Collins

Maths Zone 4

Updated Edition

Series Editor
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Acknowledgements

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Preface

Maths Zone **(Updated Edition)** is a series of eight books for Classes 1 to 8. The series conforms to the objectives outlined in *National Curriculum Framework*. The updated edition of **Maths Zone**, trying to make a difference with its new features, incorporates the latest requirements across various boards. With its activity-oriented approach, the series aims to inculcate lateral thinking, analytical, research and deduction skills in students, thus urging them to explore beyond the boundaries of textual knowledge.

Based on the NCERT syllabus, the series follows a coherent and structured approach. It provides a seamless continuity in the Maths curriculum for classes 1 to 8, laying emphasis on developing problem-solving skills.

The series has been updated in view of the extensive feedback received from the user schools and experienced teachers. Wherever necessary, content has been simplified to cater to the needs of all kinds of learners in a classroom.

Key Features

Mental Maths to help practise calculation skills and deductive reasoning

Cross-curricular Links (Classes 1 to 5) integrate knowledge across subjects

Exercises after each topic and **Revision Exercises** at the end of each chapter for a comprehensive review of the concepts

Summary (Classes 6 to 8) gives a snapshot of the chapter for quick recapitulation

Maths Lab Activity to test skills of investigation, observation and deduction

Worksheets to reinforce practice with fun exercises

Consolidated **Practice Worksheets** and **Reasoning Worksheet** at the end of the book for further practice

Latest **International Mathematics Olympiad** paper to help students prepare for competitive exams

Maths Tales (Classes 1 to 5) at the end of the book give colourful cartoon spreads

Vedic Maths (Classes 3 to 8) to master shortcut techniques which aid in faster calculations

Poster, at the end as a pull-out, for a quick revision of important points and formulae

Remember, **Common Errors**, **Challenge** and **Projects** are a few other features included in the books.

Four **assessment papers** and two **comprehensive assessment papers** have been given at the end of each book, in addition to the exercises within and at the end of each chapter.

In line with the CBSE guidelines, evaluation features along with the tools of assessment have been provided extensively to the teachers and learners in a well-integrated manner.

We would like to take this opportunity to thank all the teachers who reviewed the books and provided their valuable feedback. Special thanks to Ms Sneha Susan George, Toc H Public School, Ernakulam; Ms T S Florence Usha and Ms Regina R, SBOA School, Chennai, for giving their suggestions, which helped in improving the quality of the content.

Feedback, valuable comments and suggestions from the users are welcome.

Authors

Key Features

Cross-curricular Link: What is the difference in the meaning of the words 'remainder' and 'reminder'?

Mental Maths

Look at the pattern and fill in the blanks

$7 - 1 = 6$ $70 - 60 = 10$	$4 - 3 = 1$ ____ − ____ = ____
$5 - 2 = 3$ $50 - 20 = 30$	$9 - 3 = 6$ ____ − ____ = ____

SUMMARY

Symmetry — Types of Symmetry

- Line Symmetry — Figures with
  - No Line of Symmetry
  - One Line of Symmetry
  - Multiple Lines of Symmetry → n lines of symmetry ← has Regular Polygon of side 'n'
- Points Symmetry — is — Symmetry about a point with 180° rotation
- Rotational Symmetry
  - Order 1
  - Order 2
  - Order n — has — Regular Polygon of side 'n'
- Figure with Combination of Symmetries
  - Line and Point Symmetry
  - Point and Rotational Symmetry
  - Line and Rotational Symmetry
  - Line, point and Rotational Symmetry
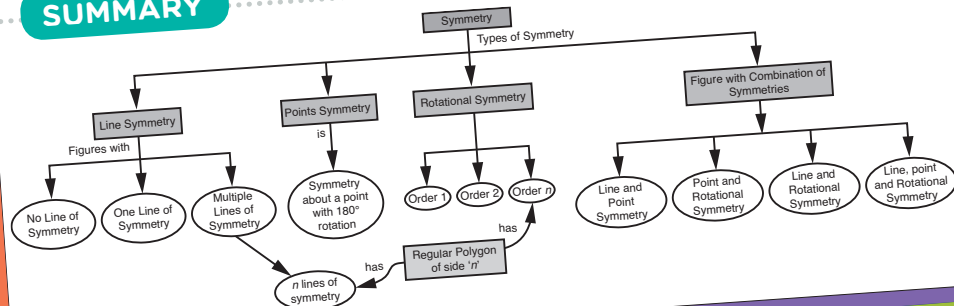
Exercise 16.1

1 **Find the perimeter of the following objects using the correct formulae.**

(a) 125 cm, 125 cm

(b) 15 cm, 15 cm

(c) 52 in, 30 in
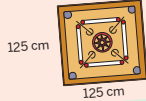
Revision Exercise

1 **Find the perimeter and area of each of the following figures.**

(a) 8 cm, 8 cm

(b) 20 cm, 20 cm

(c) 13 cm, 7 cm
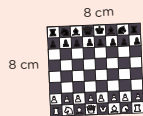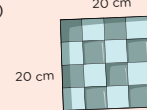
Maths Lab Activity

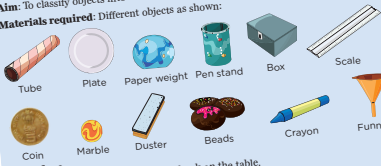**Aim**: To classify objects into rolling, sliding and rolling as well as sliding objects

Materials required: Different objects as shown:

Tube Plate Paper weight Pen stand Box Scale

Coin Marble Duster Beads Crayon Funnel

Procedure:
1. Make an inclined surface using a book on the table.
2. Place the objects one by one on the book.
3. Observe whether the object rolls, slides or rolls as well as slides.
4. Complete the table given below for any five objects by drawing them.

