

Jender Heart High School ; Chandigarh

Class: VI

Date: 8.04.24

Subject: Mathematics

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Ch-1 Number System

Numbers play an important role in Mathematics. The very first stage of learning mathematics begins with counting of objects. This is done by using counting numbers 1, 2, 3, 4, 5, 6, ...

- These counting numbers are called natural numbers.

There is no end to natural numbers.

Writing a number in figures is called notation.

Writing a number in words is called numeration.

Number	Numerical	Numeration
31	31	Thirty one

- Periods : →

We separate the various places into periods, namely Crores, Lakhs, Thousands and Ones.

- Hundreds, tens and ones places taken together form Ones Period.
- Ten-thousands and thousands places taken together form Thousands Period.
- Ten-lakhs and lakhs places taken together form Lakhs Period.
- Ten-crores and crores places taken together

form Crores Period.

- In a given numeral, we insert comma after each period.

Hindu Arabic System of Numeration.

CRORES		LAKHS		THOUSANDS		ONES		
Ten Crore	Crore	Ten Lakh	Lakh	Ten Thousand	Thousand	Hundreds	Tens	Ones
TC	C	TL	L	TTh	Th	H	T	O

Face-Value of a Digit in a Numeral

The face-value of a digit in a numeral is the value of the digit itself at whatever place it may be.

eg:- in the numeral 83946, we have

8	3	9	4	6	face value
					→ 6
					→ 4
					→ 9
					→ 3
					→ 8

Place-Value of a Digit in a Numeral

The place-value of a digit in a numeral depends on the place it occupies in the place-Value chart.

$$\text{Place-value of a digit} = (\text{Face-value of the digit}) \times (\text{value of the place})$$

eg:-

TL	L	Th	Th	H	T	O	
2	6	9	0	4	3	5	Place Value
							5 ones
							3 tens
							4 hundred
							0
							9 ten thousand
							6 lakh
							2 ten lakh

The place-value of '0' is always '0' at whatever place it may be.

Whole Numbers:->

All natural numbers together with '0' are called whole numbers.

eg:- Thus, 0, 1, 2, 3, 4, 5, 6, 7, ... are whole numbers.

Successor of a Number:->

The successor of a number is '1' more than the number.

eg:- successor of 63,019 is 63,020

Predecessor of a Number:->

The predecessor of a number is 1 less than the number.

eg:- predecessor of 16,501 is = 16,500

The predecessor of 0 does not exist.

Exercise 1A

Q1. Write the numeral for each of the following:-

i) Eight lakh five thousand twelve.

→ $\overset{L}{8}, \overset{Th}{05}, \overset{HT}{012}$

ii) Thirteen lakh three thousand eight

→ 13, 03, 008

iii) Three crore three lakh three thousand three.

→ 3, 03, 03, 003

iv) Five crore twelve lakh eighteen.

→ 5, 12, 00, 018

v) Nine crore nineteen lakh five thousand eight.

→ 9, 19, 05, 008

vi) Six crore thirty five lakh nineteen thousand sixteen.

→ 6, 35, 19, 016

vii) Eleven crore twenty two lakh thirty three thousand four hundred fifty.

→ 11, 22, 33, 450

Q2. Write each of the following in words:-

i) $\overset{L}{8}, \overset{Th}{08}, \overset{HT}{080}$ → Eight lakh eight thousand eighty.

ii) $\overset{TL}{15}, \overset{Th}{07}, \overset{H}{06} \overset{T}{3} \rightarrow$ Fifteen lakh seven thousand sixty three.

iii) $\overset{TL}{87}, \overset{Th}{08}, \overset{H}{10} \overset{T}{9} \rightarrow$ Eighty seven lakh eight thousand one hundred nine.

iv) $\overset{C}{2}, \overset{TL}{14}, \overset{Th}{05}, \overset{H}{06} \overset{T}{3} \rightarrow$ Two crore fourteen lakh five thousand sixty three.

v) $\overset{C}{3}, \overset{TL}{03}, \overset{Th}{03}, \overset{H}{10} \overset{T}{3} \rightarrow$ Three crore three lakh three thousand one hundred three.

vi) $\overset{TC}{10}, \overset{TL}{06}, \overset{Th}{05}, \overset{H}{36} \overset{T}{8} \rightarrow$ Ten crore six lakh five thousand three hundred sixty eight.

Q3-i) Write the place value of 4 in 8,46,572 $\rightarrow$ 40,000

ii) Write the place value of 7 in 7,30,493 $\rightarrow$ 7,00,000

iii) Place value of 6 in 23,76,400 $\rightarrow$ 6,000

iv) Place value of 9 in 19,63,605 $\rightarrow$ 9,00,000

v) Place value of 8 in 20,07,189 $\rightarrow$ 80

vi) Place value of 3 in 23,608 $\rightarrow$ 3,000

Q4. Find the difference between the place-values of two sixes in 6,56,348.

