{3\times9}{7\times9}=\frac{27}{63}$

$\therefore \frac{49}{63}>\frac{42}{63}>\frac{27}{63}$ or $\frac{7}{9}>\frac{2}{3}>\frac{3}{7}$

b. L.C.M. of 3, 7 and 5 = 105

Now, $\frac{2}{3}=\frac{2\times35}{3\times35}=\frac{70}{105}$; $\frac{5}{7}=\frac{5\times15}{7\times15}=\frac{75}{105}$; $\frac{2}{5}=\frac{2\times21}{5\times21}=\frac{42}{105}$

$\therefore \frac{75}{105}>\frac{70}{105}>\frac{42}{105}$ or $\frac{5}{7}>\frac{2}{3}>\frac{2}{5}$

c. L.C.M. of 4, 2 and 5 = 20

Now, $\frac{3}{4}=\frac{3\times5}{4\times5}=\frac{15}{20}$; $\frac{1}{2}=\frac{1\times10}{2\times10}=\frac{10}{20}$; $\frac{4}{5}=\frac{4\times4}{5\times4}=\frac{16}{20}$

$\therefore \frac{16}{20}>\frac{15}{20}>\frac{10}{20}$ or $\frac{4}{5}>\frac{3}{4}>\frac{1}{2}$

d. L.C.M. of 3, 10 and 5 = 30

$\therefore \frac{1}{3}=\frac{1\times10}{3\times10}=\frac{10}{30}$; $\frac{1}{10}=\frac{1\times3}{10\times3}=\frac{3}{30}$; $\frac{1}{5}=\frac{1\times6}{5\times6}=\frac{6}{30}$

Now, $\frac{10}{30}>\frac{6}{30}>\frac{3}{30}$ or $\frac{1}{3}>\frac{1}{5}>\frac{1}{10}$

e. L.C.M. of 6, 8 and 9 = 72

Now, $\frac{1}{6}=\frac{1\times12}{6\times12}=\frac{12}{72}$; $\frac{1}{8}=\frac{1\times9}{8\times9}=\frac{9}{72}$; $\frac{1}{9}=\frac{1\times8}{9\times8}=\frac{8}{72}$

$\therefore \frac{12}{72}>\frac{9}{72}>\frac{8}{72}$ or $\frac{1}{6}>\frac{1}{8}>\frac{1}{9}$

f. L.C.M. of 7, 21 and 3 = 21

Now, $\frac{1}{7}=\frac{1\times3}{7\times3}=\frac{3}{21}$, $\frac{2}{21}=\frac{2\times1}{21\times1}=\frac{2}{21}$, $\frac{2}{3}=\frac{2\times7}{3\times7}=\frac{14}{21}$

$\therefore \frac{14}{21}>\frac{3}{21}>\frac{2}{21}$ or $\frac{2}{3}>\frac{1}{7}>\frac{2}{21}$

g. L.C.M. of 3, 5 and 9 = 45

Now, $\frac{2}{3}=\frac{2\times15}{3\times15}=\frac{30}{45}$; $\frac{4}{5}=\frac{4\times9}{5\times9}=\frac{36}{45}$; $\frac{7}{9}=\frac{7\times5}{9\times5}=\frac{35}{45}$

$\therefore \frac{36}{45}>\frac{35}{45}>\frac{30}{45}$ or $\frac{4}{5}>\frac{7}{9}>\frac{2}{3}$

h. L.C.M. of 3, 2 and 11 = 66

Now, $\frac{2}{3}=\frac{2\times22}{3\times22}=\frac{44}{66}$; $\frac{1}{2}=\frac{1\times33}{2\times33}=\frac{33}{66}$; $\frac{7}{11}=\frac{7\times6}{11\times6}=\frac{42}{66}$

$\therefore \frac{44}{66}>\frac{42}{66}>\frac{33}{66}$ or $\frac{2}{3}>\frac{7}{11}>\frac{1}{2}$

Exercise 8.7

1.a. $1\frac{5}{7}=\frac{(7\times1)+5}{7}=\frac{7+5}{7}=\frac{12}{7}$ **b.** $5\frac{1}{4}=\frac{(5\times4)+1}{4}=\frac{20+1}{4}=\frac{21}{4}$

c. $4\frac{4}{11}=\frac{(4\times11)+4}{11}=\frac{44+4}{11}=\frac{48}{11}$ **d.** $3\frac{7}{10}=\frac{(3\times10)+7}{10}=\frac{30+7}{10}=\frac{37}{10}$

e. $2\frac{3}{7}=\frac{(2\times7)+3}{7}=\frac{14+3}{7}=\frac{17}{7}$ **f.** $1\frac{1}{7}=\frac{(7\times1)+1}{7}=\frac{7+1}{7}=\frac{8}{7}$

g. $5\frac{4}{8}=\frac{(5\times8)+4}{8}=\frac{40+4}{8}=\frac{44}{8}$ **h.** $8\frac{13}{32}=\frac{(8\times32)+13}{32}=\frac{256+13}{32}=\frac{269}{32}$

2.a. $\frac{13}{7}=1\frac{6}{7}$

$$\begin{array}{r|l} 7 & 13 \\ & -7 \\ \hline & 6 \end{array}\quad 1$$

b. $\frac{29}{8}=3\frac{5}{8}$

$$\begin{array}{r|l} 8 & 29 \\ & -24 \\ \hline & 5 \end{array}\quad 3$$

c. $\frac{31}{7}=4\frac{3}{7}$

$$\begin{array}{r|l} 7 & 31 \\ & -28 \\ \hline & 3 \end{array}\quad 4$$

d. $\frac{45}{11}=4\frac{1}{11}$

$$\begin{array}{r|l} 11 & 45 \\ & -44 \\ \hline & 1 \end{array}\quad 4$$

e. $\frac{96}{13}=7\frac{5}{13}$

$$\begin{array}{r|l} 13 & 96 \\ & -91 \\ \hline & 5 \end{array}\quad 7$$

f. $\frac{100}{23}=4\frac{8}{23}$

$$\begin{array}{r|l} 23 & 100 \\ & -92 \\ \hline & 8 \end{array}\quad 4$$

g. $\frac{153}{32}=4\frac{25}{32}$

$$\begin{array}{r|l} 32 & 153 \\ & -128 \\ \hline & 25 \end{array}\quad 4$$

h. $\frac{335}{27}=12\frac{11}{27}$

$$\begin{array}{r|l} 27 & 335 \\ & -27 \\ \hline & 165 \\ & -54 \\ \hline & 11 \end{array}\quad 12$$

Exercise 8.8

1.a. Since $2>1$. $\therefore 2\frac{5}{9}\ \textcircled{>}\ 1\frac{5}{10}$ **b.** $\frac{20}{25}\ \bigcirc\ 1\frac{3}{25}\ \Rightarrow\ \therefore \frac{20}{25}\ \textcircled{<}\ \frac{28}{25}$

c. $\frac{3}{8} \bigcirc 2\frac{11}{16} \Rightarrow \frac{3}{8} \bigcirc \frac{43}{16} \Rightarrow \frac{3}{8} \times \frac{2}{2} \bigcirc \frac{43 \times 1}{16 \times 1} \Rightarrow \frac{6}{16} \lessgtr \frac{43}{16} \Rightarrow \frac{3}{8} \lessgtr 2\frac{11}{16}$

Alternatively, a mixed fraction is greater than a proper fraction. $\therefore \frac{3}{8} < 2\frac{11}{16}$

d. $4\frac{3}{5} \bigcirc 4\frac{2}{6}$

Since the whole number parts are equal, we compare the fractions.

