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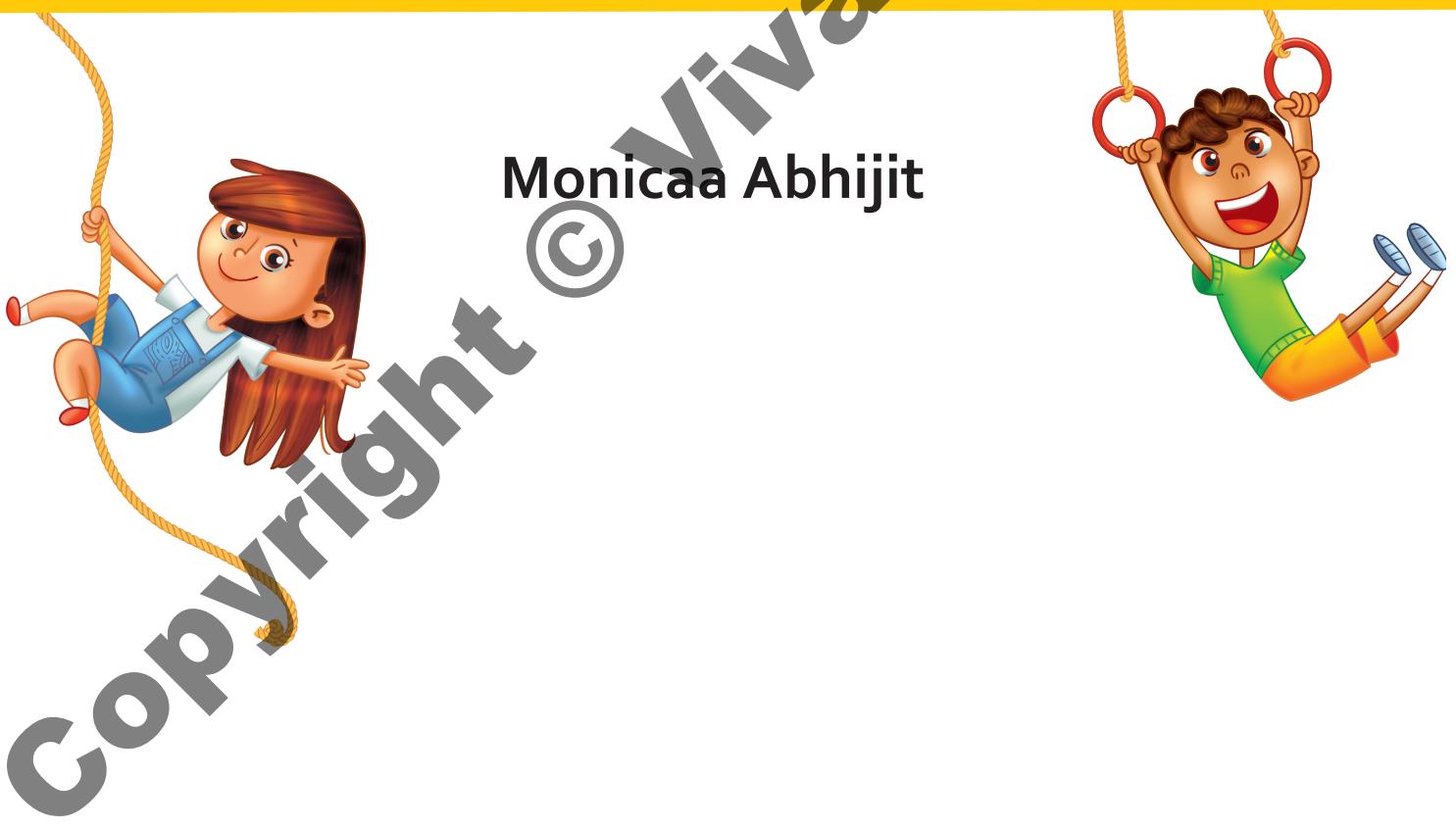


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# START UP MATHEMATICS

Monicaa Abhijit



**VIVA EDUCATION**

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# Preface

*Start Up Mathematics* is a sincere effort to fulfill the requirements and meet the expectations of students and teachers. Children should learn to enjoy Mathematics rather than fear it. They should pose and solve meaningful problems with ease. The content of the series has been designed keeping this in mind.

The series conforms to the latest NCF guidelines with careful grading of interdisciplinary and thematic linkages. The books are carefully planned to give comprehensive coverage to all the topics through clear explanations and sound supporting examples. There is ample focus on activities and exercises to develop logical thinking and reasoning.

The contents flow from known to unknown, simple to complex and concrete to abstract. Continuity from one level to another is maintained. A recall section is given at the beginning of every concept already taught because revision is a must before starting a new concept, particularly in Mathematics.

## **Vision of Start Up Mathematics**

- To develop numerical ability in a child
- To make a child capable of deciding which approach is best for problem solving
- To pursue assumption to a child's logical conclusion
- To equip a child to co-relate the four fundamental operations in everyday life
- To allow a child to articulate reasons behind doing a particular exercise
- To nurture a child's mathematical thinking and systematic reasoning
- To help a child to observe relationships and to find connections
- To help a child to use the concepts confidently in day-to-day life
- To arouse a child's interest and curiosity in geometrical facts and figures
- To inspire critical thinking and widen a child's scope in problem solving

It is our belief that regular practice will not only inculcate interest in students, but also lay a strong foundation at an early stage.

A feedback from students and teachers for further improvement of the books will be highly appreciated.

## Detailed Contents

Chapter	Content	Activity/Worksheet
1. Numbers beyond 9999	<ul style="list-style-type: none"> <li>• 5-Digit and 6-Digit Numbers</li> <li>• Numbers and Number Names</li> <li>• Face Value and Place Value</li> <li>• International Number System</li> <li>• Standard Form and Expanded Form</li> <li>• Comparison of Numbers</li> <li>• Predecessor and Successor</li> <li>• Ordering of Numbers</li> <li>• Juggling with Numbers</li> <li>• Rounding Off Numbers</li> </ul>	<ul style="list-style-type: none"> <li>• Group Activity—Team Spirit, Conceptual Understanding</li> </ul>
2. Roman Numerals	<ul style="list-style-type: none"> <li>• Roman Numerals up to Hundred</li> <li>• Conversion of Roman Numeral to Hindu-Arabic Numeral</li> <li>• Conversion of Hindu-Arabic Numeral to Roman Numeral</li> <li>• Addition and Subtraction of Roman Numerals</li> <li>• Modern Usage</li> </ul>	<ul style="list-style-type: none"> <li>• Worksheet—Application of Concepts, Observation Skills</li> </ul>
3. Addition	<ul style="list-style-type: none"> <li>• Addition of Numbers (without carry over)</li> <li>• Addition of Numbers (with carry over)</li> <li>• Addition of Three or More Numbers</li> <li>• Finding the Missing Digits</li> <li>• Estimating the Sum</li> <li>• Solving and Framing Word Problems</li> </ul>	<ul style="list-style-type: none"> <li>• Individual Activity—Observation Skills, Conceptual Understanding</li> </ul>
4. Subtraction	<ul style="list-style-type: none"> <li>• Subtraction of Numbers (without borrowing or regrouping)</li> <li>• Subtraction of Numbers (with borrowing or regrouping)</li> <li>• Subtraction with Zeros</li> <li>• Subtraction: Input/Output</li> <li>• Checking Subtraction</li> <li>• Finding the Missing Digits</li> <li>• Estimating Differences</li> <li>• Solving and Framing Word Problems</li> <li>• Addition and Subtraction Together</li> </ul>	<ul style="list-style-type: none"> <li>• Group Activity—Team Spirit, Application of Concepts</li> </ul>
5. Multiplication	<ul style="list-style-type: none"> <li>• Multiplication Tables from 16 to 20</li> <li>• Properties of Multiplication</li> <li>• Multiplication by Numbers Ending with Zero</li> <li>• Multiplication by 1-Digit, 2-Digit and 3-Digit Numbers</li> <li>• Multiplication with Zero in the Multiplier</li> <li>• Estimating Product of Two Numbers</li> <li>• Multiplication Tricks</li> <li>• Solving and Framing Word Problems</li> <li>• Mixed Problems</li> <li>• Lattice Multiplication</li> </ul>	<ul style="list-style-type: none"> <li>• Worksheet—Thinking Skills, Conceptual Understanding</li> </ul>
6. Division	<ul style="list-style-type: none"> <li>• Division of a 4-Digit Number by a 1-Digit Number</li> <li>• Division by a 2-Digit Number up to 20</li> <li>• Division by a 2-Digit Number More Than 20</li> <li>• Short Division Method</li> <li>• Division of a Number by 10, 100 and 1,000</li> <li>• Division When Dividend and Divisor end With Zero(s)</li> <li>• Estimating the Quotient</li> <li>• Solving and Framing Word Problems</li> <li>• Unitary Method</li> <li>• Mixed Problems</li> </ul>	<ul style="list-style-type: none"> <li>• Worksheet—Conceptual Understanding, Observation Skills</li> </ul>

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Chapter	Content	Activity/Worksheet
7. Factors and Multiples	<ul style="list-style-type: none"><li>• Factors</li><li>• Prime Factorization</li><li>• Common Factors</li><li>• Multiples</li><li>• Tests of Divisibility</li></ul>	<ul style="list-style-type: none"><li>• Worksheet—Observation Skills, Application of Concepts</li></ul>
8. Fractions	<ul style="list-style-type: none"><li>• Equivalent Fractions</li><li>• Checking the Equivalence of Two Fractions</li><li>• Types of Fractions</li><li>• Converting Mixed Fraction to Improper Fraction</li><li>• Converting Improper Fraction to Mixed Fraction</li><li>• Comparing Like and Unlike Fractions</li><li>• Comparing Mixed Fractions</li><li>• Ordering of Fractions</li><li>• Finding Fraction of a Number</li><li>• Lowest Term of Fractions</li><li>• Addition and Subtraction of Fractions</li><li>• Word Problems</li></ul>	<ul style="list-style-type: none"><li>• Group Activity—Team Spirit, Application of Concepts, Observation Skills</li></ul>
9. Measurement	<ul style="list-style-type: none"><li>• Smaller Units of Measurement</li><li>• Addition and Subtraction</li></ul>	<ul style="list-style-type: none"><li>• Worksheet—Observation Skills, Conceptual Understanding</li></ul>
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11. Money	<ul style="list-style-type: none"><li>• Conversion of Money</li><li>• Addition, Subtraction, Multiplication and Division of Money</li><li>• Word Problems and Price Lists</li></ul>	<ul style="list-style-type: none"><li>• Field Work—Observation Skills</li></ul>
12. Basic Geometry	<ul style="list-style-type: none"><li>• Point</li><li>• Line Segment</li><li>• Ray</li><li>• Line</li><li>• Angles</li></ul>	<ul style="list-style-type: none"><li>• Individual Activity—Conceptual Understanding, Observation Skills</li></ul>
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## Special Features of Start Up Mathematics 3-5

**Let's Recall ...**  
Review exercises

**Remember and Quick Tip**  
Important points and tips

**Mental Maths**  
Questions to strengthen concepts

**Scratch Your Brain**  
Question based on thinking skills

**Let's Evaluate**  
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Questions based on  
Values and Life Skills

Concept-based Activities and Worksheet

Assessment Sheets and Let's Review  
Term-wise evaluation

Vedic Mathematics  
Tricks to sharpen Mathematical Skills

Practice Questions for Problem-Based Learning

Some NCERT textbook questions given

1



# Numbers beyond 9999



## Let's Recall ...

- 10 ones = 1 ten
- 10 tens = 1 hundred
- 10 hundreds = 1 thousand

- Adding 1 to the largest 1-digit number gives the smallest 2-digit number.  $9 + 1 = 10$
- Adding 1 to the largest 2-digit number gives the smallest 3-digit number.  $99 + 1 = 100$
- Adding 1 to the largest 3-digit number gives the smallest 4-digit number.  $999 + 1 = 1000$

**1** Write the following numbers in expanded form. Also write their number names.

(a)  $2809 = \boxed{\quad} + \boxed{\quad} + \boxed{\quad} + \boxed{\quad} =$

(b)  $6174 = \boxed{\quad} + \boxed{\quad} + \boxed{\quad} + \boxed{\quad} =$

(c)  $9875 = \boxed{\quad} + \boxed{\quad} + \boxed{\quad} + \boxed{\quad} =$

**2** Circle the largest number.

- (a) 4268    4175    4628    4186    (b) 379    397    387    378

**3** Write the predecessor and successor of the given numbers.

<p>(a) <input type="text"/> 6280 <input type="text"/></p> <p>(c) <input type="text"/> 9979 <input type="text"/></p>	<p>(b) <input type="text"/> 2010 <input type="text"/></p> <p>(d) <input type="text"/> 8349 <input type="text"/></p>
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**4** Complete the series.

