MATH 3

CHAPTER 4: ADDITION

ADDITION

➤ INTRODUCTION

Addition is the basic arithmetic operation. The combination of two or more counted objects is represented by single notation is called addition. The symbol for the notation of addition is +. Peter has 4 flowers and John has 5 flowers then both have 4 + 5 = 9 flowers. Therefore, the addition of two different units cannot be expressed in single unit. In this chapter we will learn about the addition of numbers.

❖ ADDITION OF NUMBERS

Resulting sum of two or more numbers is called the addition of the numbers and the numbers those are in addition are called addends. In the addition of 456 + 567 = 1023. The numbers 456 and 567 are addends and resulting number 1023 is their sum. The process of addition of the numbers always starts from ones.

❖ ADDITION OF FOUR DIGITS NUMBERS WITHOUT CARRYING

The following steps are used for the addition of numbers 4784 and 3214:

Step 1: Add the ones 4 + 4 = 8. Write 8 under ones column.

Step 2: Add the tens 8 + 1 = 9. Write 9 under tens column.

Step 3: Add the hundreds 7 + 2 = 9. Write 9 under hundreds column.

Step 4: Add the thousands 4 + 3 = 7. Write 7 under thousands column.

Th	H	T	O
4	7	8	4
+ 3	2	1	4

Hence, the addition of the numbers 4784 + 3214 = 7998.

Example:

(1)

ADDITION

In the addition of the number: 6523 and 2364. Which one of the following numbers is in the thousands place of the resulting addition?

(a) 7

(b) 8

(c) 6

(d) 5

(e) None of these

Answer: (b)

Explanation: The sum of the numbers, 6523 + 2364 = 8887

❖ **ADDITION OF FOUR DIGITS NUMBERS WITH CARRYING**

The following steps are used for the addition of the numbers 7569 and 5984:

Step 1: Add the ones 9 + 4 = 13 = 1 tens + 3 ones. Write 3 under ones column and carry one tens to the tens column.

Step 2: Add the tens 6 + 8 + 1 (carry over) = 15 tens = 1 hundred + 5 tens.

Write 5 under tens column and carry 1 hundred to the hundreds column.

Step 3: Add the hundreds 5 + 9 + 1 (carry over) = 15 hundreds, = 1 thousand +5 hundreds.

Write 5 under hundreds column and carry 1 thousand to the thousand column.

Step 4: Add the thousands 7 + 5 + 1 (carry over) = 13 thousands.

 Write 13 under thousand column.

```
 Th  h t  o
   1  1 1  ⇐ Carry
   7  5 6  9
 + 5  9 8  4
 ─────────────
  13  5 5  3
```

Therefore, the sum of the numbers 7569 and 5984 = 13553.

Example:

The place of third digit from right of resulting sum of two 4 digits numbers is obtained at which one of the following places?

(a) Thousands
(b) Ones

(c) Hundreds

(d) All of these

(e) None of these

Answer: (c)

Explanations The place value of third digit of resulting sum of two four digits numbers is obtained at hundred place.

❖ **ADDITION OF FIVE DIGITS NUMBERS WITH CARRYING**

Addition of five digits numbers with carrying is added by the following steps:

Step 1: Arrange the numbers vertically, ones of a number below the ones of another number and tens below tens, thousands below thousands.

Step 2: First add ones of all the given numbers.

Step 3: If carry is generated then add the carry to the addition of tens.

Step 4: Add the tens of the numbers with carry. If carry is again generated in the addition of tens then add the carry to the addition of hundreds.

Step 5: Add the hundreds of the numbers with carry and add the generated carry to the thousands.

Step 6: Add the thousands with carry and add the generated carry to the addition of the numbers those are in the place of ten thousands.

Step 7: Add ten thousands with carry and again add the generated carry to the numbers those are in the place lacs.

Example:

Add 95673 and 83458

Solution:

		(Carry)		
	1	1	1	
T.th	Th	H	T	O
9	5	6	7	3
8	3	4	5	8
7	9	1	3	1

❖ **COMMUTATIVE PROPERTY OF ADDITION**

The sum of two numbers does not change on changing the order of the numbers and this property of addition is called the commutative property of addition. The sum of the numbers 456 and 123 = 456 + 123 = 579, on changing the order, 123 + 456 = 579.