$\frac{3}{5} \bigcirc \frac{2}{6}$

LCM of 5 and 6 = 30

$\frac{3}{5} \times \frac{6}{6} \bigcirc \frac{2}{6} \times \frac{5}{5} \Rightarrow \frac{18}{30} \gtrless \frac{10}{30} \therefore \frac{3}{5} \gtrless \frac{2}{6}$ or $4\frac{3}{5} \gtrless 4\frac{2}{6}$

2.a. Since, $2 > 1 \therefore 1\frac{1}{5} \lessgtr 2\frac{2}{3}$ **b.** Since, $5 > 1 \therefore 5\frac{1}{3} \gtrless 2\frac{5}{6}$

c. Since, $8 > 7 \therefore 7\frac{4}{15} \lessgtr 8\frac{1}{4}$ **d.** Since, $8 > 5 \therefore 8\frac{1}{6} \gtrless 5\frac{1}{5}$

e. Since, $2 > 1 \therefore 1\frac{8}{45} \lessgtr 2\frac{8}{15}$ **f.** Since, $11 > 7 \therefore 11\frac{5}{6} \gtrless 7\frac{2}{6}$

Exercise 8.9

1. a. $\frac{3}{8} + \frac{5}{8} = \frac{3+5}{8} = \frac{8}{8} = 1$ **b.** $\frac{3}{7} + \frac{1}{7} = \frac{3+1}{7} = \frac{4}{7}$

c. $\frac{7}{11} + \frac{2}{5}$ = Taking the equivalent fractions with same denominator, we have

$\frac{7}{11} = \frac{7 \times 5}{11 \times 15} = \frac{35}{55}$ (L.C.M. of 11 and 5 = 55)

and $\frac{2}{5} = \frac{2 \times 11}{5 \times 11} = \frac{22}{55}$ Now $\frac{7}{11} + \frac{2}{5} = \frac{35}{55} + \frac{22}{55} = \frac{35 \times 22}{55} = \frac{55}{55} = 1\frac{2}{5}$

d.–f. Similar working as above.

2. a. $\frac{8}{9} - \frac{7}{9} = \frac{8-7}{9} = \frac{1}{9}$ **b.** $\frac{5}{4} - \frac{3}{4} = \frac{5-3}{4} = \frac{2}{4} = \frac{1}{2}$ **c.** $3 - 2\frac{1}{2} = \frac{3}{1} - \frac{5}{2} = \frac{6-5}{2} = \frac{1}{2}$

d. $\frac{13}{4} - \frac{9}{5}$ = (L.C.M. of 4 and 5 = 4 × 5 = 20)

$\therefore \frac{13}{4} = \frac{13 \times 5}{4 \times 5} = \frac{65}{20}$ and $\frac{9}{5} = \frac{9 \times 4}{5 \times 4} = \frac{36}{20}$

$\Rightarrow \frac{13}{4} - \frac{9}{5} = \frac{65}{20} - \frac{36}{20} = \frac{65-36}{20} = \frac{29}{20} = 1\frac{9}{20}$

e.–f. Similar working as above.

a. The distance covered by bus = $\frac{3}{5}$ of the whole journey

The distance covered by auto = $\frac{1}{5}$ of the whole journey

Hence, the distance covered by the two means of transport = $\frac{1}{5} + = \frac{1}{4} = \frac{3 \times 4 + 1 \times 5}{20} = \frac{12+5}{20} = \frac{17}{20}$

b. Work done on monday = $\frac{3}{7}$ past

and work done on Tuesday = $\frac{2}{5}$ past

so, the work done in the two days = $(\frac{1}{5}+\frac{2}{5})$ past

$$= \frac{3\times 5+2\times 7}{35} = \frac{15+14}{35} = \frac{29}{35} \text{ past}$$

c. Books in such is bookshelf = $\frac{3}{4}$ past

Books in Shobit is is bookshelf = $\frac{3}{5}$ past

comparing the two fractions

$\frac{3}{4} > \frac{3}{5}$, as numerator is same, so fraction with smaller denominator is greater.

now $\frac{3}{4}-\frac{3}{5} = \frac{3\times 5-3\times 4}{20} = \frac{15-12}{20} = \frac{3}{20}$

d. Similar working as above.

Test Your Skills

Multiple choice Questions

1.-5. Refer answers given at the end of the book.

Mental Maths

1. ₹1 = 100p

$\therefore$ 50p out of 100p means $\frac{50}{100} = \frac{1}{2}$ ie, half

2-3. Refer answers given at the end of the book.

4. Refer $\frac{12}{30} = \frac{12\div 6}{30\div 6} = \frac{2}{5}$

5. $\frac{24}{30} = \frac{24\times 5}{30\times 5} = \frac{\boxed{120}}{150}$, $\frac{24\div 6}{30\div 6} = \frac{4}{\boxed{5}}$, $\frac{24\times 4}{30\times 4} = \frac{96}{\boxed{120}}$ and $\frac{24\div 2}{30\div 2} = \frac{\boxed{12}}{15}$

Apply your skills

problem Solving Assessment

1. Refer answers given at the end of the book.

2. Parts of cake eaten by Rita, Gita and Kamla are $\frac{2}{3}$, $1\frac{1}{4}$ and $\frac{1}{12}$ respectively.

Hence the cake eaten by them together = $\frac{2}{3}+\frac{1}{4}+\frac{1}{12} = \frac{2\times 4+1\times 3+1\times 1}{12}$

($\because$ L.C.M of 3, 4 and 12 = 12)

$$= \frac{8+3+1}{12} = \frac{12}{12} = 1 \text{ whale}$$

Thus, whole cake was eaten by then and nothing left

3. Total provided time = $3\frac{1}{2}$ hours

Time taken to finish the text = $\frac{23}{4}$ hours

Difference = $(3\frac{1}{2}-2\frac{3}{4})$ hours

$= (\frac{7}{2} - \frac{11}{4})$ hours

$= (\frac{14-11}{4}) = \frac{3}{4}$ hours or 45 min

Thus, Vimal completed his lest $\frac{3}{4}$ hour earlier.

4. Total cloth = $9\frac{3}{4}$ m

cloth taken for a Kurta = $4\frac{1}{2}$ m

and cloth taken for a salwar $3\frac{3}{4}$ m

$\therefore$ cloth used in total = $4\frac{1}{2} + 3\frac{3}{4}$

$= \frac{9}{2} + \frac{15}{4}$

$= \frac{18+15}{4} = \frac{33}{4}$ m

Hence, piece of cloth left = $9\frac{3}{4} - \frac{33}{4}$

$= \frac{39}{4} - \frac{33}{4}$

$= \frac{39-33}{4} = \frac{6}{4} = \frac{3}{2}$ or $1\frac{1}{2}$ m

5. The distance travelled on first day = 21 km 200m

The distance travelled on next day = 21 km 200m + $\frac{1}{4}$ of 21 km 200m

= 21 km 200m + 5 km 300m

= 26 km 500m

So the distance covered in two days = 21 km 200m + 26 km 500m = 47 km 700m

$$\begin{array}{r} 4\overline{)21200}\,(530 \\ -20 \\ \hline 12 \\ -12 \\ \hline 00 \end{array}$$

Value based Questions

1. Anita got the total cake = $\frac{3}{7} + \frac{1}{7} = \frac{4}{7}$ part

She gave $\frac{1}{2}$ of $\frac{4}{7}$ part to her friend

That means $\frac{1}{\cancel{2}_{1}} \times \frac{\cancel{4}^{2}}{2} = \frac{2}{7}$ part.

Further, cake left with Anita's brother = $1 - \frac{3}{7} = \frac{7-3}{7} = \frac{4}{7}$ part

and cake left with Anit's sister = $1 - \frac{1}{7} = \frac{7-1}{7} = \frac{6}{7}$ part

Value: moral value. friendship

2. The weight of 350 notebooks = 70 kg

so the weight 1 notebook $= \frac{70}{350_{35}}$ kg

so the weight of 175 notebook $= \frac{\cancel{70}^{35}}{\cancel{350}_{2}} \times \cancel{175}^{1} = 35$ kg

Further. $\frac{1}{5}$ of 35 kg $= \frac{1}{5} \times \cancel{35}^{7} = 7$ kg

Thus, Rohit's friend is carrying 7 kg weight and Rohit is carrying 35 – 7 = 25 kg weight.