Object	Rolling (R)/Sliding (S)/Sliding & Rolling (R & S)

WORKSHEET

Write the fractions corresponding to the shaded parts in the figures below.
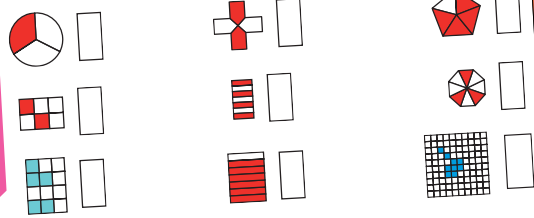
Cooking with Maths

It is Sunday. Cerah's mother is busy cooking in the kitchen. Smelling the mouth-watering aroma coming from the kitchen, Cerah comes to find out what her mother is preparing.

Hi Mom! What are you cooking?

I am preparing peanut *chikkis*, Cerah.

Vedic Maths

When the numbers to be multiplied are not near the base, then we can use the following method in general to multiply any two 2-digit numbers.

Example 1: Multiply 31 and 22.

Step 1: Multiply the numbers vertically in the last column.

$1 \times 2 = 2$

	3	1
×	2	2
		2

Step 2: Multiply the numbers crosswise in both the columns and add the results.

$1 \times 2 = 2$ and $3 \times 2 = 6$

	3	1
×	2	2
	2	6

Collins MATHS ZONE (UPDATED EDITION)

Contents

Place Value of Large Numbers

Learning Objectives

- To read, write and expand 5-digit and 6-digit numbers
- To round off numbers to the nearest 10, 100, 1000 and 10,000

Let's Get Started

We have studied about numbers from 1 to 9999 in earlier classes. Let us recall some important concepts.

Place Value: It is the value of digits in different places (ones, tens, hundreds and thousands) of a number.

Example: Consider the number 7286. The place value of each digit is shown here.

Expanded Form: It is the way in which a number is written to show the sum of the values of its digits. For example: 7286 = 7000 + 200 + 80 + 6

```
        200        6
      Hundreds    Ones
        ↓          ↓
   [7]  [2]  [8]  [6]
    ↑         ↑
 Thousands   Tens
   7000       80
```

Number Name: It is the name of a number when written based on its place value. For example: Seven thousand two hundred eighty-six

Comparison of numbers: Two numbers can be compared by comparing the digits at different places of the numbers. For example, when we compare the numbers 825 and 2701, we find that 2701 is bigger than 825 as 2701 has 2 thousands whereas 825 has no thousands.
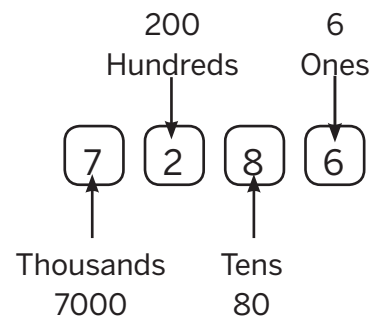
5-DIGIT NUMBERS

Read the following statements and recognize the numbers.

- Sachin Tendulkar scored 18,426 runs in 463 one-day internationals.

- Goa is the state with the least area of 3702 square kilometres, followed by Sikkim (7096) and then Tripura (10,492).

Could you read all the numbers?

The numbers 18,426 and 10,492 have more than four digits.

We know that 9999 is the largest 4-digit number. On adding 1 to it, you will get the next number, that is, 10,000. Recall that adding 1 to a number will give its successor. Therefore, 10,000 is the successor of 9999. In other words, 9999 is the predecessor of 10,000. This number has five digits and the new place added is known as **ten thousands** place.

Th	H	T	O
9	9	9	9

	Th	H	T	O
1	0	0	0	0

→

TTh	Th	H	T	O
1	0	0	0	0
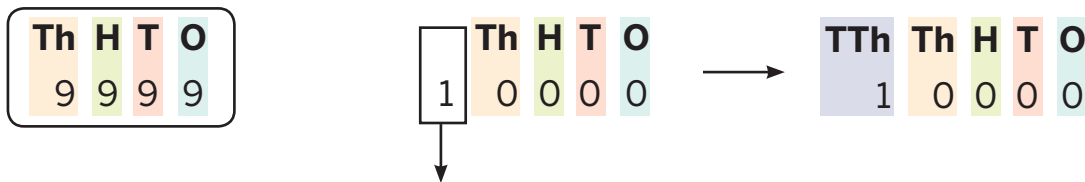
This place is known as **ten thousand** and it is written as **TTh**.

The numbers with five place values—ones, tens, hundreds, thousands and ten thousands—are known as 5-digit numbers.

Reading 5-digit Numbers

In order to make reading easy, digits are grouped into periods. The ones digit, the tens digit and the hundreds digit together form the ONES period. The thousands digit and the ten thousands digit form the THOUSANDS period.

In order to read a number:

Step 1: Read the digits in the THOUSANDS period together.

Step 2: Then, read the digits in the ONES period.

