

Chapter 10

Large Number

In previous class-IV, you have learnt reading and writing numbers upto lakhs. We know that 999999 is the largest 6-digit number. We read 999999 as **nine lakh ninety-nine thousand nine hundred ninety-nine**.

When we add 1 to the numeral 999999, we get the next numeral.

T.L	L	T.Th	Th	H	T	O
9	9	9	9	9	9	9
					+	1
1	0	0	0	0	0	0

Here, the digit 1 is at ten lakh's place, that is seventh place from right which the **smallest 7-digit number** and read as **ten lakhs**. The seventh place is called the **ten lakhs place**. We denote it as T. L.

Similarly, the largest seven digit number is 9999999. When we add 1 to the number 9999999, we get 10000000.

10000000 is the **smallest 8-digit number** and it is read as **one crore**.

The eighth place from the extreme right is called the one **crore's place**.

If we add 1 to the largest 8-digit number (99999999), we get 100000000.

100000000 is the smallest 9-digit number and it is read as ten crores. The ninth place is called the **ten-crore's place**.

Now, we can extend the Indian place value chart upto 9 places. These places are grouped into four periods namely: **Ones, Thousands, Lakhs and Crores**.

Look at the following place value chart, showing above mentioned four periods :

Periods→	Crores		Lakhs		Thousands		Ones		
Places →	Ten-Crores	Crores	Ten-Lakhs	Lakhs	Ten-Thousands	Thousands	Hundreds	Tens	Ones
Symbols →	T-C	C	T-L	L	T-Th	Th	H	T	O
Numbers→	100000000	10000000	1000000	100000	10000	1000	100	10	1

READING AND WRITING NUMBERS

Before reading a number, we divide it into periods starting from the right. The first period consists of three digits, called the ones period. The next period consists of two digits, called the thousands period. Next period also consists of two digits, called the lakhs period and similarly, the next periods also consists of two digits, is called the crores period.

We separate the periods by a comma (,). In modern notation, we leave a short space between the periods.

Let us study some examples:

Example 1 : Read the following numbers and then write in words :

- (a) 3580360
- (b) 29346571
- (c) 263270857

Solution : First we divide each number into periods.

S. No.	Given Numbers									Numbers using comma
	Crores		Lakhs		Thousands		Ones			
	T-C	C	T-L	L	T-Th	Th	H	T	O	
(a)			3	5	8	0	3	6	2	35, 80, 360
(b)		2	9	3	4	6	5	7	1	2, 93, 46, 571
(c)	2	6	3	2	7	0	8	5	7	26, 32, 70, 857

- Now, (a) 35, 80, 360 = Thirty-five lakh eighty thousand three hundred sixty.
 (b) 2, 93, 46, 571 = Two crore ninety-three lakh forty-six thousand five hundred seventy-one.
 (c) 26, 32, 70, 857 = Twenty-six crore thirty-two lakh seventy thousand eight hundred fifty-seven.

Example 2 : Write each of the following number names in figures :

- (a) Forty -seven lakh eighty thousand nine hundred twelve.
- (b) Eight crore sixty-one lakh thirty thousand seven hundred twenty-four.
- (c) Fifteen crore thirty lakh seventy-one thousand three hundred sixty-eight.

Solution : We can write the above number names in figure as given on the next page :

S. No.	Given Number Name	Number in periods									Number
		T-C	C	T-L	L	T-Th	Th	H	T	O	
(a)	Forty-seven lakh eighty thousand nine hundred twelve			4	7	8	0	9	1	2	47,80,912
(b)	Eight crore sixty-one lakh thirty thousand seven hundred twenty-four		8	6	1	3	0	7	2	4	8,61,30,724
(c)	Fifteen crore thirty lakh seventy-one thousand three hundred sixty-eight	1	5	3	0	7	1	3	6	8	15,30,71,368

Example 3 : How many numbers have nine digits ?

Solution : The greatest 9-digit number = 999999999

The greatest 8-digit number = 99999999

∴ Number of numbers having nine digits

$$= 999999999 - 99999999 = 900000000.$$



Testing Time 10.1

1. Rewrite the following numerals using commas to separate periods according to the Indian place value chart :

(a) 528176

(b) 73650752

(c) 8573168

(d) 107009375

(e) 6854670

(f) 87598207

(g) 869000275

(h) 790407080

2. Write the number name for each of the following numerals :

(a) 8235618

(b) 8781282

(c) 4852906

(d) 7183518

(e) 4808382

(f) 9425037

(g) 17435016

(h) 30181705

3. Write each of the following numbers in figures :

(a) one lakh fifty-six thousand four

(b) Thirty-five lakh two thousand three hundred three.

