HICON SERIES

CLASS 5 LESSON 1

MATHEMATICS
NUMBERS

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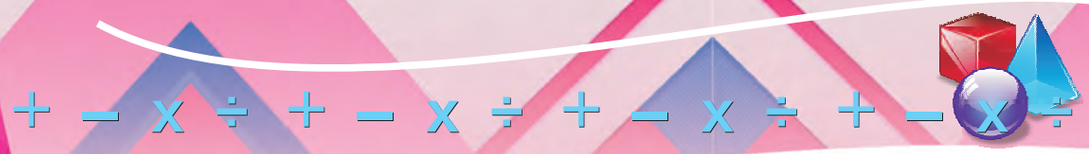
LESSON
PART 3



1 NUMBERS

READY ... STEADY

A. Write the number names of the following :

1. 12345 2. 789654 3. 99999 4. 100000

B. Write in expanded form :

1. 45678 2. 345678 3. 157162 4. 59002

C. Write the ascending and descending orders of the following numbers :

1. 278569, 589562, 36790, 24678
2. 978564, 89370, 79875, 56726
3. 46752, 754761, 24687, 956781
4. 675346, 55555, 777777, 999999

D. Write the face value and place value of encircled digits.

1. 3(9)6781 2. 47(5)62 3. (9)87527 4. 7(2)727

E. Put commas for International system of numerals :

1. 234567 2. 35892 3. 789654 4. 67890

F. Put commas for Indian system of numerals :

1. 12345 2. 123456 3. 64761 4. 975643

G. Round off the following as directed :

1. 84 to nearest 10
2. 296 to nearest 100
3. 1797 to nearest 1000
4. 1291 to nearest 1000

EXTENSION OF NUMBERS

You have learnt about numbers upto 5 to 6 digits.

- The smallest 5-digit number is – 10000
- The largest 5-digit number is – 99999

- The smallest 6- digit number is – 100000
- The largest 6-digit number is – 999999

The 7-digit number begins at 1000000.

We get the digit 1 in ten lakhs place, so we can say the number is *ten lakhs* in words and *10,00,000* in figures.

The largest 7-digit number is → 9999999

It is read as ninety nine lakh ninety nine thousand nine hundred ninety nine.

If we add 1 to 99,99,999 we get 1,00,00,000 the smallest eight digit number.

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

We read smallest 8-digit number as 1 crore.

The largest 8-digit number is 9,99,99,999. When 1 is added to largest 8 digit number, we get 10,00,00,000 the smallest 9-digit number.

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

We read smallest 9-digit number as 10 crores.

INDIAN SYSTEM OF NUMERATION

Place Value Chart of Digits according to the Indian System of Numeration.

Crores		Lakhs		Thousands		Ones			← Periods
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 (T Th) 10,000	THOUSANDS (Th) (1000)	HUNDREDS (H) 100	TENS (T) 10	ONES (O) 1	← Places

Example : Write 38,46,06,423 according to the Indian system of numeration.

Crores	Lakhs	Thousands	Ones
38	46	06	423

We read this number as thirty eight crore forty six lakh six thousand four hundred twenty three.

INTERNATIONAL SYSTEM OF NUMERATION

Most of the countries use the International System of Numeration. We have already learnt upto millions. In this class, we shall learn upto billions.

Place Value Chart of Digits according to the International System of Numeration.

Billions			Millions			Thousands			Ones		
HUNDRED BILLIONS (HB) 100,000,000,000	TEN BILLIONS (TB) 10,000,000,000	BILLIONS (B) 1,000,000,000	HUNDRED MILLIONS (HM) 100,000,000	TEN MILLIONS (TM) 10,000,000	MILLIONS (M) 1,000,000	HUNDRED THOUSANDS (H Th) 100,000	TEN THOUSANDS (T Th) 10,000	THOUSANDS (Th) (1000)	HUNDREDS (H) 100	TENS (T) 10	ONES (O) 1

Example : Write 3,159,360,845 according to the International system of numeration.

Billions	Millions	Thousands	Ones	← Periods
3	159	360	845	← Places

We read this number as three billion one hundred fifty nine million three hundred sixty thousand eight hundred forty five.

Place Value

Example : In 82,65,38,095, find the place value of each digit. Write the numeral 82,65,38,095 in the place value chart.

Crores		Lakhs		Thousands		Ones			← Periods
TC	C	TL	L	T Th	Th	H	T	O	← Places
8	2	6	5	3	8	0	9	5	

Here, we can see that

the place value of 5	= 5 ones	=	5
the place value of 9	= 9 tens	=	90
the place value of 0	= 0 hundreds	=	0
the place value of 8	= 8 thousands	=	8,000
the place value of 3	= 3 ten thousands	=	30,000
the place value of 5	= 5 lakhs	=	5,00,000
the place value of 6	= 6 ten lakhs	=	60,00,000
the place value of 2	= 2 crores	=	2,00,00,000
the place value of 8	= 8 ten crores	=	80,00,00,000

So the number is :

Eighty two crores, sixty five lakhs, thirty eight thousand and ninety five

Relation between Place Values

10 ones = 1 ten

10 tens = 1 hundred

10 hundreds = 1 thousand

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

EXPANDED FORM AND STANDARD FORM

Expanded form is a form of writing a number as the sum of the place values of its digits.

