Chapter-2

Fundamental Operations on Numbers

Objectives :
1. To add, subtract, multiply and divide numbers upto 100000.
2. To provide information regarding exchange of goods, division, banking, buying-selling etc. through operation on numbers of six digits.
3. To give different/alternate solution to all four fundamental operations of numbers.
4. To enhance the thinking level and ability to solve problems of the students.
5. To develop mental and intellectual level of students.

Recap

1. Solve :

(a)
$$\begin{array}{r} 4203 \\ +\,6415 \\ +\quad 131 \\ \hline \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 3708 \\ +\,6272 \\ +\quad 472 \\ \hline \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 5026 \\ -\,2553 \\ \hline \\ \hline \end{array}$$

(d)
$$\begin{array}{r} 7863 \\ -\,5507 \\ \hline \\ \hline \end{array}$$

2. Fill in the blanks :

(a) 115 + 327 = 327 + ☐

(b) 321 + 0 = ☐

(c) 139 × 1 = ☐

(d) 625 × 0 = ☐

(e) 339 – 0 = ☐

(f) 119 ÷ 119 = ☐

(g) 128 ÷ 16 = ☐

(h) 720 + 500 = ☐

(i) 10000 ÷ 10 = ☐

(j) 152 ÷ 19 = ☐

3. Let's Do :

(a) In a school, there are 342 boys and 369 girls. How many total students are there in the school ?

(b) In a godown, there are 459 bags of wheat and 813 bags of rice. How many bags are there in total ?

(c) In a year, Harmanpreet Kaur scored 1790 runs and Mitali Raj scored 1299 runs. How many more runs were scored by Harmanpreet Kaur than Mitali Raj ?

(d) Harpreet took ₹ 10,000 from his father and bought a bicyle for ₹ 3540. How much amount is left with him ?

(e) A shopkeeper has 625 packets of toffees. In each packet, there are 100 toffees. How many toffees in total the shopkeeper has ?

(f) There is 250 litre diesel in diesel tank of a truck. It covers 9 km distance with one litre of diesel. How much distance can be covered with the diesel ?

(g) In a school, there are 648 students. 18 students can sit in a school van to go for a picnic. How many vans are required to take all the students to picnic ?

(h) In a garden, there are 2568 guava trees. If there are 12 trees in a row then how many rows are there for 2568 guava trees.

2.1 Addition and Subtraction

We have learnt addition and subtraction of four digit numbers in previous class. In this class, we shall learn addition/subtraction of larger numbers.

Activity

Teacher will do activity on addition and subtraction of numbers by using currency notes.

Teacher will call two students (Prabhjot and Simarjeet) and give them some currency notes and asked them the total amount they have.

For example : Prabhjot has ₹ 4132 and simarjeet has ₹ 1252 then the total amount will be calculated by adding.

Prabhjot has	4	1	3	2
Simarjeet has	+ 1	2	5	2
Total amount	5	3	8	4

Teacher will continue this activity. Now teacher will ask Simarjeet to take back his currency notes (₹ 1252) from the total amount ₹ 5384. Balance amount will be given to Prabhjot.

Total amount	5	3	8	4
Simarjeet has taken back	– 1	2	5	2
Amount given to Prabhjot	4	1	3	2

In this way, this activity will be performed in different groups and the students will learn about addition/subtraction and also the verification of their answers.

- $91 + 0 = 91$, $0 + 91, = 91$, If 0 is added to any number or any number is added to 0 then result will be that number.
- $79 - 0 = 79$, If 0 is subtracted from any number then result will be same number.

In 4th class, we have learnt the addition and subtraction of numbers with/ without carry up to 10,000. In this class we shall learn these operations on numbers upto 100000.

2.1.1 Addition without carry and Subtraction without borrow :

In this section, we shall learn simple sums of addition without carrying and subtraction without borrowing.

Example 1 : Add : 2213 + 4512

Solution :

$$\begin{array}{r} 2\ 2\ 1\ 3 \\ +\ 4\ 5\ 1\ 2 \\ \hline 6\ 7\ 2\ 5 \\ \hline \end{array}$$

Example 2 : Subtract : 4567 – 1234

Solution :

$$\begin{array}{r} 4\ 5\ 6\ 7 \\ -\ 1\ 2\ 3\ 4 \\ \hline 3\ 3\ 3\ 3 \\ \hline \end{array}$$

2.1.2 Addition with carry and Subtraction with borrow:

In this section, we shall learn sums of addition with carry forward and subtraction with borrowing from next digit.

Example 3 : Add : 3756 + 1464

Solution :

$$\begin{array}{r} \textcircled{1}\textcircled{1}\textcircled{1} \\ 3\ 7\ 5\ 6 \\ +\ 1\ 4\ 6\ 4 \\ \hline 5\ 2\ 2\ 0 \\ \hline \end{array}$$

Example 4 : Subtract : 5688 – 2189

Solution :

$$\begin{array}{r} 5\ 6\ 8\ 8 \\ -\ 2\ 1\ 8\ 9 \\ \hline 3\ 4\ 9\ 9 \\ \hline \end{array}$$

Verification of Subtraction : Now we shall verify whether the subtraction is right or not with the help of an example

Example 4 :

VERIFICATION :

Larger Number	5 6 8 8	Difference	3 4 9 9
Smaller Number	– 2 1 8 9	Smaller Number	+ 2 1 8 9
Difference	3 4 9 9	Larger Number	5 6 8 8

Example 5 : Add the numbers 3872, 4283 and 8075

Solution :

$$\begin{array}{r} \mathbf{3\ 8\ 7\ 2} \\ +\ 4\ 2\ 8\ 3 \\ +\ 8\ 0\ 7\ 5 \\ \hline 1\ 6\ 2\ 3\ 0 \\ \hline \end{array}$$