Examples:

18,426 – Eighteen thousand four hundred twenty-six

45,608 – Forty-five thousand six hundred eight

Thousands period

TTh Th H T O
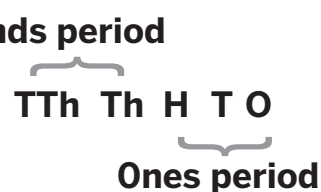
Ones period

Use of Commas in Writing 5-digit Numbers

Commas are used to distinguish the periods in a number. A comma is placed after the THOUSANDS period to distinguish it from the ONES period. In the number 18426, a comma has to be placed after 18, so the number is written as 18,426.

Examples:

64429 is written as 64,429.   10350 is written as 10,350.

Place Value and Expanded Form

The place value of the ten thousands digit is 10,000. The place values of other digits of 5-digit numbers can be written in the same way as written for the 4-digit numbers. Consider the examples given below.

TTh	Th	H	T	O
1	2	5	4	8
10,000	2000	500	40	8

Number: **12,548**

Number name: Twelve thousand five hundred forty-eight

Expanded form: 10,000 + 2000 + 500 + 40 + 8

TTh	Th	H	T	O
9	0	0	0	9
90,000	0	0	0	9

Number: **90,009**

Number name: Ninety thousand nine

Expanded form: 90,000 + 9

6-DIGIT NUMBERS

The largest 5-digit number is 99,999.
What number would you get if you add 1 to it?

9 + 1 = 10

99 + 1 = 100

999 + 1 = 1000

9999 + 1 = 10,000

99,999 + 1 = _____

On adding 1 to 99,999, you get the number **1,00,000**.

Note that the number has six digits. It is read as **One lakh**.

The new place is known as the **lakhs** place and it is denoted by **L**.

The lakhs place is a new period.

A comma is used after the lakhs digit to distinguish the digit from other periods.

Example: 1,00,000 – One lakh

1,15,264 – One lakh fifteen thousand two hundred sixty-four
7,06,990 – Seven lakh six thousand nine hundred ninety
2,00,008 – Two lakh eight
9,99,999 – Nine lakh ninety-nine thousand nine hundred ninety-nine

Thousands period

L TTh Th H T O

Lakhs period **Ones period**
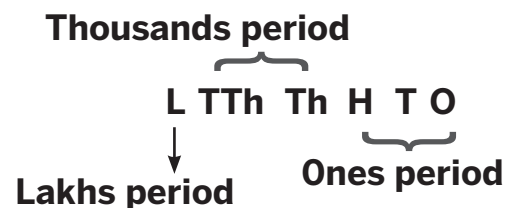
Place Value and Expanded Form

Consider the examples given below.

L		TTh	Th	H	T	O
3		4	8	1	2	9
3,00,000		40,000	8000	100	20	9
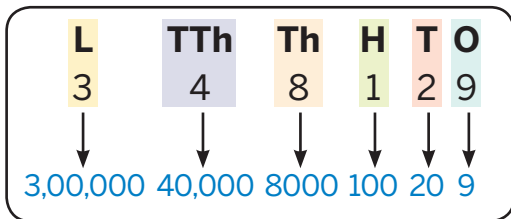
Number: **3,48,129**

Number name: Three lakh forty-eight thousand one hundred twenty-nine

Expanded form: 3,00,000 + 40,000 + 8000 + 100 + 20 + 9

L		TTh	Th	H	T	O
4		1	0	0	8	6
4,00,000		10,000	0	0	80	6
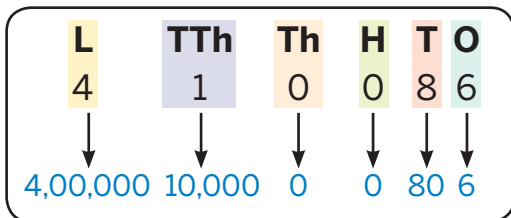
Number: **4,10,086**

Number name: Four lakh ten thousand eighty-six

Expanded form: 4,00,000 + 10,000 + 80 + 6

Fun Project

Make a spike abacus with six spokes and represent different 5-digit and 6-digit numbers on it.
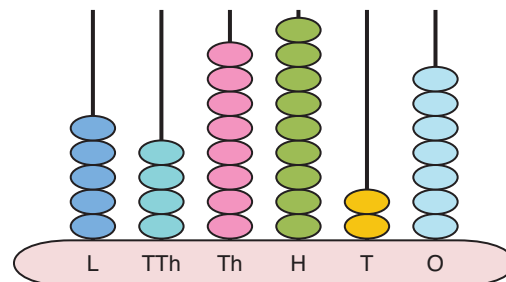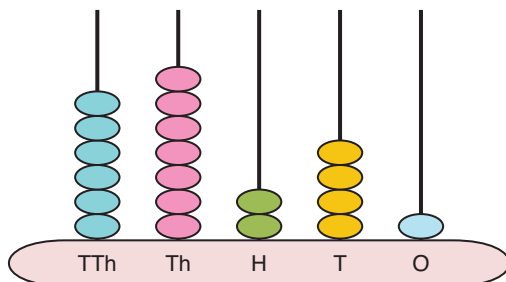
Did You Know?

The Postal Index Number (PIN) of different places is a 6-digit number. The PIN code helps the postal department to categorize the parcels region-wise, state-wise and district-wise.