- (a) 3245; 3250; \_\_\_\_\_; \_\_\_\_\_; 3265; \_\_\_\_\_
- (b) 1060; 1070; \_\_\_\_\_; 1090; \_\_\_\_\_; \_\_\_\_\_
- (c) 8686; 8688; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; 8696

**5** Using the digits 4, 8, 0 and 7, form the largest and the smallest 4-digit numbers.

**6** Put the correct sign > or <.

- |   |   |
|---|---|
| <p>(a) 4683 <input type="text"/> 4863</p> <p>(c) 9819 <input type="text"/> 9189</p> | <p>(b) 3107 <input type="text"/> 3007</p> <p>(d) 8876 <input type="text"/> 8786</p> |
|---|---|



## 5-Digit and 6-Digit Numbers

The largest 4-digit number is 9999.

$9999 + 1 = 10000$  which is the smallest 5-digit number.

Also,  $10000 = 10$  thousands = 1 ten thousand

The largest 5-digit number is 99999.

$99999 + 1 = 100000$  which is the smallest 6-digit number.

Also,  $100000 = 10$  ten thousands = 1 lakh, and so on.

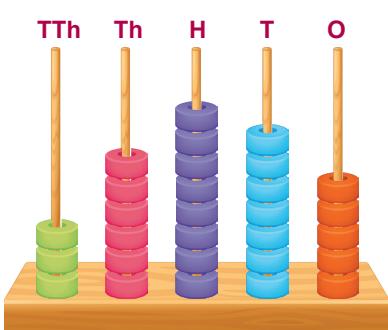
## Numbers and Number Names

To write a 5-digit number, we need any five digits from 0 to 9. These digits are written under TTh (Ten thousands), Th (Thousands), H (Hundreds), T (Tens) and O (Ones).

TTh Th H T O

3 6 8 7 5 = 3 ten thousands + 6 thousands + 8 hundreds + 7 tens + 5 ones

On an abacus, 36875 is shown as:



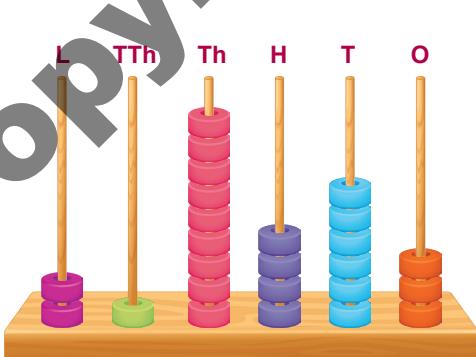
- Rod TTh reads in ten thousands.
- Rod Th reads in thousands.
- Rod H reads in hundreds.
- Rod T reads in tens.
- Rod O reads in ones.

Similarly, to write a 6-digit number we need six digits, written under L (Lakhs), TTh (Ten thousands), Th (Thousands), H (Hundreds), T (Tens) and O (Ones).

L TTh Th H T O

2 1 9 4 6 3 = 2 lakhs + 1 ten thousand + 9 thousands + 4 hundreds + 6 tens + 3 ones

On an abacus, 219463 is shown as



- Rod L reads in lakhs.
- Rod TTh reads in ten thousands.
- Rod Th reads in thousands.
- Rod H reads in hundreds.
- Rod T reads in tens.
- Rod O reads in ones.

### Remember

We cannot write 0 at the thousands place as it will then become a 4-digit number.



To write the number name of large numbers, we divide them into groups. Each group is called a **period**. Follow the given steps to group numbers. Let's consider the number 8137546.

- Start from extreme right and make a group of three digits. 8137546

This is the first group. It consists of ones, tens and hundreds and is called the **Ones Period**.

- The second group consists of the next two digits, i.e., thousands and ten thousands. It is called the **Thousands Period**. 8137 546

- The third group consists of the next two digits, i.e., lakhs and ten lakhs. It is called the **Lakhs Period**. 81 37 546

Thus, 8137546 is written as eighty-one lakh thirty-seven thousand five hundred forty-six.

Periods →	LAKHS (L)		THOUSANDS (Th)		ONES (O)		
Number	Ten Lakhs (TL)	Lakhs (L)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
81,37,546	8	1	3	7	5	4	6

**Example 1:** Group the given numbers by separating them using commas. Also, write the number names.

- (a) 82675      (b) 398104      (c) 540327      (d) 1725945

**Solution:** (a) 82,675

→ It is read as eighty-two thousand six hundred seventy-five.

- (b) 3,98,104

→ It is read as three lakh ninety-eight thousand one hundred four.

- (c) 5,40,327

→ It is read as five lakh forty thousand three hundred twenty-seven.

- (d) 17,25,945

→ It is read as seventeen lakh twenty-five thousand nine hundred forty-five.

#### Quick Tip

- The digits in the same period are read together.
- In a number, two periods are separated by a comma.



### Face Value and Place Value

We know that the face value of a digit is the value of the digit itself, while the place value of a digit depends on its face value and its place or position in a number.

Consider the number 2,89,053. Let's determine the place value of its digits.

Periods →	LAKHS (L)		THOUSANDS (Th)		ONES (O)		
Place Value →	Ten Lakhs (TL)	Lakhs (L)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
2,89,053		2	8	9	0	5	3

The place value of 2 is 2 lakhs, i.e., 2,00,000.

The place value of 8 is 8 ten thousands, i.e., 80,000.

The place value of 9 is 9 thousands, i.e., 9,000.

The place value of 0 is 0 hundreds, i.e., 0.

The place value of 5 is 5 tens, i.e., 50.

The place value of 3 is 3 ones, i.e., 3.

### Relations between the value of the places

There is a relation between the value of each place in a number with the other places. Let's know more about it.

$$10 = 10 \times 1 = 10 \text{ ones}$$

$$100 = 10 \times 10 = 10 \text{ tens}$$

$$= 100 \times 1 = 100 \text{ ones}$$

$$1,000 = 10 \times 100 = 10 \text{ hundreds}$$

$$= 100 \times 10 = 100 \text{ tens}$$

$$= 1,000 \times 1 = 1,000 \text{ ones}$$

$$10,000 = 10 \times 1,000 = 10 \text{ thousands}$$

$$= 100 \times 100 = 100 \text{ hundreds}$$

$$= 1,000 \times 10 = 1,000 \text{ tens}$$

$$= 10,000 \times 1 = 10,000 \text{ ones}$$

$$1,00,000 = 10 \times 10,000 = 10 \text{ ten thousands}$$

$$= 100 \times 1,000 = 100 \text{ thousands}$$

$$= 1,000 \times 100 = 1,000 \text{ hundreds}$$

$$= 10,000 \times 10 = 10,000 \text{ tens}$$

$$= 1,00,000 \times 1 = 1,00,000 \text{ ones}$$

### Mental Maths

$$100 = \underline{\quad} \text{ tens}$$

$$10,000 = \underline{\quad} \text{ hundreds}$$

$$\underline{\quad} = 10,000 \text{ tens}$$

$$\underline{\quad} = 100 \text{ hundreds}$$

$$\underline{\quad} = 1,000 \text{ ones}$$

$$10,00,000 = \underline{\quad} \text{ thousands}$$



$$\begin{aligned}
 10,00,000 &= 10 \times 1,00,000 = 10 \text{ lakhs} \\
 &= 100 \times 10,000 = 100 \text{ ten thousands} \\
 &= 1,000 \times 1,000 = 1,000 \text{ thousands} \\
 &= 10,000 \times 100 = 10,000 \text{ hundreds} \\
 &= 1,00,000 \times 10 = 1,00,000 \text{ tens} \\
 &= 10,00,000 \times 1 = 10,00,000 \text{ ones}
 \end{aligned}$$

## International Number System

The system of writing numbers we have learnt is called the Indian Number System. It is used only in India. It can further be extended to crores and ten crores. There is another number system called the International Number System which is used all over the world.

The table below shows the place value and the periods in the International Number System.

Periods →	MILLIONS (M)			THOUSANDS (Th)			ONES (O)		
Place Value →	Hundred Millions (HM)	Ten Millions (TM)	Millions (M)	Hundred Thousands (HTh)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)

To read large numbers as per the International Number System, we group them into three periods. Let's consider the number 8137546.

- Start from the extreme right and make a group of three digits. This is the first group. It consists of ones, tens and hundreds and is called the **Ones Period**. 8137 546
- The second group consists of the next three digits, i.e., thousands, ten thousands and hundred thousands. It is called the **Thousands Period**. 8 137 546
- The third group consists of the next three digits, i.e., millions, ten millions and hundred millions. It is called the **Millions Period**. 8 137 546

Thus, 8137546 is read as eight million one hundred thirty-seven thousand five hundred forty-six.

Periods →	MILLIONS (M)			THOUSANDS (Th)			ONES (O)		
Number	Hundred Millions (HM)	Ten Millions (TM)	Millions (M)	Hundred Thousands (HTh)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
	100,000,000	10,000,000	1,000,000	100,000	10,000	1,000	100	10	1
8,137,546			8	1	3	7	5	4	6



**Example 2:** Group the given numbers by putting commas according to the International Number System. Also, write the number names.

- (a) 43825      (b) 619807      (c) 2864317

**Solution:** (a) 43,825 → It is read as forty-three thousand eight hundred twenty-five.

(b) 619,807 → It is read as six hundred nineteen thousand eight hundred seven.

(c) 2,864,317 → It is read as two million eight hundred sixty-four thousand three hundred seventeen.

Let's determine the place value of the digits of the number 2,864,317.

Periods →	MILLIONS (M)			THOUSANDS (Th)			ONES (O)		
Number	Hundred Millions (HM)	Ten Millions (TM)	Millions (M)	Hundred Thousands (HTh)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
	100,000,000	10,000,000	1,000,000	100,000	10,000	1,000	100	10	1
2,864,317			2	8	6	4	3	1	7

The place value of 2 is 2 millions, i.e., 2,000,000.

The place value of 8 is 8 hundred thousands, i.e., 800,000.

The place value of 6 is 6 ten thousands, i.e., 60,000.

The place value of 4 is 4 thousands, i.e., 4,000.

The place value of 3 is 3 hundreds, i.e., 300.

The place value of 1 is 1 ten, i.e., 10.

The place value of 7 is 7 ones, i.e., 7.

## Comparing Indian and International Number Systems

Periods →	CRORES (C)		LAKHS (L)		THOUSANDS (Th)		ONES (O)		
Place Value →	Ten Crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
	10,00,00,000	1,00,00,000	10,00,000	1,00,000	10,000	1,000	100	10	1

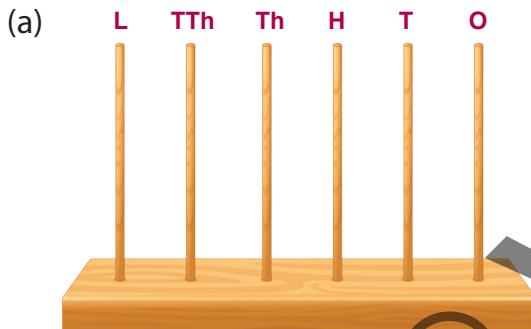
Periods →	MILLIONS (M)			THOUSANDS (Th)			ONES (O)		
Place Value →	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
	100,000,000	10,000,000	1,000,000	100,000	10,000	1,000	100	10	1



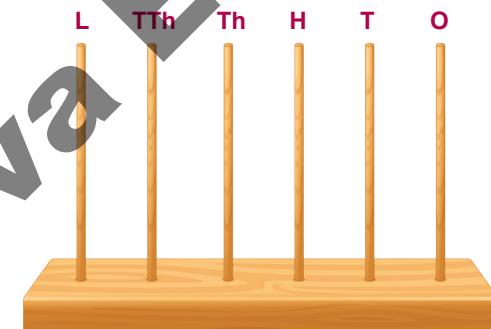
Numbers	Indian Number System	International Number System
(a) 92168	92,168 Ninety-two thousand one hundred sixty-eight	92,168 Ninety-two thousand one hundred sixty-eight
(b) 543296	5,43,296 Five lakh forty-three thousand two hundred ninety-six	543,296 Five hundred forty-three thousand two hundred ninety-six
(c) 7834265	78,34,265 Seventy-eight lakh thirty-four thousand two hundred sixty-five	7,834,265 Seven million eight hundred thirty-four thousand two hundred sixty-five

### EXERCISE 1.1

1. Represent the following numbers on the abacus.



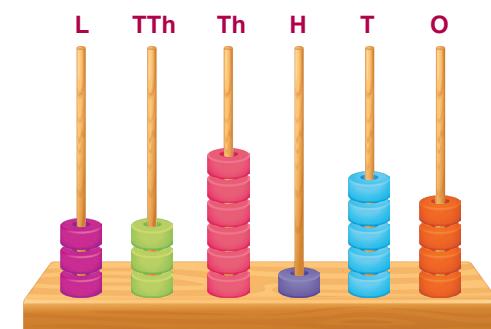
63,842



9,01,675

2. Write the number represented by the abacus.






3. Write the number names in the Indian Number System.

- (a) 14,269      (b) 2,34,075      (c) 29,708      (d) 4,81,167

4. Write the number names in the International Number System.

- (a) 27,430      (b) 9,16,752      (c) 35,089      (d) 5,731,684

5. Write the place value of 5 in the following numbers.
- (a) 6,53,127      (b) 95,072      (c) 590,783      (d) 5,821,074
6. Group the numbers by putting commas as per the Indian Number System and write their number names.
- (a) 97638      (b) 121375      (c) 4068179      (d) 534912  
 (e) 76209      (f) 6398705      (g) 8905678      (h) 2351645
7. Group the numbers by putting commas as per the International Number System and write their number names.
- (a) 23427      (b) 998916      (c) 820756      (d) 9087501  
 (e) 50249      (f) 543486      (g) 4819675      (h) 645678
8. Write numerals for the following number names.
- (a) Two million thirty-seven thousand five hundred twenty-six \_\_\_\_\_  
 (b) Fifty-four lakh seventy-five thousand six hundred eighty-nine \_\_\_\_\_  
 (c) Twenty-two crore eight lakh nine hundred sixteen \_\_\_\_\_  
 (d) Seventy-eight lakh thirty-three thousand sixty-eight \_\_\_\_\_  
 (e) Nine million twenty-eight \_\_\_\_\_
9. Fill in the blanks.
- (a) In the Indian Number System, the place which is just to the left of thousands place is \_\_\_\_\_.  
 (b) 10,000 can also be written as \_\_\_\_\_ hundreds.  
 (c) Six million two hundred five thousand ninety-eight in numeral is written as \_\_\_\_\_.  
 (d) The place value of 6 in 2,86,304 is \_\_\_\_\_.  
 (e) 1,00,000 can also be written as \_\_\_\_\_ thousands.