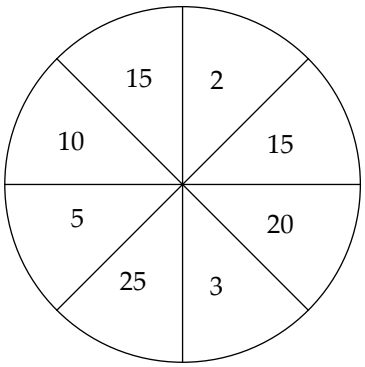
3. As $\frac{1}{4} > \frac{1}{8}$, Anshul got less pieces of breads them Subham got value: greed

HOTS

1. There are 8 setors on dartboard. Out of which:

a. multiples of 5 = 5, 10, 15, 20, 25, 50 ie, 6 sectors

$\therefore$ Required fraction $= \frac{6}{8}$



b. multiple of 3 and 5 = 15, ie, 1 sector

$\therefore$ fraction $= \frac{1}{8}$

c. multiples of 2 and 5 ÷ 10, 20, 50. ie, 3 sectors

$\therefore$ fraction $= \frac{3}{8}$

d. prime numbers = 2, 3, 5, ie, 3 sectors

$\therefore$ fraction $= \frac{3}{8}$

2. Total amount Vani had = ₹1000

expense on dress $= \frac{1}{4}$ of ₹1000 = ₹250

expense on watch = ₹250

Now, she remained ₹(1000 – 250 – 250) = ₹500

Now, she remained ₹(1000 – 250 – 250) = ₹500

Hence, the cost of movie ticket $= \frac{1}{2}$ of ₹500 = ₹250

Finally, she was left with ₹(500 – 250 – 250) ₹250

CHAPTER 9

Decimals

Lesson plan

OBJECTIVES

The students should know

(i) Meaning of decimals
(ii) Tenths and Hundredths
(iii) Parts of a decimals numbers
(iv) Conversion of decimals into fractions and vice-versa
(v) Like and unlike decimals
(vi) Comparison of decimals

Pre-Requisite Knowledge: The students should have the basic knowledge of tenth part and hundredth part of a number and also about the fractions.

Teaching Aids: Writing board, marker, chalks, charts, duster, geometrical box, smart-board/ projector and a pointer.

Method of Teaching: The following topics and sub-topics of this chapter will be taught in the class by taking some simple examples.

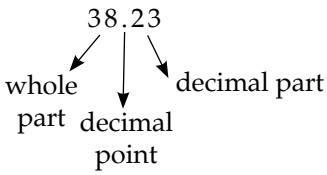
(i) Decimal mean tenth part of a number and its symbol is (.)

e.g. $2.5 = \frac{25}{10}$, $0.03 = \frac{3}{100}$

(ii) **Parts of decimal number:**

(a) whole part and (b) decimal part

e.g. 38.23



(iii) **Like and unlike decimals**

3.18, 0.35, 8.12 and 10.35 are all like decimals and 2.32, 1.5 and 0.235 and 6.02 are all unlike decimals

Recapitulation: The whole chapter will be revised in the class taking some extra questions and the problmes of the students will be solved immediately.

Home Assignment:

(A) From Text Book:

(i) Exercise 9.1 — Solve Q. No. 1 to 5 all parts
(ii) Exercise 9.2 — Solve Q. No. 1 to 4 all parts

(iii) Exercise 9.3 — Solve Q. No. 1 to 4 all parts

(B) Extra Questions:

(1) Separate the like and decimals in the following:
35.007, 5.03, 6.2, 10.15, 3.052, 8.25, 15.45

(2) Express the following improper fractions in decimals.

(a) $\frac{84}{100}$ (b) $\frac{75}{10}$ (c) $\frac{6}{100}$ (d) $\frac{35}{10}$

Exercise 9.1

1.– 5. and **7.** Refer answers given at the end of the book.

7. Place value chat for decimal numbers

	Decimal Numbers	Thousands	Hundreds	Tens	Ones	Decimal	Tenths	Hundredths
		1000	100	10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
a.	8.7				8	.	7	
b.	9.35				9	.	3	5
c.	54.01			5	4	.	0	1
d.	168.75		1	6	8	.	7	5
e.	2120.52	2	1	2	0	.	5	2

Expanded form of decimal numbers.

a. $8.7 = 8 + \frac{7}{10}$ or $8 + 0.7$

b. $9.35 = 9 + \frac{3}{10} + \frac{5}{100}$ or $9 + 0.3 + 0.05$

c. $54.01 = 50 + 4 + \frac{1}{100}$ or $50 + 4 + 0.01$

d. $168.75 = 100 + 60 + 8 + \frac{7}{10} + \frac{5}{100}$ or $100 + 60 + 8 + 0.7 + 0.05$

e. $2120.52 = 2000 + 100 + 20 + \frac{5}{10} + \frac{2}{100} = 2000 + 100 + 20 + 0.5 + 0.02$

Exercise 9.2

1. a. In $\frac{5}{10}$, the denominator 10 has one zero so we count one digit starting from right in the numerator and put the decimal so $\frac{5}{10} = 0.\overset{\frown}{5}$

b. In $\frac{11}{100}$, the denominator 100 has two zeros so we count two digits starting from right and put the decimal so $\frac{11}{100} = 0.\overset{\frown}{11}$

c. In $\frac{7}{100}$, the denominator 100 has two zeros but the numerator 7 has one digt only so we add one zero to the left of 7 and then put the decimal.

$\therefore \frac{7}{100} = 0.\overset{\curvearrowleft}{07}$

c., e. f. similar working as above.

2. **a.** In $\frac{96}{10}$, the denominator 10 has one zero so put the decimal after one digit from right in the numerator

$\therefore \frac{96}{10} = 9.\overset{\curvearrowleft}{6}$

b. $3\frac{1}{10} = 3 + \frac{1}{10} = 3 + 0.1 = 3.1$

c.- f. similar working as above.

3. **a.** 3 and 4 hundred the

= 3 ones + 4 hundred the

$= 3 \times 1 + \frac{4}{100} = 3 + 0.04 = 3.04$

And $3.04 = \frac{304}{100}$ (In the denominator, put 1 for the decimal and add as many zeros as the number of digits after decimal)

b. 17 and 5 tenths can be expressed as $17 + \frac{5}{10}$ or $17 + 0.5 = 17.5$

Further $17.5 = \frac{175}{10}$ (There is one digit after decimal, write 10 in the denominator and write all the digit in numerator without decimal)

c.- f. similar working as above.

4. **a.** $0.4 = \frac{4}{10}$ (As the decimal has only one place after decimal point, write 10 in the denominator and 4 in the numerator)

d. $1.45 = \frac{145}{100}$ (Write all the digit in numerator and 100 in the denominator as there are two digits after decimal point in the given decimal.)

b, c, e,f. similar working as above.

Exercise 9.3

1. Count the decimal places in the given decimals and hence make the group of like decimals.
38.1178.0, 8.5, 9.3, 16.8 are like decimals as each one has one decimal place.
Again 9.35, 7.01, 9.09, 18.18, 9.75 are like decimals as each one has two decimal places.

2. **a.** 1.08 has tow decimal places but 4.5 has one decimal place, so add zero at the end of 4.5 → 1.50.
Hence 1.08 and 4.50 are like decimals

b.-d. Similar working as above.

3. To compare the decimals, first compare the whole number parts. If they are same, compare the digit at tenths and hence hundredths

a. 8.75 and 8.57 have same whole but 7 tenths > 5 tenth

$\therefore$ 8.75 > 8.57

b. In decimals 48.75 and 9.38, 48 > 9 (whole number part)

$\therefore$ 48.75 > 9.38

c.-d. Similar working as above.

4. Refer answer at the end of the book.

Test Your Skills

Multiple choice Questions

1.-5. Refer answers given at the end of the book.

Puzzle

1.2	5.4	2.4
4.2	3.0	1.8
3.6	0.6	4.8

Mental Maths

1.-4. Refer answers at the end of the book.

5. Since 5 boxes of pencils cost ₹42.50

So 1 box of pencils cost ₹42.50 ÷ 5 = ₹8.50

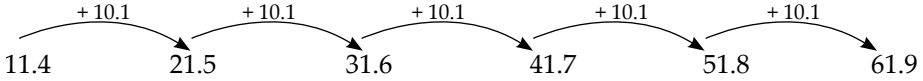
So 8 box of pencils cost ₹8.50 × 8 = ₹68.00

Apply your skills

problem Solving Assessment

1.-2. Refer answers given at the end of the book.

3. a.



b. 9.001 (+0.002) 9.003 (+0.002) 9.005 (+0.002) 9.007 (+0.002) 9.009

c. 27.17 (−0.03) 27.14 (−0.03) 27.11 (−0.03) 27.08 (−0.03) 27.05

4. Comparing the whole number parts of the given decimals 7.85, 78.50, 58.75, 17.95, 8.93 and 6.57, we have $6 < 7 < 8 < 17 < 58 < 78$

Therefore, the ascending order of the decimals is 6.57, 7.85, 8.93, 17.95, 58.75, 78.50

Value based Questions

1. 20 – 120 kg = 20 kg 120g

$\frac{1}{10}$ th of whole past means $\frac{1}{10}$ of 20 kg = 20kg ÷ 10 = 2kg and $\frac{1}{5}$ th of decimal past means $\frac{1}{5}$th of decimal part means $\frac{1}{5}$ of 120g = 120g ÷ 5 = 24g

Hence, Rihaina give 2kg 24g or 2.024kg size to the pigeons.

