Chapter- 2

INDIAN NUMBER SYSTEM

STUDY NOTES

I am reading this chapter to know:

- Extension of the number system
- Place value chart upto ten crore
- Expanded form / Order relation
- Successor and predecessor
- Comparison of numbers
- Ascending and descending order
- Formation of number with given digits

Extension of the number system:

A 8-digit number begins at the one crore place.

A 9-digit number begins at the ten crore place.

To represent an eight 8 or a 9-digit number a place-value chart is divided into four periods.

Ones period has three places – Hundreds, Tens and Ones

Thousand period has two places –Ten Thousands and Thousands

Lakhs period has two places – Lakhs and Ten Lakhs

Crores period has two places – Crores and Ten Crores

We write 1 crore as 1,00,00,000

1,00,00,000(1 crore) is the smallest 8-digit number.

We read 10,00,00,000 as ten crore

10,00,00,000(10 crore) is the smallest 9-digit number.

We read 100,00,00,000 as hundred crore

100,00,00,000(100 crore) is the smallest 10-digit number.

The greatest 8 digit number is 9,99,99,999

The greatest 9 digit number is 99,99,99,999

PLACE VALUE CHART UPTO TEN CRORE

Crores period		Lakhs period		Thousands period		Ones period		
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

The 9-digit number 78,32,41,563 in Indian place-value chart is :

Crores period		Lakhs period		Thousands period		Ones period		
Ten crores	Crores	Ten lakhs	Lakhs	Ten thousands	Thousands	Hundreds	Tens	Ones
7	8	3	2	4	1	5	6	3

The number in the place-value chart is read as :

Seventy eight crore thirty-two lakh forty-one thousand five hundred sixty three.

Example 1 :

a) Write the numeral for Fifty crore fifty-three lakh thirty-four thousand five hundred ninety-two.

Solution: 50 crore 53 lakh 34 thousand 592

The numeral is 50,53,34,592

b) Write the place-value of the digit in orange.

84,56,32,645

76,45,30,253

Solution:

84,56,32,645 = 6 lakh

78,45,30,253 = 8 crore

Expanded form:

A number when expressed as a sum of place values of digits is said to be in expanded form.

The place-value chart helps us to read, write and operate the numbers in various forms.

Let us consider the number 87,69,54,321:

TC	C	TL	L	T Th	TH	H	T	O
8	7	6	9	5	4	3	2	6

1.Reading a number name : Eighty-seven crore sixty-nine lakh fifty-four thousand three hundred twenty six

2.Standard form : 87,69,54,326

3.Expanded form: 80,00,00,000+7,00,00,000+60,00,000+9,00,000+50,000+4,000+300+20+6

4.Expanded form in words: 8 ten crores + 7 crores + 6 ten lakhs + 9 lakhs + 5 ten thousands + 4 thousands + 3 hundreds + 2 tens + 6 ones

Example 2 :

a) Write 54,65,78,304 in the expanded form.

Solution:

54,65,78,304=50,00,00,000+4,00,00,000+60,00,000+5,00,000+70,000+8,000+300+4

b) Write the standard form of :

90,00,00,000+8,00,00,000+7,00,000+2,000+500+80+2

Solution:

Using the place value chart, we have

TC	C	TL	L	T Th	TH	H	T	O
9	8	0	7	0	2	5	8	2

The standard form is 98,07,02,582.

Successor and predecessor :

The number that comes just after a given number is called its **successor**.

The number that comes just before a given number is called its **predecessor**.

Example 3 :

a) Write the successor of 47,67,999.

Solution: Successor of 47,67,999 = 47,67,999 + 1 = 47,68,000

b) Write the predecessor of 58,64,000.

Solution: Predecessor of 58,64,000 = 58,64,000 - 1 = 58,63,999

Comparing and ordering of numbers :

Rules :

1.When the number of digits is different, the number with more digits is greater.

2.When the number of digits is same, compare the leftmost digits first. If these digits are the same, compare the next digits on the right. Continue until you find two digits that are different the number with greater digit is greater.

Example 4 :

a) Compare 76,75,892 and 9,56,76,309

Solution:

C	TL	L	T Th	TH	H	T	O	
	7	6	7	5	8	9	2	
9	5	6	7	6	3	0	9	

Therefore, 9,56,76,309 > 76,75,892

b) Compare 7,46,57,980 and 7,46,75,809

C	TL	L	T Th	TH	H	T	O
7	4	6	5	7	9	8	0
7	4	6	7	5	8	0	9

Therefore, 7,46,75,809>7,46,57,980

Example 5 :

a) Arrange in ascending and descending order:
34,65,789 ;5,65,45,786 ; 65,78,896 ; 7,34,65,798

Solution:

Write these numbers in a place-value chart

C	TL	L	T Th	TH	H	T	O
	3	4	6	5	7	8	9
5	6	5	4	5	7	8	6
	6	5	7	8	8	9	6
7	3	4	6	5	7	9	8

Ascending order: 34,65,789; 65,78,896; 5,65,45,786;7,34,65,798

Descending order: 7,34,65,798; 5,65,45,786;65,78,896;34,65,789

Formation of numbers with given digits

Rules :

1. To write the largest number using the given digits without repetition of the digits, write the digits in descending order and then write the number using the digits written in descending order .

2. To write the smallest number using the given digits without repetition of the digits, arrange the digits in ascending order. Two cases arise :

Case I : If there is no zero among the digits, then write the digits in ascending order and we will get the smallest number.

Case II : If one of the digits is zero, then put zero at the second place from the left and write the remaining digits in ascending order.

3. To write the smallest or largest number using the give digits when repetition of the digits is allowed, write the smallest or greatest number following the details given in the question.

Example 6 :

Write the largest and smallest number using 3, 6, 0, 2, 8 and 5 only once.

Solution:

The required largest number is 8,65,320.

The required smallest number is 2,03,568.

Example 6 :

Write the largest and smallest number using 3, 0, 6 and 4, repeating 3 three times.

Solution:

The required largest number is 6,43,330

The required smallest number is 3,03,346

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