Class - 4

Mathematics

Large Numbers

Chapter - 1

NUMBERS UPTO 1 LAKH

We know that

1 more than 9 is 10, i.e. 9 + 1 = 10

1 more than 99 is 100, i.e. 99 + 1 = 100

1 more than 999 is 1000, i.e. 999 + 1 = 1000

1 more than 9999 is 10000, i.e. 9999 + 1 = 10000

1 more than 99999 is 100000, i.e. 99999 + 1 = 100000

We observe the following :

(i) The number next to the largest 1-digit number (9) is the smallest 2-digit number (10).

(ii) The number next to the largest 2-digit number (99) is the smallest 3-digit number (100).

(iii) The number next to the largest 3-digit number (999) is the smallest 4-digit number (1000)

(iv) The number next to the largest 4-digit number (9999) is the smallest 5-digit number (10000).

(v) The number next to the largest 5-digit number (99999) is the smallest 6-digit number (100000).

The numbers beyond ten thousand are developed as under :

How we write	How we read
10000	Ten thousand
10001	Ten thousand one
10002	Ten thousand two
.....	.....

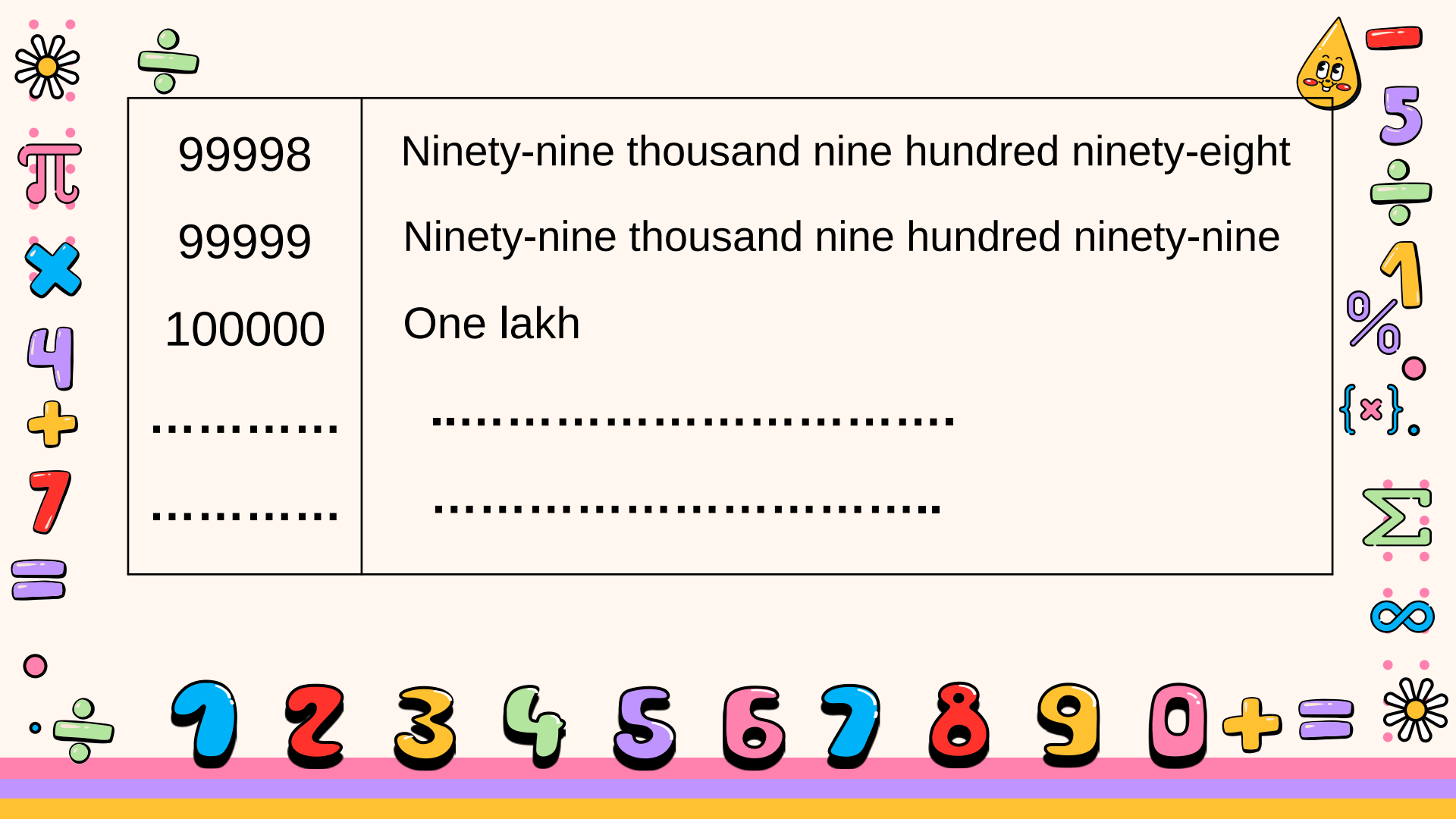
.....	.....
10009	Ten thousand nine
10010	Ten thousand ten
10011	Ten thousand eleven
.....	.....
.....	.....