Value: Humanity, love with birds

2. First make a place value chart and then enter the digits at proper places to represent the given decimals as follows.

Decimal Numbers	Hundreds 100	Tens 10	Ones 1	Decimal .	Tenths $\frac{1}{10}$	Hundredths $\frac{1}{100}$
38.45		3	8	.	4	5
32.05		3	2	.	0	5
7.85			7	.	8	5
6.8			6	.	8	
71.5		7	1	.	5	
169.09	1	6	9	.	0	9

Value: family value

HOTS

1.–2. Refer answers at the end of the book.

CHAPTER 10

The Metric System

Lesson plan

OBJECTIVES

The students should know

(i) Units of measurement
(ii) Conversion of units
(iii) Addition and Subtraction of metric units
(iv) Multiplication of metric units
(v) Division of metric units

Pre-Requisite Knowledge: The students should have the basic knowledge of the units of measurement as they have studied in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, geometrical box, smart-board/ projector and the pointer.

Method of Teaching: The following topics of this chapter will be taught to the students in the class.

(i) **Metric System:** It is accepted all over the world based on a multiple of 10 to measure length, weight and volume.

(ii) **Units of Length**

10 mm = 1 cm, 100 cm = 1 m, 1000 m = 1 km

(iii) **Units of weight**

1000 mg = 1 g, 1000 g = 1 kg, 100 kg = 1 quintal

(iv) **Units of Capacity**

1000 mL = 1L, 1000 L = 1 kL

(v) **Additions and Subtraction of metric units**

Example: Add 16 km 675 m 60 cm and 6 km 350 m 30 cm

	km	m	cm
	①		
	16	675	60
+	6	350	30
	23 km	25 m	90 cm

Recapitulation: The whole chapter will be revised in the class by taking simple extra questions and the problems of the students will be solved accordingly.

Home Assignment:

(A) From Text Book:

(i) Exercise 10.1 — Solve Q. No. 1, 2, 3 all parts
(ii) Exercise 10.2 — Solve Q. No. 1 and 2 all parts
(iii) Exercise 10.3 — Solve Q. No. 1 and 2 all parts
(iv) Exercise 10.4 — Solve Q. No. 1 and 2 all parts
(v) Exercise 10.5 — Solve Q. No. 1 to 5

(B) Extra Questions:

(1) Add the following:
250 kg 375 gram and 120 kg 250 gram
(2) Multiply 20 kg 235 g by 2
(3) Divide 16 kg 250 g by 5

Exercise 10.1

1. Refer answers at the end of the book.

2. a. Since 1 cm = 10 mm ∴ 1000 cm = 10000 mm
100 mm ⓒ 10000 mm
b. 1000 mL ⓔ 1 L (or 1000 mL)
c. 1000 g ⓒ 10 kg (or 10000 g) (as 1000 g = 1 kg)
d. 23 g ⓡ 230 mg (as 23 g = 23000 mg)
e. 600 mL ⓒ 6 L (as 6 L = 6000 mL)
f. 15 m ⓡ 150 mm (as 15 m = 15000 mm)
g. 45 kg ⓔ 45000 g (as 45 kg = 45000 g)
h. 800 m ⓡ 8000 cm (as 800 m = 80000 cm)

3. a. 55 cm + 22 cm + 10 cm = 87 cm

55 cm
22 cm
+ 10 cm
87 cm

b. 320 km 50 m + 410 km 10 m = 730 km 60 m

320 km 50 m
+ 410 km 10 m
730 km 60 m

c. 194 kg 600 g + 50 kg 320 g = 244 kg 920 g

194 kg 600 g
+ 50 kg 320 g
244 kg 920 g

d. 96 m – 23 m = 73 m

96 m
–23 m
73 m

e. 520 L 110 mL – 100 L 10 mL = 420 L 100 mL

520 L 110 mL
– 100 L 010 mL
420 L 100 mL

f. 550 kg 100 g – 220 kg 50 g = 330 kg 50 g

550 kg 100 g
– 220 kg 050 g
330 kg 050 g

Exercise 10.2

Refer answers at the end of the book.

Exercise 10.3

1. a. 1000 cm + 90 m = _____ m

$\therefore$ 10 m + 90 m = 100 m ($\because$ 100 cm = 1 m)

b. 87 dm = 870 cm

($\because$ 1 dm = 10 cm $\Rightarrow$ 87 dm = 87 × 10 = 870 cm)

c. 5600 mL = 5 L 600 mL

(since 1000 mL = 1 L $\Rightarrow$ 5600 mL = $\frac{5600}{1000}$ L = 5.6 L or 5 L 600 mL)

d. 45000 mL = 45 L ($\because$ 1000 mL = 1 L)

e. 7000 g = 7 kg ($\because$ 1000 g = 1 kg)

f. 567 hm = 567000 cm ($\because$ 1 hm = 10000 cm)

g. 9 daL = 90 L ($\because$ 1 daL = 10 L)

h. 4998 cm + 2 cm = 50 m

($\because$ 4998 + 2 = 5000 cm and $\frac{5000}{100}$ m = 50 m)

i. 56 g = 56000 mg (as 1 g = 1000 mg)

j. 600000 cm = 6 km (as 100000 cm = 1 km)

k. 2560 mg = 256 cg (as 1 cg = 10 mg)

l. 3000 cL = 30 L (as 100 cL = 1 L)

2. a. i. 4 km 8 hm = 4 × 1000 m + 8 × 100 m = (4000 + 800) m = 4800 m

ii. As 100 cm = 1 m $\therefore$ 5876 cm = $\frac{5876}{100}$ m = 58.76 m

iii. As 1000 mm = 1 m $\therefore$ 3241 mm = $\frac{3241}{1000}$ m = 3.241 m

iv. As 10 dm = 1 m $\therefore$ 1080 dm = $\frac{1080}{10}$ m = 108 m

b. i. As 1 kg = 1000 g $\therefore$ 34 kg = 34 × 1000 g = 34000 g

ii. 67 hg 5 dag = 67 × 100 g + 5 × 10 g = (6700 + 50) g = 6750 g

iii. As 1 mg = $\frac{1}{1000}$ g $\therefore$ 1300 mg = $\frac{1300}{1000}$ g = 1.300 g or 1.3g

iv. As 1 cg = $\frac{1}{100}$ g $\therefore$ 2509 cg = $\frac{2509}{100}$ g = 25.09 g

c. i. As 1 mL = $\frac{1}{1000}$ L $\therefore$ 7809 mL = $\frac{7809}{1000}$ L = 7.809 L

ii. As 1 dL = $\frac{1}{10}$ L $\therefore$ 130 dL = $\frac{130}{10}$ L = 13 L

iii. As 1 mL = $\frac{1}{1000}$ L $\therefore$ 9008 mL = $\frac{9008}{1000}$ L = 9.008 L

iv. 3 hL 5 daL

3 hL 5 daL = 3 × 100 L + 5 × 10 L (300 + 50)L = 350 L

d. i. As $1\text{ mm} = \frac{1}{10}\text{ cm}$ $\therefore$ $30\text{ mm} = \frac{30}{10}\text{ cm} = 3\text{ cm}$

ii. 8 dam 30 dm = 8 × 1000 cm + 30 × 10 cm (8000 + 300) cm
= 8300 cm

iii. As 1 km = 100000 cm $\therefore$ 6 km = (6 × 100000) cm = 600000 cm

iv. As 1 m = 100 cm $\therefore$ 32 m = (32 × 100) cm = 3200 cm

e. i. As $1\text{ g} = \frac{1}{1000}\text{ kg}$ $\therefore$ $1200\text{ g} = \frac{1200}{1000}\text{ kg} = 1.200\text{ kg or } 1.2\text{ kg}$

ii. As $1\text{ dg} = \frac{1}{10000}\text{ kg}$ $\therefore$ $54600\text{ dg} = \frac{54600}{10000}\text{ kg} = 5.46\text{ kg}$

iii. As $1\text{ hg} = \frac{1}{10}\text{ kg}$ $\therefore$ $890\text{ hg} = \frac{890}{10}\text{ kg} = 89\text{ kg}$

iv. 1 quintal = 100 kg $\therefore$ 50 quintals = 50 × 100 kg = 5000 kg

f. i. As 1 L = 1000 mL $\therefore$ 13 mL = 13 × 1000 mL = 13000 mL

ii. As 1 cL = 10 mL $\therefore$ 78 cL = 78 × 10 mL = 780 mL

iii. As 1 dL = 100 mL $\therefore$ 80 dL = 80 × 100 mL = 8000 mL

iv. $\therefore$ 2 kL 5 daL = 2 × 1000000 mL + 5 × 10000 mL
= (2000000 + 50000) mL = 2050000 mL

Exercise 10.4

1. a.

kg	g
①	①
45	456
+23	608
69	064

Sum = 69 kg 64 g

b.

km	m	cm
①①		①
123	034	22
+ 89	405	68
212	439	90

Sum = 212 km 439 m 90 cm

c.

km	m	cm
①		①
19	036	25
+24	022	48
43	058	73

Sum = 43 km 58 m 73 cm

d.

km	m
①②	①
13	670
45	908
+29	770
89	348

Sum = 89 km 348 m

e.

kg	g
①①	①
45	043
18	390
+55	900
119	333

Sum = 119 kg 333 g

f.

kg	hg	mg
		①
13	456	13
+34	233	78
47	689	91

Sum = 47 kg 689 hg 91 mg

g.