Cross-curricular Link: Find out the postal code of your area. Interact with a postman to know how the postal codes are useful in their work. Also, find out if all the countries have 6-digit postal codes.
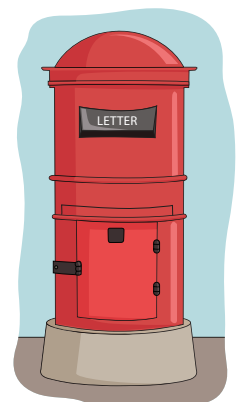
Exercise 1.1

1 **Write the numbers represented on the spike abacus and also write their number names.**

(a)

Number: _____
Number name: _____

(b)

Number: _____
Number name: _____

(c)
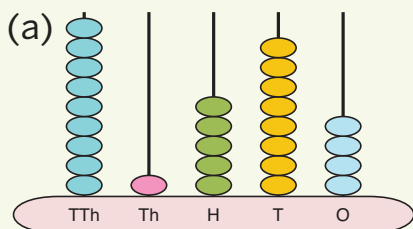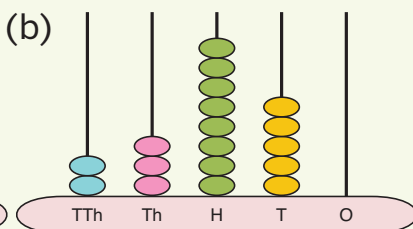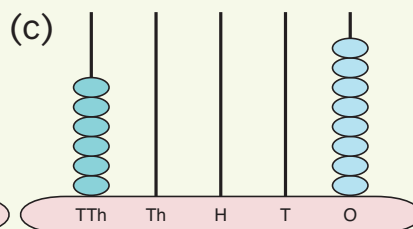
Number: _____
Number name: _____

2 **Write the numbers corresponding to the given number names and expanded forms.**

(a) Forty-five thousand six hundred ninety-five = _____

(b) 1,00,000 + 200 + 10 + 9 = _____

(c) Two lakh sixty thousand eighty-two = _____

(d) 80,000 + 6000 + 500 + 40 + 2 = _____

3 **Write the place value of the underlined digits.**

(a) 40,93**6** _____ (b) 9,**2**1,456 _____ (c) **7**,10,581 _____

(d) 8,12,**7**35 _____ (e) 1,27,3**5**5 _____ (f) 4,0**9**,453 _____

COMPARISON OF NUMBERS

Comparison of 5-digit Numbers

Two or more 5-digit numbers can be compared by comparing the digits at different places, starting from the ten thousands place to the ones place of the two numbers.

Example: The balance in the savings account of Aarav and Aarna are ₹17,895 and ₹21,435 respectively. Let us find who has more money.

TTh	Th	H	T	O
1	7	8	9	5

TTh	Th	H	T	O
2	1	4	3	5

1 < 2
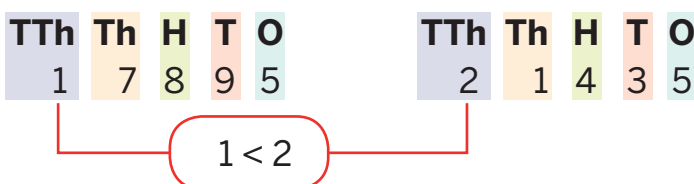
Hence, 17,895 < 21,435
or   21,435 > 17,895
So, Aarna has more money in her account.

If the digits at the ten thousands place are the same, then compare the digits at the thousands place.

TTh	Th	H	T	O
4	5	2	9	5

$5 < 8$

TTh	Th	H	T	O
4	8	4	3	5

45,295 < 48,435

If the digits at the ten thousands and thousands places are the same, then compare the digits at the hundreds place.

TTh	Th	H	T	O
7	6	4	0	5

$4 > 1$

TTh	Th	H	T	O
7	6	1	8	2

76,405 > 76,182

If the digits at the ten thousands, thousands and hundreds places are the same, then compare the digits at the tens place.

TTh	Th	H	T	O
3	4	6	8	1

$8 > 2$

TTh	Th	H	T	O
3	4	6	2	9

34,681 > 34,629

If the digits at the ten thousands, thousands, hundreds and tens places are the same, then compare the digits at the ones place.

TTh	Th	H	T	O
9	3	7	8	4

$4 < 6$

TTh	Th	H	T	O
9	3	7	8	6

93,784 < 93,786

Comparison of 6-digit Numbers

Consider the examples given below.

The number with the greater digit at the lakhs place is greater than the other number.

2 8 4 3 5 1   5 0 7 2 5 8

2 < 5

2,84,351 < 5,07,258

If the digits at lakhs place are the same in both the numbers, then compare the digits at the ten thousands place.

4 7 4 0 5 6   4 3 8 4 5 1

7 > 3

4,74,056 > 4,38,451

If the digits at the lakhs and ten thousands places are the same in both the numbers, then compare the digits at the thousands place.

3 6 2 8 5 9   3 6 8 7 5 4

2 < 8

3,62,859 < 3,68,754

If the digits at the lakhs, ten thousands and thousands places are the same in both the numbers, then compare the digits at the hundreds place.

1 7 2 9 5 2   1 7 2 4 5 0

9 > 4

1,72,952 > 1,72,450

If the digits at the lakhs, ten thousands, thousands and hundreds places are the same in both the numbers, then compare the digits at the tens place.

9 0 4 7 6 2   9 0 4 7 3 8

6 > 3

9,04,762 > 9,04,738

If the digits at the lakhs, ten thousands, thousands, hundreds and tens places are the same in both the numbers, then compare the digits at the ones place.

7 0 0 0 0 2   7 0 0 0 0 8

2 < 8

7,00,002 < 7,00,008

Brain Teaser

I am a 6-digit number. All my digits are the same and their sum is 8 more than 10. Who am I?

