

3

Addition of 4-digit Numbers

Let's Begin

- Addition means putting together two or more things or numbers and combining all of them.
- When two or more numbers are added, each of the numbers to be added is known as addend and the result obtained after addition is called the sum.
- The sum is always greater than the addends except when one of the addends is zero.

Addition of 4-digit numbers Without Carrying

Adding 4-digit numbers is similar to adding 3-digit numbers.

To add 4-digit numbers we arrange the digits in columns of thousands, hundreds, tens and ones. Add them column wise starting from ones, then tens, then hundreds and finally thousands.

Let's Try

Example 1: Add 3241 and 2137.

Solution: Arrange the given numbers in columns and then follow these steps:

Step-1: Add the ones.

$$1 + 7 = 8 \text{ ones}$$

Write 8 under ones column.

Step-2: Add the tens.

$$4 + 3 = 7 \text{ tens}$$

Write 7 under tens column.

Step-3: Add the hundreds.

$$2 + 1 = 3 \text{ hundreds}$$

Write 3 under hundreds column.

Step-4: Add the thousands.

$$3 + 2 = 5 \text{ thousands}$$

Write 5 under thousands column.

Hence, the sum is 5378.

Th	H	T	O
3	2	4	1
2	1	3	7
<hr/>			
5	3	7	8

Example 2: Find the sum: $2143 + 1235 + 2410$

Solution: Arranging the given numbers in columns and then adding we get:

Th	H	T	O
2	1	4	3
1	2	3	5
2	4	1	0
<hr/>			
5	7	8	8

Hence, the sum is 5788.

Properties of Addition

1. Any number + 0 = Number itself.

For example, $181 + 0 = 181$; $7132 + 0 = 7132$; $999 + 0 = 999$

2. When one is added to a number, the sum is the successor of the given number.

For example, $4153 + 1 = 4154$, $2356 + 1 = 2357$

3. We can add two or more numbers in any order and the result remains same in each case.

For example,

$$391 + 2000 = 2000 + 391 = 2391; \quad 6123 + 1012 = 1012 + 6123 = 7135$$

4. The sum of two or more numbers is always greater than the numbers being added, except when one of the numbers is zero.

For example, $2137 + 1022 = 3159$:

$$3159 > 2137; \quad 3159 > 1022$$

EXERCISE 3A

- 1 Add the following.

(a)	Th	H	T	O
	2	5	0	3
	+	3	2	1 4

(b)	Th	H	T	O
	4	6	3	2
	+	3	1	4 5

(c)	Th	H	T	O
	4	1	3	7
	+	2	8	5 2

(d)	Th	H	T	O
	3	4	1	0
	+	6	5	8 9

(e)	Th	H	T	O
	7	5	4	2
	+	1	4	3 7

(f)	Th	H	T	O
	4	8	3	5
	+	5	1	4 3

- 2 Write in column form and then add the following.

(a) $4352 + 247$

(b) $4303 + 1092$

(c) $1234 + 4321$

(d) $2614 + 5142$

(e) $5521 + 3243$

(f) $3051 + 5234$

(g) $1111 + 7654$

(h) $2910 + 1024$

(i) $5656 + 4132$

3 Find the sum of 2314, 1234 and 3141.

4 Add the following.

(a) $8231 + 432 + 23$

(b) $3123 + 4514 + 1330$

(c) $5000 + 1900 + 2090$

(d) $6543 + 1221 + 1012$

5 Fill in the blanks.

(a) $3845 + 0 = \underline{\hspace{2cm}}$

(b) $6192 + \underline{\hspace{2cm}} = 6192$

(c) $8134 + 1213 = 1213 + \underline{\hspace{2cm}}$

(d) $6000 + 190 + 2120 = 2120 + \underline{\hspace{2cm}} + 190$

Word Problems

Addition means finding the sum. While solving word problems we may come across the words like altogether, joined, combined, total, etc. These all mean addition. Let us learn through few examples.