L	mL
②②	①
41	543
8	564
+19	900
70	007

Sum = 70 L 7 mL

h.

L	mL
	①
14	708
+34	222
48	930

Sum = 48 mL 930 mL

i.

L	mL
①① ①	①①
3784	698
+1223	798
5008	496

Sum = 5008 L 496 mL

j.

L	mL
272	500
+725	000
997	500

Sum = 997 L 500 mL

2. a.

m	cm
6 7 8	1 0 0
− 5 3 7	6 3
1 4 0	4 7

Difference = 140 m 47 cm

b.

km	m
15	000
− 7	380
7	620

Difference = 7 km 620 m or 7620 m

c.

L	mL
99	000
− 47	788
51	212

Difference = 51 L 212 mL

d.

km	m
42	900
− 31	706
11	194

Difference = 11 km 194 m

e.

km	m
15	000
− 6	678
8	322

Difference = 8 km 322 m

f.

L	mL
42	789
− 13	230
29	559

Difference = 29 L 559 mL

g.

kg	g
45	120
− 23	319
21	801

Difference = 21 kg 801 g

h.

km	m	cm
76	104	66
− 52	300	45
23	804	21

Difference = 23 km 804 m 21 cm

Exercise 10.5

1.

Length of 1st stick	=	85 cm
Length of 2nd stick	=	+ 39 cm
Total length	=	124 cm

= 1 m 24 cm

2.

		m	cm
Length of 1st piece of wood	=	4	87
Length of 2nd piece of wood	=	+ 5	13
Total length of two pieces	=	10	00

= 10 m

Piece of wood left unpainted = (10 ÷ 2) m = 5 m

3.

Distance to the library	=	4 km	456 m
Distance to the stationary shop	=	2 km	034 m
Distance to the grocery shop	=	+ 1 km	350 m
Total distance walked	=	7 km	840 m

4.

		L	mL
Milk sold on 1st day	=	46	450
Milk sold on 2nd day	=	35	500
Milk sold on 3rd day	=	+ 56	706
Total milk sold	=	138	656

= 138 L 656 mL

5.

		kg	g
Weight of 1st vehicle	=	205	450
Weight of 2nd vehicle	=	180	600
Weight of 3nd vehicle	=	+ 325	005
		711	055
Total wieght of three	=	711kg	55g

6. Total shampoo in a bottle = 250 mL
Shampoo used = −89 mL
Shampoo left in the bottle = 161 mL

7. Total length of wire = 500 cm
Length of wire used = −298 cm
Length of wire left = 202 cm

8.

		m	cm
Total length of rope	=	345	66
Piece of rope used	=	−234	15
Length of rope left	=	111	51

= 111 m 51 cm

9.

		kg	g
Rohan's weight	=	25	725
Vasu weighs more by	=	+8	360
Vasu's weight	=	34	085

Total weight = 34 kg 85g + 25kg 725g
= 321 mL = 59 kg 810g

10. Water in bucket = 12275 mL

As 1 mL = $\frac{1}{1000}$ L $\quad \therefore$ 12275 mL = $\frac{12275}{1000}$ L = 12.275 mL or 12 L 275 mL

12 L 275 mL – 8 L 35 mL = 42 240 mL

11. Oil in a can = 900 mL
Oil used = (456 + 123) mL
= 579 mL
Oil left in the can = (900 – 579) mL

12.

		kg	g
Flour needed for making buns	=	12	350
Flour needed for making biscuits	=	+4	100
Flour used for making two items	=	16	450

Total Flour in the can = 20
This, flour needed for making buns= 20 kg – 16 kg 450g = 3kg 550g

Exercise 10.6

1. a.

m	cm
3	25
	× 3
9	75

= 9 m 75 cm

b.

104 L
×5
520 L

c.

kg	g
2	900
	× 2
5	800

= 5 kg 800 g

d.

kg	g
3	560
	× 5
17	800

= 17 kg 800 g

e.

L	mL
7	150
	× 3
21	450

= 21 L 450 mL

f.

L	mL
48	40
	× 4
192	160

= 192 L 160 mL

g.

cm	mm
①①	
19	7
	× 2
39	4

= 39 cm 4 mm

h.

kg	g
①	③
6	250
	× 7
43	750

= 43 kg 750 g

i.

km	m
	②
13	208
	× 3
39	624

= 39 km 624 m

Exercise 10.7

1. a.

m	cm
4	20
2) 8	40
–8	↓
	4
	–4
	00

8 m 40 cm ÷ 2
= 4 m 20 cm

b.

km	m
0	700
5) 3	500
–3	5↓↓
	000

3 km 500 m ÷ 5
= 700 m

c.

km	m
9	450
2) 18	900
–18	↓
0	9
	–8
	10
	–10
	00

18 km 900 m ÷ 2
= 9 km 450 m

d.

kg	g
1	220
2) 2	440
–2	↓
0	4
	–4
	04
	–4
	00

2 kg 440 g ÷ 2
= 1 kg 220 g

e.

kg	g
0	365
5) 1	825
–1	5↓
0	32
	–30
	25
	–25
	0

1 kg 825 g ÷ 5
= 365 g

f.

g	mg
0	500
3) 1	500
–1	5↓↓
0	000

1 g 500 mg ÷ 3
= 500 mg

g.

L	L
3	123
3) 9	369
–9	↓
0	3
	–3
	06
	–6
	09
	–9
	0

9 L 369 mL ÷ 3
= 3 L 123 mL

h.

kL	L
0	852
4) 3	408
–3	2↓
0	20
	–20
	08
	–8
	0

3 kL 408 L ÷ 4
= 852 L

i.

L	mL
0	564
8) 4	512
–4	0↓
0	51
	–48
	32
	–32
	00

4 L 512 mL ÷ 8
= 564 mL

Exercise 10.8

1. Length of 1 ribbon = 10 cm 6 mm
No. of ribbons = 3
Total length of ribbons = 10 cm 6 mm × 3
= 31 cm 8 mm

cm	m
①	
10	6
	× 3
31	8

2. Distance from Delhi to Ludhiana = 438 km 500 m
Total distance for a to and fro trip = 438 km 500 m × 2 = 877 km

km	m
①①	
438	500
	× 2
877	000

3. Butter consumed by Sahil in a day = 50 mg
No. of days in the month of June = 30
Total butter consumed in June = 50 mg × 30 = 1500 mg
or 1 g 500 mg

4. Capacity of a glass = 350 mL
No. of glasses = 8
Water required to fill 8 glasses = 350 mL × 8
= 2800 mL or 2 L 800 mL

350	mL
× 8	
2800	mL

5. Sugar consumed in a month = 4 kg 500 g
No. of months in a year = 12
Sugar consumed in a year = 4 kg 500 g × 12
= 54 kg

kg	g
①	
4	500
	× 12
9	000
+45	000
54	000

6. Total quantity of milk packed = 8 L 200 mL
No. of hours required to pack = 4
Quantity of milk packed in 1 hr = 8 L 200 mL ÷ 4
= 2 L 050 mL

	L	mL
	2	050
4)	8	200
	−8	↓↓
	0	20
		−20
		00

Quantity of milk packed in 3 hours = 2 L 50 mL × 3 = 6 L 150 mL

7. Total track of relay-race track = 4 km 400 m
No. of players = 4
Distance each player will cover = 4 km 400 m ÷ 4
= 1 km 100 m

	km	m
	1	100
4)	4	400
	−4	↓
	0	4
		−4
		000

8. Total quantity of wheat = 5 kg

No. of families = 4

Quantity of wheat each family will get = 5 kg ÷ 4

= 1 kg 250 g

```
     kg  g
      1  250
4 )   5  000
     -4
      1  0
     -   8
        20
       -20
        00
```