Solution:- Place value of the first six = 6,00,000

Place value of the second six = 6,000

Difference between place values = 6,00,000 - 6,000

$$= 5,94,000$$

Hence the difference between these two sixes is 5,94,000

Q5. Find the difference between the place-value and the face-value of 8 in the numeral 5,86,273.

Solution:-

	L	Th	Th	H	T	O
	5	,	86	,	27	3

Place value of 8 = 80,000

Face value of 8 = 8

Difference = $80,000 - 8 = 79,992$

Hence, the difference between place value and the face value of 8 is 79,992.

Q6. Write each of the following in expanded form

i)

	L	Th	Th	H	T	O
	5	,	16	,	28	7

$$= (5 \times 10,000) + (1 \times 10,000) + (6 \times 1,000) + (2 \times 100) + (8 \times 10) + (7 \times 1)$$

ii)

TL	L	Th	Th	H	T	O
	1	3	,	25	,	694

$$= 1 \times 10,00,000 + 3 \times 10,000 + 2 \times 10,000 + 5 \times 1000 + 6 \times 100 + 9 \times 10 + 4$$

iii)

	L	Th	Th	H	T	O
	8	,	08	,	80	8

$$= 8 \times 1,00,000 + 0 + 8 \times 1000 + 8 \times 100 + 0 + 8$$

iv)

TL	L	Th	Th	H	T	O
	6	4	,	72	,	319

$$= 6 \times 10,00,000 + 4 \times 1,00,000 + 7 \times 10,000 + 2 \times 1000 + 3 \times 100 + 1 \times 10 + 9 \times 1$$

$$(v) \begin{array}{ccccccc} \text{C} & \text{TL L} & \text{Th Th} & \text{HT O} \\ 1, & 36, & 04, & 107 \end{array} = (1 \times 1,00,00,000) + (3 \times 10,00,000) + (6 \times 10,00,000) + 0 + (4 \times 1000) + (1 \times 100) + 0 + (7 \times 1)$$

$$(vi) \begin{array}{ccccccc} \text{C} & \text{TL L} & \text{Th Th} & \text{HT O} \\ 9, & 36, & 50, & 519 \end{array} = (9 \times 1,00,00,000) + (3 \times 10,00,000) + (6 \times 1,00,000) + (5 \times 10,000) + 0 + (5 \times 100) + (1 \times 10) + (9 \times 1)$$

Q7. Write the number corresponding to each of the following:-

$$(i) (5 \times 1,00,000) + (\times 10,000) + (4 \times 1,000) + (7 \times 100) + (3 \times 10) + (8 \times 1) = 5,14,738$$

$$ii) (6 \times 1,00,000) + (6 \times 1,000) + (3 \times 10) + (6 \times 1) = 6,06,036$$

$$iii) (1 \times 10,00,000) + (2 \times 1,00,000) + (3 \times 10,000) + (4 \times 100) + (6 \times 10) + (9 \times 1) = 12,30,469$$

$$iv) (2 \times 10,00,000) + (3 \times 1,00,000) + (7 \times 1,000) + (9 \times 100) + (4 \times 10) + (5 \times 1) = 23,07,945$$

$$v) (9 \times 10,00,000) + (8 \times 1,000) + (8 \times 100) + (8 \times 1) = 90,08,808$$

Q8. Write the successor of each of the following:-

$$(i) 6,001 + 1 = 6,002$$

$$ii) 1,099 + 1 = 1,100$$

$$\text{iii)} \quad 12,749 + 1 = 12,750$$

$$\text{iv)} \quad 2,19,708 + 1 = 2,19,709$$

$$\text{v)} \quad 62,399 + 1 = 62,400$$

Q9. Write the predecessor of each of the following numbers:-

$$\text{i)} \quad 99 - 1 = 98$$

$$\text{ii)} \quad 1,305 - 1 = 1,304$$

$$\text{iii)} \quad 32,000 - 1 = 31,999$$

$$\text{iv)} \quad 1,65,000 - 1 = 1,64,999$$

Q10. Write the whole number whose successor is

$$\text{(i)} \quad 100 \Rightarrow 99$$

$$\text{ii)} \quad 6,299 \Rightarrow 6298$$

$$\text{iii)} \quad 71,650 \rightarrow 71,649$$

$$\text{iv)} \quad 42,000 \rightarrow 41,999$$

v)

Q11. Write the whole number whose predecessor is:-

$$\text{i)} \quad 1,000 \rightarrow 1,001$$

$$\text{ii)} \quad 3,189 \rightarrow 3,190$$

$$\text{iii)} \quad 3,001 \rightarrow 3,002$$

$$\text{iv)} \quad 8,000 \rightarrow 8,001$$

$$\text{v)} \quad 9,999 \rightarrow 10,000$$