### Standard Form and Expanded Form

Writing a number as the sum of the place values of its digits is called the expanded form of that number.

To write the short form of an expanded number, write the face value of each digit in its correct place.

**Example 3:** Write 63,872 and 4,90,518 in the expanded form.

Solution:	Standard form	Expanded form	Expanded form in words
	63,872	= 60,000 + 3,000 + 800 + 70 + 2	6 ten thousands + 3 thousands + 8 hundreds + 7 tens + 2 ones
	4,90,518	= 4,00,000 + 90,000 + 0 + 500 + 10 + 8	4 lakhs + 9 ten thousands + 5 hundreds + 1 ten + 8 ones



## Comparison of Numbers

You already know how to compare numbers upto four digits. Let's now learn how to compare numbers with five or six digits.

### Comparison of numbers with different number of digits

If two numbers have different number of digits, the number with more digits is greater.

Consider the numbers 1,34,791 and 8,264.

The number of digits in 1,34,791 = 6 and in 8,264 = 4

Since  $6 > 4$ , therefore,  $1,34,791 > 8,264$ .

### Comparison of numbers with the same number of digits

1. Compare the face values of the leftmost digits, i.e., the digits at the lakhs place.

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

#### Remember

To compare numbers having the same number of digits, always start from the leftmost digit.



So,  $8,07,642 > 7,92,843$ .

2. If the face values of the digits at the lakhs place are the same, then compare the face values of the digits at the ten thousands place.

L	TTh	Th	H	T	O
7	9	2	8	4	3
7	6	3	2	1	4

So,  $7,92,843 > 7,63,214$ .

3. If the face values of the digits at the lakhs and ten thousands place are the same, then compare the face values of the digits at the thousands place.

L	TTh	Th	H	T	O
7	9	2	8	4	3
7	9	3	2	1	4

Same               $3 > 2$

So,  $7,93,214 > 7,92,843$ .



4. If the face values of the digits at the lakhs, ten thousands and thousands place are the same, then compare the face values of the digits at the hundreds place.

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

So, 7,92,843 > 7,92,315.

Similarly, we can compare the face values of the digits at the tens and ones place to know which number is greater.

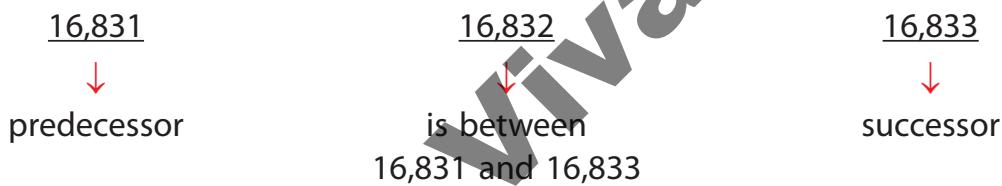
## Predecessor and Successor

A number one less than a given number comes just before it and is called its predecessor.

A number one more than a given number comes just after it and is called its *successor*.

Consider a 5-digit number 16,832.

Its predecessor =  $16,832 - 1 = 16,831$  and its successor =  $16,832 + 1 = 16,833$ .



# Ordering of Numbers

Numbers can be arranged either in ascending order (smaller to bigger) or descending order (bigger to smaller). For example,

28,963; 28,972; 29,531; 29,537 are in ascending order.

78,421; 78,375; 76,240; 75,189 are in descending order.

## EXERCISE 1.2



- (d)  $4 \text{ TTh} + 4 \text{ Th} + 2 \text{ T} + 6 \text{ O}$   
(e)  $9,000,000 + 600,000 + 50,000 + 7,000 + 200 + 10 + 3$
3. Put the correct sign  $>$ ,  $<$  or  $=$ .
- (a)  $5,681$    $5,816$       (b)  $69,410$    $69,342$       (c)  $42,215$    $43,402$   
(d)  $9,00,375$    $9,00,375$     (e)  $907,632$    $815,426$     (f)  $3,92,085$    $3,93,805$
4. Arrange in ascending order.
- (a)  $4,281; 3,971; 4,183; 2,697; 3,824$   
(b)  $9,984; 10,426; 7,480; 11,397; 10,269$   
(c)  $84,631; 83,462; 85,316; 83,625; 94,940$   
(d)  $3,20,284; 3,19,706; 3,42,053; 3,39,513; 3,07,654$   
(e)  $6,125,041; 6,215,104; 5,031,325; 4,106,219; 718,045$
5. Arrange in descending order.
- (a)  $7,063; 7,128; 8,375; 8,503; 7,219$   
(b)  $18,234; 17,945; 17,946; 18,432; 18,963$   
(c)  $2,23,705; 2,32,817; 2,40,098; 2,54,419; 2,17,390$   
(d)  $9,08,743; 9,14,827; 8,23,999; 9,99,872; 8,13,948$   
(e)  $8,132,415; 8,132,306; 9,015,246; 9,510,163; 8,312,415$
6. Write the predecessor and successor of the following numbers.
- (a)  $8,679$       (b)  $23,080$       (c)  $45,199$       (d)  $4,98,998$       (e)  $5,00,899$
7. Fill in the blanks.
- (a) The number that is between  $8,999$  and  $9,001$  is \_\_\_\_\_.  
(b) The predecessor of  $6,89,490$  is \_\_\_\_\_.  
(c) The successor of  $82,769$  is \_\_\_\_\_.  
(d) Writing a number as the sum of the place values of its digits is called the \_\_\_\_\_ form of that number.
8. Complete the series.
- (a)  $1,635; 1,636; 1,637$ ; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_  
(b)  $25,044; 25,046; 25,048$ ; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_  
(c)  $3,72,150; 3,72,160; 3,72,170$ ; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_  
(d)  $8,95,720; 8,95,725; 8,95,730$ ; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_  
(e)  $4,42,141; 5,42,141; 6,42,141$ ; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_

## Forming with Numbers

Look at the number  $68,715$ . This number is made up of five digits namely,  $6, 8, 7, 1$  and  $5$ .

By arranging these digits in different positions, many numbers can be formed.

68,751; 68,175; 68,157; 67,851; 67,158; 67,518 and so on.

The smallest 5-digit number that can be formed using these digits is 15,678 and the greatest 5-digit number that can be formed is 87,651.

### Remember

- To form the greatest number, arrange the given digits in descending order.
- To form the smallest number, arrange the given digits in ascending order.



**Example 4:** Write the smallest and the greatest 5-digit numbers formed using the digits 2, 0, 8, 6 and 4.

**Solution:** The smallest 5-digit number formed using the digits 2, 0, 8, 6 and 4 is 20,468 and the greatest 5-digit number formed is 86,420.

### Quick Tip

To form the smallest 5-digit number never place 0 at the ten thousands place, as it will then become a 4-digit number. So, place 0 at the thousands place.



**Example 5:** Write the smallest and the greatest 6-digit numbers formed using the digits 9, 3, 4, 3, 7 and 5.

**Solution:** The smallest 6-digit number formed using the digits, 9, 3, 4, 3, 7 and 5 is 3,34,579 and the greatest 6-digit number formed is 9,75,433.

### Mental Maths

Form the smallest 5-digit number using the digits 0, 0, 1, 6 and 4.



## Rounding Off Numbers



When we are not sure of the exact number, we use the word about. It gives a rough estimation of the number. We can also say that the number has been rounded off.



This rack has about 100 books.



### Rounding off to the nearest 10

To round off a number to the nearest 10, look at the digit at the ones place.

- If it is 4 or less, then replace it with 0 without changing the digit at the tens place.
- If it is 5 or more, then place a 0 at the ones place and add 1 to the digit at the tens place.

**Example 6:** Round off (a) 154, (b) 2,356 and (c) 30,795 to the nearest 10.

**Solution:**  
(a) 154 is rounded off to 150 since the digit at the ones place is 4.  
(b) 2,356 is rounded off to 2,360 since the digit at the ones place is 6.  
(c) 30,795 is rounded off to 30,800 since the digit at the ones place is 5.

## Rounding off to the nearest 100

To round off numbers to the nearest 100, look at the digits at the tens place.

- If it is 4 or less, then place zeros at the tens and ones place. The digit at the hundreds place remains the same.
- If it is 5 or more, then place zeros at the tens and ones place. Add 1 to the digit at the hundreds place.

**Example 7:** Round off (a) 826, (b) 4,768 and (c) 2,80,934 to the nearest 100.

**Solution:** (a) 826 is rounded off to 800 since the digit at the tens place is 2.

(b) 4,768 is rounded off to 4,800 since the digit at the tens place is 6.

(c) 2,80,934 is rounded off to 2,80,900 since the digit at the tens place is 3.

## Rounding off to the nearest 1,000

To round off numbers to the nearest 1,000, look at the digits at the hundreds, tens and ones place.

- If it is 4 or less, then place zeros at the hundreds, tens and ones place. Keep the digit at the thousands place as it is.
- If it is 5 or more, then place zeros at the hundreds, tens and ones place. Also, add 1 to the digit at the thousands place.

**Example 8:** Round off (a) 6,578 and (b) 24,352 to the nearest 1,000.

**Solution:** (a) 6,578 is rounded off to 7,000 since the digit at the hundreds place is 5.

(b) 24,352 is rounded off to 24,000 since the digit at the hundreds place is 3.

### EXERCISE 1.3

1. Write the smallest and the greatest 5-digit numbers formed using the given digits.

- |                   |                   |
|-------------------|-------------------|
| (a) 7, 4, 3, 1, 8 | (b) 5, 0, 2, 8, 3 |
| (c) 9, 1, 6, 2, 0 | (d) 8, 0, 7, 0, 4 |

2. Write the smallest and the greatest 6-digit numbers formed using the given digits.

- |                      |                      |
|----------------------|----------------------|
| (a) 2, 3, 7, 8, 5, 1 | (b) 6, 0, 9, 3, 0, 4 |
| (c) 8, 2, 1, 3, 2, 5 | (d) 9, 4, 6, 5, 0, 9 |

3. Round off the given numbers to the nearest 10.

- |         |           |            |              |
|---------|-----------|------------|--------------|
| (a) 547 | (b) 6,912 | (c) 43,785 | (d) 1,90,273 |
|---------|-----------|------------|--------------|

4. Round off the given numbers to the nearest 100.

- |         |           |            |              |
|---------|-----------|------------|--------------|
| (a) 496 | (b) 7,319 | (c) 75,849 | (d) 4,46,755 |
|---------|-----------|------------|--------------|

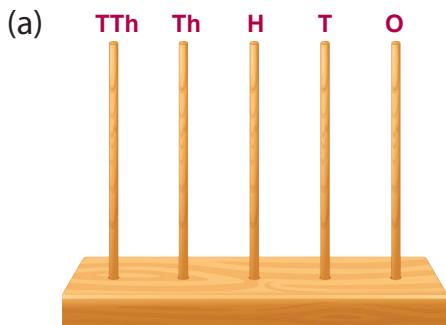
5. Round off the given numbers to the nearest 1,000.