9. Total quantity of cold drink = 5 L or 5000 mL

Capacity of a bottle = 250 mL

No. of bottles required = 5000 mL ÷ 250 mL

= 20 bottles

```
250 ) 5000 ( 20
     -500
        00
```

10. Capacity of a tank = 100 L

Capacity of a drum = 10 L

No. of drums that will be filled = 100 L ÷ 10 L = 10 drums

11. Total length of piece of cloth = 8 m 64 cm

No. of pieces cut = 4

Length of each piece = 8 m 64 cm ÷ 4

= 2 m 16 cm

```
     m   cm
     2   16
4 )  8   64
    -8
     0   6
        -4
        24
       -24
        00
```

12. Flour used by baker in a week = 26 kg 250 g

No. of days in a week = 7

Flour used in a day = 26 kg 250 g ÷ 7

= 3 kg 750 g

```
     kg   g
      3   750
7 )  26   250
    -21
      5   2
     -4   9
         35
        -35
         00
```

13. Distance walked by Sachin = 21 km 200 m

No. of days = 4

Distance he walks in a day = 21 km 200 m ÷ 4

= 5 km 300 m

```
     km   m
      5   300
4 )  21   200
    -20
      1   2
     -1   2
        000
```

Distance Sachin walks in 5 days = 5 km 300 m × 5 = 26km 500m

Test Your Skills

Multiple choice Questions

1.-4. Refer answers given at the end of the book.

5. Cost of 2 kg grapes at ₹35 per kg = ₹35 × 2 = ₹70

Cost of 250 g ginger at ₹125 per kg = ₹125 ÷ 4 = ₹31.25 (∵ 1 kg = 1000g or 4 × 250 g)

Cost of $\frac{1}{4}$ kg apples at ₹100 per kg = ₹100 ÷ 4 = ₹25 (∵ 1 kg = 1000g or 10 × 100 g)

Thus, option (a) is correct.

Mental Maths

1. 18 cm 4 mm = 18 × 10 mm + 4 mm = (180 + 4) mm = 184 mm.

2. ∵ cost of 1 m cloth = ₹180

∵ cost of $\frac{3}{4}$ m cloth = ₹180 × $\frac{3}{4}$ = ₹$\frac{540}{4}$ = ₹135

3.

		kL	L
Consumption of water for family A	=	180	240
Consumption of water for family B	=	+ 250	110
Total consumption of water in a month	=	430 kL	350 L

There fore, total consumption of water in a day = 430 kL 350 L ÷ 30

= 14 kL 345 L

	kL	L
	14	345
30)	430	350
−	30	
	130	
−	120	
	10	3
−	9	0
	1	35
−	1	20
	1	5 0
	1	5 0
		0

Family B consumes more water by

	kL	L
	250 kL	110 L
−	180 kL	240 L
	69 kL	870 L

4.

Step 1

kg	g
15	250
+ 18	425
33	675

Step 2

kg	g
12	025
+ 21	045
33	70

Step 3

kg	g
33	675
+ 33	070
0	605

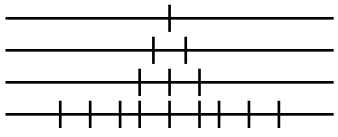
This, required result is 605 g.

5. Total juice contained in 8 packets each measuring 250 mL = 250 mL × 8 = 2000 mL
And total juice contained in 10 packets each measuring 180 mL = 180 mL × 10 = 1800 mL
This, 2000 mL > 1800 mL.

Apply your skills

problem Solving Assessment

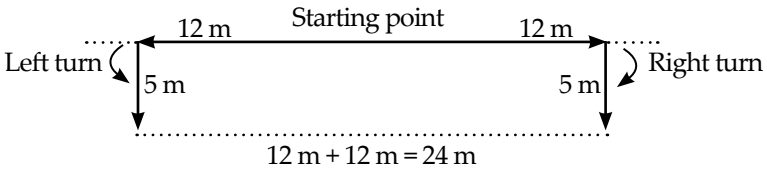
1. By 1 cut, we can get 2 pieces of a rope.
By 2 cuts, we can get 3 pieces of a rope.
By 3 cuts, we canget 4 pieces of a rop.
Hence by 9 cuts, we can get 10 pieces of a rope.



2. Weight of (carriage apples) = 440 kg 600 g
Weight of (carriage bananas) = 239 kg 900 g
Weight of (carriage mangoes) = 660 kg 000 g
Total weight of (3 carriage + three kinds of fruits) = 1340 kg 500g
Weight of all the fruits = 1200 kg
∴ Weight of thrice a carriage = 1340 kg 500g – 1200 kg = 140 kg 500 g
Hence weight of a carriage alone = 140 kg 500 g ÷ 3 = 46 kg 833 g

3. Shweta weight 46 kg less than Reena. That means weight of Shweta + 49 kg = weight of Reena
Again, Amina weighs 5 kg more than Reena. Therefore Weight of Amina = weight of Reena + 5 kg = (weight of Shweta + 49 kg) + 5 kg
∴ Weight of Amina = weight of Shweta + 54 kg
Hence, Shweta weighs 54 kg less than Amina.

4.



5. Volume of trick butter milk = 1200 mL
Volume of water = 400 mL
Volume of butter shake to be make = 2 L = 2000 mL
Volume of water to be obtained from ice = 2000 mL – (1200 mL + 400 m L)
= 400 m l
Now, volume of water obtained from 1 ice cube = 10 mL
So number of ice cubes required to get 400 mL water = 400 ÷ 10 = 40.

Value based Questions

1. Refer answer at the end of the book.

2. on day 1, selling price of 1 kg suger in ₹40, which in ₹10 more than its cant price
∴ cost price = ₹40 – ₹10 = ₹30 per kg
On day 2, selling price of 2 kg sugar is ₹60, which ₹10 more than its cost price
∴ cost price of 2 kg sugar is ₹60 – ₹10 = ₹50
Hence, the rate of sugar = ₹50 ÷ 2 = ₹25 per kg
Total cost of sugar for days = ₹30 + ₹50 = ₹80
value: Honest

HOTS

1. Weight of an object on Earth = weight of the object on Moon × 6 If weight of an object on Earth = 660 kg, then weight of the object on Moon = 660 kg ÷ 6 = 110 kg
Again if weight of an object on Moon = 13 kg, than weight of the object on Earth = 13 kg × = 78 kg.

2. Refer answer at the end of the book.

CHAPTER 11

Geomtry

OBJECTIVES

The students should know

(i) Points, lines and line segment
(ii) closed and open curves
(iii) Circle and its elements (parts)
(iv) Symmetry
(v) 2-D and 3-D figures

Pre-Requisite Knowledge: The students should have the basic knowledge of 2-D and 3-D shapes that they have studied in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, geometrical box, smart-board/ projector and the pointer.

Method of Teaching: The following topics and sub-topics of this chapter will be taught in the class.

(i) **2-D and 3-D shapes:** To find the number of faces, number of edges and number of vertices
(ii) **Line and Line-segment:**
  (a) Straight line
  (b) Curved lines
(iii) **Curves:** (a) Open curve (b) closed curve
(iv) **Circle:** Parts of circle
  (a) centre (b) radius (c) diameter (d) chord (e) arc
  (f) semi-circles (g) circumference
(v) **Symmetry:**
  (a) Reflection symmetry or mirror symmetry
  (b) Line of symmetry
  (c) Horizontal and vertical symmetry
(vi) Three-dimensional objects
  (a) cube (b) cuboid (c) cylinder (d) cone

Recapitulation: The whole chapter will be revised in the class taking simple questions and the problems will be solved immediately.

Home Assignment:

(A) From Text Book:

(i) Exercise 11.2 — Solve Q. No. 1, 2, 3 all parts
(ii) Exercise 11.5 — Solve Q. No. 1 to 6 all parts
(iii) Exercise 11.8 — Solve Q. No. 1 to 5 all parts

(iv) Exercise 11.10 — Solve Q. No. 1, 2, 3 all parts

(B) Extra Questions:

(1) Write the number of faces, edge and vertices of the following 3-D shapes.
(a) cuboid (b) cone (c) cylinder (d) sphere

(2) Write the alphabet which have horizontal symmetry.

(3) Write the alphabet having vertical symmetry.

