

## CHAPTER 01

# KNOWING OUR NUMBERS

## Introduction to large numbers:

Counting things is easy for us now. We can count objects in large numbers.

Ex. The number of voters in an area, and represent them through numerals. We can also communicate large numbers using suitable number names.

It is not as if we always knew how to convey large quantities in conversation.



Over the years, with practice and need, we have developed strategies to handle large numbers.

Let us now recall the greatest five-digit numbers that is 99,999. If we add 1 to 99,999, we get smallest six-digit number.

That is 1 followed by 5 zeros, which is one lakh. One lakh comes after 99,999.

Now let us check how many tens, hundreds and thousands this 1 lakh has.

$$1,00,000 = \frac{100000}{10} \text{ Tens}$$

To calculate the number of tens in one lakh, divide it by 10.

So 1 lakh has Ten thousand tens.

$$1,00,000 = 10000 \text{ Tens}$$

To calculate the number of hundreds in one lakh, divide it by 100.

So 1 lakh has Thousand hundreds.

$$1,00,000 = \frac{100000}{100} \text{ Hundreds}$$

To calculate the number of thousands in one lakh, divide it by 1000.

$$1,00,000 = \frac{100000}{1000} \text{ Thousands}$$

So 1 lakh has Hundred thousands. Some more examples of large numbers.

The population of a village A is 5, 16 and 334.

i.e. 516334.

Let us write this in the place value chart.

| Lakh | Ten thousands | Thousands | Hundreds | Tens | Ones |
|------|---------------|-----------|----------|------|------|
| 5    | 1             | 6         | 3        | 3    | 4    |

Now observe the position of the digits in the place value chart and write the expanded form.

The expanded form will be,

$$5 \times 1 \text{ lakh} + 1 \times 10000 + 6 \times 1000 + 3 \times 100 + 3 \times 10 + 4 \times 1.$$

The number name for this big number will be,

Five lakh sixteen thousand three hundred thirty four.

**Example:**

The distance of the Moon from the Earth is 3, 84, 400 km.

The expanded form will be as follows,

$$3, 84, 400 = 3 \times 100000 + 8 \times 10000 + 4 \times 1000 + 4 \times 100 + 0 \times 10 + 0 \times 1.$$



The number name for this big number will be,

Three lakhs eighty-four thousand and four hundred kilometers.

Let us explore the next big number. Try using 9 in all the places of a 6 digit number.

That will be 9, 99, 999. This is the biggest six-digit number.

Now if we add 1 to this number what would be the result?

We get ten lakhs when we add one to the biggest six-digit number.

Also note, ten lakh is the smallest 7-digit number.

Let us now observe the pattern of smallest and biggest digit numbers.

$$9 + 1 = 10$$

$$99 + 1 = 100$$

$$999 + 1 = 1,000$$

$$9,999 + 1 = 10,000$$

$$99,999 + 1 = 1,00,000$$

$$9,99,999 + 1 = 10,00,000$$

When we add one more to the greatest 7-digit number, we get one crore.

### Place value of large numbers:

We shall now use the large numbers, place them in their respective placeholders, and read them.

| Indian Place value chart               |            |           |           |               |               |          |      |      |
|--|------------|-----------|-----------|---------------|---------------|----------|------|------|
| ← PERIODS                              |            |           |           |               |               |          |      |      |
| Crores                                 |            | Lakhs     |           | Thousands     |               | Ones     |      |      |
| Ten Crores                             | One Crores | Ten Lakhs | One Lakhs | Ten thousands | One thousands | Hundreds | Tens | Ones |
| 100000000                              | 10000000   | 1000000   | 100000    | 10000         | 1000          | 100      | 10   | 1    |
| PLACES IN FIGURES / SYMBOLS / NUMERALS |            |           |           |               |               |          |      |      |

Observe the chart, the crores period also has two sections Ten crores and 1 crore similar to other period of the place value chart.

An example,

The number considered as, Three eight two four zero five seven six five.