(c) Eighty-one lakh forty-three thousand thirty-six

(d) Nine crore fifteen lakh two hundred four

(e) Twenty-three crore ten lakh thirty-six thousand five hundred

4. Write the next three numbers:

- (a) 29009,,,
 (b) 807510,,,

5. Count by twos and fill in the blanks:

385634512, 385634514,,,

6. Count by fives and fill in the blanks:

780423190, 780423195,,,

7. Count by tens and fill in the blanks :

337294563, 337294573,,,

8. Write the smallest 8-digit number.

9. Write the greatest 9-digit number.

10. Write True and False for these :

- (a) Hundred thousands make 10 ten thousands.
 (b) Thousand ten thousands make hundred lakhs.
 (c) Ten hundred make thousand tens.

PLACE VALUE OF A DIGIT IN A NUMERAL

The place value of a digit depends upon its position in the numeral. It is given by :
 The place value of a digit = its face value \times value of its place.

Example 4 : Write the place value of each digit of the numeral 837524.

Solution : In the numeral 837524:

- The place value of 4 is $4 \times 1 = 4$;
 The place value of 2 is $2 \times 10 = 20$;
 The place value of 5 is $5 \times 100 = 500$;
 The place value of 7 is $7 \times 1000 = 7000$;
 The place value of 3 is $3 \times 10000 = 30000$;
 The place value of 8 is $8 \times 100000 = 800000$.

Example 5 : Find the place value of each of the digits in 87652341 .

Solution : We may write the given numeral in place value chart as:

C	T-L	L	T-Th	Th	H	T	O
8	7	6	5	2	3	4	1

From the place value chart, we have:

- Place value of 1 = 1 one = $1 \times 1 = 1$;
 Place value of 4 = 4 tens = $4 \times 10 = 40$;
 Place value of 3 = 3 hundreds = $3 \times 100 = 300$;
 Place value of 2 = 2 thousands = $2 \times 1000 = 2000$;
 Place value of 5 = 5 ten thousands = $5 \times 10000 = 50000$;

The place value of zero (0) always remains zero (0) no matter, at what place it is.

Place value of 6 = 6 lakhs = $6 \times 100000 = 600000$;

Place value of 7 = 7 ten lakhs = $7 \times 1000000 = 7000000$;

Place value of 8 = 8 crores = $8 \times 10000000 = 80000000$.

Example 6 : Find the place value of the coloured digit by using Indian system of numeration.

(a) 68584902 (b) 531085784

Solution : (a) In 68584902, 8 is in ten-thousand place.

Thus, place value of 8 in the given number is

$$8 \times 10000 = 80000.$$

(b) In 531085784, 3 is in crores place.

Thus, place value of 3 in the given number is

$$3 \times 10000000 = 30000000.$$

NUMBERS IN EXPANDED FORM

The sum of the place values of the digits in a numeral is called its expanded form.

Example 8 : Write 657403268 in the expanded form.

Solution : First of all write all the digits in the place value chart as given under.

T-C	C	T-L	L	T-Th	Th	H	T	O
6	5	7	4	0	3	2	6	8

\therefore 657403268

= 6 ten crores + 5 crores + 7 ten lakhs + 4 lakhs + 0 ten thousands

+ 3 thousands + 2 hundreds + 6 tens + 8 ones

= $6 \times 100000000 + 5 \times 10000000 + 7 \times 1000000 + 4 \times 100000 + 0 \times 10000$

+ $3 \times 1000 + 2 \times 100 + 6 \times 10 + 8 \times 1$

\therefore Thus, the expanded form of 657403268 is

$$600000000 + 50000000 + 7000000 + 400000 + 3000 + 200 + 60 + 8.$$

SHORT FORM

Example 9 : Write the following in short form :

(a) $8000000 + 400000 + 2000 + 100 + 6$

(b) $90000000 + 60000 + 5000 + 7$

Solution : (a) $8000000 + 400000 + 2000 + 100 + 6 = 8402106$

(b) $90000000 + 60000 + 5000 + 7 = 90065007.$



Testing Time 10.2

1. Using Indian system of numeration, find the place value of the coloured digit in each of the following numbers.

- (a) 859 **7** 218 (b) 867982 **4** 6 (c) 1**8**36952 (d) **9** 1240567

2. Write the place value of 6 in each of the following:

- (a) 5 6 835905 (b) 625734005 (c) 8 7698253 (d) 3124056 7

3. Find the difference between the place values of:

- (a) the two 4's in 1457624 (b) the two 5's in 57619352
 (c) the two 7's in 627395700 (d) the two 8's in 295864982