Exercise 11.1

1.–2. Refer answers at the end of the book.

3. a. Cone – ice cream cone **b.** Sphere – cricket ball
c. Cylinder – pepsi can **d.** Cuboid – match box
e. Cube – dice **f.** Square – chess board

Exercise 11.2

1.–3. Refer answers at the end of the book.

Exercise 11.3

1.–2.Refer answers at the end of the book.

3. a. Square **b.** Triangle **c.** Rectangle

Exercise 11.4

Refer answers at the end of the book.

Exercise 11.5

1.–3.Refer answers at the end of the book.

4. Diameter = 2 × Radius

a. R = 2 cm
D = 2 × 2 = 4 cm

b. R = 5 cm
D = 2 × 5 = 10 cm

c. R = 8 cm
D = 8 × 2 = 16 cm

d. R = 10 cm
D = 2 × 10 = 20 cm

e. R = 12 cm
D = 2 × 12 cm = 24 cm

5. Radius = Diameter ÷ 2

a. D = 8 cm
R = 8 ÷ 2 = 4 cm

b. D = 12 cm
R = 12 ÷ 2 = 6 cm

c. D = 18 cm
R = 18 ÷ 2 = 9 cm

d. D = 22 cm
R = 12 ÷ 2 = 11 cm

e. D = 36 cm
R = 36 ÷ 2 = 18 cm

6. Refer answers on page 216.

Exercise 11.6

Refer answers at the end of the book.

Exercise 11.7

1. Different varieties of tiling patterns can be located from internet.

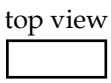
2.–3. Try yourself

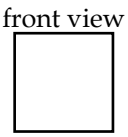
Exercise 11.8-11.9

Refer answers at the end of the book.

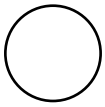
Exercise 11.10

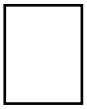
1. a.

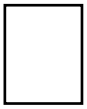




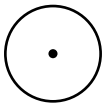
b.

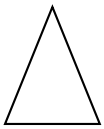


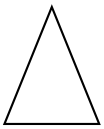




c.







2.–3.Refer answers at the end of the book.

Test Your Skills

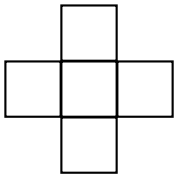
Multiple choice Questions

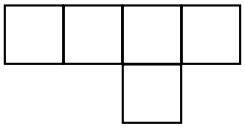
1.-5. Refer answers given at the end of the book.

Mental Maths

1.-4. Refer answers given at the end of the book.

5. Any net of 5 - faced cube can be considered.





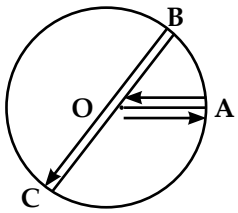
Apply your skills

problem Solving Assessment

1.-5. Refer answers given at the end of the book.

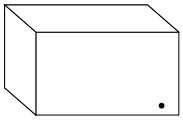
Value based Questions

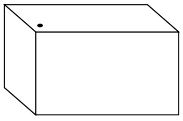
1. Let madhu walk along BC, the diameter of the circular garden. And let Anita walk to and fro along OA, radius of the circular garden, As diameter = 2 × radians go both of then walk equal distance.



Value: understanding and guidance.

2. The shape is rotated by 180°, hence it books like as follow.



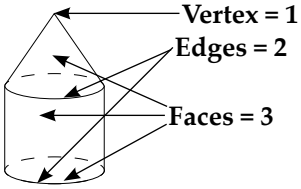


Rotated by 180°

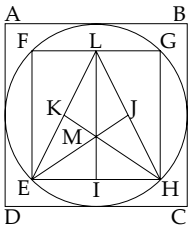
Value: Friendship

HOTS

1.



2.



Squares = ABCD and EFGH; 2
Rectangles = EFLI and GHIL; 2
Triangles = EFL, GHL, EMK, KML, LMJ, JHM, HIM, EIM, EML, LMH, EHM, EJL, EJH, EIL, HIG, EKH, HKL and EHL; 18

CHAPTER 12

Perimeter and Area

OBJECTIVES

The students should know

(i) Perimeter of shapes

(ii) Find the area of the figures

(iii) Finding the area of regular and irregular figures

Pre-Requisite Knowledge: The students should have the basic knowledge of different kind of figures as they have studied in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, duster, geometrical box, smart-board/ projector and the pointer.

Method of Teaching: The following topics and sub-topics of this chapter will be taught in this class.

(i) **Perimeter:** Sum of all the sides of the given figure is called perimeter.

(a) Perimeter of rectangle = 2 [length + breadth]

(b) Perimeter of square = 4 × side

(c) Perimeter of triangle = sum of three sides

(d) Perimeter of polygon = sum of all sides

(ii) **Area**

(a) Area of square = side × side

(b) Area of rectangle = length × breadth

(c) Area of triangle = $\frac{1}{2}$ × base × height

Recapitulation: The whole chapter will be revised to the students taking simple examples and the problems of the students will be solved immediately in the class.

Home Assignment:

(A) From Text Book:

(i) Exercise 12.1 — Solve Q. No. 1 and 2 all parts

(ii) Exercise 12.2 — Solve Q. No. 1 to 10

(iii) Exercise 12.5 — Solve Q. No. 1, 2, 3 all parts

(iv) Exercise 12.6 — Solve Q. No. 1 to 4 all parts

(B) Extra Questions:

(1) Find the perimeter of rectangle whoe length is 12 cm and breadth 8 cm.

(2) Find the perimeter of a square of length 6 cm.

(3) Find the area of a rectangle of length 10 cm and breadth 8 cm.

(4) Find the area of a square whose each side is 5 cm.

Exercise 12.1

1. a. Perimeter of square = 4 × side
Side of square = 7 cm
∴ Perimeter = (4 × 7) cm = 28 cm

b. Perimeter of triangle = Sum of all its sides
= 3 cm + 6 cm + 8 cm = 17 cm

c. Here L = 8 cm and B = 6 cm
Perimeter of rectangle = 2 (L + B) = 2 (8 + 6) cm = 2 × 14 cm = 28 cm

d. Side of an equilateral triang = 6 cmle
Perimeter of equilateral triangle = 3 × side = (3 × 6) cm = 18 cm

e. Side of a pentagon = 4 cm
Perimeter of pentagon = 5 × side = (5×4) cm = 20 cm

f. Side of a hexagon = 8 cm

Perimeter of hexagon = 6 × side

= (6 × 8) cm = **48 cm**

2.To find the perimeters (P) of given figures, we add all its sides.

a. P = (3 + 3 + 3 + 3 + 3 + 3) cm = 18 cm

b. P = (1 + 5 + 1 + 1 + 1 + 1 + 5) cm = 15 cm

c. P = (1 + 3 + 1 + 3 + 1 + 3 + 1 + 3 + 1 + 3 + 1 + 3) cm = 24 cm

d. P = (4 + 4 + 4) cm = 12 cm

e. P = (4 + 8 + 3 + 3 + 8) cm = 26 cm

f. P = (2.5 + 3.5 + 2.5 + 3.5) cm = 12 cm ($\because$ 1 mm = $\frac{1}{10}$ cm)

Exercise 12.2

1. c. ∴ P = (10 + 14 + 15) cm = 39 cm
Perimeter of a triangle = Sum of 3 sides

a. ∴ P = (12 + 14 + 18) cm = 44 cm

b. ∴ P = (9 + 11 + 16) m = 36 m

2. Perimeter = 3 × side
= 3 × 6 cm = 18 cm

3. Here L = 12 cm and B = 4 cm
Perimeter of rectangle = 2(L + B)
= 2(12 + 4) cm = 2 × 16 cm = 32 cm

4. Perimeter of a square = 4 × side
= 4 × 20 feet
= 80 feet

5. Here L = 3 m and B = 2 m
Length of lace needed = Perimeter of bedspread
= 2(3 + 2) m = 2 × 5 m = 10 m
Hence, the lace required is 10 m.