Example : Write the expanded form of 38,94,26,152

Given numeral can be written as.

TC	C	TL	L	T Th	Th	H	T	O
3	8	9	4	2	6	1	5	2

(i) $3 \times 10,00,00,000 + 8 \times 1,00,00,000 + 9 \times 10,00,000 + 4 \times 1,00,000 + 2 \times 10,000 + 6 \times 1000 + 1 \times 100 + 5 \times 10 + 2 \times 1$

(ii) 30,00,00,000 + 8,00,00,000 + 90,00,000 + 4,00,000 + 20,000 + 6000 + 100 + 50 + 2

(iii) 3 ten crore + 8 crore + 9 ten lakh + 4 lakh + 2 ten thousand + 6 thousand + 1 hundred + 5 tens + 2 ones

Example : Write the following in standard form.

80,00,00,000 + 6,00,00,000 + 50,00,000 + 10,000 + 600 + 80 + 5

This can be written as

8 ten crore + 6 crore + 5 ten lakh + 1 ten thousand + 6 hundred + 8 tens + 5 ones

Writing this under place value chart :

TC	C	TL	L	T Th	Th	H	T	O
8	6	5	0	1	0	6	8	5

∴ The number in short is 86,50,10,685

SUCCESSOR AND PREDECESSOR OF A NUMBER

Successor – To get the successor of any number, add 1 to it.

Successor of any number = Number + 1

Example : Find out the successor of 24531786.

Add 1 to 24531786 → 24531786 + 1 = 24531787

So, 24531787 is the successor of 24531786.

Predecessor – To get the predecessor of any number, subtract 1 from it.

Predecessor of any number = Number – 1.

Example : Find out the predecessor of 76512348.

Subtract 1 from 76512348 → 76512348 – 1 = 76512347

So, 76512347 is the predecessor of 76512348.

COMPARING NUMBERS

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

Example : Compare 3648925 and 28543910.

Solution : 3648925 → It is a 7-digit number.

28543910 → It is a 8-digit number.

Therefore 28543910 > 3648925

Or 3648925 < 28543910

When the number of digits are same, compare each digit starting from the left. Stop when the digits are different.

Example : Compare 53684295 and 53686512.

Solution : Compare digit to digit of the numbers. Start from the left.

C	TL	L	TTh	Th	H	T	O
5	3	6	8	4	2	9	5
5	3	6	8	6	5	1	2

5 = 5 → Same

3 = 3 → Same

6 = 6 → Same

8 = 8 → Same

6 > 4 → Different

So, 53686512 > 53684295

or 53684295 < 53686512

ORDERING NUMBERS

Ascending order → arranging the numbers from smallest to greatest.

Descending order → arranging the numbers from greatest to smallest.

Example : Arrange the following numbers in ascending and descending orders.

52121534 37146908 66178072 88249303

Ascending order → Smallest to greatest

Solution :

All the numbers are 8-digit numbers. Start comparing from the extreme left.

Number 37146908 has digit 3 in the extreme left. So, it is the smallest.

Number 52121534 has digit 5 in the extreme left. So, it is in the second place.

Number 66178072 has digit 6 in extreme left. So, it is in the third place.

Number 88249303 has digit 8 in the extreme left. So, it is the largest.

Therefore ascending order of the numbers is :

37146908 < 52121534 < 66178072 < 88249303

Now, descending order is just the opposite : Greatest to smallest.

88249303 > 66178072 > 52121534 > 37146908

FORMING NUMBERS WITH THE GIVEN DIGITS

Greatest and smallest numbers

You can write the greatest and the smallest numbers by rearranging the digits.

Greatest number → Arrange the digits from greatest to smallest.

Smallest number → Arrange the digits from smallest to greatest.

Example : Form the greatest and the smallest numbers with digits 9, 5, 7, 4, 6, 2, 0 and 8.

Solution :

Greatest number – Arrange the digits from greatest to smallest.

→ 98765420.

Smallest number – Arrange the digits from smallest to greatest.

Here 0 is the smallest digit. Number starting with 0 has no meaning. Write the next smallest digit. Place 0 after the smallest digit. Arrange the next digits from smallest to greatest.

→ 20456789

REMEMBER

0 at the beginning has no meaning. Begin the number with the next smallest digit and put 0 in the second place. Keep arranging the remaining digits from smallest to greatest.

Exercise 1.1

A. Make the place value chart for both Indian and International systems of numeration of the following numbers. Write the number names and numerals by putting commas in appropriate places in both the systems of numerations.