Let's Try

Example 1: For the first show of a movie, 1321 tickets were sold. For the second show 2317 tickets were sold. What was the total number of tickets sold?

Solution: Tickets sold for first show = 1321

Tickets sold for second show = 2317

	+	Th	H	T	O
		1	3	2	1
		2	3	1	7
		3	6	3	8

Total number of tickets sold =

Hence, the required total is 3638 tickets.

Example 2: A florist bought 1240 white roses, 1510 yellow roses and 1125 jasmine flowers. How many flowers did he buy in all?

Solution: Number of white roses = 1240

Number of yellow roses = 1510

Number of jasmine flowers = 1125

Total = 1240 + 1510 + 1125 = 3875

Hence, the florist bought 3875 flowers in all.

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

EXERCISE 3B

- 1 Ruhi wants to join 1123 metres and 2315 metres of rope. What will be the length of the rope after joining the pieces together?
- 2 A machine produced 3712 items on Monday and 4135 items on Tuesday. How many items were produced by the machine in these two days?
- 3 A milk van was carrying 4325 packets of flavoured milk and 1620 packets of flavoured yoghurt. How many packets was it carrying altogether?
- 4 In a poultry farm, 1205, 1453 and 2131 eggs are produced on three consecutive days. How many eggs are produced in total?
- 5 Ms. Sahni purchased a portable TV set for ₹ 3145, a mixer grinder for ₹ 2500 and an electric iron for ₹ 334. How much she had to pay in all?



Addition of 4-digit Numbers with Carrying

The process of carrying over in addition of 4-digit numbers is same as that of 3-digit numbers. Let us learn through examples.

Let's Try

Example 1: Add 5268 and 2785.

Solution: Arrange the given numbers in columns and then follow these steps:

Step 1: Add the ones.

$$\begin{aligned} & 8 \text{ ones} + 5 \text{ ones} \\ & = 13 \text{ ones} = 10 \text{ ones} + 3 \text{ ones} \\ & = 1 \text{ ten} + 3 \text{ ones} \end{aligned}$$

Th	H	T	O
5	2	6	8
2	7	8	5
			3

Write 3 under ones column and carry 1 ten to tens column.

Step 2: Add the tens.

$$\begin{aligned} & 1 \text{ ten (carried over)} + 6 \text{ tens} + 8 \text{ tens} \\ & = 15 \text{ tens} = 10 \text{ tens} + 5 \text{ tens} \end{aligned}$$

$$= 1 \text{ hundred} + 5 \text{ tens}$$

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

Th	H	T	O
5	2	6	8
2	7	8	5
		5	3

Step 3: Add the hundreds.

$$\begin{aligned} & 1 \text{ hundred (carried over)} + 2 \text{ hundreds} + 7 \text{ hundreds} \\ & = 10 \text{ hundreds} = 1 \text{ thousand} + 0 \text{ hundreds.} \end{aligned}$$

Write 0 under hundreds column and carry 1 thousand to thousands column.

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

Step 4: Add the thousands.

1 thousand (carried over)
 + 5 thousands + 2 thousands
 = 8 thousands

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

Write 8 under thousands column.

Hence, the sum is 8053.

Example 2: Find the sum: $5632 + 1048 + 3214$

Solution: By arranging the numbers in columns and then adding, we get:

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

Hence, the sum is 9894.

Example 3: Find the sum: $3847 + 789 + 1562$

Solution: By arranging the numbers in columns and then adding, we get:

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

Hence, the sum is 6198.