4. Write each of the following numbers in expanded form:

- (a) 78365 (b) 356218 (c) 9454021 (d) 2831628

5. Write each of the following in short form:

- (a) $9000000 + 200000 + 800 + 10 + 6$ (b) $5000000 + 10000 + 700 + 80 + 9$
 (c) $4000000 + 900000 + 6000 + 400 + 5$ (d) $700000 + 20000 + 900 + 80$
 (e) $1000000 + 6000 + 800 + 70$ (f) $900000 + 50 + 8$
 (g) $70000000 + 200000 + 40000 + 30$

ASCENDING AND DESCENDING ORDER

If we arrange the numbers from the smallest to the highest (biggest), we say that they are arranged in ascending order.

Example 13 : Arrange the following numbers in ascending order:

9359604, 2789301, 10003902, 2930568

Solution :

$\underbrace{9359604}_{7 \text{ digits}}$	$\underbrace{2789301}_{7 \text{ digits}}$	$\underbrace{10053902}_{8 \text{ digits}}$	$\underbrace{2930568}_{7 \text{ digits}}$
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Since 10003902 has more digits (8-digits), so it is the greatest numbers.

Now, we compare the remaining three digits.

All these numbers have 7-digits.

9359604, 2789301 and 2930568

Since, $2789301 < 2930568$

and $2930568 < 9359604$

Hence, the numbers in ascending order are:

2789301, 2930568, 9359604, 10003902.

Comparing numbers from extreme left we have $9 > 2$.
 But 2789301 and 2930568 has 2 at the left most digits. Here $9 > 7$
 So, $2930568 > 2789301$

Example 14 : Arrange the following numbers in descending order:

4809362, 3175265, 48530261, 3186405

Solution :

$\underbrace{4809362}_{7 \text{ digits}}$	$\underbrace{3175265}_{7 \text{ digits}}$	$\underbrace{48530261}_{8 \text{ digits}}$	$\underbrace{3186405}_{7 \text{ digits}}$
---	---	--	---

Since 48530261 has more digits. So it is the greatest number.

Next greater number is 4809362

and $3186405 > 3175265$.

Hence, the numbers in descending order are : 48530261, 4809362, 3186405, 3175265.



Testing Time 10.3

1. Compare and put the correct sign $>$ or $<$ in each :

- | | | | |
|----------------------------------|---------|----------------------------------|---------|
| (a) 5135628 <input type="text"/> | 6134628 | (b) 7121493 <input type="text"/> | 8121483 |
| (c) 982100 <input type="text"/> | 972100 | (d) 6140578 <input type="text"/> | 623495 |
| (e) 8963976 <input type="text"/> | 8964989 | (f) 2576421 <input type="text"/> | 2754523 |

2. Tick (\checkmark) the largest and cross (\times) the smallest number :

- | | |
|-------------------------------|-------------------------------|
| (a) 3120567, 3120167, 312665 | (b) 2198108, 298107, 296148 |
| (c) 367889, 357664, 398100 | (d) 4569108, 4569206, 4539206 |
| (e) 2685006, 2345006, 2789006 | |

3. Arrange the following numbers in ascending order:

- (a) 752361, 6523620, 95125, 88728
(b) 1887359, 7815289, 6152893, 6789389
(c) 86673838, 19831638, 726139, 28372, 8387681
(d) 533452159, 766152831, 727835218, 736176128

4. Write the following numbers in descending order:

- (a) 2564507, 2563201, 2569850
(b) 879564, 878254, 8317561, 8318000
(c) 526781, 452678, 4531071, 4452700
(d) 6183955, 6878599, 3869890, 7962387

ROMAN NUMERALS

In the previous class, we have learnt reading and writing of Roman numerals upto 39. Now, we shall learn about writing and reading of these numbers upto 100. There are seven distinct symbols (numerals) in this system. These symbols along with corresponding Hindu-Arabic numerals are given below :

I	V	X	L	C	D	M
1	5	10	50	100	500	1000

Rules for writing numbers in Roman system :

Rule 1: If a symbol is repeated, its value is multiplied by the number of times it is repeated.