- |           |            |              |              |
|-----------|------------|--------------|--------------|
| (a) 7,435 | (b) 12,752 | (c) 4,75,926 | (d) 8,99,128 |
|-----------|------------|--------------|--------------|

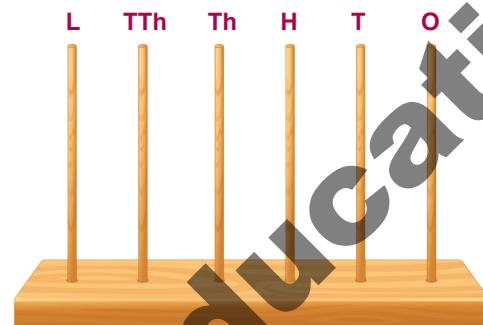


# LET'S EVALUATE

1. Represent the following numbers on the abacus.



54,208



8,42,739

**2.** Write the number names in the Indian and International Number System.

- (a) 6475                  (b) 92087                  (c) 549306                  (d) 1274583

3. Write in the expanded form.

- (a) 8,347      (b) 15,209      (c) 7,53,621      (d) 37,35,438

4. Write the smallest and the greatest 6-digit numbers that can be formed using the digits 8, 4, 0, 7, 5, 2. Use each digit only once.

5. Arrange in ascending order.

- (a) 32,491; 31,491; 38,149; 32,149; 31,941  
(b) 9,82,467; 9,82,476; 8,93,756; 8,99,324; 9,92,946

6. Arrange in descending order.

- (a) 66,075; 69,328; 69,915; 66,208; 67,143  
(b) 10,081; 10,180; 10,089; 10,918; 10,810

7. Arjun wants to treat his friends on his birthday. Using the given information, estimate the total amount he needs for the treat.

- 4 packets of chips costing ₹ 78 (rounded off to the nearest 10)
  - 6 samosas costing ₹ 62 (rounded off to the nearest 10)
  - 4 pizzas costing ₹ 1,549 (rounded off to the nearest 1,000)
  - 5 plates of momos costing ₹ 135 (rounded off to the nearest 100)
  - 3 cartons of juice costing ₹ 178 (rounded off to the nearest 100)



## 8. Write True or False.

- (a) The successor of 2,86,789 is 2,86,788.
  - (b) The smallest 6-digit number is 1,00,000.
  - (c) 82,354 rounded off to the nearest hundred is 92,400.
  - (d) Number of tens in ten thousand is 100.
  - (e) The place value of 4 in 4,826,139 is four millions.

**9. Choose the correct answer.**

- (a)  $50,000 + 700 + 80 + 4$  in standard form is:

(i) 50,784      (ii) 57,084      (iii) 57,804

(b) The predecessor of 1,20,980 is:

(i) 1,20,981      (ii) 1,20,990      (iii) 1,20,979

(c) The place value of 5 in 15,68,324 is:

(i) 50,000      (ii) 5,00,000      (iii) 5,000

(d) 8,939 rounded off to the nearest 100 is:

(i) 8,900      (ii) 8,800      (iii) 8,940

(e) The largest 6-digit number formed using the digits 2, 0, 1, 2, 4, 8 is:

(i) 8,42,120      (ii) 8,42,210      (iii) 8,41,220

**10. Fill in the blanks.**

- (a) Two million sixty-seven thousand one hundred thirty-five is written in numbers as \_\_\_\_\_.

(b) 7,84,920 is \_\_\_\_\_ than 7,85,647.

(c) The successor of 472,199 is \_\_\_\_\_.

(d) The predecessor of 35,906,187 is \_\_\_\_\_.

(e) The largest number among 7,20,147; 7,02,147; 7,10,417; 7,02,714 is \_\_\_\_\_.

(f) \_\_\_\_\_ comes between 872,379 and 872,381.

(g)  $10,000 =$  \_\_\_\_\_ hundreds

(h) 1 million = \_\_\_\_\_ lakhs



1. Rohit is shorter than Tia but taller than Karishma. Tia is not as tall as Varun but she is taller than Karishma. Arrange them from tallest to shortest.

- Arushi has 5,625 stamps. Honey has 35 stamps more than Arushi. Devesh has 120 stamps less than Honey. Aditya has 50 more stamps than Devesh. Who has the largest and the smallest number of stamps?
- List all the numbers that can be rounded off to the given numbers.
  - 150
  - 400
  - 80
  - 1,200



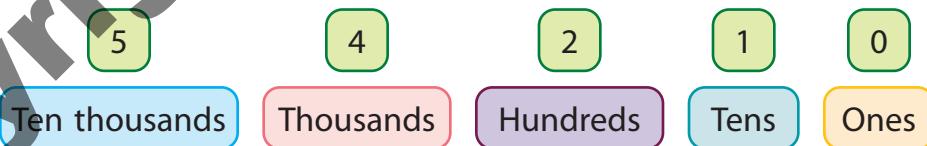
## GROUP ACTIVITY

To check the understanding of number names and place value

**Things We Need:** Chart paper (old greeting cards or visiting cards can also be used), a pencil and crayons

### How To Do:

- Make a set of 10 number cards from 0 to 9, by writing one number on each card. Shuffle the cards and place them facing down.
- Also, make 6 place value cards from ones to lakhs, by writing one place value on each card.
- Divide the class into groups of four.
- Call a group and ask a child from the group to come and pick any 5 number cards. Ask the child to form the greatest 5-digit number using the cards. For example, if the number cards picked up are 4, 2, 5, 1 and 0 then the greatest 5-digit number formed will be 54210.
- Ask the second child to write the place value of all the digits of the greatest 5-digit number using the place value cards.



- The third child will form the smallest 5-digit number using the same cards.
- The fourth child will write the number name of the smallest 5-digit number.
- Repeat the same activity with all the groups. Ask some groups to pick 6 number cards and form 6-digit numbers.
- Give marks to each group on the basis of their answers. The group with the maximum marks will be the winner.



# Roman Numerals



## Let's Recall ...

Roman numeral system was developed by the ancient Romans. It is based on seven letters of the alphabet. All the numbers are written using either one letter or a combination of letters. However, there is no letter representing zero.

Roman Numeral	I	V	X	L	C	D	M
Hindu-Arabic Numeral	1	5	10	50	100	500	1,000



## Roman Numerals up to Hundred

1	2	3	4	5	6	7	8	9	10
I	II	III	IV	V	VI	VII	VIII	IX	X
11	12	13	14	15	16	17	18	19	20
XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
21	22	23	24	25	26	27	28	29	30
XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX
31	32	33	34	35	36	37	38	39	40
XXXI	XXXII	XXXIII	XXXIV	XXXV	XXXVI	XXXVII	XXXVIII	XXXIX	XL
41	42	43	44	45	46	47	48	49	50
XLI	XLII	XLIII	XLIV	XLV	XLVI	XLVII	XLVIII	XLIX	L
51	52	53	54	55	56	57	58	59	60
LI	LII	LIII	LIV	LV	LVI	LVII	LVIII	LIX	LX
61	62	63	64	65	66	67	68	69	70
LXI	LXII	LXIII	LXIV	LXV	LXVI	LXVII	LXVIII	LXIX	LXX
71	72	73	74	75	76	77	78	79	80
LXXI	LXXII	LXXIII	LXXIV	LXXV	LXXVI	LXXVII	LXXVIII	LXXIX	LXXX
81	82	83	84	85	86	87	88	89	90
LXXXI	LXXXII	LXXXIII	LXXXIV	LXXXV	LXXXVI	LXXXVII	LXXXVIII	LXXXIX	XC
91	92	93	94	95	96	97	98	99	100
XCI	XCII	XCIII	XCIV	XCV	XCVI	XCVII	XCVIII	XCIX	C



In modern Roman numeral system, for large numbers a bar is placed above the base numeral indicating multiplication by 1,000, although the ancient Romans themselves often just used M for it.

V	Five thousand
X	Ten thousand
L	Fifty thousand
C	One hundred thousand
D	Five hundred thousand
M	One million

### Maths Fun

How can half of XII be 7?



## Conversion of Roman Numeral to Hindu-Arabic Numeral

- If a smaller number is to the left of a larger number, subtract the value of the smaller number from the larger number.

Consider the number IX. Since I < X,  $10 - 1 = 9$ . Therefore, IX = 9.

Also, in XL, X < L. Therefore, XL =  $50 - 10 = 40$ .

- Subtract only the values of letters I, X and C. Values of V, L and D cannot be subtracted.

Consider the numeral 45.

$$45 = XLV [(50 - 10) + 5]$$

$$45 \neq VL (50 - 5)$$

- Subtract the value of only a single smaller numeral from a single bigger numeral. In other words, you can subtract only once from a numeral.

Consider the numeral 8.

$$8 = VIII (5 + 3)$$

$$8 \neq IIX (10 - 1 - 1)$$

- Do not subtract a numeral from another numeral which is more than 10 times greater, i.e., I can be subtracted from V and X but not from L, C, D and M. Similarly, X can be subtracted from L and C but not from D, M and so on.

- If a smaller number is to the right of a larger number, add the value of the smaller number to the larger number.

Consider the number XI.

Since X > I,  $10 + 1 = 11$ . Therefore, XI = 11.

- If the number has more than two letters, add the value of each letter to find the number.

Consider the number LXVIII.

$$LXVIII = 50 + 10 + 5 + 1 + 1 + 1$$

$$= 68$$

### Remember

- We cannot repeat a symbol more than 3 times to write a Roman numeral.
- Symbols V, L and D cannot be repeated at all.



$$\begin{aligned}\text{Also, } \text{CDI} &= (\text{CD}) + 1 \\ &= (500 - 100) + 1 \\ &= 400 + 1 = 401\end{aligned}$$

## Conversion of Hindu-Arabic Numeral to Roman Numeral

Numbers 1, 2, 3 are written in Roman numerals as I, II and III, respectively. Now 4 cannot be written as IIII since the symbol I can be repeated only three times in a row.

As,  $4 < 5$  and  $4 = 5 - 1 = V - I$

Therefore,  $4 = IV$ .

Numbers 6, 7, 8 are written as VI, VII and VIII.

But 9 cannot be written as VIIII as I cannot be repeated more than three times.

As,  $9 < 10$  and  $9 = 10 - 1 = X - I$

Therefore,  $9 = IX$ .

Similarly,  $40 = 50 - 10 = L - X = XL$  and  $90 = 100 - 10 = C - X = XC$

To convert a large Hindu-Arabic numeral to a Roman numeral, convert each digit separately and then combine the letters.

**Example 1:** Convert 752 into Roman numeral.

**Solution:**  $752 = 700 + 50 + 2 = DCC + L + II = DCCLII$

### A Challenge!

Write 999 in Roman numerals.



## Addition and Subtraction of Roman Numerals

To add or subtract Roman numerals, follow these steps.

- Change the number into Hindu-Arabic numbers.
- Add or subtract accordingly.
- Convert the answer into Roman numeral.

**Example 2:**  $XLV + LXIII$

**Solution:**  $XLV = 45$

$LXIII = 63$

$45 + 63 = 108 = CVIII$

Therefore,  $XLV + LXIII = CVIII$

### Mental Maths

Find the sum.

(a)  $MIX + I =$



(b)  $MIX - I =$

**Example 3:**  $CCXCVI - CLXXIV$

**Solution:**  $CCXCVI = 296$

$CLXXIV = 174$

$296 - 174 = 122 = CXXII$

Therefore,  $CCXCVI - CLXXIV = CXXII$



## Modern Usage

Roman numerals were commonly used until 14th century. Since they were not enough to write large numbers, they were replaced by Hindu-Arabic numbers. However, we still see them being used in certain places in modern times. Some of them are given below.

- Names of Monarchs and Popes like, Elizabeth II and Benedict XVI
- Recurring grand event such as Olympic games
- Hour marks on clock faces and timepieces
- Sometimes page numbering and chapter numbering



## LET'S EVALUATE



1. Convert the following Hindu-Arabic numbers to Roman numerals.

- |                 |                 |                 |
|-----------------|-----------------|-----------------|
| (a) 15 = _____  | (b) 49 = _____  | (c) 103 = _____ |
| (d) 305 = _____ | (e) 228 = _____ | (f) 450 = _____ |
| (g) 637 = _____ | (h) 989 = _____ | (i) 354 = _____ |
| (j) 509 = _____ | (k) 83 = _____  | (l) 179 = _____ |

2. Convert the following Roman numerals to Hindu-Arabic numbers.

- |                     |                  |                     |
|---------------------|------------------|---------------------|
| (a) XIV = _____     | (b) LXII = _____ | (c) XCVIII = _____  |
| (d) CCCXXXI = _____ | (e) CDV = _____  | (f) CMLXXVI = _____ |
| (g) DCCI = _____    | (h) CMXV = _____ | (i) CD = _____      |
| (j) LIII = _____    | (k) XLIX = _____ | (l) DCII = _____    |

3. Find the value of the following Roman numerals.

- |                   |                  |                 |
|-------------------|------------------|-----------------|
| (a) LXXXIV + XXVI | (b) XCIII + LXXI | (c) CCXCI - CVI |
| (d) DXLVI - CDXX  | (e) LX + XII     | (f) XXIX + XIV  |
| (g) XL - XIX      | (h) XCIX - XIII  | (i) XXXIX - XIX |

4. What comes before or after the given Roman numerals?

- |                    |                |                  |
|--------------------|----------------|------------------|
| (a) _____, XXXIV   | (b) _____, C   | (c) XXXIX, _____ |
| (d) CCCXCIX, _____ | (e) XXI, _____ | (f) XLIX, _____  |
| (g) _____, LXX     | (h) _____, XC  | (i) _____, DXLVI |

5. Put the correct sign  $<$ ,  $>$  or  $=$ .

(a)  $46 \square XXV$

(b)  $CCLV \square 245$

(c)  $XC \square CX$

(d)  $CL \square 150$

(e)  $XLII + 12 \square LXXIV - XXXVIII$

(f)  $C \square 50$

6. Change the Hindu-Arabic numerals to Roman numerals and solve the following. Write the answer in Roman numerals.

(a)  $400 + 13$

(b)  $50 - 27$

(c)  $37 + 12$

(d)  $29 - 9$

(e)  $733 - 20$

(f)  $100 + 65$

(g)  $80 - 30$

(h)  $250 + 45$



1. There are seven letters used as Roman numerals I, V, X, L, C, D and M.

(a) Which is the biggest correctly formed Roman numeral using each numeral once?