10099	Ten thousand ninety-nine
10100	Ten thousand one hundred
10101	Ten thousand one hundred one
.....	.....
.....	.....

10999	Ten thousand nine hundred ninety-nine
11000	Eleven thousand
11001	Eleven thousand one
.....	.....
.....	.....

19999	Nineteen thousand nine hundred ninety-nine
20000	Twenty thousand
20001	Twenty thousand one
.....	.....
.....	.....

99998	Ninety-nine thousand nine hundred ninety-eight
99999	Ninety-nine thousand nine hundred ninety-nine
100000	One lakh
.....	.....
.....	.....



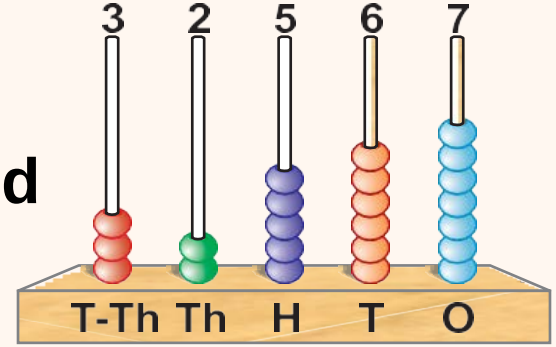
REPRESENTATION OF NUMBERS UPTO 1 LAKH ON THE ABACUS

EXAMPLE 1 :

Represent the numbers 32567 and 58538 on the abacus.

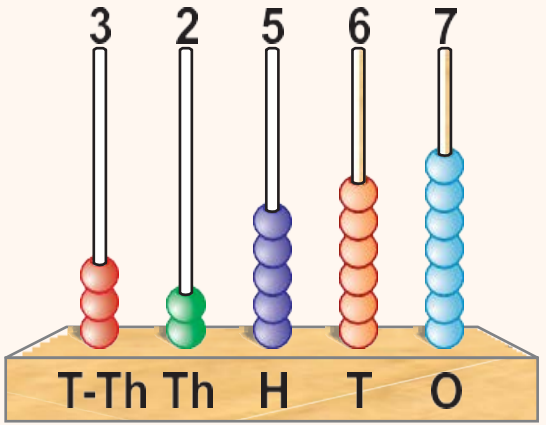
SOLUTION :

The given numbers have five digits. So, the abacus should have at least 5 spikes.

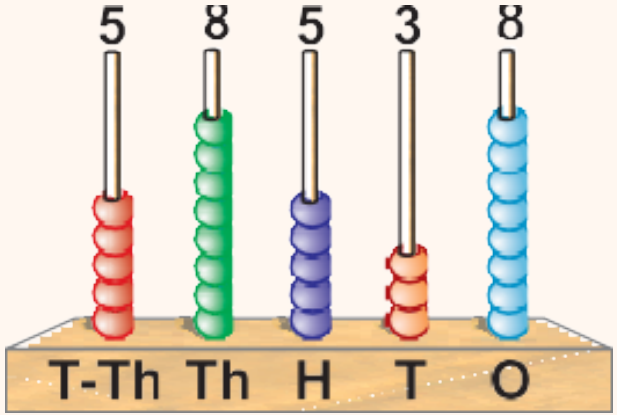


The number 32567 contains 7 ones, 6 tens, 5 hundreds, 2 thousands and 3 ten-thousands.

Therefore, 32567 is represented on the abacus as shown at right.