Exercise 1.2

1 **Compare the numbers and write the appropriate symbol (>/</=).**

(a) 45,251 ____ 6,81,320

(b) 10,024 ____ 10,204

(c) 8,00,756 ____ 7,84,245

(d) 92,475 ____ 85,784

(e) 6,87,999 ____ 1000

(f) 34,251 ____ 34,208

2 **State whether the following are true (T) or false (F).**

(a) 2,00,812 > Two lakh eight hundred two ☐

(b) 10,000 + 4000 + 20 + 1 < 10,000 + 400 + 90 + 8 ☐

(c) 4,00,000 + 50,000 + 3000 + 3 > 4,00,000 + 80,000 + 3000 + 30 + 3 ☐

(d) 6,00,000 + 600 + 30 + 7 < 6,00,000 + 6000 + 30 + 4 ☐

(e) 20,000 + 2000 + 1 > 20,000 + 200 + 10 ☐

ASCENDING AND DESCENDING ORDER
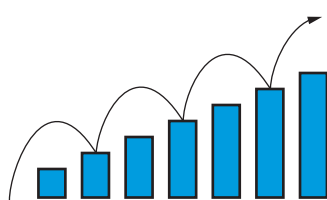
Numbers when arranged from the smallest to the greatest are said to be in the ascending order.
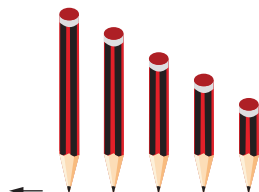
Ascending Order

Numbers when arranged from the greatest to the smallest are said to be in the descending order.

Descending Order

For Example;

Ascending order – 10,245   17,405   17,845   38,712   72,125   72,807

Descending order – 8,14,545   6,54,747   4,05,751   4,05,324   2,09,007

GREATEST AND SMALLEST NUMBERS

How many 5-digit numbers are there?

How many 6-digit numbers are there?

There are a total of 90,000 5-digit numbers!

There are a total of 9,00,000 6-digit numbers!

Greatest and Smallest 5-digit Numbers

Arrange the digits in increasing order to get the smallest number. For example, by using the digits 1, 5, 7, 6 and 2 only once, the smallest number that can be formed is 12,567.

Arrange the digits in decreasing order to get the greatest number. For example, by using the digits 1, 5, 7, 6 and 2 only once, the greatest number that can be formed is 76,521.

Study the example given in the table. Also, fill in the empty boxes.

Digits	Smallest Number	Greatest Number
8, 3, 6, 7, 9	36,789	98,763
2, 1, 8, 4, 5		
9, 5, 8, 7, 4		

Note: If one of the digits is 0, then the smallest 5-digit number is obtained by first writing them in ascending order and then interchanging the digits at the ten thousands and thousands places.

Example: If the digits are 4, 8, 2, 0 and 3, then by arranging them in ascending order you get 02348. Interchange the positions of 0 and 2 such that the number we get is 20348. Therefore, 20,348 is the smallest 5-digit number that can be formed with the digits 4, 8, 2, 0 and 3.

The greatest 5-digit number can be obtained by writing the same numbers in descending order, that is, 84,320.

Greatest and smallest 6-digit numbers

The steps to form the smallest 6-digit number from the given digits are the same as that of 5-digits numbers, that is, write the digits in ascending order. For example, the smallest 6-digit number that can be formed using the digits 5, 8, 9, 2, 4 and 1 is 1,24,589.

The greatest number is obtained by writing the digits in descending order, that is, 9,85,421.

Note: If one of the digits is 0, then the smallest 6-digit number is obtained by first writing them in ascending order and then interchanging the digits in lakhs and ten thousands places.

Example: If the digits are 7, 4, 8, 2, 0 and 3, then by arranging them in ascending order, you get 023478. Interchange the positions of 0 and 2 such that the number becomes 203478. Therefore, 2,03,478 is the smallest 6-digit number that can be formed with the digits 7, 4, 8, 2, 0 and 3.

The greatest 6-digit number can be obtained by writing the same numbers in descending order, that is, 8,74,320.

SUCCESSORS AND PREDECESSORS

The successor of a number is the number we get by adding 1 to the given number.

For example, if the number is 8,74,320, then the successor of the number will be 8,74,320 + 1 = 8,74,321.

The predecessor of a number is the number we get by subtracting 1 from the number.

For example, if the number is 8,74,320, then the predecessor of the number will be 8,74,320 – 1 = 8,74,319.

1 **Arrange the following numbers in ascending order.**

(a) 12,054; 30,458; 20,105; 40,306 _____

(b) 4,30,490; 2,41,475; 4,13,281; 4,30,087 _____

(c) 75,802; 7,50,806; 7,50,608; 75,871 _____

2 **Tick (✓) the group of numbers in descending order.**

(a) 8,51,407; 62,405; 30,112; 1845; 1001 ☐

(b) 72,924; 72,356; 89,425; 10,658; 10,012 ☐

(c) 6,75,852; 5,67,514; 4,06,489; 4,02,257; 2,56,200 ☐

3 **Write the greatest and the smallest numbers that can be formed using all the digits only once.**

	Digits	Smallest Number	Greatest Number
(a)	4, 5, 2, 3, 0, 8		
(b)	6, 9, 4, 7, 2, 8		
(c)	7, 4, 8, 0, 5, 6		
(d)	6, 1, 9, 2, 0, 3		
(e)	8, 1, 5, 2, 7		
(f)	0, 6, 4, 3, 8		

4 **Write the successors and the predecessors of the following numbers.**

(a) _____ ; 59,768; _____   (b) _____ ; 23,875; _____

(c) _____ ; 65,793; _____   (d) _____ ; 35,987; _____

5 **Fill in the missing numerals to continue the pattern.**

(a) 4,56,778; 4,56,779; _____; _____; _____.

