

# 3

# The Four Operations

You know that there are four arithmetic operations : addition, subtraction, multiplication and division. Now, we will learn about them one by one.



## Addition

Addition of large numbers is done in the same way as addition of smaller numbers. You start from the ones place and regroup, if necessary.

**Example I** : Add 7, 32, 12, 546 and 2, 13,66, 152

	C	T-L	L	T-Th	Th	H	T	O	
	7	3	2	1	2	5	4	6	← Addend
+	2	1	3	6	6	1	5	2	← Addend
	9	4	5	7	8	6	9	8	← Sum

Therefore,  $7,32,12,546 + 2,13,66,152 = 9,45,78,698$ .

Each number to be added in an addition sum is called **addend**.

In an addition operation, we can have two, three, four or many more addends.

The result we get in addition operation is called **sum**.

**Example II** : Find the sum of 425916175, 223724524 and 345967353.

	T-C	C	T-L	L	T-Th	Th	H	T	O	
		①	②	①	①	①	①	①		← carry
	4	2	5	9	1	6	1	7	5	
	2	2	3	7	2	4	5	2	4	
+	3	4	5	9	6	7	3	5	3	
	9	9	5	6	0	8	0	5	2	

Therefore, the sum of  $42,59,16,175 + 22,37,24,524 + 34,59,67,353 = 99,56,08,052$ .





**Example III :** Mukesh bought two houses for ₹ 26,68,125 and ₹ 34,54,342. How much did he spend for both the houses?

**Solution :**

	(1) (1) (1) ← carry	
Cost of one house	=	2 6 6 8 1 2 5
Cost of other house	=	+ 3 4 5 4 3 4 2
Therefore, total cost	=	6 1 2 2 4 6 7

The cost of both houses is ₹ 61,22,467.

**Example IV :** An industry earned a profit of ₹ 1,48,26,002 in the year 2000, ₹ 98,36,540 in the year 2001, ₹ 89,58,437 in the year 2002 and ₹ 1,24,56,500 in the year 2003. Find the total profit earned by the industry throughout these years.

**Solution :**

	(2) (3) (1) (2) (1) ← carry	
Profit earned by the industry in 2000	=	1 4 8 2 6 0 0 2
Profit earned by the industry in 2001	=	9 8 3 6 5 4 0
Profit earned by the industry in 2002	=	8 9 5 8 4 3 7
Profit earned by the industry in 2003	=	+ 1 2 4 5 6 5 0 0
Therefore, total profit earned		4 6 0 7 7 4 7 9

The total profit by industry throughout these years is 4,60,77,479.



## Properties of Addition

### Order Property

When the order of the addends is changed, the sum remains the same.

**For Example :**  $4,25,416 + 3,56,914 = 7,82,330$   
and  $3,56,914 + 4,25,416 = 7,82,330$

### Zero Property

The sum of zero and the number is the number itself.

**For Example :**  $7,28,312 + 0 = 7,28,312$   
 $0 + 7,28,312 = 7,28,312$

### Grouping Property

Even if the grouping of addends is changed, the sum remains the same.





**For Example :**  $(2,57,206 + 3,28,337) + 4,32,865 = 10,18,408$   
 $2,57,206 + (3,28,337 + 4,32,865) = 10,18,408$   
 $(2,57,206 + 4,32,865) + 3,28,337 = 10,18,408$



## Exercise 3.1

### 1. Add the following.

a. 
$$\begin{array}{r} 6476359 \\ + 2337494 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 58672198 \\ + 7899289 \\ \hline \end{array}$$

c. 
$$\begin{array}{r} 529978259 \\ + 467841234 \\ \hline \end{array}$$

d. 
$$\begin{array}{r} 5402563 \\ 1403080 \\ + 871259 \\ \hline \end{array}$$

e. 
$$\begin{array}{r} 67287989 \\ 75829287 \\ + 23754828 \\ \hline \end{array}$$

f. 
$$\begin{array}{r} 263849853 \\ 21542233 \\ + 314915679 \\ \hline \end{array}$$

### 2. Arrange in columns and add the following.

- a.  $9,46,27,803$        $6,27,114$        $36,54,89,762$   
 b.  $64,32,248$        $4,28,62,123$        $3,43,80,229$   
 c.  $54,16,317$        $7,26,84,359$        $41,27,02,419$   
 d.  $27,36,245$        $53,06,417$        $32,26,151$

3. The population of Tamilnadu in the year of 2011 was 41,947,250. The next year it is increased by 5,87,210. What was the population in the year 2012?  
 4. The difference between two numbers is 69,73,566. If the smaller number is 53,86,745, then find the greater number.  
 5. A number exceeds 6,43,67,484 by 67,54,165. What is that number?