Example 6 : Solve 6543 + 5039 + 832

Solution :

$$\begin{array}{r} \mathbf{6\ 5\ 4\ 3} \\ +\ 5\ 0\ 3\ 9 \\ +\quad 8\ 3\ 2 \\ \hline 1\ 2\ 4\ 1\ 4 \\ \hline \end{array}$$

Example 7 : Subtract 5908 from 7921

Solution :

$$\begin{array}{r} 7\ 9\ 2\ 1 \\ -\ 5\ 9\ 0\ 8 \\ \hline 2\ 0\ 1\ 3 \\ \hline \end{array}$$

Exercise-2.1

1. Solve the following:

(a) 6574 + 5502 (b) 5350 + 4102

(c) 56754 + 25740 (d) 25000 + 11887

(e) 8988 – 2450 (f) 8990 – 1034

(g) 80029 – 21200 (h) 56789 – 1234

2. Solve the following :

(a) 8760 + 2584 (b) 9649 + 5161

(c) 38009 + 55691 (d) 25347 + 74040

(e) 8761 + 5584 + 4320 (f) 4687 + 1000 + 1130

(g) 28740 + 54938 + 12338 (h) 72624 + 3106 + 10234

(i) 8849 – 4118 (j) 51307 – 42158

(k) 80003 – 19219 (l) 70000 – 12345

3. Subtract and verify the following :

(a) 98920 – 12334 (b) 40013 – 18167

(c) 78901 – 52214 (d) 40467 – 10239

(e) 79571 – 48678

2.2 Some more concepts on : (Addition & Subtraction)

In last section, we have learnt simple sums of addition and subtraction. In this section, we shall discuss some more problems.

Example 1 : Find the digit in place of *

$$\begin{array}{r} 7\ 8\ 9\ 5 \\ +\ 4\ 2\ 2\ * \\ +\ *\ 1\ *\ 4 \\ \hline 1\ 4\ *\ 4\ 4 \\ \hline \end{array}$$

Solution :

$$\begin{array}{r} 7\ 8\ 9\ 5 \\ +\ 4\ 2\ 2\ 5 \\ +\ 2\ 1\ 2\ 4 \\ \hline 1\ 4\ 2\ 4\ 4 \\ \hline \end{array}$$

Example 2 : Find the digit to fill in *

$$\begin{array}{r} 8\ *\ 5\ 0\ 7 \\ -\ 1\ 3\ *\ 4\ * \\ \hline *\ 7\ 6\ *\ 8 \\ \hline \end{array}$$

Solution :

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

Example 3 : Find value of : 8786 + 1254 – 5232

Solution :

Step 1

$$\begin{array}{r} 8\ 7\ 8\ 6 \\ +\ 1\ 2\ 5\ 4 \\ \hline 1\ 0\ 0\ 4\ 0 \\ \hline \end{array}$$

Step 2

$$\begin{array}{r} 1\ 0\ 0\ 4\ 0 \\ -\ 5\ 2\ 3\ 2 \\ \hline 4\ 8\ 0\ 8 \\ \hline \end{array}$$

Example 4 : Find value of 8975 – 2080 + 4156

Solution :

Step 1

$$\begin{array}{r} 8\ 9\ 7\ 5 \\ -\ 2\ 0\ 8\ 0 \\ \hline 6\ 8\ 9\ 5 \\ \hline \end{array}$$

Step 2

$$\begin{array}{r} 6\ 8\ 9\ 5 \\ +\ 4\ 1\ 5\ 6 \\ \hline 1\ 1\ 0\ 5\ 1 \\ \hline \end{array}$$

Note: Teachers must teach the above example 3, 4 by changing their orders also.

Exercise-2.2

1. Fill the digit in place of *

(a)
$$\begin{array}{r} 6\ 5\ 6\ 9 \\ +\ *\ *\ 3\ * \\ \hline 9\ 9\ *\ 8 \end{array}$$

(b)
$$\begin{array}{r} 1\ 5\ 6\ *\ 8 \\ +\ *\ *\ 1\ 1\ 2 \\ +\ 0\ 2\ 5\ 5\ 6 \\ \hline 8\ 8\ 3\ 0\ * \end{array}$$

(c)
$$\begin{array}{r} *\ *\ 7\ 8 \\ -\ 2\ 3\ 4\ * \\ \hline 7\ 6\ *\ 5 \end{array}$$

(d)
$$\begin{array}{r} 9\ 7\ 2\ *\ 2 \\ -\ *\ *\ 1\ 2\ 3 \\ \hline 8\ 3\ *\ 6\ 9 \end{array}$$

(e)
$$\begin{array}{r} *\ *\ 8\ 0 \\ +\ 4\ 5\ 6\ * \\ \hline 9\ 9\ *\ 9 \end{array}$$

(f)
$$\begin{array}{r} 2\ 0\ *\ 0\ 4 \\ +\ 6\ *\ 3\ 7\ 3 \\ +\ *\ 5\ 7\ *\ 4 \\ \hline 9\ 9\ 8\ 2\ * \end{array}$$

(g)
$$\begin{array}{r} 9\ 9\ 9\ * \\ -\ *\ *\ 7\ 2 \\ \hline 5\ 4\ *\ 3 \end{array}$$

(h)
$$\begin{array}{r} 9\ 7\ 8\ *\ 3 \\ -\ *\ 5\ 1\ 3\ * \\ \hline 6\ 2\ *\ 5\ 5 \end{array}$$

2. Evaluate the following :

(a) 1238 – 1025 + 5018 (b) 9386 – 2535 – 1002

(c) 6307 – 4052 + 2115 (d) 8107 + 2437 – 6089

(e) 18837 + 30947 – 33413 (f) 91206 – 70413 + 30824

(g) 1003 – 5911 – 3284 (h) 92319 – 65424 – 12105

2.3 Word Problems of Addition & Subtraction

We have learnt the numeral problems of addition and subtraction. Now we shall discuss word problems like population increase/decrease, cost/prices, etc. In word problems, first read the statements carefully, solve and find the answer.