EXERCISE 3C

1 Add the following.

Th	H	T	O
○	○		
2	3	4	5
+	6	8	7
			4

Th	H	T	O
○	○	○	
5	6	3	7
+	2	4	9
			5

Th	H	T	O
○			
3	9	7	5
+	1	1	1
			2

Th	H	T	O
○	○	○	
4	7	6	9
+	2	5	8
			7

Th	H	T	O
○	○	○	
6	3	5	7
2	4	5	9
+		1	2
			3

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

Th	H	T	O
	○	○	
7	1	6	5
	3	7	4
+			9
			5

Th	H	T	O
○		○	
2	3	4	5
1	2	3	4
+	4	7	1
			9

2 Arrange in column and then find the following sums.

(a) $1990 + 2000 + 2014$

(b) $3726 + 634 + 135$

(c) $63 + 378 + 5437$

(d) $8887 + 654 + 19$

Word Problems

Let's Try

Example 1: The population of a village A is 5410. Due to drought conditions in another village B, 2894 people migrated to village A. What is the population of village A now?

Solution: Population of village A = 5410
 Number of people migrated from village B = 2894
 Total population in village A
 = $5410 + 2894 = 8304$

Th	H	T	O
①	①		
5	4	1	0
+	2	8	9
<hr/>			
8	3	0	4

Hence, the population of village A is 8304 now.

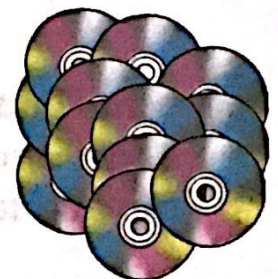
Example 2: Aman travelled to his home partly by train and partly by car. If he travelled 2678 km by train and 988 km by car. How far is his home?

Solution: Distance travelled by train = 2678 km
 Distance travelled by car = 988 km
 Total distance = $2678 + 988 = 3666$ km
 Hence, Aman's home is 3666 km away.

Th	H	T	O
①	①	①	
2	6	7	8
+	9	8	8
<hr/>			
3	6	6	6

EXERCISE 3D

- 1 A shop has 3674 DVDs of Hindi films and 2748 DVDs of English films. How many DVDs does it have altogether?



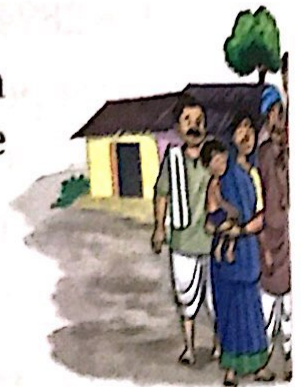
- 2 Rahul travelled 4782 km away from home and came back. Find the total distance travelled.



- 3 A departmental store has 2648 bottles of apple juice, 3314 bottles of orange juice and 1452 bottles of grapes juice. How many bottles of juice does it have?



- 4 There are 3192 men, 2935 women and 1574 children in a village. What is the total population of the village?



- 5 In a school library, there are 3471 books of fiction, 2981 books on non-fiction and 1608 books on other subjects. How many books are there in all in the library?



- 6 In an orchard, there are 1765 coconut trees, 2347 tamarind trees and 478 plants. How many trees and plants are there in total?



- 7 Mr. Khurana purchased a washing machine for ₹ 6899 and a microwave for ₹ 2645 from a shop. How much total money he had to pay for both the items?



REVIEW EXERCISE

- 1 Find the sum of 3532 and 2245.
- 2 Find the sum of $2345 + 1234 + 1000$.
- 3 Find the sum of $4537 + 2369$.
- 4 Add the following.

(a)

	Th	H	T	O
	5	2	4	3
+	2	3	5	4
<hr/>				

(b)

	Th	H	T	O
	4	3	7	5
+	3	9	8	6
<hr/>				

ACTIVITY

Objective: To develop accuracy in addition of 4-digit numbers.

Materials Required: Chits with numbers from 1000 to 9999 written on them (one chit, one number) plastic bowls and a score board.

Procedure:

1. This activity will be done in teams. Each team will be given a bowl full of the number chits.
2. Each team will draw 2 chits from the bowl. For example, chits with number 2456 and 1875.
3. Now, the students will add the numbers.
4. Each student of the team will draw the chits from the bowl atleast 2 times and work out the sums.
5. After all the teams have worked out, the scores will be given by the teacher to each team on the basis of correct answers.