## Subtraction

You know that the number which is to be subtracted is called **subtrahend** and the number from which it is subtracted is called **minuend** and the answer is called the **difference**. The method of subtraction of higher digit number is same as that for smaller digit number. You start from the ones place and regroup if necessary.





**Example V** : Subtract 4,31,62,734 from 6,54,86,936.

	C	T L	L	T Th	Th	H	T	O	
	6	5	4	8	6	9	3	6	→ Minuend
–	4	3	1	6	2	7	3	4	→ Subtrahend
	2	2	3	2	4	2	0	2	→ Difference

Therefore,  $6,54,86,936 - 4,31,62,734 = 2,23,24,202$ .

**Example VI** : Subtract 7,47,95,748 from 9,46,73,426.

	C	T-L	L	T-Th	Th	H	T	O
	8	13	15	16	12	13	11	16
	<del>9</del>	<del>4</del>	<del>6</del>	<del>7</del>	<del>3</del>	<del>4</del>	<del>2</del>	<del>6</del>
–	7	4	7	9	5	7	4	8
	1	9	8	7	7	6	7	8

Therefore,  $9,46,73,426 - 7,47,95,748 = 1,98,77,678$ .

**Example VII** : Food Corporation of India has 99,78,97,425 quintal of wheat in stock. Out of this stock, 12,65,35,425 quintal of wheat was sent to another states of India. How much stock is in balance now ?

<b>Solution</b> :	Wheat stock of Food Corporation of India	=	997897425
	Wheat stock sent to other states of India	=	– 126535425
	Therefore, balance stock of wheat	=	871362000

$99,78,97,425 - 12,65,35,425 = 87,13,62,000$  quintal

**Example VIII** : The sum of two numbers is 25,67,56,436. If one of them is 9,89,67,544, find the other number.

<b>Solution</b> :	Sum of two numbers	=	2/ 5/ 6/ 7/ 5/ 6/ 4/ 3/ 6
	One number	=	– 9 8 9 6 7 5 4 4
	The other number	=	1 5 7 7 8 8 8 9 2

**Answer** : 15,77,88,892



## Properties of Subtraction

- ❖ The order of numbers involved in subtraction cannot be changed.
- ❖ When a number is subtracted from itself, the difference is zero.

**For Example** :  $98,26,527 - 98,26,527 = 0$





When zero is subtracted from the number, the difference is the same number.

**For Example :**  $73,19,854 - 0 = 73,19,854$



## Exercise 3.2

### 1. Subtract the following.

a. 
$$\begin{array}{r} 6786598 \\ - 3547243 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 83972116 \\ - 49712103 \\ \hline \end{array}$$

c. 
$$\begin{array}{r} 675814619 \\ - 362935766 \\ \hline \end{array}$$

### 2. Find the difference of the following.

a.  $46,26,944$  and  $96,25,787$

b.  $8,05,41,658$  and  $6,58,72,549$

c.  $30,24,50,678$  and  $9,63,31,529$

d.  $95,93,18,874$  and  $89,75,45,434$

3. The sum of two numbers is  $54,63,24,209$ . If one number is  $46,58,43,306$ , then find the other number.

4. Subtract the greatest 7-digit number from the smallest 9-digit number.

5. A number when subtracted from  $58,16,41,200$  gives  $39,27,15,315$ . Find the number.



## Multiplication

We have learnt about the multiplication of a number by 2-digit or 3-digit number in previous class. Now learn the multiplication of large numbers.