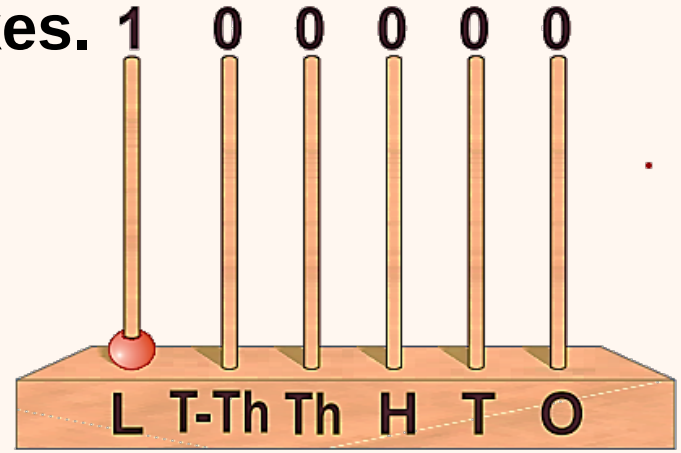


Now, 58538 contains 8 ones, 3 tens, 5 hundreds, 8 thousands and 5 ten-thousands.
Representation of 58538 on abacus is shown at right.



Similarly, we can represent 1 lakh (i.e. 100000) on the abacus.

Since 1 lakh contains 6 digits, the abacus should have at least 6 spikes.



PLACE VALUE CHART

In previous classes, we have already learnt the place values of the numbers upto 5 digits.

Ten-thousands	Thousands	Hundreds	Tens	Ones
10000	1000	100	10	1

We observe that the value of each place increases 10 times as we move from right to left, i.e. ones to tens, tens to hundreds, hundreds to thousands and thousands to ten-thousands.

Similarly, we can show the place value chart of 6-digit number, i.e. 1 lakh.

6. Write the place value of 2 in 12530.

Similarly, we can show the place value chart of 6-digit number, i.e. 1 lakh.

Lakhs	Ten-thousands	Thousands	Hundreds	Tens	Ones
100000	10000	1000	100	10	1

EXAMPLE 2 : ***Find the place value of each digit in 167050.***

SOLUTION :

Number 1 6 7 0 5 0

Place Values

0	ones	=	0
5	tens	=	50
0	hundreds	=	0
7	thousands	=	7000
6	ten-thousands	=	60000
1	lakh	=	100000

NOTE: Place value of 0 is always 0.

EXAMPLE 3 : ***Arrange the numbers 41548 and 172853 in the place value chart.***

SOLUTION :

	Lakhs (L)	Ten-thousands (T-Th)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
	100000	10000	1000	100	10	1
41548		4	1	5	4	8
172853	1	7	2	8	5	3

EXAMPLE 4 : Write 32758 in the expanded form.

SOLUTION :

Number 3 2 7 5 8

	Place Values
8 ones	= 8
5 tens	= 50
7 hundreds	= 700
2 thousands	= 2000
3 ten-thousands	= 30000

Hence,

32758

= 30000 + 2000 + 700 + 50+ 8

Or 32758 = 3 ten-thousands + 2 thousands + 7 hundreds + 5 tens + 8 ones

EXAMPLE 5 : Write 34528 in the expanded form in three different ways.

SOLUTION : Expanded form of 34528 in three different ways are given by :

(i) 34528 = 3 ten-thousands + 4 thousands + 5 hundreds + 2 tens + 8 ones

(ii) 34528 = (3 × 10000) + (4 × 1000) + (5 × 100) + (2 × 10) + (8 × 1)

(iii) 34528 = 30000 + 4000 + 500 + 20 + 8

PERIOD

To read numerals of large numbers without difficulty, we group the places into periods in the place value chart as shown below :

Perids ⇒ (HOUSES)

Places ⇒

34259 ⇒

LAKHS	THOUSANDS		ONE		
One lakh	Ten-thousands	Thousands	Hundreds	Tens	ONE
100000	10000	1000	100	10	1
	3	4	2	5	9

In the above table, 6 places are grouped in 3 periods, i.e. ones, thousands and lakhs.

We observe that :

1. The first three places from the right make the ‘Ones’ period , the next two make the ‘Thousands’ period, and the next i.e. sixth place makes the ‘Lakhs’ period.

2. While reading the numerals of a number, all the digits in the same period are read together. The name of the period (except the ones) is read along with them.

For Example :

(i) We read 28524 as

‘twenty-eight thousand five hundred twenty-four’

(ii) We read 20048 as ‘twenty thousand forty-eight’.

We represent numbers 28524 and 20048 in place value chart as below :

	LAKHS	THOUSANDS		ONE		
	One lakh	Ten-thousands	Thousands	Hundreds	Tens	ONE
	100000	10000	1000	100	10	1
28524 →		2	8	5	2	4
20048 →		2	0	0	4	8

ORDERING OF NUMBERS

Read the following :

124 > 25, as 3-digit number > 2-digit number

1234 > 923, as 4-digit number > 3-digit number

Here, we note that

the numbers with more number of digits are greater than the numbers having less number of digits.