(b) Which is the smallest correctly formed Roman numeral using each numeral once?

2. Form two Roman numerals that are also words in English. For example, MIX is a Roman numeral and an English word.

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# Worksheet

## Roman Numerals

Rishabh and Arpita have completed their worksheets on Roman numerals. Check them by putting ✓ for correct and ✗ for wrong answers.



1. Write Roman numeral for the following.
  - (a)  $53 = \underline{\text{LIII}}$
  - (b)  $178 = \underline{\text{CLXXVIII}}$
  - (c)  $225 = \underline{\text{CCXXV}}$
  - (d)  $433 = \underline{\text{CDXXXIII}}$
  
2. Convert the following Roman numerals to Hindu-Arabic numerals.
  - (a)  $\text{LX} = \underline{60}$
  - (b)  $\text{LXXIX} = \underline{59}$
  - (c)  $\text{CDXX} = \underline{420}$
  - (d)  $\text{XXXVIII} = \underline{38}$



1. Write Roman numeral for the following.
  - (a)  $53 = \underline{\text{LIII}}$
  - (b)  $178 = \underline{\text{LCXXVIII}}$
  - (c)  $225 = \underline{\text{CCXVX}}$
  - (d)  $433 = \underline{\text{CDXXXIII}}$
  
2. Convert the following Roman numerals to Hindu-Arabic numerals.
  - (a)  $\text{LX} = \underline{40}$
  - (b)  $\text{LXXIX} = \underline{79}$
  - (c)  $\text{CDXX} = \underline{620}$
  - (d)  $\text{XXXVIII} = \underline{38}$

Who has given more correct answers? \_\_\_\_\_

## 3



# Addition



## Let's Recall ...

- Addition means finding the total of two or more numbers. This total is called **sum**.
- The numbers which are added are called **addends**.
- The sum of two numbers remains same even if the order of addends is changed.
- Adding 0 to a number gives the same number.
- Adding 1 to a number gives the next number.
- Any number except 1 can be written as the sum of two or more numbers in many different ways.

**1** Add the following numbers.

(a)  $224 + 887$       (b)  $485 + 505 + 975$       (c)  $8,462 + 4,596$       (d)  $9,084 + 7,638$

**2** Add using expanded form.

(a) $376 + 958$	(b) $1,632 + 4,789$
(c) $2,691 + 350$	(d) $132 + 5,701 + 3,526$

**3** Find the estimated sum of the following numbers by rounding off the numbers to the nearest 100.

(a) $643 + 482$	(b) $1,708 + 2,436$
(c) $1,451 + 9,824$	(d) $2,516 + 938 + 187$

**4** Sukrit travelled 1,578 km by train, 1,036 km by bus and another 729 km by car. How much distance did he travel in his whole journey?

**5** What number is 2,045 more than 6,287?

**6** Fill in the blanks.

(a) $7,532 + 0 =$ _____	(b) Sum of 438 and 527 is an _____ number. (odd/even)
(c) $1,823 + 6,479 =$ _____ + 1,823	(d) $9,987 + 100 =$ _____

## Addition of Numbers (without carry over)

To add large numbers, first add the ones, then the tens, the hundreds, the thousands and continue moving to the left.

**Example 1:** Find the sum of 37,241 and 21,356. Write the addends and the sum obtained in words.

**Solution:** Step 1: Add the ones.  $1 + 6 = 7$

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

Step 2: Add the tens.  $4 + 5 = 9$

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

Step 3: Add the hundreds.  $2 + 3 = 5$

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

Step 4: Add the thousands.  $7 + 1 = 8$

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

Step 5: Add the ten thousands.  $3 + 2 = 5$

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

So,  $37,241 + 21,356 = 58,597$ .

↑  
addends  
↓  
sum

### Addends

37,241 → Thirty-seven thousand two hundred forty-one

21,356 → Twenty-one thousand three hundred fifty-six

### Sum

58,597 → Fifty-eight thousand five hundred ninety-seven

**Example 2:** Find the sum of 1,62,875 and 4,15,123. Write the sum obtained in words.

**Solution:**

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

So,  $1,62,875 + 4,15,123 = 5,77,998$ .

↑  
addends  
↓  
sum

### Sum

5,77,998 → Five lakh seventy-seven thousand nine hundred ninety-eight

## Addition of Numbers (with carry over)

Look at the given examples to see how to add large numbers with carry over.

**Example 3:** Find the sum of 42,618 and 37,956.

**Solution:** Step 1: Add the ones.

$$8 + 6 = 14$$

Step 2: 14 is a 2-digit number. Keep 4 in the ones place and carry over 1 to the tens place. Add the tens and the 1 carried over.

$$\textcircled{1} + 1 + 5 = 7$$

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

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

Step 3: As nothing is carried over, we add the hundreds.

$$6 + 9 = 15$$

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

Step 4: 15 is a 2-digit number. Keep 5 in the hundreds place and carry over 1 to the thousands place.

Add the thousands and the 1 carried over.  $\textcircled{1} + 2 + 7 = 10$

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

Step 5: 10 is a 2-digit number. Keep 0 in the thousands place and carry over 1 to the ten thousands place.  
Add the ten thousands and the 1 carried over.  $\textcircled{1} + 4 + 3 = 8$

$$\text{So, } 42,618 + 37,956 = 80,574$$

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

**Example 4:** Find the sum of 5,70,183 and 2,69,476.

**Solution:**

L	TTh	Th	H	T	O
1 5	7	0	1	8	3
+ 2	6	9	4	7	6
	8	3	9	5	9

$$\text{So, } 5,70,183 + 2,69,476 = 8,39,659.$$

### Remember

Addition using carry over method is also called addition by regrouping.



## EXERCISE 3.1

1. Add the following numbers.

- |                       |                           |                      |
|-----------------------|---------------------------|----------------------|
| (a) 25,173 and 37,045 | (b) 3,09,278 and 5,63,197 | (c) 63,971 and 2,108 |
| (d) 1,38,026 and 219  | (e) 4,20,153 and 75,692   | (f) 84,736 and 99    |
| (g) 14,285 and 1,834  | (h) 37,542 and 8,01,342   | (i) 85,321 and 7,037 |

2. Write the addends and the sum obtained.

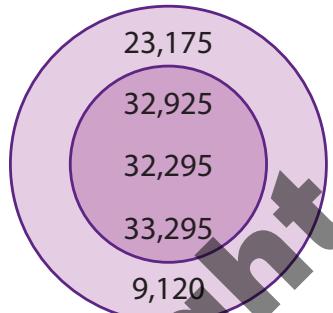
- |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| (a) 4,00,723 + 3,68,912 | (b) 2,89,916 + 6,30,249 | (c) 75,648 + 28,503     |
| (d) 63,254 + 29,046     | (e) 2,20,496 + 3,406    | (f) 6,10,420 + 2,42,108 |

3. Add and write the answer in words.

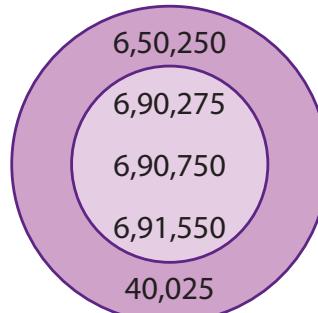
- |  |
|--|
| (a) Thirty-five thousand four hundred twelve and fifty-two thousand six hundred ninety                               |
| (b) Four lakh ninety thousand three hundred sixty and two lakh twenty-six thousand seven hundred eighty-four         |
| (c) Three lakh forty-six thousand seven hundred forty-two and two lakh sixty-seven thousand eight hundred fifty-nine |

4. Tick the number in the inner circle which is the sum of the numbers given in the outer circle.

(a)



(b)



### Addition of Three or More Numbers

We add three or more large numbers in the same way we add two numbers.

**Example 5:** Add 7,26,438; 2,19,756 and 38,437.

**Solution:**

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

$$\text{So, } 7,26,438 + 2,19,756 + 38,437 = 9,84,631.$$

### Common Mistake!

1	1	1	1	5
8	2	6	4	5
+	7	9	8	6

1 8 0 6 3 1 (x)

Add the carry over and do not combine it with the digit to form a 2-digit number.



**Example 6:** Add 6,34,925; 1,47,156; 79,685 and 1,03,219.

**Solution:**

L	TTh	Th	H	T	O
① 6	② 3	① 4	① 9	② 2	5
1	4	7	1	5	6
	7	9	6	8	5
+ 1	0	3	2	1	9
9	6	4	9	8	5

$$\text{So, } 6,34,925 + 1,47,156 + 79,685 + 1,03,219 = 9,64,985.$$

### Finding the Missing Digits

We can find the missing digits in an addition sum by following the given formula:

Sum – one addend = the other addend

**Example 7:** Find the missing digits.

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

**Solution:** Step 1: Look at the ones column.

$$4 + \boxed{?} = 1$$

1 is smaller than 4.

So, we find a number which when added to 4 gives a sum whose unit digit is 1.

$$4 + \boxed{7} = 11$$

11 is a 2-digit number. Keep the 1 one and carry over the 1 ten.

So, we write 7 in the blank space.

Step 2: Look at the tens column.

$$1 + \boxed{?} + 5 = 4$$

$$6 + \boxed{?} = 4$$

4 is smaller than 6.

So, we find a number which when added to 6 gives a sum whose unit digit is 4.

$$6 + \boxed{8} = 14$$

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

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



14 is a 2-digit number. Keep the 4 ones and carry over the 1 ten.

So, we write 8 in the blank space.

Step 3: Add the hundreds including the 1 carried over.

$$1 + 3 + 2 = 6$$

So, we write 6 in the blank space.

Step 4: Look at the thousands column.

$$\boxed{?} + 6 = 8$$

8 is more than 6.

Also, sum – one addend = other addend

$$\boxed{?} = 8 - 6 = 2$$

So, we write 2 in the blank space.

Step 5: Look at the ten thousands column.

$$1 + \boxed{?} = 6$$

6 is more than 1.

$$\boxed{?} = 6 - 1 = 5$$

So, we write 5 in the blank space.

TTh	Th	H	T	O
1	?	①3	①8	4
?	6	2	5	7
6	8	6	4	1

TTh	Th	H	T	O
1	2	①3	①8	4
?	6	2	5	7
6	8	6	4	1

TTh	Th	H	T	O
1	2	①3	①8	4
5	6	2	5	7
6	8	6	4	1

**Example 8:** Find the missing digits.

L	TTh	Th	H	T	O
5	?	3	2	6	?
?	5	?	3	?	3
+	2	0	2	?	0
	8	8	9	8	8
					9

**Solution:**

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

### Estimating the Sum

Estimation gives a rough (or approximate) value of the sum. We can round off a number to any place depending upon the degree of accuracy required.

Estimating the sum means rounding off the given numbers to the nearest 10; 100; 1,000, etc. and then adding the numbers obtained.

**Example 9:** A box contains 2,645 red balls, 1,378 blue balls and 1,798 green balls. How many balls are there in the box? Calculate using estimation method by rounding off to the nearest 100. Check whether the estimated sum is close to the actual sum or not.

**Solution:**

Number of red balls (rounded off)	=	<u>2 6 0 0</u>
Number of blue balls (rounded off)	=	1 4 0 0
Number of green balls (rounded off)	=	+ 1 8 0 0
Total balls in the box	=	<u>5 8 0 0</u>

There are approximately 5,800 balls in the box.

Let's now find the actual number of balls in the box.

<u>1 2 2</u>		
Red balls	=	2 6 4 5
Blue balls	=	1 3 7 8
Green balls	=	+ 1 7 9 8
Total balls	=	<u>5 8 2 1</u>

5,821 when rounded off to the nearest 100 gives 5,800.