Example 1 : Add : 45167, 30662 and 21197

Solution :

$$\begin{array}{r} 45167 \\ +\ 30662 \\ +\ 21197 \\ \hline 97026 \end{array}$$

Example 2 : What is the difference between 82613 and 56607

Solution :

$$\begin{array}{r} 82613 \\ -\ 56607 \\ \hline 26006 \end{array}$$

So difference between 82613 and 56607 is 26006

Example 3 : There are 23456 men 23148 women and 10177 children in a village. Find the total population of the village.

Solution :

Number of men	23456
Number of women	23148
Number of children	+ 10177
Total population	56781

Total population of the village is 56781

Example 4 : Find the number which is :

(a) 21835 more than 74907.

(b) 14076 less than 25431

Solution : (a) To find the required number 74907 and 21835 are to be added

$$\begin{array}{r} 74907 \\ +\ 21835 \\ \hline 96742 \end{array}$$

So the required number is 96742

(b) To find the required number, 14076 is to be subtracted from 25431.

$$\begin{array}{r} 25431 \\ -\ 14076 \\ \hline 11355 \\ \hline \end{array}$$

So the required number is 11355.

Example 5 : What number must be added to 38108 so that the sum becomes 69990 ?

Solution : To find the required number, given number 38108 is to be subtracted from 69990.

$$\begin{array}{r} 69990 \\ -\ 38108 \\ \hline 31882 \\ \hline \end{array}$$

Verification :

Let us verify this :

small number	38108
difference	+31882
large number	69990

Example 6 : Karamjeet bought a TV costing ₹ 24766, an almirah costing ₹ 9179 and a table ₹ 13250 from a market. How much amount did he spend in total ?

Solution :

Price of TV	=	₹ 24766
Price of almirah	=	₹ 9179
Price of table	=	₹ 13250
Total amount	=	₹ 24766
		+ 9179
		+ 13250
		47195

Total amount spent = ₹ 47195

Example 7 : Find the greatest and smallest 5-digit number using digits 5, 1, 8, 6 and 7. Also find the sum and difference of these numbers.

Solution : Greatest 5 digit number = 8 7 6 5 1

Smallest 5 digit number = 1 5 6 7 8

$$\begin{array}{rr} \text{Sum} = & 8\ 7\ 6\ 5\ 1 \\ + & 1\ 5\ 6\ 7\ 8 \\ \hline & 10\ 3\ 3\ 2\ 9 \end{array} \qquad \begin{array}{rr} \text{Difference} = & 8\ 7\ 6\ 5\ 1 \\ - & 1\ 5\ 6\ 7\ 8 \\ \hline & 7\ 1\ 9\ 7\ 3 \end{array}$$

Example 8 : The sum of two numbers is 81900, if one number is 70945 then find the other number.

Solution :

$$\begin{array}{lrr} \text{Sum of two numbers} & = & 81900 \\ \text{One number} & = & 70945 \\ \text{Other number} & = & 81900 \\ & & -70945 \\ & & \hline & & 10955 \end{array}$$

Second number = 10955

Example 9 : Jagtar singh has bought a radio for ₹ 1430. He gives ₹ 2000 to the shopkeeper. How much amount will he get back ?

Solution :

$$\begin{array}{lrr} \text{Amount given to shopkeeper} & = & ₹\ 2000 \\ \text{Price of the radio} & = & ₹\ 1430 \\ \text{Amount get back from shopkeeper} & = & 2000 \\ & & -1430 \\ & & \hline & & ₹\ 570 \end{array}$$

Exercise-2.3

Think and Do :

1. (a) Find the sum of 60498, 31292 and 7132.
   (b) Find difference of 70123 and 40268.
2. 27020 bricks are required for constructing a kitchen and 31275 bricks are required for constructing a room. How many bricks in total are required for construction of both.

3. Surjeet had ₹ 20,000 with him. He bought clothes costing ₹ 13750. How much amount was left with him ?
4. In a library, there are 30155 Punjabi books, 28653 Maths books and 12376 English books. How many books are there in the library ?
5. The sum of two numbers is 89000. If one number is 25450 then find the other number.
6. What number must be added to 70429 to get 100000 ?
7. Find the number which is :
   (a) 7976 more than 36798
   (b) 12967 less than 30067
8. If the price of a computer is ₹ 15560 and price of a laptop is ₹ 9050 more than price of the computer then Find :
   (a) Price of the laptop
   (b) Total price of both the items.
9. Find the greatest and smallest 5 digit numbers using digits 9, 3, 4, 0, 7. Also find their difference.
10. Find the sum of greatest 2 digits, 3 digits and 4 digits numbers.
11. Find the difference of place values of 6 and 7 in number 96074.
12. Subtract 45555 from 6 digit smallest number.
13. Satnam had ₹ 8765 with him. His uncle gave him ₹ 2500. Satnam gave ₹ 4770 to his sister out of his total money. How much money was left with him ?
14. Mandeep had ₹ 10000. He bought a pair of shoes for ₹ 1050 and a suit for ₹ 3600. How much money was left with him ?
15. Sandeep has ₹ 78500 in his bank account. How much more amount should he deposit in the account so that he has ₹ 100000 in his account ?
16. A person travels 135 km by car from Pathankot to Srinagar. Next day, he drives 138 km from Srinagar to Leh. How much distance did he cover ?

2.4 Multiplication

In last section, we have learnt two fundamental operations : addition and subtraction in detail. Now we will learn third fundamental operation i.e 'Multiplication.'