(b) 1,23,244; 1,33,244; _____; _____; _____.

(c) 65,855; 65,955; _____; _____; _____.

(d) 5,36,400; 6,36,400; _____; _____; _____.

(e) 67,877; 77,878; _____; _____; _____.
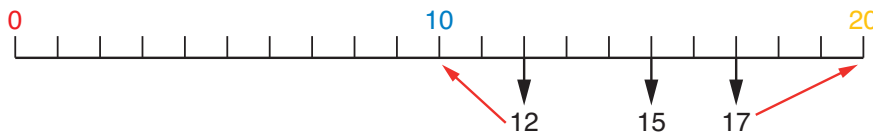
Rounding off numbers to the nearest 10

Recall the method of rounding off numbers to the nearest 10. Consider the numbers marked on a number line and find the nearest multiple of 10 on both sides of the number.

If the ones digit of a number is less than five, then it is rounded off to the ten to its left on the number line. If the ones digit is greater than or equal to 5, then it is rounded off to the ten to its right on the number line.

Example: The number 17 is rounded off to 20, whereas the number 12 will be rounded off to 10.

Consider some more examples.

Number	352	1028	95,789	42,135	1,35,245	5,19,022
Rounded off to 10	350	1030	95,790	42,140	1,35,250	5,19,020

Rounding off numbers to the nearest 100

Rule: If the last two digits of a number read together is less than 50, then round it off to the hundred to its left. If the last two digits of a number read together is greater than or equal to 50, then round it off to the hundred to its right.

Consider the example 365. Note that 65 is greater than 50. Therefore, 365 will be rounded off to 400. Similarly, 321 will be rounded off to 300 since 21 is less than 50.
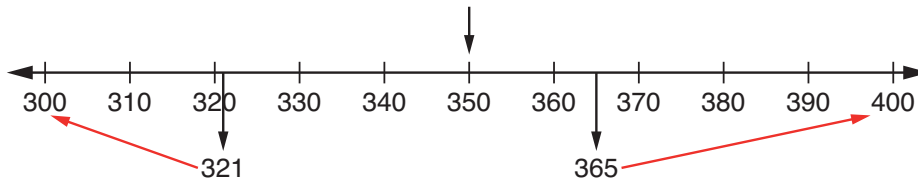
Consider some more examples.

Number	850	1028	95,789	42,135	1,35,245	5,19,028
Rounded off to 100	900	1000	95,800	42,100	1,35,200	5,19,000

Rounding off numbers to the nearest 1000

Rule: If the last three digits of a number read together is less than 500, then round it off to the thousand to its left. If the last three digits of a number read together is greater than or equal to 500, then round it off to the thousand to its right.
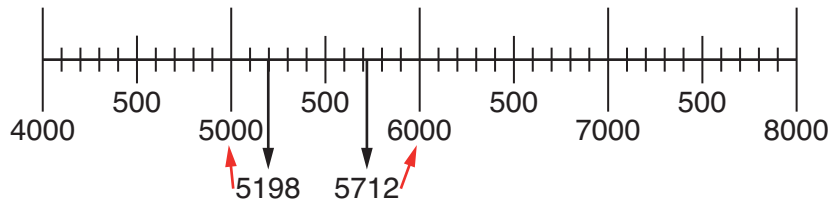
Consider the example 5198. Note that 198 is less than 500. Therefore, it will be rounded off to 5000, whereas 5712 will be rounded off to 6000 since 712 is greater than 500.

Consider some more examples.

Number	1850	7028	95,789	42,135	1,35,245	5,18,528
Rounded off to 1000	2000	7000	96,000	42,000	1,35,000	5,19,000

Rounding off numbers to the nearest 10,000

Rule: If the last four digits of a number read together is less than 5000, then round it off to the ten thousand to its left. If the last four digits of a number read together is greater than or equal to 5000, then round it off to the ten thousand to its right.

Example: 15,821 will be rounded off to 20,000 as 5821 is greater than 5000. 71,540 will be rounded off to 70,000 as 1540 is less than 5000.
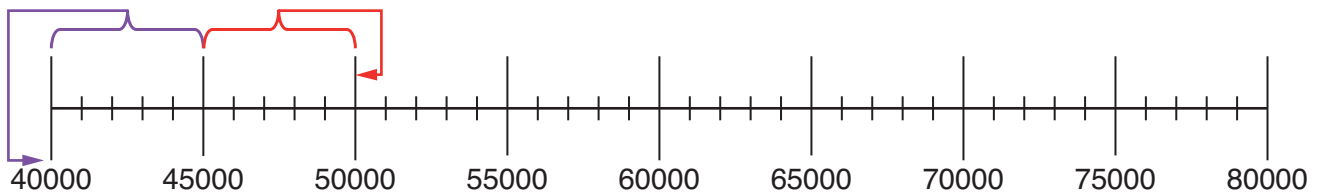
Consider some more examples.