(3)

Hence, the resulting sum does not change and remains same as the sum in the previous order.

Example:

According to the commutative property of addition, which one of the following options is correct?

(a) 45 + 34 = 36 + 43

(b) 29 + 18 = 18 + 29

(c) 23 + 67 = 50 + 50

(d) All of these

(e) None of these

Answer: (b)

Explanation:

According to the commutative property of addition the addition of 29 + 18 = 47 and addition of 18 + 29 = 47 are same. Hence, the statement 29 + 18 = 18 + 29 is correct.

❖ **ASSOCIATIVE PROPERTY OF ADDITION**

The sum of the numbers does not change on changing the groups of addends.

There are two groups in the following term: 4 + (5 + 6), 4 and (5 + 6) the resulting sum of the term 4 + (5 + 6) = 15, on changing the groups of numbers, the resulting sum = (4 + 5) + 6 = 15. Therefore, the sum of the numbers is same on changing their groups. This property is known as associative property of addition.

Example:

Consider the following two statements:

Statement 1. The sum of two numbers is changed on changing their order.

Statement 2. The sum of two numbers does not change on changing their order.

Which one of the following options is correct about the above statements?

(a) Statement 1 is true and 2 is false

(b) Statement 1 and 2 are false

(c) Statement 1 is false and 2 is true

(d) Statement land 2 are true

(e) None of these

(4)

Answer: (c)

Explanations:

The sum of two numbers does not change on changing their order.

❖ **ADDITIVE PROPERTY FOR ZERO**

The addition of zero with a number is the number itself this property of addition is called additive property for zero.

➢ DECIMAL NUMBERS AND THEIR ADDITION

A number with a decimal point is known as decimal number. The digit at right from decimal point is called whole part of the decimal number and digit at right side from the decimal point is called decimal part of the decimal number. In the decimal number 567.89, digits 567 are whole parts and digits 89 are decimal part. Place values of whole parts of decimal numbers are same as the place values of whole or natural numbers but the place values of decimal parts of the decimal numbers are read from left side and their place values are tenths, hundredth, thousandth, etc.

Three digits right after the decimal point are considered in the mathematical calculation.

The following steps are used for the addition of decimal numbers:

Step 1: Arrange the decimal numbers vertically, decimal numbers under decimal numbers and whole numbers under whole numbers.

Step 2: Add them starting from right of the decimal numbers.

Step 3: Carry over to the next addition.

Step 4: If carry is generated in the addition of tenth place digits then carry over to the addition of ones of the whole parts of the decimal numbers.

Step 5: Add the whole parts of the decimal numbers.

Look at the following addition:
Add Rs 123. 25, Rs 85.60 and Rs 48.75.

$$\begin{array}{r} \underline{111} \; - \\ 123.25 \\ 85.60 \\ +\underline{48.75} \\ \text{Rs}\underline{257.60} \end{array}$$

Example:

The cost of 1 kg of potatoes is Rs 12.50 and the cost of 2 kg of tomatoes is Rs 56.75. How much money is paid on purchasing 1 kg of potatoes and 2 kg of tomatoes?

(5)

(a) Rs 69.75

(b) Rs 69.25

(c) Rs 60.50

(d) All of these

(e) None of these

Answer: (b)

Explanation:

The total money paid

   1

  12.50

+56.75 = Rs 69.25.

  69. 25

Questions:

1. The addition of the terms 13a, 15b and 12a is:

(a) 25a+15b

(b) 15a + 15b

(c) Slab

(d) All of these

(e) None of these

Answer: (a)

Explanation 13 a + 12 a + 15 b = 25 a + 15 b.

2. If x = 1 and y = 2, then find the value of 2x + 3y.

(a) 5

(b) 8

(c) 7

(d) All of these

(e) None of these

Answer: (b)

$2 \times 1 + 3 \times 2 = 2 + 6 = 8$