Activity

Teacher will keep various currency notes on the table and ask the 5 students to pick the notes of equal denomination. Each student will pick equal amount of notes :

1st student	=	1000
2nd student	=	1000
3rd student	=	1000
4th student	=	1000
5th student	=	1000

Now ask the students to add the amount

$1000 + 1000 + 1000 + 1000 + 1000 = 5000$

Teacher will tell the students that if all notes are of equal denomination then we have alternative method for addition i.e $1000 \times 5 = 5000$.

Activity

Teacher will tell the students that if all 25 students of a class pick ₹ 1000 each, then we have to add 1000, 25 times. It will take more time. We can find its answer by multiplying 1000×25.

1000×25

$$\begin{array}{r} 1\ 0\ 0\ 0 \\ \times\ 2\ 5 \\ \hline 5\ 0\ 0\ 0 \\ 2\ 0\ 0\ 0\ 0 \\ \hline 2\ 5\ 0\ 0\ 0 \end{array}$$

Example 1 : Multiply the following :

(a) 7345×6 (b) 2308×35 (c) 1512×105

Solution :

(a)

Th	H	T	O
	2	2	3
	7	3	4	5
			×	6
4	4	0	7	0

(b)

Th	H	T	O
	2	3	0	8
		×	3	5
1	1	5	4	0
6	9	2	4	0
8	0	7	8	0

(c)

Th	H	T	O
	1	5	1	2
		×	1	0	5
		7	5	6	0
	0	0	0	0	0
1	5	1	2	0	0
1	5	8	7	6	0

Example 2 : Find the digit in place of *

Th	H	T	O
	3	2	*
	×	*	2
	6	*	4
*	3	0	8	0
1	3	*	3	*

Solution :

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

* While multipliying with two or three digit number, teacher will use 0 in place of '×' in tens/hundreds digits place.

Exercise-2.4

1. Solve the following :

(a) 450 × 6 (b) 963 × 9 (c) 529 × 23 (d) 988 × 38

(e) 912 × 56 (f) 806 × 56 (g) 252 × 54 (h) 1888 × 19

(i) 2005 × 34 (j) 1560 × 64 (k) 10569 × 8 (l) 10210 × 9

(m) 230 × 150 (n) 400 × 225

2. Find the product of the following :

(a) 4045 × 23 (b) 1609 × 30 (c) 363 × 134 (d) 455 × 208

(e) 105 × 120 (f) 1440 × 25 (g) 1530 × 61 (h) 3817 × 12

(i) 1908 × 35 (j) 1000 × 29

3. **Fill the digits in place of ***

$$\begin{array}{r} *\ 3\ 5 \\ \times\ *\ 5 \\ \hline 6\ 7\ 5 \\ *\ 1\ 0\ 0 \\ \hline 8\ 7\ 7\ * \end{array}$$

2.5 Multiplication of a number with 0, 1, 10, 100, ... :

Here you will learn the special case of multiplication when you multiply any number with 0,1, 10,100, ... etc.

In this case, how to write answer directly ?

- Multiply with 0, 1, 10, 100, 1000, 10000 to any number

$6 \times 0 = 0$

$6 \times 1 = 6$

$6 \times 10 = 60$

$6 \times 100 = 600$

$6 \times 1000 = 6000$

$6 \times 10000 = 60000$

- If we multiply first number with second number or second number with the first number the answer will be the same.

For example : $10 \times 6 = 6 \times 10$

$10 \times 6 = 60$

$6 \times 10 = 60$

* $8 \times 0 = 0$, $0 \times 8 = 0$ If any number is multiplied with 0 or 0 is multiplied with any number, then answer will be 0.

* $9 \times 1 = 9$, $1 \times 9 = 9$ If any number is multiplied with 1 or 1 is multiplied with any number, then answer is the number itself.

Exercise-2.5

1. **Fill in the blanks :**

(a) $451 \times 1 = \square$ (b) $8135 \times 10 = \square$

(c) $650 \times 100 = \square$ (d) $3090 \times 0 = \square$

(e) $129 \times \square = 12900$ (f) $\square \times 1000 = 13000$

(g) $\square \times 791 = 0$ (h) $\square \times 82 = 82 \times 602$

(i) $8414 \times 10 = \square$ (j) $67 \times 100 = \square$

(k) $91 \times 1000 = \square$ (l) $100 \times 1000 = \square$

(m) $545 \times \square = 5450$ (n) $\square \times 10 = 7060$

(o) $798 \times \square = 798$

2.6 Word Problems of Multiplication

In last section, we have learnt the numerical sums of multiplication. In this section, we shall understand word problems through multiplication.

Example 1 : The price of a cycle is ₹ 2560.What is the total price of 39 cycles ?

Solution : The price of one cycle = ₹ 2560

The price of 39 cycles = ₹ 2560 × 39

$$\begin{array}{r} 2560 \\ \times\ 39 \\ \hline 23040 \\ 76800 \\ \hline 99840 \end{array}$$

The price of 39 cycles = ₹ 99840

Example 2 : Suppose your father earns ₹ 6500 in a month. How much money will he earn in a year ?

Solution : Father earns in one month = ₹ 6500

Father earns in 12 month = ₹ 6500 × 12

(1 year = 12 month)

$$\begin{array}{r} 6500 \\ \times\ 12 \\ \hline 13000 \\ 65000 \\ \hline 78000 \end{array}$$

Father earns ₹ 78000 in one year

Example 3 : A person earns ₹ 1308 daily. How much money will he earn in the month of November ?