So, the estimated number of balls is very close to the actual number of balls in the box.



### Solving Word Problems

**Example 10:** A publisher sold 46,750 books in the month of January; 1,52,430 books in the month of February and 1,60,000 books in the month of March. How many books did the publisher sell in 3 months?

**Solution:**

Number of books sold in January	=	<u>4 6 7 5 0</u>
Number of books sold in February	=	1 5 2 4 3 0
Number of books sold in March	=	+ 1 6 0 0 0 0
Total number of books sold	=	<u>3 5 9 1 8 0</u>

L	TTh	Th	H	T	O
0	4	6	7	5	0
1	5	2	4	3	0
1	6	0	0	0	0
<u>3</u>	<u>5</u>	<u>9</u>	<u>1</u>	<u>8</u>	<u>0</u>

So, the publisher sold 3,59,180 books in 3 months.

**Example 11:** The population of a small town in the year 2011 was 2,35,170. In the next year, the population of the town increased by 62,000. What was the population in the year 2012?

	L	TTh	Th	H	T	O
Population of the town in 2011	=	2	3	5	1	7
Increase in population in 2012	=	+ 6	2	0	0	0
Population of the town in 2012	=	2	9	7	1	7

So, the population of the town in the year 2012 was 2,97,170.

## Framing Word Problems

We already know how to frame word problems for given addition facts. Let's see an example to review it.

**Example 12:** Frame 2 word problems for  $1,289 + 1,364 = ?$

- Solution:**
- There are 1,289 students in school A and 1,364 students in school B. How many students are there in the two schools?
  - Raju had ₹ 1,289 in his account. He deposited ₹ 1,364 more. How much money does he have in his account now?

### Quick Tip

Be logical when you frame word problems. For example,  
1,289 students in a school ✓  
1,289 chips in a packet ✗



## EXERCISE 3.2

1. Find the sum.

(a)

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

(b)

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

(c)

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

(d)

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

(e)

L	TTh	Th	H	T	O
1	0	5	0	3	2
2	6	7	9	1	4
+ 3	1	0	5	7	8

(f)

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

(g)

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

(h)

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

2. Find the missing digits.

(a)

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

(b)

L	TTh	Th	H	T	O
2	7	?	4	?	2
?	6	4	?	9	?
8	?	3	2	4	8

(c)

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

(d)

L	TTh	Th	H	T	O
?	6	3	?	?	5
2	?	4	7	0	?
3	2	?	0	8	1
7	0	1	6	2	9

3. Solve the following word problems.

- A manufacturer sold 23,650 kg of sugar to shopkeeper A; 51,173 kg of sugar to shopkeeper B and 60,850 kg of sugar to shopkeeper C. How much sugar did the manufacturer sell in all?
- A businessman buys two cars for his office. Car A costs ₹ 3,75,496 and car B costs ₹ 4,50,675. How much does the businessman pay for both the cars?
- The population of a city was 5,34,296 in the year 2010. It increased by 45,125 in the year 2011. What was the population of the city in the year 2011?
- Poonam's annual income was ₹ 6,42,970 in the year 2011. She got an annual increment of ₹ 1,00,550 in the year 2012. What was her annual income in the year 2012?

- (e) For a family function, Mr Malik spent ₹ 2,75,600 on food, ₹ 1,25,750 on arrangements and decoration and ₹ 96,275 on gifts. How much did Mr Malik spend for the function?
- (f) Consider a 6-digit number 7,99,835. If you increase it by 35,768, what will be the new 6-digit number?
4. Estimate the sum by rounding off to the nearest 1,000. Then, check the result by finding the actual sum.
- (a) There are 1,23,465 red roses, 1,10,250 white roses and 96,752 pink roses in a garden. Estimate the total number of roses in the garden.
- (b) The population of village A is 53,628 and village B is 78,426. Estimate the total population of the two villages.
5. Frame two word problems for the following sums. Then solve to find the answer.
- (a)  $37,260 + 28,450 = ?$
- (b)  $1,23,000 + 2,75,000 = ?$
- (c)  $65,190 + 1,20,075 = ?$
- (d)  $75,364 + 82,915 = ?$

### LET'S EVALUATE

1. Find the sum.

- (a)  $2,68,754 + 1,37,972$       (b)  $4,07,682 + 2,58,196$       (c)  $7,53,432 + 3,09,758$   
 (d)  $3,92,854 + 2,75,694 + 1,57,346$       (e)  $4,76,199 + 2,87,438 + 2,54,759$   
 (f)  $6,08,027 + 3,92,568 + 2,87,115$       (g)  $8,34,567 + 9,305 + 25,009$
2. Mr Bhatia had ₹ 3,70,495 in his account. He deposited ₹ 1,52,600 more on Monday and ₹ 2,64,750 on Friday. How much money is there in his account now?
3. Find the missing digits.

(a)

L	TTh	Th	H	T	O
4	?	7	?	9	3
2	8	?	4	?	6
+	?	1	9	2	3
	8	7	1	9	3

(b)

L	TTh	Th	H	T	O
4	5	2	?	8	9
?	?	0	2	1	?
+	3	?	5	3	4
	5	9	9	4	?

4. Estimate the sum by rounding off to the nearest 100. Then check the result by finding the actual sum.
- (a)  $46,316 + 3,17,956$       (b)  $4,21,832 + 5,36,122$       (c)  $7,29,818 + 64,481$
5. Find the sum of the largest 6-digit, 5-digit, 4-digit and 3-digit numbers.



## VALUES AND LIFE SKILLS

1. 2,46,710 people casted their votes in an election in Bihar; 1,85,920 people casted their votes in Odisha and 3,25,375 people casted their votes in Delhi. How many people casted their votes in the three states? Why is it important to vote?
2. Sandeep goes to an electronic goods showroom and purchases a television for ₹ 1,52,375; a refrigerator of ₹ 92,750 and a washing machine for ₹ 28,635. How much does Sandeep pay in all? Why do we need to be careful while handling electronic goods?



## SCRATCH YOUR BRAIN

1. Complete the following addition sequence.

(a)  + 5 = 13

+ 50 = 130

+ 500 = 1,300

+ 5,000 = 13,000

(b) 4 +  = 11

40 +  = 110

400 +  = 1,100

4,000 +  = 11,000

2. Choose two numbers from the box which add up to the given sum and fill them in the boxes. Take help of the solved example.

438    724    132    56

438 +  = 570

(a) 572    600    398    356

+  = 928

(b) 1,435    1,325    1,705    1,825

+  = 3,140

3. Fill in the box with the number which makes the given equation true.

(a) 47,213 + 21,051 =  + 22,051

(b) 68,198 +  = 67,198 + 35,246

(c)  + 2,43,650 = 3,50,625 + 2,33,650



## INDIVIDUAL ACTIVITY

To check the understanding of number names and addition of 6-digit numbers

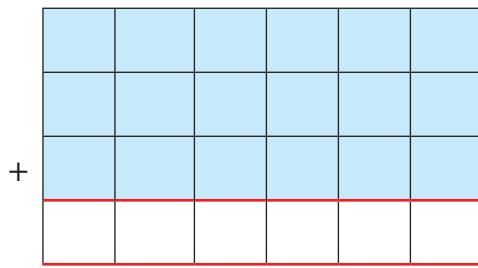
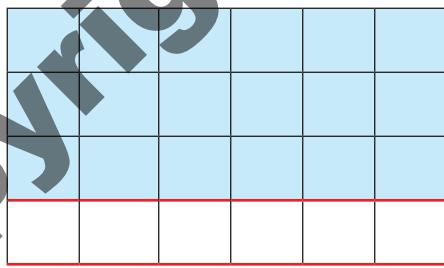
**Things We Need:** A pencil

**How To Do:**

1. Using the internet, write the pincodes of General Post Office or Head office of any 6 states.
2. Arrange the pincodes in ascending order.
3. Find the sum of the first three pincodes and the sum of the next three pincodes.
4. Write the number names of the two sums obtained.

City	Pincode

Ascending order: \_\_\_\_\_



Number names: \_\_\_\_\_  
\_\_\_\_\_

## 4



# Subtraction



## Let's Recall ...

- Subtraction means finding the difference between two numbers.
- Minuend  $-$  Subtrahend  $=$  Difference  
 ↓  
 (Number from which we subtract)      ↓  
 (Number which is subtracted)      ↓  
 (Result or answer)

- When zero is subtracted from a number, we get the number itself and when a number is subtracted from itself, we get zero.
- When 1 is subtracted from a number, we get its predecessor.
- We cannot subtract a bigger number from a smaller number.

### 1 Solve the following.

(a)

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

(b)

H	T	O
7	0	8
5	9	6

### 2 Find the missing digits.

(a)

H	T	O
8	?	6
?	3	4
3	1	?

(b)

Th	H	T	O
8	2	7	?
4	?	?	4
?	6	9	1

(3) Two persons A and B stood for elections. Total votes were 6,875. Person A got 4,235 votes. How many votes did person B get?

(4) The difference between two numbers is 7,546. If one of the numbers is 1,509, find the other number.

### 5 Subtract.

- (a) 79 from 632  
 (c) 54 from 7,815  
 (e) 7,800 from 9,890

- (b) 148 from 5,307  
 (d) 4,312 from 5,216  
 (f) 1,299 from 2,000

## Subtraction of Numbers (without borrowing or regrouping)

We follow the same steps to subtract large numbers as we do for smaller numbers.

**Example 1:** Find the difference between 87,632 and 42,102.

**Solution:** Step 1: Subtract the ones.  $2 - 2 = 0$       Step 2: Subtract the tens.  $3 - 0 = 3$

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

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

Step 3: Subtract the hundreds.

$$6 - 1 = 5$$

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

Step 4: Subtract the thousands.

$$7 - 2 = 5$$

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

Step 5: Subtract the ten thousands.  $8 - 4 = 4$

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

$$\text{So, } 87,632 - 42,102 = 45,530.$$

**Example 2:** Subtract 2,30,452 from 5,46,793.

**Solution:**

L	TTh	Th	H	T	O
5	4	6	7	9	3
-	2	3	0	4	5
3	1	6	3	4	1

$$\text{So, } 5,46,793 - 2,30,452 = 3,16,341.$$

Subtraction without borrowing can also be done by writing numbers in the expanded form and then subtracting.

### Mental Maths

$$50,250 - 40,200 = \boxed{ }$$



**Example 3:** Subtract 53,121 from 87,462.

**Solution:**

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

$\rightarrow$	80,000	+ 7,000	+ 400	+ 60	+ 2
-	50,000	+ 3,000	+ 100	+ 20	+ 1
(-)	(-)	(-)	(-)	(-)	(-)
	30,000	+ 4,000	+ 300	+ 40	+ 1

### EXERCISE 4.1

1. Solve and identify the minuend, subtrahend and difference. Write in the given table.

- (a)  $57,487 - 26,312 =$
- (b)  $68,716 - 32,405 =$
- (c)  $9,28,492 - 7,16,430 =$
- (d)  $5,45,169 - 3,10,023 =$

	Minuend	Subtrahend	Difference
(a)			
(b)			
(c)			
(d)			

2. Subtract the numbers.

(a)

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

(b)

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

(c)

L	TTh	Th	H	T	O
4	3	0	5	9	7
-	1	2	0	3	5
					2

(d)

L	TTh	Th	H	T	O
9	8	6	3	5	2
-	7	5	2	1	4
					0

3. Change to numbers and solve. Write the answer in words.

- (a) Thirty-five thousand seven hundred thirty-five minus Twenty-four thousand three hundred one
- (b) Fifty-seven thousand six hundred ninety-two minus Thirty-four thousand three hundred fifty-one
- (c) Four lakhs fifty-nine thousand three hundred four minus One lakh twenty-six thousand one hundred two



## Subtraction of Numbers (with borrowing or regrouping)

Look at the given examples to see how to subtract large numbers with borrowing.

**Example 4:** Subtract 32,179 from 61,452.

**Solution:**

TTh	Th	H	T	O
6	1	4	<u>4</u> 5	<u>12</u> 2
-	3	2	1	7
				3

Step 1: Subtract the ones.

But,  $2 - 9$  is not possible.

Borrow 1 ten or 10 ones from the tens place and add it to 2 ones.

$$10 \text{ ones} + 2 \text{ ones} = 12 \text{ ones}$$

Thus,  $12 - 9 = 3$ .

TTh	Th	H	T	O
6	1	<u>3</u> 4	<u>14</u> 5	<u>12</u> 2
-	3	2	1	7
			7	3

Step 2: Subtract the remaining tens.

But,  $4 - 7$  is not possible.

Borrow 1 hundred or 10 tens from the hundreds place and add it to 4 tens.

$$10 \text{ tens} + 4 \text{ tens} = 14 \text{ tens}$$

Thus,  $14 - 7 = 7$ .