Number	18,500	70,028	55,789	22,135	4,85,245	9,37,500
Rounded off to 10000	20,000	70,000	60,000	20,000	4,90,000	9,40,000

1 **Round off the numbers to the nearest 100.**

(a) 51,202 _____   (b) 4,60,150 _____   (c) 82,500 _____

(d) 1,94,878 _____   (e) 6,71,012 _____   (f) 2,47,109 _____

2 **Round off the following numbers to the nearest 1000.**

(a) 78,124 _____   (b) 8,12,874 _____   (c) 80,945 _____

(d) 30,540 _____   (e) 1,55,201 _____   (f) 1,71,500 _____

3 **The numbers are rounded off to the nearest 10,000. Tick (✓) the correct option out of the three options given.**

(a) 18,136   —   10,000 ☐   19,000 ☐   20,000 ☐

(b) 5,47,801 —   5,40,000 ☐ 5,50,000 ☐ 5,00,000 ☐

(c) 53,851   —   53,000 ☐   50,000 ☐   60,000 ☐

(d) 3,64,999 —   3,60,000 ☐ 3,80,000 ☐ 3,70,000 ☐

4 **Round off the numbers in the following sentences to the nearest 10,000 and rewrite the sentences. The first one has been done for you.**

(a) In a stadium, there are 43,512 spectators.
    <u>In a stadium there are about 40,000 spectators.</u>

(b) The population of a city is 4,24,540.

(c) The distance from the planet Earth to Moon is 3,84,400 km.

ROMAN NUMERALS

Look at the wall clock. How do you read time in this wall clock?

Are the numbers familiar to you?

Note that the numbers used in the wall clock are different from the numbers that we use, which are, 0, 1, 2, 3, 4 …

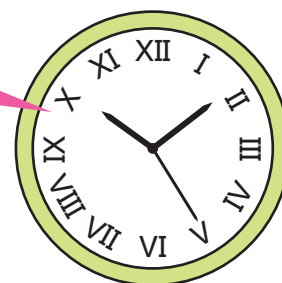The numbers used in the clock are given below.

I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII

These numbers are known as **Roman Numerals**. This way of writing numbers was used during the ancient Roman period.

The basic numerals are I, V, X, L, C, D and M.

Note: The Roman numeral system does not have 0.

Conversions between Roman numerals and Hindu-Arabic numbers

Roman numerals can be written in Hindu-Arabic numbers. The following table gives the basic symbols of Roman numerals and their value in Hindu-Arabic numbers.

There are certain rules to be followed in order to write different numbers using the basic symbols of Roman numerals.

Symbol	I	V	X	L	C	D	M
Value in Hindu-Arabic Number System	1	5	10	50	100	500	1000

Rules:

Explanation: If a smaller number is written to the left of a bigger number, then it has to be subtracted from the bigger number.

For example: $IV = 5 - 1 = 4$

$IX = 10 - 1 = 9$

Note: However, a symbol is not repeated more than three times.

Explanation: If a smaller number is written to the right of a bigger number, then it has to be added to the bigger number. For example: $VI = 5 + 1 = 6$

✗ $VX = 10 - 5 = 5$ **Wrong!**

Note: The symbol I can only be written to the left of V and X. Also, V is never written to the left of a bigger number.

1

If a symbol is repeated, then its value is added as many times as it occurs.

Examples

$III = 1 + 1 + 1 = 3$

$XX = 10 + 10 = 20$

✗ $IIII = 1 + 1 + 1 + 1 = 4$ **Wrong!**

2

Symbol of Smaller Value

I to the left of a number → I to the right of a number

Subtracted from the Number

$IV = 5 - 1 = 4$

$IX = 10 - 1 = 9$

Added to the Number

$VI = 5 + 1 = 6$

$VIII = 5 + 1 + 1 + 1 = 8$

$XI = 10 + 1 = 11$ $XV = 10 + 5 = 15$ $XVI = 10 + 5 + 1 = 16$

Forming Roman numbers from Hindu-Arabic Numbers

Expand the given number into tens and ones, and then form its Roman numeral by following the above rules.

> **Remember**: The number should be expanded such that it can be written using the basic symbols of Roman numerals.

Examples:

14 = 10 + 4 = X + IV = XIV

19 = 10 + 9 = X + IX = XIX

37 = 10 + 10 + 10 + 7 = X + X + X + VII = XXXVII

Forming Hindu-Arabic numbers from Roman Numbers

Examples:

XXI = X + X + I = 10 + 10 + 1 = 21

XXXIV = X + X + X + IV = 10 + 10 + 10 + 4 = 34

XVI = X + V + I = 10 + 5 + 1 = 16

XXIII = X + X + I + I + I = 10 + 10 + 1 + 1 + 1 = 23

Exercise 1.5

Write the missing Roman numerals in the following table.

Number System Table				
1 – I	9 – IX	17 – XVII	25 – XXV	33 – _____
2 – II	10 – X	18 – XVIII	26 – XXVI	34 – _____
3 – III	11 – XI	19 – _____	27 – _____	35 – _____
4 – IV	12 – _____	20 – XX	28 – XXVIII	36 – _____
5 – V	13 – XIII	21 – XXI	29 – _____	37 – _____
6 – VI	14 – _____	22 – _____	30 – XXX	38 – _____
7 – VII	15 – XV	23 – XXIII	31 – XXXI	39 – _____
8 – VIII	16 – XVI	24 – _____	32 – _____	

1 **Write the numbers corresponding to the number names. Also, write the expanded forms.**