Solution : A person earns in a day = ₹ 1308

A person earns in 30 days = ₹ 1308 × 30

(Because Number of days in November = 30)

$$\begin{array}{r} 1\ 3\ 0\ 8 \\ \times\ 3\ 0 \\ \hline 0\ 0\ 0\ 0 \\ 3\ 9\ 2\ 4\ 0 \\ \hline 3\ 9\ 2\ 4\ 0 \end{array}$$

Therefore a person earns ₹ 39240 in month November.

Exercise-2.6

1. The price of a cycle is ₹ 5699. What is price of 17 cycles ?
2. There are 12 tiles in a box. How many tiles are there in 4590 boxes ?
3. Multiply 4 digit smallest number with 98.
4. Rate list of electrical equipment in electrical shop is as follows :

Rate List		
Equipment		**Price (Per item)**
	Washing Machine	₹ 24999
	L.C.D	₹ 42500
	AC	₹ 54000
	Water Gyser	₹ 12999
	Refrigerator	₹ 18499

(i) Charan has ₹ 1 lakh with him. He buys 2 washing machines and one L.C.D. How much amount has he spent ?

(ii) Charan's brother has ₹ 1 lakh. He buys one AC, Two water Gysers and one Refrigerator. How much amount is left with him ?

5. A factory manufactures 4990 toffees a day. How many toffees will be manufactured in 19 days?

6. 6798 bricks are loaded in a tractor in an hour. How many bricks will be loaded in 13 hours ?

7. A shopkeeper sells one mobile phone for ₹ 5089. If he sells 18 such mobile phones in a day, how much amount would he collect in a day ?

8. Multiply 3 digit largest number with 95.

9. How many seconds are there in 24 hours ?

2.7 Division

Upto now, we have learnt three fundamental operations of numbers : addition subtraction and multiplication. Now we will learn fourth fundamental operation i.e., Division.

We have learnt different methods of division of four digit number with two digit number . Division with the help of number line, continuous subtraction, simple division was taught by the teacher. In this chapter, we shall learn division of numbers upto 100000 by using different divisors.

2.7.1 Informal Method of Division :

Teacher will call 15 students and ask them to divide the currency notes of amount ₹ 8415 in equal parts amongst themselves.

Teacher - How will you divide ₹ 8415 in 15 parts ?

Student - Sir, first I will give ₹ 500 note to each student.

Teacher - How much amount is left now ?

Student - Sir, ₹ 915 left.

Teacher - How will you divide ₹ 915 ?

Student - Now I will give ₹ 50 note to each student.

Teacher - How much amount is left now ?

Student - ₹ 165

```
  8 4 1 5
- 7 5 0 0
---------
    9 1 5
  - 7 5 0
---------
    1 6 5
  - 1 5 0
---------
      1 5
    - 1 5
---------
        0
---------
```


Teacher - How will you divide ₹165 ?

Student - I will give ₹ 10 to each.

Teacher - How much amount is left now ?

Student - Sir, ₹ 15 left . Now 1 will give ₹ 1 to each student.

Teacher - How much money is left ?

Student - Nothing

Teacher - Now how much amount has every one got ?

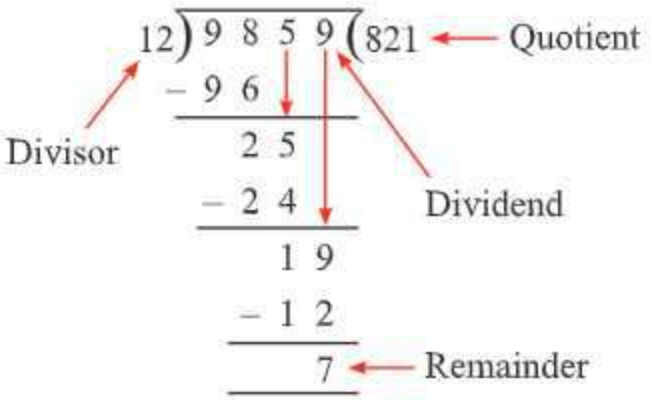
Student - 500 + 50 + 10 + 1 = 561 (By Adding)

In this process, there is continuous division of tens (with ₹ 50 – 50 and ₹ 10 – 10) which is not a formal method of division. So we will learn formal method of division .

2.7.2 Formal Method of Division :

Example 1 : 9859 ÷ 12

Solution :



Teacher will tell students that while dividing any number with 2 digit number, first read table of divisor (2 digit number) upto first two digits of dividend as in case of above division, 9859 is divided by 12, So read table of 12 upto first two digits (98) of the dividend.

98 ÷ 12

Table of 12 : 12 × 8 = 96 ; 98 – 96 = 2 (Remainder)

- Now along 2, lower down and write next digit (5) of dividend, we've 25

25 ÷ 12

Table of 12 : 12 × 2 = 24 ; 25 –24 = 1 (Remainder)

Now along 1 ,again lower down and write next digit (9) of dividend, we've 19

19 ÷ 12

Table of 12 : 12 × 1 = 12 ; 19 – 12 = 7 (Remainder)

Ans : Quotient = 821, Remainder 7

Verification : We can verify the above division in the following way :

Dividend = Quotient × Divisor + Remainder

9859 = 821 × 12 + 7

	8 2 1	Quotient
	× 1 2	Divisor
	1 6 4 2	
+	8 2 1 0	
	9 8 5 2	
+	7	Remainder
	9 8 5 9	Dividend

Example 2 : Divide 12525 by 25 and verify.

Solution :

$$25\overline{)12525}\,(0501$$

$$\begin{array}{r} -00 \\ \hline 125 \\ -125 \\ \hline 02 \\ -00 \\ \hline 025 \\ -025 \\ \hline 00 \end{array}$$

Verification :

Dividend = Quotient × Divisor + Remainder

12525 = 501 × 25 + 0

12525 = 12525 + 0

12525 = 12525

* 0 ÷ 7 = 0 ; 0 is divided by any number (except 0) then answer will be 0.
* Division by 0 (zero) is not possible.