Now, if both the numbers have same number of digits, we compare them by comparing the digits starting with the left-most digit and then moving from left to right.

EXAMPLE 6 : Which is greater ?

(i) 38527 or 36782

(ii) 45672 or 45679

SOLUTION : **In (i) and (ii), both have the same number of digits.**

Now we compare them from the left-most digits.

(i) The digits at the ten-thousands places are same,
i.e. 3 = 3.
At thousands places, 8 > 6.
So, 38527 > 36782.
i.e. 38527 is the greater one

T-Th	Th	H	T	O
3	8	5	2	7
SAME	different			
3	6	7	8	2

(ii) In 45672 and 45679, we have the following :

Digits of ten-thousands places are same.

Digits of thousands places are same.

Digits of hundreds places are same.

Digits of tens places are same.

Digits of ones places are different,

i.e. 9 > 2

Therefore, 45679 > 45672.

i.e. 45679 is the greater one.

T-Th	Th	H	T	O
4	5	6	7	2
SAME	SAME	SAME	SAME	Different
4	5	6	7	9

NUMBERS BEYOND ONE LAKH

We can extend numbers beyond 1 lakh in the same way as we do from one to one lakh.

Now, let us learn to read numbers with six digits using the place value chart.

For example, take the numerals 562732 and 999999.

One lakh	100000
Two lakh	200000
Three lakh	300000
Four lakh	400000
Five lakh	500000
Six lakh	600000
Seven lakh	700000
Eight lakh	800000
Nine lakh	900000

LAKHS		THOUSANDS		ONES		
	One lakh	Ten-thousands	Thousands	Hundreds	Tens	Ones
	100000	10000	1000	100	10	1
562732	5	6	2	7	3	2
999999	9	9	9	9	9	9

We read (i) 562732 as ‘five lakh sixty-two thousand seven hundred thirty-two’.
(ii) 999999 as ‘nine lakh ninety-nine thousand nine hundred ninety-nine’.
999999 is the largest 6-digit number.
1 more than 999999 is 1000000 (read as ‘ten lakh’).

1 more than 999999 is 1000000 (read as ‘ten lakh’).

LAKHS		THOUSANDS		ONES		
Ten lakhs	One lakh	Ten-thousands	Thousands	Hundreds	Tens	Ones
1000000	100000	10000	1000	100	10	1
	9	9	9	9	9	9
1	0	0	0	0	0	0

999999
1000000

Note that under the period Lakhs, we add a new place for ten lakhs. Similarly, 9999999 + 1 = 10000000 (read as ‘1 crore’). 1 crore or 10000000 is the smallest 8-digit number.

The place value chart is to be further extended to its left to enter 1 crore and then 10 crores.

CRORES		LAKHS		THOUSANDS		ONES		
10 crores	1 crore	Ten lakhs	One lakh	Ten-thousands	Thousands	Hundreds	Tens	Ones
100000000	10000000	1000000	100000	10000	1000	100	10	1
	1	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0

The place value chart is to be further extended to its left to enter 1 crore and then 10 crores.

CRORES		LAKHS		THOUSANDS		ONES		
10 crores	1 crore	Ten lakhs	One lakh	Ten-thousands	Thousands	Hundreds	Tens	Ones
100000000	10000000	1000000	100000	10000	1000	100	10	1
	1	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0

The above chart is popularly known as Indian Place Value Chart.

10 crore

1 crore

We read 25678231 as ‘twenty-five million six hundred seventy-eight thousand two hundred thirty-one.’

In the International System, we use 9 digits in three different periods, i.e. ones, thousands and millions. The name of the period (except the ones) is read along with the digits.

Comparison of Place Value Charts of Indian and International System

	CRORES		LAKHS		THOUSANDS		ONES		
Indian System	Ten Crores	One Crore	Ten Lakhs	One Lakh	Ten-thousands	One Thousand	Hundreds	Tens	Ones
	10000000	10000000	1000000	100000	10000	1000	100	10	1
Inter-national System	Hundred Millions	Ten Millions	One Million	Hundred Thousands	Ten Thousands	One Thousand	Hundreds	Tens	Ones
	100000000	10000000	1000000	100000	10000	1000	100	10	1
	MILLIONS			THOUSANDS			ONES		

Observing the table carefully, we notice that :

100 thousands = 1 lakh, 1 million = 10 lakhs

10 millions = 1 crore, 100 millions = 10 crores

THANKS!

1 2 3 4 5 6 7 8 9 0

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