Subtraction of 4-digit Numbers

Let's Begin

- Subtraction means taking away a number or a quantity from a given number or quantity. The result of subtraction is known as the difference.
- In previous class we have learnt how to subtract 2-digit and 3-digit numbers.
- To subtract 2-digit or 3-digit numbers we always write the larger number first and then find their difference.

Subtraction of 4-digit Numbers Without Borrowing

Subtraction of 4-digit numbers is similar to subtraction of 3-digit numbers. For subtracting a given number from another number, we write the large number first in the columns, then the smaller number and find the difference for each place starting from ones, then tens, then hundreds and finally thousands.

Let's Try

Example 1: Subtract 6342 from 8573.

Solution: Here $8573 > 6342$

Arrange the numbers in columns and then follow these steps:

Step-1: Subtract the ones.

$$3 - 2 = 1 \text{ one}$$

Write 1 under ones column.

Step-2: Subtract the tens.

$$7 - 4 = 3 \text{ tens}$$

Write 3 under tens column.

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

Step-3: Subtract the hundreds.

$$5 - 3 = 2 \text{ hundreds}$$

Write 2 under hundreds column.

Step-4: Subtract the thousands.

$$8 - 6 = 2 \text{ thousands}$$

Write 2 under thousands column.

Hence, the difference is 2231.

Example 2: Find the difference between 2541 and 6798.

Solution: Here $6798 > 2541$

Arranging the numbers in columns and then subtracting, we get:

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

Hence, the difference is 4257.

Properties of Subtraction

1. Any number $- 0 =$ The number itself.

For example, $1693 - 0 = 1693$, $2918 - 0 = 2918$

2. When we subtract 1 from a number the difference is the predecessor of the given number.

For example, $1675 - 1 = 1674$, $2235 - 1 = 2234$

3. Any number subtracted from itself always gives zero.

For example, $1734 - 1734 = 0$, $2149 - 2149 = 0$

4. In subtraction, the order of numbers is very important. We always subtract smaller number from the larger number.

EXERCISE 4A

1 Subtract the following.

(a)

Th	H	T	O
8	7	9	2
-	5	4	3
1			

(b)

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

(c)

Th	H	T	O
9	6	5	3
-	3	5	4
2			

(d)

Th	H	T	O
5	6	4	8
-	4	1	3
5			

(e)

Th	H	T	O
2	7	5	3
-	1	3	0
2			

(f)

Th	H	T	O
6	4	7	0
-	3	4	0

2 Write in column form and then find the difference.

(a) $3471 - 2350$ (b) $4732 - 3121$ (c) $5863 - 3241$ (d) $9675 - 7365$

3 Subtract 1072 from 4185.

4 Subtract 4372 from 6697.

5 Simplify: $9800 - 8700$.

6 Evaluate: $9999 - 1234$.

7 Fill in the blanks.

(a) $1794 - 0 = \underline{\hspace{2cm}}$ (b) $3475 - \underline{\hspace{2cm}} = 3475$ (c) $2140 - \underline{\hspace{2cm}} = 0$

(d) We cannot subtract a number from a number.

Word Problems

Let's Try

Example 1: What is left when you take away 3072 from 9894?

Solution: Here take away means subtraction.

	Th	H	T	O
	9	8	9	4
-	3	0	7	2
	6	8	2	2

Hence, 6822 is left.

Example 2: A stadium has a seating capacity of 4359. 2154 people watched the show. How many seats were vacant?

Solution: Seating capacity of stadium = 4359
 Number of people watching the show = 2154

	Th	H	T	O
	4	3	5	9
-	2	1	5	4
	2	2	0	5

Seats left vacant = $4359 - 2154 = 2205$

Example 3: Of the 2549 students in a school, 1024 students play sports. How many students do not play sports?

Solution: Total number of students = 2549
 Number of students playing sports = 1024
 Number of students who do not play sports = $2549 - 1024$

	Th	H	T	O
	2	5	4	9
-	1	0	2	4
	1	5	2	5

Hence, the required number is 1525.