Exercise-2.7

1. Solve the following :

(a) $117 \div 13$ (b) $135 \div 15$ (c) $72 \div 12$ (d) $108 \div 9$

(e) $78 \div 13$ (f) $121 \div 11$ (g) $140 \div 20$ (h) $144 \div 16$

(i) $119 \div 17$

2. Divide the following and verify :

(a) $54598 \div 12$ (b) $8975 \div 21$ (c) $77552 \div 18$ (d) $88001 \div 17$

(e) $12896 \div 11$

3. Solve the following and verify :

(a) $760 \div 12$ (b) $550 \div 14$ (c) $894 \div 21$

(d) $913 \div 19$ (e) $826 \div 25$ (f) $7645 \div 24$

(g) $89781 \div 9$ (h) $99999 \div 80$ (i) $82525 \div 75$

(j) $70008 \div 14$ (k) $50205 \div 15$ (l) $16258 \div 36$

(m) $96000 \div 50$ (n) $45457 \div 35$

2.8 Word Problems related to Division :

In the last section, we have learnt the numerical problems of division. In this section, we shall learn division through general problems such as distribution of articles, amount etc.

Example 1 : A shopkeeper has 36540 toys. He sells 15 toys daily. How many days does he need to sell all his toys ?

Solution : Total Toys = 36540

Daily sold toys = 15

Number of days to sell out the toys

= 36540 ÷ 15

$$
\begin{array}{r}
15\overline{)3\,6\,5\,4\,0}\,(2436 \\
-\,3\,0 \\
\hline
6\,5 \\
-\,6\,0 \\
\hline
5\,4 \\
-\,4\,5 \\
\hline
9\,0 \\
-\,9\,0 \\
\hline
0\,0
\end{array}
$$

Ans : 2436 days

Example 2 : An employee earns ₹ 65596 in the month of January. How much is he earning in a day ?

Solution : An employee earns in January earning ₹ 65596

Total days in January = 31

Earning in a day = 65596 ÷ 31

```
31)65596(2116
  -62
   35
  -31
    49
   -31
    186
   -186
     000
```

Ans : ₹ 2116

Example 3 : By what 160 must be multiple so that product becomes 24480 ?

Solution : Product of two numbers = 24480

One number = 160

Second number = 24480 ÷ 160

```
160)24480(153
  -160
   848
  -800
    480
   -480
     0
```

Therefore required number is 153

Exercise-2.8

1. In a stadium, in the match of cricket there are 84000 people sitting in 24 rows. How many people are sitting in a row ?
2. You have ₹ 99825 which is to be distributed equally among 33 friends. How much amount will each friend get ?
3. My grandfather divided ₹ 72000 equally among four brothers-sisters. How much will each get ?
4. What number must be multiplied with 26 to get 14508 ?
5. The gardener has 23976 flowers to make garlands. One garland has 24 flowers in it. How many garlands can be made from 23976 flowers ?

6. How many ₹ 2000 notes are there in forty thousand rupees ?

7. I need change of ₹ 25000. How many following notes shall I get ?

   (a) Number of notes of ₹1000 = ...

   (b) Number of notes of ₹ 500 = ...

   (c) Number of notes of ₹ 100 = ...

8. A JCB machine picks 900 bricks in a round. How many rounds will it take to pick 99000 bricks ?

9. The cost of a railway ticket is ₹ 78. Palak gave ₹ 7722 for buying tickets. How many tickets will she get ?

10. A factory, manufactures 45540 icecream cones in the month of June. How many icecream cones are manufactured in a day ?

2.9 Estimating in Operations on numbers :

In many situations of day-to-day life, we estimate price, measurement and distance. For example, height of a tree, distance between two cities, weight of person/article etc. Let us consider some examples to see estimation related to everyday life.

Example 1 : Find the estimate and actual sum of 9748 and 5476.

Solution : Rounding off 9748 to the nearest 1000 = 10000

Rounding off 5476 to the nearest 1000 = 5000

	1	0	0	0	0			9	7	4	8
+		5	0	0	0		+	5	4	7	6
Estimated sum	1	5	0	0	0	Actual		1	5	2	2	4

Example 2 : Find the estimate and actual difference between 875 and 438.

Solution : Rounding off 875 to the nearest 100 = 900

Rounding off 438 to t he nearest 100 = 400

	9	0	0			8	7	5
–	4	0	0		–	4	3	8
Estimated difference	5	0	0	Actual		4	3	7

Example 3 : Find the estimated product of 412 and 72.

Solution : Rounding off 412 to the nearest 100 = 400

Rounding off 72 to the nearest 10 = 70

Estimated product

$400 \times 70 = 28000$

Example 4 : Find the estimated quotients of $548 \div 53$.

Solution : Rounding off 548 to the nearest 100 = 500

Rounding off 53 to the nearest 10 = 50

So $500 \div 50 = 10$

Estimated quotient = 10

* Estimating of the numbers must be according to the number of digits in the number such as Rounding off 4 digit number to the nearest 1000, Rounding off 3-digit number to the nearest 100, Rounding off two digits to the nearest 10. With this, we get the accurate answer.

Exercise-2.9

1. Find the estimated answers :

(a) $753 + 525$ (b) $11526 + 8748$

(c) $980 - 489$ (d) $5897 - 2987$

(e) 440×28 (f) 6198×13

(g) $563 \div 34$ (h) $7541 \div 43$

2.10 BODMAS

B	O	D	M	A	S
( )		÷	×	+	–
Bracket	of	Division	Multiplication	Addition	Subtraction

When we operate all four operations in one sum then we solve them in a fixed pattern which is called BODMAS. If we do not solve the sums according to this rule then we will get wrong answer. In this chapter, we will consider only DMAS.