6. So, side of square = P ÷ 4
As perimeter of square = 4 × side
= (36 ÷ 4) cm = 9 cm

7. Here P = 100 cm
Perimeter of regular pentagon = 5 × side
∴ Side of regular pentagon = P ÷ 5
= (100 ÷ 5) cm = 20 cm

8. Here B = 3 cm and L = 2 × B = 2 × 3 = 6 cm
Perimeter of rectangle = 2(L + B)
= 2(3 + 6) cm = 2 × 9 cm = 18 cm

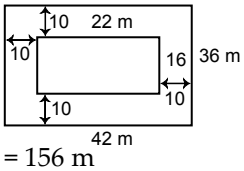
9. Perimeter of rectangular park = 2(L + B)
Now, P = 180 m and B = 33 m

$\therefore \quad L = \frac{P}{2} - B$

$= \left(\frac{180}{2} - 33\right)$ m = (90 – 33) m = 57 m

10. Perimeter of square with side 29 cm = 4 × 29 cm = 116 cm
Perimeter of square with side 14 cm = 4 × 14 cm = 56 cm
Difference between the two perimeters = (116 – 56) cm = 60 cm
Rohit runs 60 m more than Reena.

11. Since 10 m is left between the fence and the pool.
∴ the new length = (22 + 10 + 10) = 42 m
New breadth = (16 + 10 + 10) = 36 m
Fencing required = Perimeter
= 2(L + B)
= 2(42 + 36) m = 2 × 78 m = 156 m



12. Fencing required = Perimeter of field = 2(L + B)
∴ P = 2(36 + 23) m = 2 × 59 m = 118 m
Now, cost of fencing 1 m = ₹125
Cost of fencing 118 m = ₹(118 × 125) = ₹14750

Exercise 12.3

The bigger area can be found out by there observation.

Exercise 12.4

a. 1 × 5 = 5 sq cm **b.** 4 × 5 = 20 sq cm

c–i the area can be find out by counting the number. of squares in the figure and add sq cm to it.

Exercise 12.5

1 a. No. of full squares = 3
No. of half squares = 3

$\therefore \quad$ Total area = $\left(3 + \frac{1}{2} \times 3\right)$ sq units = $\left(3 + 1\frac{1}{2}\right)$ sq units = $4\frac{1}{2}$ sq units

b. No. of full squares = 3
No. of squares more than half = 2

No. of half squares = 4

$\therefore$ Total area = $\left(3+2+\frac{1}{2}\times 4\right)$ sq units = (3 + 2 + 2) sq units = 7 sq units

2. Similar working as 1.

3. a. No of full squares = 4.

No of squares more than half= 14.

No of half squares = 2.

Total area = $(4 + 14 + \frac{1}{2} \times 2)$ sq units

= (4 + 14 + 1) = 19 sq units

b. No. of full squares = 6

= 3 × 6 cm = 18 cm

Exercise 12.6

1. a. Area of square = side × side

Side = 8 cm

$\therefore$ Area = (8 × 8) sq units = 64 sq units

b. Area of a rectangle = Length × Breadth

= 4 × 12 sq cm

= 48 sq cm

Here, Base = 8 m and height = 12 m

$\therefore$ Area = $\left(\frac{1}{2}\times 8\times 12\right)$ m^2 = 48 m^2

c. Area of rectangle = L × B

Here, L = 12 cm and B = 5 cm

$\therefore$ Area = (12 × 5)cm^2 = 60 cm^2

d. Area of triangle = $\frac{1}{2} \times b \times h$

Here, b = 11 cm and h = 16 cm

$\therefore$ Area = $\left(\frac{1}{2}\times 11\times 16\right)$ cm^2 = 88 cm^2

2. Area of rectangle = l × b

a. l = 8 cm, b = 3 cm $\therefore$ Area = (8 × 3) cm^2 = 24 cm^2

b. l = 11 cm, b = 4 cm $\therefore$ Area = (11 × 4) cm^2 = 44 cm^2

c. l = 15 m, b = 12 m $\therefore$ Area = (15 × 12) m^2 = 180 m^2

3. Area of triangle = $\frac{1}{-}$ × base × height

a. h = 7 cm, b = 10 cm $\therefore$ Area = $\left(\frac{1}{2}\times 7\times 10\right)$ cm^2 = 7 × 5 cm^2 = 35 cm^2

b. h = 4 cm, b = 8 cm $\therefore$ Area = $\left(\frac{1}{2}\times 4\times 8\right)$ cm^2 = 4 × 4 cm^2 = 16 cm^2

c. h = 12 m, b = 9 m ∴ Area = $\left(\frac{1}{2} \times 12 \times 9\right)$ m² = 6 × 9 m² = 54 m²

4. Area of square = side × side

a. Side = 6 cm ∴ Area = (6 × 6) cm² = 36 cm²

b. Side = 9 m ∴ Area = (9 × 9) m² = 81 m²

c. Side = 12 cm ∴ Area = (12 × 12) cm² = 144 cm²

d. Side = 4 m ∴ Area = (4 × 4) m² = 16 m²

5. a. Area of room = (16 × 12) m² = 192 m²

1 sq m carpet cost = ₹50

192 m² carpet will cost = ₹(192 × 50) = ₹9600

b. Area of triangular plot = $\frac{1}{2}$ × base × height

Here, h = 12 m and b = 24 m

∴ Area of plot = $\left(\frac{1}{2} \times 12 \times 24\right)$ m² = 144 m²

c. Side of square rug = 7 m

∴ Area of square rug = side × side

= (7 × 7)m² = 49 m²

d. Area of rectangular room = L × B

Here, L = 15 m and B = 8 m

∴ Area = (15 × 8)m² = 120 m²

Rate of tiling the room = ₹75 per sq m

∴ Cost of tiling 120 m² = ₹(120 × 75) = ₹9000

e. Area of square garden = 100 m² = (10 × 10) m²

∴ side = 10 m = side × side

f. Here, Area = 391 sq m and B = 17 m

Area of rectangular field = L × B

∴ L = Area ÷ B

= 391 m² ÷ 17 m = 23 m

$$17\overline{)391}\,23 \quad -34\downarrow \quad 51 \quad -51 \quad 00$$

g. Area of triangle = 28 cm², Base = 8 cm

Now Area of Δ = $\frac{1}{2}$ × b × h

or h = $\frac{\text{Area} \times 2}{}$ = $\frac{28 \times 2}{}$ = $\frac{56}{}$ = 7 cm

h. Required no. of slabs = $\frac{\text{Area of path}}{}$

Area of path = L × B

= (1600 × 1200) cm²

where L = 16 m or 1600 cm and (1600 × 1200) cm²

B = 12 m or 1200 cm

Area of slab = L × B

= (20 × 15) cm²

where L = 20 cm and B = 15 cm

∴ No. of slabs required = $\frac{\overset{80}{\cancel{(1600}} \times \overset{80}{\cancel{1200)}} \text{ cm}^2}{1}$ = 6400

LESSON PLAN

CHAPTER-13
(TIME)

OBJECTIVES

The students should know

(i) Reading a clock

(ii) Meaning of 'am' and 'pm'

(iii) Conversion of Time

(a) Hours into minutes (b) Minutes into seconds

(iv) Duration of time

(v) Calender conversion

(a) weeks into days (b) Months into days

Pre-Requisite Knowledge: The students should have the basic knowledge of reading a clock and about 'am' and 'pm' as they have studied in their previous classes.

Teaching Aids: Writing board, marker, chalks, charts, clock, duster, geometrical box, smart-board/projector and the pointer.

Method of Teaching: The following topics of this chapter will be revised in the class by taking practical examples.

(i) **Reading a clock:** Clock has two hands

(a) Short hand or hour hand

(b) Long hand or minute hand.

(ii) 'am' and 'pm'

'am' = anti-meridien

'pm' = post-meridien

(iii) **Conversion of Time**

1 hour = 60 minutes

and 1 minutes = 60 sec

(iv) **Duration of Time:**

We can get the duration of time by subtracting the time from final times.

e.g. Let starting time = 4.30 pm

final time = 7.40 pm

so duration of time = 7.40 – 4.30 = 3.10 hours

(v) **Calender Conversion**

1 week = 7 days

1 month = 28, 30 or 31 days

1 year = 365 days

Recapitulation: The whole chapter will be revised in the class taking some extra questions and the problems will be solved immediately.

Home Assignment:

(A) From Text Book:

(i) Exercise 13.2 — Solve Q. No. 1 to 5 all parts

(ii) Exercise 13.3 — Solve Q. No. 1, 2, 3 all parts

(iii) Exercise 13.4 — Solve Q. No. 1, 2, 3 all parts

(iv) Exercise 13.6 — Solve Q. No. 1, 2, 3 all parts

(v) Exercise 13.7 — Solve Q. No. 1 to 5 all parts

(B) Extra Questions:

(1) Convert 1.30 am into 24-hour clock time

(2) Calculate the number of days is

October + November + December + Fortnight + 5 days.

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