**Example IX :** Multiply  $8,42,627$  by  $346$ .

**Solution :**

8 4 2 6 2 7	→	Multiplicand
× 3 4 6	→	Multiplier
5 0 5 5 7 6 2	→	$842627 \times 6$ ones
3 3 7 0 5 0 8 0	→	$842627 \times 40$ ones
2 5 2 7 8 8 1 0 0	→	$842627 \times 300$ ones
2 9 1 5 4 8 9 4 2	→	sum of the products

Therefore, the product is  $29,15,48,942$ .



### Facts to Know

- The product of a 2-digit number and a 3-digit number can not have more than five digits.





**Example X** : Multiply 162453 by 824.

**Solution** :

$$\begin{array}{r}
 162453 \\
 \times 824 \\
 \hline
 649812 \longrightarrow (162453 \times 4 \text{ ones}) \\
 3249060 \longrightarrow (162453 \times 20 \text{ ones}) \\
 129962400 \longrightarrow (162453 \times 800 \text{ ones}) \\
 \hline
 133861272 \longrightarrow \text{sum of the products}
 \end{array}$$

Therefore, the product is 13,38,61,272.

**Example XI** : A truck can carry 8,342 kg of potatoes. How much kilogram of potatoes can 678 such trucks carry ?

**Solution** : One truck can carry = 8,342 kg of potatoes  
 678 trucks can carry = 8,342 × 678 kg of potatoes

$$\begin{array}{r}
 8342 \\
 \times 678 \\
 \hline
 66736 \\
 583940 \\
 5005200 \\
 \hline
 5655876
 \end{array}$$

Therefore, 678 trucks can carry 56,55,876 kg of potatoes.



## Properties of Multiplication

- ❖ The product does not change even if the order changes.  
**For Example** :  $795 \times 408 = 3,24,360$  and  $408 \times 795 = 3,24,360$
- ❖ The product of any number and 1 is the number itself.  
**For Example** :  $95,278 \times 1 = 95,278$  and  $1 \times 95,278 = 95,278$
- ❖ The product of any number and zero is zero.  
**For Example** :  $83,247 \times 0 = 83,247$  and  $0 \times 83,247 = 0$



## Exercise 3.3

### 1. Multiply the following.

a. 
$$\begin{array}{r}
 74689 \\
 \times 168 \\
 \hline
 \end{array}$$

b. 
$$\begin{array}{r}
 28396 \\
 \times 647 \\
 \hline
 \end{array}$$

c. 
$$\begin{array}{r}
 36582 \\
 \times 352 \\
 \hline
 \end{array}$$

d. 
$$\begin{array}{r}
 45638 \\
 \times 463 \\
 \hline
 \end{array}$$

\_\_\_\_\_

\_\_\_\_\_

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## 2. Find the following products.

- a.  $78352 \times 432$       b.  $57628 \times 356$       c.  $58763 \times 867$   
d.  $62718 \times 2463$       e.  $6276 \times 3245$       f.  $2456 \times 7526$

3. The cost of a cars is ₹ 2,89,812. Find the cost of 39 cars.  
4. The cost of a revolving chair is ₹ 6392. What is the cost of 3864 such chairs?  
5. A factory produces 14575 bolts a day. If the factory has 294 working days in a year then how many bolts will be produced by the factory in a year?  
6. A computer costs is ₹ 56,490. What is the cost of 2648 such computers?



## Division

In previous class, we have learnt how to divide 6-digit or 4-digit numbers by 2-digit numbers. Let us learn how to divide 5-digit, 6-digit or 7-digit numbers by 2-digit or 3-digit numbers.

**Example XII :** Divide 29,26,389 by 386 and verify answer.

**Solution :**  $29,26,389 \div 386$  gives quotient  
 $= 7,581$  and remainder  $= 123$

**Verification :** Dividend = Quotient  $\times$  Divisor + Remainder  
 $= 7,581 \times 386 + 123$   
 $= 29,26,389$

$$\begin{array}{r}
 \text{Quotient} \rightarrow 7581 \\
 386 \overline{) 2926389} \\
 \underline{- 2702} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \phantom{00} \times 2243 \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \underline{- 1930} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \phantom{00} \phantom{00} \times 3138 \phantom{00} \phantom{00} \phantom{00} \\
 \underline{- 3088} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \phantom{00} \phantom{00} \phantom{00} \times 509 \phantom{00} \phantom{00} \phantom{00} \\
 \underline{- 386} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \text{Remainder} \rightarrow 123
 \end{array}$$

Hence, the answer is correct.