$4 \times 4 + 4 - 4 \div 4$

Step 1 : In this sum, first we will divide according to rule :

$4 \times 4 + 4 - 1$

Step 2 : Now we will multiply :

$16 + 4 - 1$

Step 3 : Now do addition of 16 and 4.

$20 - 1$

Step 4 : Now subtract 1 from 20 :

19

So our required answer is 19.

Example 1 : Solve : $9 + 7 \times 3$

Solution : $9 + 7 \times 3$

$= 9 + 21 = 30$

Example 2 : Solve : $10 + 12 \div 2 - 3$

Solution : $10 + 12 \div 2 - 3$

$= 10 + 6 - 3 = 16 - 3 = 13$

Example 3 : Solve : $30 \div 6 + 5 \times 4 - 8$

Solution : $5 + 5 \times 4 - 8$

$5 + 20 - 8 = 25 - 8 = 17$

Example 4 : Solve $60 + 9 \times 5 - 18 \div 6$

Solution : $60 + 9 \times 5 - 3$

$60 + 45 - 3$

$105 - 3 = 102$

Exercise-2.10

1. Solve the following :

1. $42 \div 7 + 8$
2. $8 + 6 \times 2$
3. $7 \times 8 \div 4 - 6$
4. $63 \div 9 \times 4 + 28 - 15$
5. $25 \times 3 + 42 \div 6 - 4$
6. $18 \div 6 \times 21 + 17 - 18$
7. $8 \div 8 + 8 \times 8 - 8$
8. $72 + 48 \times 36 \div 18 - 9$
9. $44 + 2 \times 9 - 35 \div 5$
10. $18 + 126 \div 14 \times 3 - 25$

Multiple Choice Questions (MCQs)

1. 65432 + 34568

   (a) 99999 (b) 100000 (c) 10000 (d) 99998

2. 35406 + 2580 + 43251 = 43251 + ☐ + 35406

   (a) 35406 (b) 43251 (c) 2580 (d) 81237

3. 99999 + 0

   (a) 99990 (b) 99900 (c) 100000 (d) 99999

4. 100000 – 1 = ☐

   (a) 10000 (b) 0 (c) 99999 (d) 100000

5. Simar has ₹ 5832 and his sister Prabhjot has ₹ 3565. How much amount does Simar have more than his sister ?

   (a) 2267 (b) 9397 (c) 22776 (d) 9973

6. Surjeet has ₹ 50,000 in her bank account and her husband Charan Singh has ₹ 35682 in his account. What is total amount in both accounts ?

   (a) 14318 (b) 95682 (c) 85682 (d) 15318

7. The population of a town is 12078. Out of that the number of men is 4872, women is 4729 and the rest are children. How many children are in the town ?

   (a) 2477 (b) 20578 (c) 9601 (d) 8206

8. 98540 – ☐ = 98539

   (a) 0 (b) 1 (c) 98540 (d) 98539

9. 9999 + ☐ = 100000

   (a) 1 (b) 0 (c) 90001 (d) 9001

10. 1000 – ☐ = 999

    (a) 1 (b) 0 (c) 90001 (d) 9001

11. Find the difference between 5-digit smallest number and 4-digit largest number.

(a) 10000 (b) 9999 (c) 1 (d) 0

12. Find the sum of the greatest and smallest 5-digit number using digits 2, 0, 4, 6, 7?

(a) 98687 (b) 96887 (c) 55953 (d) 76420

13. $1500 \times 30 \times 0$

(a) 45000 (b) 30 (c) 0 (d) 450

14. $7500 \times 40 = 40 \times$ ☐

(a) 400 (b) 4000 (c) 750 (d) 7500

15. ☐ $\div 100 = 1000$

(a) 100 (b) 100000 (c) 100000 (d) 10

16. The cost of a book ₹ 79. What is the cost of 12 books ?

(a) 948 (b) 938 (c) 790 (d) 793

17. Geeta has ₹ 175 with her. If she gives ₹ 25 to each child. How many children will get the money ?

(a) 6 (b) 9 (c) 7 (d) 8

18. $700 \times$ ☐ $= 2800 \times 1$

(a) 5 (b) 6 (c) 4 (d) 3

19. $9999 \div 1 =$

(a) 999 (b) 1 (c) 111 (d) 9999

20. $8899 \div 8899 =$

(a) 0 (b) 1 (c) 2 (d) 8899

21. $99 \times 99 =$

(a) 99 (b) 9801 (c) 9901 (d) 1

22. If price of 15 notebooks is ₹ 90. What is the price of one notebook ?

(a) 3 (b) 5 (c) 6 (d) 6

23. The Product of two numbers is 256. If one number is 256 then find the other number.

(a) 1 (b) 2 (c) 0 (d) 256

24. If $894 \times 100 = 89400$ then $894 \times 10 =$

(a) 894 (b) 89400 (c) 8940 (d) 8941

25. $26 \div 2 \times 4 + 4 - 40 =$ ☐

(a) 64 (b) 8 (c) 4 (d) 16

Learning Outcomes

- Concept of Four Fundamental Operations on the numbers upto 100000 i.e., addition, subtraction, multiplication and division.
- Concept of exchange of goods, increase-decrease, banking, buying selling etc through operation on numbers.
- Concept of weight, distance, money etc. using four fundamental operations on numbers through operation on numbers.
- Solving life's problems with multiplication and division of continuous adding and subtracting.
- Multiplication and division of numbers with 3-digit numbers in different ways.
- Prepare for competitive exams.