TTh	Th	H	T	O
6	1	<u>3</u> 4	<u>14</u> 5	<u>12</u> 2
-	3	2	1	7
		2	7	3

Step 3: Subtract the remaining hundreds.

$$3 - 1 = 2$$

TTh	Th	H	T	O
<u>5</u> 6	<u>11</u> 1	<u>3</u> 4	<u>14</u> 5	<u>12</u> 2
-	3	2	1	7
	9	2	7	3

Step 4: Subtract the thousands.

But,  $1 - 2$  is not possible.

Borrow 1 ten thousand from the ten thousands place and add it to 1 thousand.

$$10 \text{ thousands} + 1 \text{ thousand} = 11 \text{ thousands}$$

Thus,  $11 - 2 = 9$ .

TTh	Th	H	T	O
5 6	11 1	3 4	14 5	12 2
-	-	-	-	-
3	2	1	7	9

$$\text{So, } 61,452 - 32,179 = 29,273.$$

**Example 5:** Subtract 40,856 from 92,714.

**Solution:**

TTh	Th	H	T	O
9	1 2	6 7	10 0	14 4
-	-	-	-	-
4	0	8	5	6

$$\text{So, } 92,714 - 40,856 = 51,858.$$

**Example 6:** Subtract 2,69,358 from 5,40,267. Write the problem with the answer in words.

**Solution:**

L	TTh	Th	H	T	O
4 5	13 3 4	9 0	12 2	5 6	17 7
-	-	-	-	-	-
2	6	9	3	5	8

$$\text{So, } 5,40,267 - 2,69,358 = 2,70,909.$$

Writing in words, we have:

Five lakh forty thousand two hundred sixty-seven minus Two lakh sixty-nine thousand three hundred fifty-eight gives Two lakh seventy thousand nine hundred nine

## Subtraction with Zeros

**Example 7:** Subtract 48,256 from 87,002.

**Solution:**

TTh	Th	H	T	O
8	6 7	9 0	9 0	12 2
-	-	-	-	-
4	8	2	5	6

Step 5: Subtract the remaining ten thousands.

$$5 - 3 = 2$$

## A Challenge!

Complete the pattern.

6	-	○	= 5
60	-	○	= 50
600	-	○	= 500
6,000	-	○	= 5,000
60,000	-	○	= 50,000



Step 1: Subtract the ones.

But, 2 – 6 is not possible.

- (a) Borrow 1 ten from the tens place. Since the digit at the tens place is 0, we cannot borrow.
- (b) Shift to borrowing 1 hundred from the hundreds place. But again the digit at the hundreds place is 0.
- (c) Shift to borrowing 1 thousand from the thousands place. Add 1 thousand or 10 hundreds to the hundreds place.  
 $10 \text{ hundreds} + 0 \text{ hundreds} = 10 \text{ hundreds}$   
 (Now we have 6 at the thousands place).
- (d) Borrow 1 hundred or 10 tens from the hundreds place and add to 0 tens.  
 $10 \text{ tens} + 0 \text{ tens} = 10 \text{ tens}$   
 (Now we have 9 at the hundreds place).
- (e) Borrow 1 ten or 10 ones from the tens place and add to 2 ones.  
 $10 \text{ ones} + 2 \text{ ones} = 12 \text{ ones}$   
 12 is bigger than 6.  
 Thus,  $12 - 6 = 6$ .  
 (Now we have 9 at the tens place.)

Step 2: Subtract the remaining tens.

$$9 - 5 = 4$$

TTh	Th	H	T	O
8	<del>6</del> <sup>7</sup>	<del>10</del> <sup>9</sup>	<del>0</del> <sup>10</sup>	<del>12</del> <sup>10</sup>
-	4	8	2	5
			4	6

Step 3: Subtract the remaining hundreds.  $9 - 2 = 7$

TTh	Th	H	T	O
8	<del>6</del> <sup>7</sup>	<del>10</del> <sup>9</sup>	<del>0</del> <sup>10</sup>	<del>12</del> <sup>10</sup>
-	4	8	2	5
			7	6

TTh	Th	H	T	O
<del>7</del> <sup>16</sup>	<del>6</del> <sup>7</sup>	<del>10</del> <sup>9</sup>	<del>0</del> <sup>10</sup>	<del>12</del> <sup>10</sup>
-	4	8	2	5
		8	7	6

Step 4: Subtract the remaining thousands.

But,  $6 - 8$  is not possible.

Borrow 1 ten thousand or 10 thousands from the ten thousands place and add it to 6 thousands.

$10 \text{ thousands} + 6 \text{ thousands} =$   
 $16 \text{ thousands}$

16 is bigger than 8.

Thus,  $16 - 8 = 8$ .

TTh	Th	H	T	O
7 8	16 6 7	9 0	9 0	12 2
-	4	8	2	5
	3	8	7	4

Step 5: Subtract the remaining ten thousands.

$$7 - 4 = 3$$

$$\text{So, } 87,002 - 48,256 = 38,746.$$

**Example 8:** Subtract 1,57,936 from 4,60,082.

**Solution:**

L	TTh	Th	H	T	O
4	5 6	9 0	10 0	7 8	12 2
-	1	5	7	9	3
	3	0	2	1	4

$$\text{So, } 4,60,082 - 1,57,936 = 3,02,146.$$

### Subtraction: Input/Output

To solve input/output problems, subtract the number given in the problem from each number in the input column and write the answer in the output column.

**Example 9:** Subtract 100.

**Solution:**

Input	Output
68,275	
74,163	
98,206	
2,53,490	
5,06,318	

Input	Output
68,275	68,175
74,163	74,063
98,206	98,106
2,53,490	2,53,390
5,06,318	5,06,218

### EXERCISE 4.2

1. Subtract the following numbers.

(a)

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

(b)

TTh	Th	H	T	O
5	0	7	0	2
-	1	3	8	5



L	TTh	Th	H	T	O
6	8	7	0	0	3
-	2	9	9	4	5

L	TTh	Th	H	T	O
7	0	0	6	1	0
-	3	9	1	7	8

2. Find the following differences.

- (a)  $50,871 - 23,692$       (b)  $64,012 - 35,794$       (c)  $3,45,726 - 1,80,313$   
 (d)  $9,04,750 - 4,36,927$       (e)  $2,78,005 - 82,796$       (f)  $5,54,132 - 97,864$

3. Solve the following Input/Output problems.

- (a) Subtract 10.      (b) Subtract 1000.

Input	Output
24,976	24,966
18,417	
38,527	
2,91,013	
3,52,129	

Input	Output
69,243	
45,197	
3,81,263	
5,04,182	5,03,182
2,90,753	

4. Which of the two is correct? Give reasons.

TTh	Th	H	T	O
<del>5</del> 6	<del>12</del> <del>2</del> 3	<del>10</del> 0	<del>10</del> 0	<del>15</del> 5
-	2	4	8	7
	3	8	2	3

TTh	Th	H	T	O
<del>5</del> 6	<del>12</del> <del>2</del> 3	<del>9</del> 0	<del>9</del> 0	<del>15</del> 5
-	2	4	8	7
	3	8	1	2

### Checking Subtraction

To check subtraction, add the difference of the two numbers to the subtrahend to get the minuend.

Example 10: Subtract 37,254 from 85,106 and check your answer.

Solution:

TTh	Th	H	T	O
<del>7</del> 8	<del>14</del> <del>4</del> 5	<del>10</del> <del>0</del> 1	<del>10</del> 0	6
-	3	7	2	5
	4	7	8	5

← Minuend

← Subtrahend

← Difference

### Checking

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

← Difference  
← Subtrahend  
← Minuend

**Example 11:** Subtract 4,25,178 from 7,60,085 and check your answer.

**Solution:**

L	TTh	Th	H	T	O
7	5	9	10	10	15
- 4	2	5	1	7	8
3	3	4	9	0	7

← Minuend  
← Subtrahend  
← Difference

### Checking

L	TTh	Th	H	T	O
3	① 3	① 4	9	① 0	7
+ 4	2	5	1	7	8
7	6	0	0	8	5

← Difference  
← Subtrahend  
← Minuend

### Finding the Missing Digits



Let's learn how to find missing digits in a problem on subtraction, with the help of an example.

**Example 12:** Find the missing digits.

TTh	Th	H	T	O
5	?	6	?	2
?	5	?	4	1
3	2	3	4	?

#### Remember

To find the missing digits, always start from ones and then move towards left.



**Solution:**

TTh	Th	H	T	O
5	?	6	?	2
?	5	?	4	1
3	2	3	4	?

Step 1: Subtract the ones to get the missing digit of the difference.

$$2 - 1 = 1$$

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

Step 2: To find the missing minuend in the tens column, add the subtrahend to the difference.

$$4 + 4 = 8$$

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

Step 3: In the hundreds column, to find the missing subtrahend, subtract the difference from the minuend.

$$6 - 3 = 3$$

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

Step 4: In the thousands column, to find the missing minuend, add the subtrahend to the difference.

$$5 + 2 = 7$$

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

Step 5: In the ten thousands column, to find the missing subtrahend, subtract the difference from the minuend.

$$5 - 3 = 2$$

**Example 13:** Find the missing digits.

L	TTh	Th	H	T	O
?	7	6	3	2	?
-	4	5	?	4	?
-	4	?	8	?	6
					4

**Solution:**

L	TTh	Th	H	T	O
8	<del>6</del> 7	<del>5</del> 6	<del>2</del> 3	<del>1</del> 2	4
-	4	5	7	4	0
-	4	1	8	6	4

### Maths Fun

How many times can you subtract 10 from 100?



### EXERCISE 4.3

1. Subtract and check your answer.

(a)

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

Check


(b)

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

Check


(c)

L	TTh	Th	H	T	O
9	6	4	7	3	1
-	5	2	4	3	0

Check


(d)

L	TTh	Th	H	T	O
8	4	3	0	0	2
-	6	5	9	4	8

Check


2. Find the following differences and check your answers.

(a)  $46,213 - 24,103$

(b)  $78,036 - 49,157$

(c)  $92,003 - 794$

(d)  $3,25,156 - 1,00,032$

(e)  $6,02,071 - 3,41,598$

(f)  $5,08,906 - 9,984$

3. Find the missing digits.

(a)

TTh	Th	H	T	O
5	?	1	3	?
-	?	0	1	4

(b)

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



(c)

TTh	Th	H	T	O
7	6	4	0	3
-	?	8	?	1
3	?	8	?	?

(d)

L	TTh	Th	H	T	O
9	1	5	0	8	4
-	?	6	?	4	2
3	?	0	?	?	7

### Estimating Differences

To estimate the difference, round off the minuend and subtrahend to the nearest 10, 100, 1,000, 10,000 and so on and then subtract the rounded off numbers.

**Example 14:** Estimate the difference between 58,234 and 35,794 by rounding off the numbers to the nearest 100. Check whether the estimated difference is correct or not.

**Solution:**

Estimated Value

TTh	Th	H	T	O
5	7	8	12	0
-	3	5	8	0
2	2	4	0	0

Actual Value

TTh	Th	H	T	O
5	7	8	12	4
-	3	5	7	9
2	2	4	4	0

The actual value 22,440 when rounded off to the nearest 100 is 22,400. So, the estimated value is correct.

**Example 15:** Estimate the difference between 7,45,236 and 4,63,815 by rounding off the numbers to the nearest 1,000. Check whether the estimated difference is correct or not.

**Solution:**

Estimated Value

L	TTh	Th	H	T	O
6	14	4	5	0	0
-	4	6	4	0	0
2	8	1	0	0	0

Actual Value

L	TTh	Th	H	T	O
6	14	4	5	2	6
-	4	6	3	8	1
2	8	1	4	2	1

The actual value 2,81,421 when rounded off to the nearest 1,000 is 2,81,000. So, the estimated value is correct.

### Solving Word Problems

**Example 16:** Tarun and Ravi have 21,618 coins. If Tarun has 15,025 coins, how many coins does Ravi have?



**Solution:** Total coins with Tarun and Ravi = 21,618  
 Number of coins with Tarun = 15,025  
 Number of coins with Ravi = 21,618  
 = 6,593  
 So, Ravi has 6,593 coins.

T	Th	H	T	O
<del>1</del> 2	<del>11</del> 1	<del>5</del> 6	<del>11</del> 1	8
1	5	0	2	5
0	6	5	9	3

**Example 17:** The sum of two numbers is 3,54,370. If one number is 1,82,756, what is the other number?

$$\begin{aligned}
 \text{Solution:} \quad & \text{Sum} = 3,54,370 \\
 & \text{One number} = 1,82,756 \\
 & \text{Other number} = \text{Sum} - \text{Given number} \\
 & \qquad\qquad\qquad = 3,54,370 - 1,82,756 \\
 & \qquad\qquad\qquad = 1,71,614
 \end{aligned}$$

L	TTh	Th	H	T	O
<del>2 3</del>	<del>15 5</del>	<del>3 4</del>	<del>13 3</del>	<del>6 7</del>	<del>10 0</del>
-	1	8	2	7	5
	1	7	1	6	4

So, the other number is 1,71,614.