EXERCISE 4B

1 Reema had 1235 stamps in her stamp collection, out of which 124 were damaged. How many stamps are left with her now?

2 Rohit scored 5872 points in a game and Vikas scored 9884 points. Find the difference between their scores.



3 The difference between two numbers is 2845. If the larger number is 9876, find the smaller one.

4 There are 2760 students in a school. If 1650 of them are boys, how many are girls?



5 During a week 5798 people visited a zoo, whereas in next week 4567 people visited. Find the difference between the visitors for two weeks.

6 A train can cover a journey of 3500 km in three days and the bus can cover 2400 km. How much more distance is covered by train?

7 There were 4312 bags of cement in a godown. If 2310 bags were sold out, how many bags are left now in godown?

Subtraction of 4-digit Numbers With Borrowing

Subtraction with borrowing for 4-digit numbers is same as that for 3-digit numbers except for the fact that borrowing may start from thousands place if required. Let us learn through examples.

Let's Try

Example 1: Subtract 4968 from 7873.

Solution: Arrange the given numbers in columns and then follow these steps:

Step 1: Starting from ones column, $3 < 8$

we borrow 1 ten from tens column.

$$1 \text{ ten} + 3 \text{ ones} = 10 \text{ ones} + 3 \text{ ones}$$

$$13 \text{ ones} - 8 \text{ ones} = 5 \text{ ones}$$

Write 5 under ones column.

Th	H	T	O
7	8	7 6	3 13
- 4	9	6	8
			5

Step 2: In tens column, 7 tens becomes 6 tens after borrowing.

$$6 \text{ tens} - 6 \text{ tens} = 0$$

Write 0 under tens column.

Th	H	T	O
7	8	7 6	3 13
- 4	9	6	8
		0	5

Step 3: In hundreds column, $8 < 9$, we borrow 1 thousand from thousands column.

$$1 \text{ thousand} + 8 \text{ hundreds}$$

$$= 10 \text{ hundreds} + 8 \text{ hundreds}$$

$$= 18 \text{ hundreds}$$

$$18 \text{ hundreds} - 9 \text{ hundreds} = 9 \text{ hundreds}$$

Write 9 under hundreds column.

Th	H	T	O
7	8 18	7 6	3 13
- 4	9	6	8
	9	0	5

Step 4: In thousands column, we are left with 6 thousands
6 thousands - 4 thousands = 2 thousands
Write 2 under thousands column.

	Th	H	T	O
	6	8	7	8
-	4	9	6	8
	2	9	0	5

Hence, the difference is 2905.

Example 2: Find the difference between 9500 and 3784.

Solution:

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

Example 3: Subtract 4379 from 8785.

Solution:

	Th	H	T	O
	8	7	8	5
-	4	3	7	9
	4	4	0	6

Checking Subtraction using Addition

We can easily check the subtraction using the concept of addition.

Let us subtract 2623 from 4532 and check our answer.

Subtraction

	Th	H	T	O
	4	5	3	2
-	2	6	2	3
	1	9	0	9

Checking the answer

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

We subtract 2623 from 4532 and get the difference as 1909.

It also means that if we add 1909 and 2623 we get the sum as 4532.

Therefore, we can say that addition and subtraction are related to each other.

EXERCISE 4C

1 Subtract.

(a)

Th	H	T	O
○	○	○	○
5	0	9	4
-	2	4	7 3

(b)

Th	H	T	O
○	○	○	○
6	8	5	1
-	3	6	4 9

(c)

Th	H	T	O
○	○	○	○
7	0	1	3
-	4	3	1 8

(d)

Th	H	T	O
○	○	○	○
8	2	0	5
-	5	1	6 7

(e)

Th	H	T	O
○	○	○	○
5	6	4	3
-	1	9	8 2

(f)

Th	H	T	O
○	○	○	○
9	0	0	0
-	6	8	7 6

(g)

Th	H	T	O
○	○	○	○
9	5	6	0
-	3	4	7 8

(h)