Answers

Exercise-2.1

5. (a) 12076 (b) 9452 (c) 82494 (d) 36887
(e) 6538 (f) 7956 (g) 58829 (h) 55555

6. (a) 11344 (b) 14810 (c) 93700 (d) 99387
(e) 18665 (f) 6817 (g) 96016 (h) 85964
(i) 4731 (j) 9149 (k) 60787 (l) 57655

7. (a) 86586 (b) 21846 (c) 26687 (d) 30228
(e) 30893

Exercise-2.2

1. (a)
$$\begin{array}{r} 6\,5\,6\,9 \\ +\,3\,3\,3\,9 \\ \hline 9\,9\,0\,8 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 1\,5\,6\,3\,8 \\ +\,7\,0\,1\,1\,2 \\ +\,0\,2\,5\,5\,6 \\ \hline 8\,8\,3\,0\,6 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 9\,9\,7\,8 \\ -\,2\,3\,4\,3 \\ \hline 7\,6\,3\,5 \\ \hline \end{array}$$

(d)
$$\begin{array}{r} 9\,7\,2\,9\,2 \\ -\,1\,4\,1\,2\,3 \\ \hline 8\,3\,1\,6\,9 \\ \hline \end{array}$$

(e)
$$\begin{array}{r} 5\,3\,8\,0 \\ +\,4\,5\,6\,9 \\ \hline 9\,9\,4\,9 \\ \hline \end{array}$$

(f)
$$\begin{array}{r} 2\,0\,7\,0\,4 \\ +\,6\,3\,3\,7\,3 \\ +\,1\,5\,7\,4\,4 \\ \hline 9\,9\,8\,2\,1 \\ \hline \end{array}$$

(g)
$$\begin{array}{r} 9\,9\,9\,5 \\ -\,4\,5\,7\,2 \\ \hline 5\,4\,2\,3 \\ \hline \end{array}$$

(h)
$$\begin{array}{r} 9\,7\,8\,9\,3 \\ -\,3\,5\,1\,3\,8 \\ \hline 6\,2\,7\,5\,5 \\ \hline \end{array}$$

2. (a) 5231 (b) 5849 (c) 4370 (d) 4455
(e) 14871 (f) 51617 (g) 808 (h) 14790

Exercise-2.3

1. (a) 98922 (b) 29855
2. 58295 bricks **3.** ₹ 6250 **4.** 71184 Books
5. 633550 **6.** 29571 **7.** (a) 44774 (b) 17100
9. 97430, 30479, difference 66951 **10.** 11097
11. 5930 **12.** 54445 **13.** ₹ 6495
14. ₹ 5350 **15.** ₹ 21500 **16.** 303 km

Exercise-2.4

1. (a) 2700 (b) 8667 (c) 12167 (d) 37544
(e) 51072 (f) 45136 (g) 67608 (h) 35872
(i) 68170 (j) 99840 (k) 84552 (l) 91890
(m) 34500 (n) 90000

2. (a) 93035 (b) 48270 (c) 48642 (d) 94640
(e) 12600 (f) 36000 (g) 93330 (h) 45804
(i) 66780 (j) 29000

3.
$$\begin{array}{r} 135 \\ \times\ 65 \\ \hline 675 \\ 8100 \\ \hline 8775 \\ \hline \end{array}$$

Exercise-2.5

1. (a) 451 (b) 81350 (c) 65000 (d) 0
(e) 100 (f) 13 (g) 0 (h) 602
(i) 84140 (j) 6700 (k) 91000 (l) 100000
(m) 10 (n) 706 (o) 1

Exercise-2.6

1. ₹ 96883 **2.** 55080 **3.** 98000
4. (a) ₹ 92498 and (b) ₹ 1503 **5.** 94810 toffees
6. 88374 bricks **7.** ₹ 91602 **8.** 94905
9. 86400 seconds

Exercise-2.7

1. (a) 9 (b) 9 (c) 6 (d) 12
(e) 6 (f) 11 (g) 7 (i) 7
(j) 7

2. (a) Quotient = 4549, Remainder = 10
(b) Quotient = 427, Remainder = 8
(c) Quotient = 4308, Remainder = 8
(d) Quotient = 5176, Remainder = 9
(e) Quotient = 1172, Remainder = 4

3. (a) Quotient = 63, Remainder = 4
(b) Quotient = 39, Remainder = 4
(c) Quotient = 42, Remainder = 12

(d) Quotient = 48, Remainder = 1
(e) Quotient = 33, Remainder = 1
(f) Quotient = 318, Remainder = 13
(g) Quotient = 9975, Remainder = 6
(h) Quotient = 1249, Remainder = 79
(i) Quotient = 1100, Remainder = 25
(j) Quotient = 5000, Remainder = 8
(k) Quotient = 3347, Remainder = 0
(l) Quotient = 451, Remainder = 22
(m) Quotient = 1920, Remainder = 0
(n) Quotient = 1298, Remainder = 27

Exercise-2.8

1. 3500 **2.** ₹ 3025 **3.** ₹ 18000
4. 558 **5.** 999 garland **6.** 20 notes
7. (a) 25 notes (b) 50 notes (c) 250 notes
8. 110 rounds **9.** 99 tickets **10.** 1518 cones

Exercise-2.9

1. (a) 1300 (b) 19000 (c) 500 (d) 3000
(e) 12000 (f) 60000 (g) 20 (h) 200

Exercise-2.10

1. 14 **2.** 20 **3.** 8 **4.** 41
5. 78 **6.** 62 **7.** 57 **8.** 159
9. 55 **10.** 20

Multi-Choice Questions (MCQ)

1. b **2.** c **3.** d **4.** c
5. a **6.** c **7.** a **8.** b
9. c **10.** d **11.** c **12.** b
13. c **14.** d **15.** b **16.** a
17. c **18.** c **19.** d **20.** b
21. b **22.** c **23.** a **24.** c
25. d