## Framing Word Problems

For a given subtraction fact, we frame word problems in the same manner as we do for an addition fact.

**Example 18:** Frame two word problems for  $8,750 - 2,375 = ?$

**Solution:**

1. 8,750 jeans were manufactured in a factory. If 2,375 jeans were sold out, how many jeans were left?
2. Mr Jha deposited ₹ 8,750 in the bank. He withdrew ₹ 2,375 in January. How much money is left in his account?

## Addition and Subtraction Together

When a sum contains addition as well as subtraction, first add the numbers that do not have ‘-’ sign in front of them and then add the numbers that have ‘-’ sign and find their difference.

**Example 19:**  $10,129 + 15,372 - 14,013 = ?$

**Solution:**

10129  
- 15372  
\_\_\_\_\_  
25501

Step 1: Add the numbers that do not have a minus sign in front of them.

$$\begin{array}{r}
 & & 9 \\
 & 4 & 1011 \\
 2 & 5 & 501 \\
 - & 1 & 4 & 0 & 1 & 3 \\
 \hline
 & 1 & 1 & 4 & 8 & 8
 \end{array}$$

Step 2: Subtract the number that has a minus sign in front of it from the sum.

$$\text{So, } 10,129 + 15,372 - 14,013 = 11,488.$$



**Example 20:**  $3,803 - 990 + 1,536 - 838 = ?$

**Solution:**

$$\begin{array}{r} \textcircled{1} \\ 3\ 8\ 0\ 3 \\ +\ 1\ 5\ 3\ 6 \\ \hline 5\ 3\ 3\ 9 \end{array}$$

Step 1: Add the numbers that do not have a minus sign in front of them.

$$\begin{array}{r} \textcircled{1} \\ 9\ 9\ 0 \\ +\ 8\ 3\ 8 \\ \hline 1\ 8\ 2\ 8 \end{array}$$

Step 2: Add the numbers that have a minus sign in front of them.

$$\begin{array}{r} \textcircled{4}\ \textcircled{13} \\ \cancel{5}\ \cancel{3}\ 3\ 9 \\ -\ 1\ 8\ 2\ 8 \\ \hline 3\ 5\ 1\ 1 \end{array}$$

Step 3: Subtract the sum of step 2 from the sum of step 1.

$$\text{So, } 3,803 - 990 + 1,536 - 838 = 3,511.$$

**Example 21:**  $34,755 - 21,035 - 9,345 = ?$

**Solution:**

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

Step 1: Subtract the second number from the first one.

$$\begin{array}{r} 0\ 13\ 6\ 11\ 10 \\ \cancel{1}\ \cancel{3}\ 7\ 2\ 0 \\ -\ 9\ 3\ 4\ 5 \\ \hline 4\ 3\ 7\ 5 \end{array}$$

Step 2: Subtract the third number from their difference.

$$\text{So, } 34,755 - 21,035 - 9,345 = 4,375.$$

Alternatively,

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

Step 1: Add the numbers that have minus sign.

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

Step 2: Subtract the sum in step 1 from 34,755.

$$\text{So, } 34,755 - 21,035 - 9,345 = 4,375.$$

## EXERCISE 4.4

- Solve the following estimation.
  - $47,213 - 23,106$  (round off to the nearest 100)
  - $85,326 - 46,173$  (round off to the nearest 100)
  - $6,37,126 - 4,28,623$  (round off to the nearest 1,000)
  - $4,21,073 - 2,34,475$  (round off to the nearest 1,000)
- The population of town A was 5,46,300. After a few years, 2,75,150 people moved from town A to town B. What is the population of town A now?
- A wholesale dealer had 7,25,370 pens. He supplied 5,77,850 pens to shopkeepers. How many pens is he left with?
- The sum of two numbers is 2,05,618. If one number is 96,750, what is the other number?
- Find the number which when added to 87,325 gives the sum as 1,25,734.
- What number should be subtracted from 6,82,357 to get 4,96,576?  
**(Hint:** Here the minuend and difference are given.)
- What number is 36,851 less than 87,625?  
**(Hint:** Here the subtrahend and minuend are given.)
- Frame one word problem for each of the following. Then solve to find the answer.
 

(a) $23,915 - 12,640 = ?$	(b) $8,750 - 2,375 = ?$
(c) $1,50,720 - 82,625 = ?$	(d) $17,345 - 12,598 = ?$
- Solve the following sums.
 

(a) $36,129 + 25,421 - 22,970$	(b) $75,364 + 82,915 - 47,698 - 20,521$
(c) $3,45,290 - 1,06,234 + 45,781$	(d) $1,59,121 - 93,421 - 45,603$

### LET'S EVALUATE

- Subtract the following numbers.

(a)

T	T	H	T	O
5	6	3	8	4
-	2	8	9	5

(b)

L	T	T	H	T	O
4	2	5	6	1	7
-	2	8	0	5	9

2. Find the following differences and check your answer.

(a)  $45,068 - 32,126$

(b)  $76,182 - 49,327$

(c)  $2,18,753 - 95,034$

(d)  $3,92,005 - 2,18,672$

3. Find the missing digits.

(a)

TTh	Th	H	T	O
8	?	7	?	6
-	?	9	?	4
2	2	8	7	?

(b)

L	TTh	Th	H	T	O
5	3	4	0	?	8
?	6	?	1	8	4
2	?	6	?	1	?

4. Find the difference between 6,37,248 and 4,92,731 using the estimation method by rounding off to the nearest 1,000. Compare the actual value and the estimated value.

5. 2,79,846 students from various schools registered themselves for a drawing competition. Only 1,50,375 students participated in the competition. How many students did not participate?

6. Frame a word problem for the following. Then solve to find the answer.

(a)  $3,41,642 - 43,938 = ?$

(b)  $2,79,859 - 1,32,450 = ?$

(c)  $6,54,120 - 45,128 = ?$

(d)  $7,00,563 - 5,99,000 = ?$

7. Solve the following sums.

(a)  $23,185 - 19,200 + 7,82,374 - 6,07,521$

(b)  $1,37,300 + 75,921 - 94,375$

(c)  $17,256 - 61,703 - 1,26,365 + 2,00,000$

(d)  $1,23,548 - 36,249 - 513$



### VALUES AND LIFE SKILLS

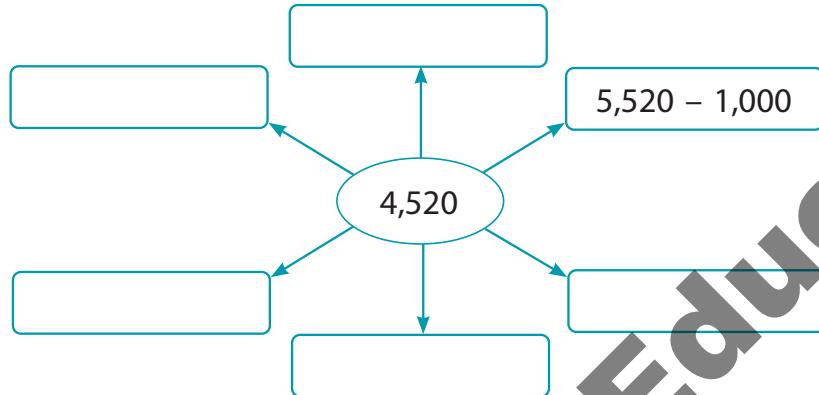


- Sunita had ₹ 1,60,475 in her account. She purchased jewellery for ₹ 85,650. How much money is left in her account? Do you think students should wear any form of jewellery to school?
- Amita saved her salary and collected ₹ 80,000 in her bank. She gave ₹ 32,920 to her brother to pay his fees. How much money is she left with? Is Amita a good sister? Justify your answer.



## SCRATCH YOUR BRAIN

1. Write the number given in the oval as a difference of two numbers.



2. Find and write the subtrahend and the minuend from the big box for the given differences.

(a) 453    621    250    174

$$\boxed{\quad} - \boxed{\quad} = 447$$

(c) 3,125    2,143    3,146    2,125

$$\boxed{\quad} - \boxed{\quad} = 1,003$$

(b) 1,326    1,285    926    945

$$\boxed{\quad} - \boxed{\quad} = 400$$

(d) 2,846    3,127    1,982    4,000

$$\boxed{\quad} - \boxed{\quad} = 864$$

3. Radhika had ₹ 2,45,325 in her account. She withdrew ₹ 50,000 on Monday. Next day, she deposited ₹ 95,750 and withdrew ₹ 1,25,500 on Wednesday. How much money is there in her account now?
4. Kishore had 70,250 marbles. He gave 21,375 marbles to his friend Amit and purchased 1,575 more marbles. How many marbles does Kishore have now?
5. Look at the given figures and answer the following questions.



Arushi  
150 cm



Saina  
165 cm



Rohit  
187 cm



Aditya  
158 cm



Jaspreet  
175 cm



Sunil  
192 cm

- (a) Which student is the tallest?
- (b) What is the total height of all the girls?
- (c) Find the difference between the total height of the boys and the total height of the girls.
- (d) What is the total height of students whose names start with the letter A?
- (e) Find the difference between the total height of students whose names start with the letter A and the total height of the remaining students.



## GROUP ACTIVITY

To reinforce the concept of forming the smallest and the greatest 5-digit numbers and understand subtraction of 5-digit numbers

**Things We Need:** White sheets of paper and a pencil

**How To Do:**

1. Divide the class into groups of 5.
2. Every child of each group will write a digit of his/her own choice. So, each group will have 5 digits.
3. From the digits obtained, each group will form the greatest and the smallest 5-digit numbers and find the difference between them.

Digits obtained	Greatest 5-digit number	Smallest 5-digit number	Difference

4. The teacher will give points to each group on the basis of their answer. The group with maximum points will be the winner.

**I. Choose the correct answer.**

1. Three million fifty-four thousand one hundred seven is written as:  
(a) 3,54,107      (b) 3,054,107      (c) 30,54,107      (d) 30,054,107
2. The predecessor of 6,08,300 is:  
(a) 6,08,299      (b) 6,08,329      (c) 6,07,300      (d) 6,07,299
3. The Roman numeral for 99 is:  
(a) CXIX      (b) XCXI      (c) XCIX      (d) CXXI
4. The Hindu-Arabic numeral for DCXCIV is:  
(a) 686      (b) 696      (c) 684      (d) 694
5. The estimated sum of 15,264; 7,427 and 9,382 when the numbers are rounded to the nearest 1,000 is:  
(a) 34,000      (b) 33,000      (c) 32,000      (d) 31,000
6. The number which is subtracted from another number is called:  
(a) minuend      (b) subtrahend      (c) difference      (d) none of these
7. The value of  $96,042 + 2,875 - 74,987$  is:  
(a) 23,930      (b) 24,120      (c) 23,030      (d) 24,030
8. The sum of two numbers is 18,260. If one number is 9,384, the other number is:  
(a) 8,976      (b) 8,876      (c) 8,886      (d) 8,986

**II. Solve and answer.**

1.  $6,00,000 + 80,000 + 200 + 4 =$  \_\_\_\_\_
2. The successor of 58,69,899 is \_\_\_\_\_.
3. Arrange in ascending order:  
 $3,26,597; 3,25,795; 3,25,597; 3,26,795$  \_\_\_\_\_
4. The sum of the largest 6-digit number and the largest 5-digit number is  
\_\_\_\_\_.
5.  $6,92,178 + 3,05,294 - 5,88,976 =$  \_\_\_\_\_
6.  $9,76,259 - 9,76,258 =$  \_\_\_\_\_
7. The value of  $CDLXV - CCCXXIV$  is \_\_\_\_\_.
8. The Roman numeral for MDCCXLIII is \_\_\_\_\_.
9. What should be subtracted from 30,49,800 to get 5,39,200? \_\_\_\_\_
10.  $6,07,08,234 - 6,07,08,234 + 6,07,08,234 =$  \_\_\_\_\_



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**Start Up Mathematics** conforms to the latest NCF guidelines with careful grading of interdisciplinary and thematic linkages. The books are carefully planned to give comprehensive coverage to all the topics through clear explanations and sound supporting examples. There is ample focus on activities and exercises to develop logical thinking and reasoning.



## Special Features of Start Up Mathematics for Classes 3 to 5

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- Questions based on Thinking Skills given in *Scratch Your Brain*
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- Various concept-based *Activities* and *Worksheets*
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**Monicaa Abhijit**, with teaching experience of over 22 years, is currently teaching in St. Thomas School, Mandir Marg, New Delhi.

## Additional Teacher's Support

### Teacher's Manual

- Comprehensive lesson plan
- Solutions of selected questions
- Worksheets

### Digital Support ([www.vivadigital.in](http://www.vivadigital.in))

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| <ul style="list-style-type: none"><li>• Flip book</li><li>• Solutions of selected questions</li><li>• Worksheets</li></ul> | <ul style="list-style-type: none"><li>• Test generator</li><li>• Comprehensive lesson plan</li></ul> |
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