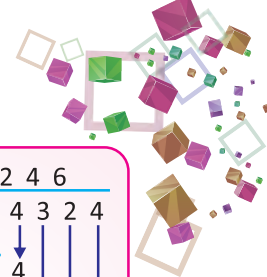
**Example XIII :** Divide 8,62,28,364 by 2,768.

**Solution :** We divide 8,62,28,364 by 2,768  
Therefore, dividing 86228364 by 2,768 gives  
Quotient = 31,151  
Remainder = 2,396

$$\begin{array}{r}
 \text{Quotient} \rightarrow 31151 \\
 2768 \overline{) 86228364} \\
 \underline{- 8304} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \phantom{00} \times 3188 \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \underline{- 2768} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \phantom{00} \phantom{00} \times 4203 \phantom{00} \phantom{00} \phantom{00} \\
 \underline{- 2768} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \phantom{00} \phantom{00} \phantom{00} 14356 \phantom{00} \phantom{00} \\
 \underline{- 13840} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \phantom{00} \phantom{00} \phantom{00} \phantom{00} \times 5164 \phantom{00} \phantom{00} \\
 \underline{- 2768} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\
 \text{Remainder} \rightarrow 2396
 \end{array}$$

**Example XIV :** In a cement factory 1,56,54,324 bags of cement was produced in a year. If there were 294 working days in that year. How many bags of cement were produced per day?





**Solution** : Number of cement bags produced in a year  
 = 1,56,54,324  
 Number of working days in that year = 294  
 Number of cement bags produced per day  
 =  $1,56,54,324 \div 294 = 53,246$   
 Therefore, number of cement bags produced  
 per day is 53,246.

Quotient → 5 3 2 4 6  

$$\begin{array}{r} 294 \overline{) 15654324} \\ \underline{-1470} \phantom{00} \\ \times \times 954 \\ \underline{-882} \phantom{00} \\ \times 723 \\ \underline{-588} \phantom{00} \\ 1352 \\ \underline{-1176} \\ \times 1764 \\ \underline{-1764} \\ \text{Remainder} \rightarrow \times \times \times \times \end{array}$$



## Properties of Division

- ❖ If we divide a number by 1, the quotient is the number itself.  
**For Example** :  $5,980 \div 1 = 5,980$
- ❖ If we divide a number by itself, the quotient is 1.  
**For Example** :  $5,980 \div 5,980 = 1$
- ❖ If we divide 0 by a number, the quotient is 0.
- ❖ Dividing a number by 0 is meaningless.



## Exercise 3.4

### 1. Find the quotient and remainder.

- |                             |                             |
|-----------------------------|-----------------------------|
| a. $9,29,768 \div 275$      | b. $65,76,494 \div 153$     |
| c. $8,26,442 \div 188$      | d. $46,75,984 \div 192$     |
| e. $21,87,67,421 \div 2413$ | f. $8,45,38,560 \div 2,469$ |
| g. $6,46,03,486 \div 3457$  | h. $6,16,57,988 \div 3,116$ |

### 2. Divide and check the answer.

- |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| a. $46,73,452 \div 716$ | b. $47,34,508 \div 586$ | c. $84,65,428 \div 806$ |
|-------------------------|-------------------------|-------------------------|
3. 418 shocks are packed in one carton. How many cartons are required to pack 6,42,884 shocks?
  4. The cost of 268 washing machines is ₹ 7,38,608. What is the cost of one washing machine?
  5. The product of two numbers is 8,19,210. If one number is 658, then what is the other number?
  6. Find the least number that should be subtracted from 8656700, so that the result is







## Points to Remember

- ❖ Each number in an addition sum is called an addend.
- ❖ In an addition sum, the order of the addends can be changed, but the sum remains the same.
- ❖ In subtraction, the order of subtrahend and minuend cannot be changed.
- ❖ In multiplication, the order of numbers can be changed, but the product remains the same.
- ❖ The product of any number and zero is zero.
- ❖ Dividing a number by 0 is meaningless.