Th	H	T	O
○	○	○	○
7	0	0	3
-	3	9	9 9

(i)

Th	H	T	O
○	○	○	○
4	2	5	6
-	1	3	6 7

2 Find the difference and check your answer.

(a) $6700 - 2194$

(b) $8264 - 1297$

(c) $2031 - 1495$

(d) $8000 - 4957$

3 Find the difference of the following and check the answers using addition.

(a) 3041 and 1348

(b) 9264 and 7841

(c) 7000 and 1699

(d) 2379 and 4193

(e) 2103 and 1849

(f) 7015 and 3786

Word Problems

Let's Try

Example 1: A school library had 3125 books. If there are 1178 books still left in the library, how many books were issued?

Solution: Total number of books = 3125

Number of books left = 1178

Number of books issued = $3125 - 1178$

Th	H	T	O
②	⑩	⑪	⑮
3	1	2	5
- 1	1	7	8
1	9	4	7

Hence, 1947 books were issued.

Example 2: An orchard has mango trees and papaya trees. Out of the total 3845 trees, there are 1986 mango trees. How many papaya trees are there?

Solution: Total number of trees = 3845

Number of mango trees = 1986

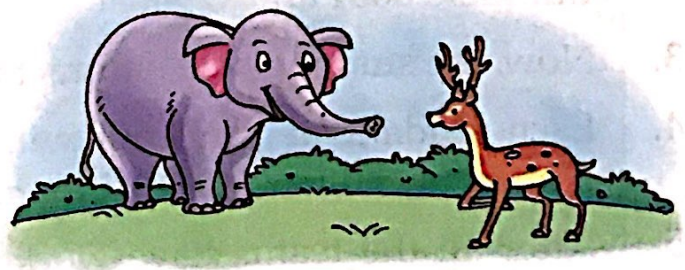
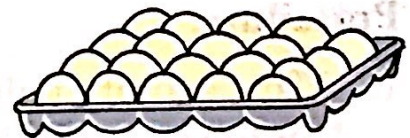
Number of papaya trees = $3845 - 1986 = 1859$

Hence, the number of papaya trees is 1859.

Th	H	T	O
②	⑮	⑮	⑮
3	8	4	5
- 1	9	8	6
1	8	5	9

EXERCISE 4D

- 1 2872 students study at school 'A' and 1584 at school 'B'. How many more students study at school 'A'?
- 2 The sum of two numbers is 8342. If one of the numbers is 6985, what is the other number?
- 3 There are 4000 students in a school. If 2894 of them are boys, how many are girls?
- 4 During a birthday party, Mr. Kaushik ordered 3450 cups of ice cream. At the end of the party, 279 cups were left. How many cups of ice cream were used?
- 5 There were 9000 people watching a match in a stadium. Due to rain 2479 people left the stadium. How many people watched the match in the stadium till end?
- 6 A farm sold 6892 eggs in first week. It sold 1985 less eggs in the second week. How many eggs were sold in the second week?
- 7 A wildlife park had 1354 elephants and 394 deer. If 295 elephants were transferred to another park, how many animals were left in the wildlife park?



REVIEW EXERCISE

1 Find the difference: $9765 - 8324$.

2 Subtract 2341 from 5657.

3 Subtract the following.

(a)

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

(b)

Th	H	T	O
6	5	4	1
-	3	6	5
0			

4 Subtract 3857 from 6764.

ACTIVITY

Objective: To develop accuracy in subtraction of 4-digit numbers with borrowing.

Materials Required: Chits with numbers from 1000 to 9999 written on them (one chit, one number) plastic bowls and a score board.

Procedure:

1. This activity will be done in teams. Each team will be given a bowl full of the number chits.
2. Each team will draw 2 chits from the bowl. For example, chits with numbers 8601 and 1796.
3. Now, the students will subtract the smaller number from the bigger one.
4. Each student of the team will draw the chits from the bowl at least 2 times and find out the difference.
5. After all the teams have worked out, the scores will be given by the teacher to each team on the basis of correct answers.