(a) Forty-three thousand two hundred fifty-seven = _____

Expanded form: _____

(b) Six lakh seventy-four thousand six hundred thirty-five = _____

Expanded form: _____

(c) Ninety nine thousand twenty-nine = _____

Expanded form: _____

(d) One lakh five thousand sixty-one = _____

Expanded form: _____

(e) Eight lakh forty thousand four hundred ninety-nine = _____

Expanded form: _____

(f) Twenty-two thousand nine = _____

Expanded form: _____

2 **Write the numbers in expanded form and also write the number names.**

(a) 84,852 = _____

Number name: _____

(b) 52,901 = _____

Number name: _____

(c) 61,509 = _____

Number name: _____

(d) 3,17,656 = _____

Number name: _____

(e) 7,01,025 = _____

Number name: _____

(f) 9,93,100 = _____

Number name: _____

3 **Write the place value of the underlined digits in the numbers.**

(a) 5**6**,253 = _____

(b) **4**5,069 = _____

(c) 13,**7**07 = _____

(d) 2,10,5**8**4 = _____

(e) 9,**1**5,024 = _____

(f) **2**,68,009 = _____

4 Write the smallest number and the greatest number that can be formed using the given digits only once.

	Digits	Smallest Number	Greatest Number
(a)	3, 9, 1, 7, 8		
(b)	2, 8, 5, 4, 0, 6		
(c)	6, 1, 4, 2, 5, 3		

5 Compare the numbers and place the appropriate symbols (</>/=).

(a) 50,825 _____ 50,809   (b) 83,687 _____ 87,256

(c) 4,21,045 _____ 5,21,036   (d) 79,891 _____ 79,897

(e) 2,14,523 _____ 2,57,025   (f) 6012 _____ 76,009

(g) 40,000 _____ 4,00,000   (h) 6,75,036 _____ 6,75,031

6 Fill in the blanks.

(a) Round off 10,593 to the nearest 100 = _____

(b) Round off 7,53,126 to the nearest 10,000 = _____

(c) Round off 21,846 to the nearest 1000 = _____

(d) Round off 4, 17,605 to the nearest 10 = _____

7 Write the Roman or Hindu-Arabic numbers.

(a) 18 = _____   (b) 12 = _____   (c) XXVI = _____

(d) 23 = _____   (e) 39 = _____   (f) IX = _____

(g) 30 = _____   (h) XXXIV = _____   (i) XV = _____

Challenge

Identify the wrong notations of Roman numerals. Also, correct them.

| IIII = 4	XIX = 19	VX = 5	XXXIIIV = 38	XX = 20
XI = 11	XXXVIV = 39	VII = 7	IIX = 8	IX = 9
XIIIX = 17	XXIX = 29	XIXI = 22	VI = 6	

Maths Lab Activity

Aim: To represent 5-digit and 6-digit numbers using spike abacus

**Materials required**: Spike abacus, beads and number flash cards

Procedure: Students should work in groups. Give a number and ask the students of each group to represent it on spike abacus. Ask each group to show their representation and correct if any group is wrong. Also, ask students to write the number name and its expanded form on the corresponding number card.
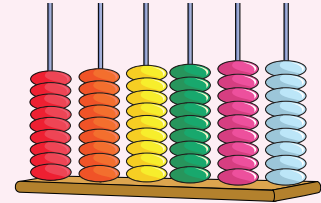
Similarly, give some more numbers to each group and repeat this.

Now, ask each group to think of a number and represent it on abacus. Ask them to show it to the class and ask the students to identify the number represented.
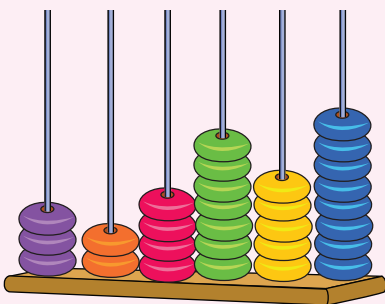
Examples:
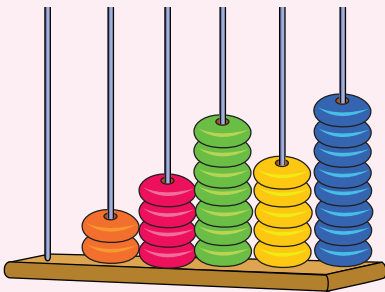
Number: 24,758
Name: Twenty-four thousand seven hundred fifty-eight
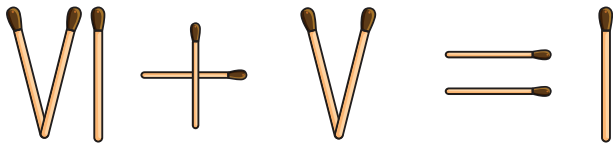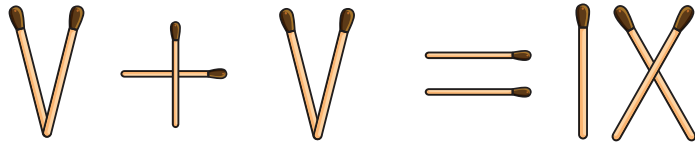**Expanded form**: 20,000 + 4000 + 700 + 50 + 8

Number: 3,24,758
Name: Three lakh twenty-four thousand seven hundred fifty-eight
Expanded form: 3,00,000 + 20,000 + 4000 + 700 + 50 + 8

Remove one matchstick from every row to make the given statement correct.

$$VI - I = VI$$

$$V + V = IX$$

$$XII - III = VIII$$

$$VI + V = I$$

$$IV - I = IV$$

$$IX + VIII = I$$

$$X - II = IX$$

Project

Collect information on the areas of different states and union territories in India (Refer to an atlas). Identify the states with area represented in 5-digit and 6-digit numbers. Arrange them in ascending order. Also, round them off to the nearest ten thousands.