## EXERCISE

(CCE Pattern)

### 1. Multiple Choice Questions (MCQs)

Tick (✓) the correct option:

a.  $7090 \div \dots\dots\dots$  gives  $Q = 70$  and  $R = 90$ .

- (i) 1  (ii) 10  (iii) 100  (iv) 1000

b.  $17 \times 6 = 102$ . So,  $1700 \times 6 = \dots\dots\dots$

- (i) 10200  (ii) 12000  (iii) 17050  (iv) none of these

c. Divisor = 97 ; Quotient = 129 ; Remainder = 30 ; Dividend =  $\dots\dots\dots$

- (i) 12643  (ii) 12553  (iii) 12543  (iv) none of these

d. Divisor = 59 ; Quotient = 153 ; Remainder = 49 ; Dividend =  $\dots\dots\dots$

- (i) 8076  (ii) 9075  (iii) 9176  (iv) 9076

e. Each number to be added in an addition sum is called  $\dots\dots\dots$

- (i) minuend  (ii) subtrahend   
 (iii) multiplier  (iv) addend

### 2. Write in vertical form and work out the operation.

- a.  $28,36,425 + 35,07,713 + 23,62,151$       b.  $83,89,552 - 29,99,908$   
 c.  $51,23,842 + 4,37,26,319 + 36,09,529$       d.  $8,05,41,852 - 6,85,72,949$

### 3. Multiply the following.

- a.  $18,795 \times 39$       b.  $23,453 \times 39$   
 c.  $2,35,248 \times 127$       d.  $6,29,769 \times 247$





**4. Find the quotient and the remainder in each of the following.**

a.  $29,048 \div 18$

b.  $2,76,453 \div 265$

c.  $54,756 \div 23$

d.  $97,366 \div 47$

5. Every day writer writes 33 pages of a novel which has 792 pages. Estimate in how many days will he complete the novel?

6. A man decides to donate five lakh rupees to a charitable trust. He proposes to pay ₹ 5000 every month. How much time will it take him to pay the full amount?



HOPE

Three consecutive numbers have a sum of 6000. What could be the numbers?



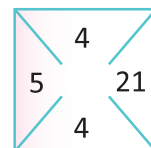
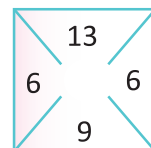
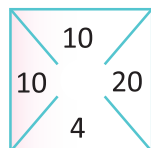
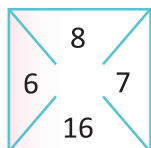
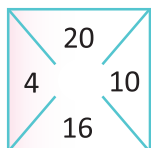
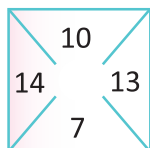
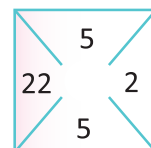
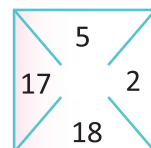
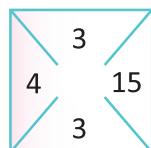
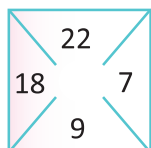
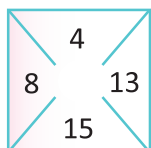
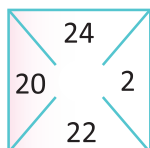
**Lab Activity**

**Objective**

: To practice the fundamental operations, i.e. addition, subtraction, multiplication and division.

**Materials Required :**

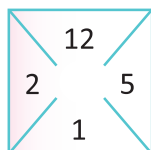
A sheet of thick paper, scale, pencil, colours and a pair of scissors



**Activities :**

- ❖ Make number cards on a thick sheet of paper.
- ❖ Each child should be given a set of 12 cards.
- ❖ You can add, subtract, multiply and divide.
- ❖ Use all the four numbers on the card, but use each number only once.
- ❖ The objective of the game is to make 24.

**For Example :**



$12 \div 2 = 6; 5 - 1 = 4; 6 \times 4 = 24$

- ❖ The child who works out all 12 cards will be declared the winner.