**Indian Numeral System**

|    |   |    |   |     |    |   |   |   |
|----|---|----|---|-----|----|---|---|---|
| TC | C | TL | L | TTh | Th | H | T | O |
| 3  | 8 | 2  | 4 | 0   | 5  | 7 | 6 | 5 |

Crores
Lakhs
Thousands

**Thirty eight crore twenty four lakh  
 five thousand seven hundred and  
 sixty five**

When we place them in their respective place, we can see how big the number is,

**Example:**

Place the number 1732256.

In the respective periods.

The number now will be 1732256.

| Periods | Lakhs     |       | Thousands     |           | Ones     |      |      |
|---------|-----------|-------|---------------|-----------|----------|------|------|
| Place   | Ten Lakhs | Lakhs | Ten Thousands | Thousands | Hundreds | Tens | Ones |
| →       | T L       | L     | T Th          | Th        | H        | T    | O    |

|     |   |      |    |   |   |   |
|-----|---|------|----|---|---|---|
| T L | L | T Th | Th | H | T | O |
| 1   | 7 | 3    | 2  | 2 | 5 | 6 |

**Use of commas reading a large number:**

Consider the example shown here.

If the numbers are written beside each other, it becomes so difficult to read.

| Ten Crore | Crore | Ten Lakh | Lakh | Ten Thousands | Thousands | Hundreds | Tens | Ones |
|-----------|-------|----------|------|---------------|-----------|----------|------|------|
| 2         | 2     | 2        | 2    | 2             | 2         | 2        | 2    | 2    |

Separating them will help us to read the number correctly. Like this,

In our Indian Numeral System, the periods are separated as UNITS, THOUSANDS, LAKHS and CRORES.

By using commas at the end of each period, we can write and read the numbers accurately.

### Example:

The commas in the numbers given in this table are used after each period.

It makes it easier for writing the number names too.



- Five crores eight lakhs one thousand five hundred and ninety two.
- 3 crores thirty-two lakhs forty thousand seven hundred and eighty one.
- Seven crores twenty-seven lakhs five thousand and sixty two.

| Crore<br>1,00,00,000 | Ten Lakh<br>10,00,000 | Lakh<br>1,00,000 | Ten-<br>Thousand<br>10,000 | Thousand<br>1,000 | Hundred<br>100 | Ten<br>10 | Unit<br>1 |
|----------------------|-----------------------|------------------|----------------------------|-------------------|----------------|-----------|-----------|
|----------------------|-----------------------|------------------|----------------------------|-------------------|----------------|-----------|-----------|

Example:      5, 08, 01, 592  
                      3, 32, 40, 781  
                      7, 27, 05, 062

### Comparison of large numbers:

Let us compare these large numbers 76767676 and 77656565.

Now write down this number in periods and place values.

By investigation, we can see both the numbers are 8-digit numbers.

The digits in the greatest place value are the same.

The digits in the next place value i.e. the lakhs place are different, which will help us compare.

The place value of the first number is 60 lakh while the place value in the second number is 70 lakh.

As 60 lakh > 70 lakh,

7, 67, 67, 676 is greater than 7, 76, 56, 565.

## Comparisons of Numbers

### Example

Let us compare the numbers: 76767676 and 77656565

Now write the numbers in periods and place values.

| Crores | Lakhs |    | Thousands |     | Ones |   |   |
|--------|-------|----|-----------|-----|------|---|---|
|        | C     | TL | L         | TTh | Th   | H | T |
| 7      | 6     | 7  | 6         | 7   | 6    | 7 | 6 |
| 7      | 7     | 6  | 5         | 6   | 5    | 6 | 5 |

- Both the numbers are 8-digit numbers.
- The digits in the greatest place value are the same, the place value being 7 crore.
- The digits in the next place value, i.e., the ten lakhs place, are different. The place value in the first number is 60 lakh. The place value in the second number is 70 lakh.

As 60 lakh < 70 lakh,  
7,67,67,676 < 7,76,56,565

