

i. Definition and Explanation

The Indian System of Numeration is a method of expressing numbers that is used in India and other South Asian countries. While the International System uses periods of three digits (like thousands, millions, billions), the Indian system uses a different structure for numbers larger than 9,999.

After the 'Thousands' period, this system introduces new periods called Lakhs and Crores.

What is a Lakh?

- One Lakh is equal to one hundred thousand.
- It is the smallest 6-digit number.
- 1 Lakh = 1,00,000 (Five zeros after 1)

What is a Crore?

- One Crore is equal to one hundred lakhs (or ten million).
- It is the smallest 8-digit number.
- 1 Crore = 1,00,00,000 (Seven zeros after 1)

The system is based on grouping digits, which makes reading and writing large numbers much simpler.

ii. Key Points and Important Terms

Periods: In the Indian system, digits are grouped into periods. These periods help us read the number. The main periods are:

- Ones (containing Ones, Tens, Hundreds)
- Thousands (containing Thousands, Ten Thousands)
- Lakhs (containing Lakhs, Ten Lakhs)
- Crores (containing Crores, Ten Crores)

Comma Placement (The Most Important Rule): The first comma is placed after the hundreds place (3 digits from the right). Subsequent commas are placed after every 2 digits.

Example: The number 543216789 is written as 54,32,16,789.

Breakdown:

- 789 (Ones period)
- 16, (Thousands period)
- 32, (Lakhs period)
- 54, (Crores period)
- Place Value Chart (Indian System):

Place Value	Clarification
Ten Crores (TC)	10,00,00,000
Crores (C)	1,00,00,000
Ten Lakhs (TL)	10,00,000
Lakhs (L)	1,00,000
Ten Thousands (TTh)	10,000
Thousands (Th)	1,000
Hundreds (H)	100
Tens (T)	10
Ones (O)	1

Key Relationships:

- 10 Thousands = 1 Ten Thousand
- 10 Ten Thousands = 1 Lakh
- 10 Lakhs = 1 Ten Lakh
- 10 Ten Lakhs = 1 Crore
- 10 Crores = 1 Ten Crore
- 1 Crore = 100 Lakhs

iii. Detailed Examples with Solutions

Example 1: Writing a number in figures and placing commas. Write "Seven Crore, fifty-two lakh, twenty-one thousand, three hundred two" in figures.

Solution:

- 1. Identify the periods: Crore, Lakh, Thousand, and Ones.
- 2. Write the digits for each period:

• Crore: 7

• Lakh: 52

• Thousand: 21

• Ones (three hundred two): 302

- 3. Combine them and place commas: Start from the right.
 - ... 302 (Ones period)
 - ... 21,302 (Thousands period)
 - ... 52,21,302 (Lakhs period)
 - 7,52,21,302 (Crores period)

Answer: 7,52,21,302

Example 2: Reading a number and writing it in words. Write the number 9,87,65,432 in words.

Solution:

- 1. Place commas correctly (already done): 9,87,65,432
- 2. Identify the periods from right to left:
 - 432 is in the Ones period.
 - 65 is in the Thousands period.
 - 87 is in the Lakhs period.
 - 9 is in the Crores period.
- 3. Read each period's number followed by its name:
 - Nine Crore
 - Eighty-seven Lakh
 - Sixty-five Thousand
 - Four hundred thirty-two

Answer: Nine Crore, eighty-seven lakh, sixty-five thousand, four hundred thirty-two.

Example 3: Finding the place value and face value. For the number 6,45,78,192, find the place value and face value of the digit 5.

Solution:

1. Identify the position of the digit 5:

Let's use the place value chart:

- 6 \rightarrow Crore
- 4 → Ten Lakh
- 5 \rightarrow Lakh
- 7 → Ten Thousand
- ...and so on.
- 2. Face Value: The face value of a digit is the digit itself.
 - Face Value of 5 is 5.
- 3. Place Value: The place value is the digit multiplied by its positional value.
 - The digit 5 is in the Lakhs place (1,00,000).
 - Place Value = $5 \times 1,00,000 = 5,00,000$.
 - Place Value of 5 is 5,00,000 (Five Lakh).

iv. Summary of Main Concepts

- The Indian System of Numeration uses periods of Ones, Thousands, Lakhs, and Crores to group digits.
- Comma Rule: The first comma comes after 3 digits from the right, and then after every 2 digits. (e.g., 12,34,56,789).

Key Values:

- 1 Lakh = 1,00,000 (1 hundred thousand)
- 1 Crore = 1,00,00,000 (100 lakhs or 10 million)
- Reading numbers involves naming the digits in a period followed by the period's name (e.g., "Twenty-three Lakh").
- Always use zeros as placeholders for any missing positions within a period.