For example, $II = 1 \times 2$ or $(1 + 1) = 2$
 $III = 1 \times 3$ or $(1 + 1 + 1) = 3$
 and $XXX = 10 \times 3$ or $(10 + 10 + 10) = 30$

Only I, X, C and M can be repeated but not more than three times.

Rule 2: If a symbol of smaller value is placed to the right of a symbol of greater value, we add its value to the value of greater symbol.

For example, $VI = 5 + 1 = 6$
 $XII = 10 + (1 \times 2) = 10 + 2 = 12$
 $XXIII = (10 \times 2) + (1 \times 3) = 20 + 3 = 23$
 and $LXV = 50 + 10 + 5 = 65$.

Rule 3: If a symbol of smaller value is placed to the left of a symbol of greater value, its value is subtracted from the value of the greater symbol.

For example, $IV = 5 - 1 = 4$
 $IX = 10 - 1 = 9$
 $XL = 50 - 10 = 40$
 and $XCV = (100 - 10) + 5 = 90 + 5 = 95$

The symbol I can be subtracted from V and X only.

The symbol X can be subtracted from L and C only. From the above rules, we have:

1 = I	2 = II
3 = III	4 = IV
5 = V	6 = VI
7 = VII	8 = VIII
9 = IX	10 = X
20 = XX	30 = XXX

No symbol is written on the left other than I and X.

40 = XL	50 = L
60 = LX	70 = LXX
80 = LXXX	90 = XC
100 = C	

Now, it is easy to write any number up to 100 in Roman numerals.

Let us write 47 in Roman numeral.

We have, $47 = 40 + 7$

$$40 = XL, 7 = VII$$

Hence, $40 + 7 = XLVII$

Roman numerals which do not follow the above rules are known as meaningless numerals.

For example, IC and VX are meaningless.

To write any number in Roman numeral, we separate the tens and ones and then first write the Roman numeral for the tens (40 here) and then write the Roman numeral for the ones (7 here) at the right of it.

Example 19 : Write the following numerals in the Roman form :

- | | |
|--------|--------|
| (a) 46 | (b) 54 |
| (c) 79 | (d) 93 |

Solution : (a) $46 = 40 + 6 = XL + VI = XLVI$
 (b) $54 = 50 + 4 = L + IV = LIV$
 (c) $78 = 70 + 8 = LXX + VIII = LXXVIII$
 (d) $99 = 90 + 9 = XC + IX = XCIX$

Example 20 : Write the following numerals in the Hindu Arabic form:

- | | |
|-----------|------------|
| (a) XXVII | (b) XCII |
| (c) LXIV | (d) LXVI |
| (e) LXXIX | (f) LXXXII |

Solution : (a) $XXVII = XX + VII = 20 + 7 = 27$
 (b) $XCII = XC + II = 90 + 2 = 92$
 (c) $LXIV = LX + IV = 50 + 10 + 4 = 64$
 (d) $LXVI = L + X + VI = 50 + 10 + 6 = 66$
 (e) $LXXIX = L + XX + IX = 50 + 20 + 9 = 79$
 (f) $LXXXII = L + XXX + II = 50 + 30 + 2 = 82$



Testing Time 10.4

1. Write the following numerals in the Roman form :

- (a) 14 (b) 26 (c) 35
(d) 59 (e) 66 (f) 78
(g) 89 (h) 94

2. Write the following in Hindu-Arabic numerals :

- (a) XII (b) XIX (c) XXV
(d) XXIX (e) XXXV (f) XXXVII
(g) XL (h) LV (i) LXVII
(j) XCV (k) XCVI (l) XCIX

3. Which of the following are meaningless ?

- (a) VX (b) IC (c) IL
(d) XC (e) LXV (f) XL
(g) ILV (h) XXXXII

4. Fill in the blanks with the symbol > or < :

- (a) LIV LVI (b) XVI XIV
(c) XXXIV XXXVI (d) IX XI
(e) VIII IX (f) CVI CIV

5. Match the following :

- | Column A | Column B |
|----------|----------|
| 1. XL | a. 7 |
| 2. XV | b. 26 |
| 3. VII | c. 40 |
| 4. LXXI | d. 99 |
| 5. XCII | e. 15 |
| 6. XXVI | f. 85 |
| 7. XCIX | g. 71 |
| 8. LXXXV | h. 92 |