1. 3724902	2. 61597423	3. 75896432
4. 4376521	5. 9754632	6. 86510576
7. 2346825	8. 12579214	9. 32524678
10. 245632321	11. 732542632	12. 521215343

B. Write the following numbers in figures :

1. Seventy five lakh seventy six thousand seven hundred eighty three
2. Twenty three crore twenty four lakh twenty five thousand five hundred five
3. Five crore forty three lakh seventy two thousand two hundred three

4. Forty seven million fifty three thousand nine hundred nine
5. Ten million six hundred three
6. Six million nine hundred twenty thousand seven hundred five
7. Seventy one crore eighty thousand four hundred ninety two
8. Twenty lakh fifty three thousand five hundred five
9. Eight million four hundred thousand five hundred ten
10. Thirty three million four hundred six thousand sixty one

C. Write the expanded notation for the following numbers :

1. 65,27,269	2. 2,79,47,508	3. 9,23,47,256
4. 56,213,724	5. 9,628,958	6. 567,432
7. 72,547,825	8. 23,56,948	9. 2,45,63,232
10. 5,64,24,632	11. 7,448,772	12. 86,32,492

D. Compare the numbers (use < or >) :

1. 12345678 and 1234567	2. 4567890 and 4569807
3. 9725461 and 23456789	4. 87253426 and 87253462
5. 6789054 and 67891782	6. 7294685 and 7294865
7. 3656438 and 36564381	8. 76050403 and 76050433
9. 6104876 and 1640876	10. 93648121 and 93684121

E. Write the successor and predecessor of the following :

1. 2497254	2. 4678543	3. 10000000
4. 9999999	5. 2000999	6. 87250000
7. 93399099	8. 6572550	9. 34345900
10. 7294865	11. 3878254	12. 59232104

F. Write the following numbers in ascending and descending orders :

1. 6257089, 95342781, 7659432, 57289643
2. 3825431, 4926795, 1729385, 8526475
3. 41924562, 72645942, 95432784, 57289643
4. 567894, 23456789, 4678539, 72345690

5. 101073, 910982, 8780946, 7893435
6. 2016428, 9089177, 8961815, 6298212
7. 12255489, 39746640, 7505901, 67107354
8. 1233137, 2865680, 3346452, 56016283
9. 6354569, 4307758, 5587347, 5925166
10. 27429099, 36180101, 4478223, 434907

G. Form the smallest and largest possible numbers with the following digits :

1. 6, 7, 3, 0, 1
2. 3, 1, 8, 5, 6
3. 8, 2, 5, 7, 6, 0
4. 4, 8, 5, 2, 9
5. 1, 2, 9, 0, 4, 5
6. 5, 0, 6, 3, 8, 1, 7
7. 9, 8, 7, 6, 5, 4, 3
8. 4, 7, 0, 2, 5, 3, 6, 8
9. 3, 0, 5, 9, 2, 8, 7
10. 2, 9, 7, 4, 3, 6
11. 3, 5, 7, 9, 2, 1, 4, 6
12. 8, 6, 4, 2, 9, 0, 7

HOTS

A fifteen storey hotel with floors G, 1, 2, ... , 14 has no accommodation on the ground floor. On the even numbered floors (2, 4, 6, ...) there are 27 guest rooms and on the odd numbered floors there are 21 guest rooms. How many guest rooms are there in the hotel ?

ROUNDING OFF NUMBERS

Sometimes we do not need to know the exact numerical value. A number close to the actual numerical value serves the purpose. The approximate value is enough to give an idea about the actual value. About or around indicates close by value.

Example : Actual distance from Delhi to Jaipur is 425 km, but to get an idea we generally say it is approximately 400 km. This approximation is called rounding off. This is for the convenience to understand better.

Numbers can be rounded off nearest to 10, 100, 1000 and so on.

Rounding off to the nearest 10

- To round a number to the nearest ten, we round it to the multiple of ten nearest to it.

- A number which is midway is always rounded up.

Example : 37 is rounded to 40

142 is rounded to 140

385 is rounded to 390

Rounding off to the nearest 100

- To round a number to the nearest hundred, we round it to the multiple of hundred nearest to it.
- A number which is midway is always rounded up.

Example : 436 is rounded to 400

1259 is rounded to 1300

750 is rounded to 800

Rounding off to the nearest 1000

- To round a number to the nearest thousand, we round it to the multiple of thousand nearest to it.
- A number which is midway is always rounded up.

Example : 4837 is rounded to 5000

1365 is rounded to 1000

3500 is rounded to 4000

Exercise 1.2

Round off the numbers to the nearest 10, 100 and 1000.

1. 2456782
2. 5678948
3. 9764325
4. 7312677
5. 39472954
6. 47295679
7. 82571745
8. 62579829
9. 595342
10. 431906
11. 18472174
12. 37208592
13. 20165383
14. 68967401

WORKSHEET

A. Write the number names of the following numbers in both the Indian and International systems of numerations :

1. 4729574
2. 6954321
3. 8572986
4. 76854320
5. 59278431
6. 95642378

B. Write in figures using commas in appropriate places.

1. Ninety seven million five hundred thousand six hundred seventy five
2. Seventy million eight hundred thousand nine hundred ninety nine
3. Ten million seven hundred thousand two hundred seven
4. Seven crore sixty nine lakh ninety six thousand two hundred fifty six
5. Nine crore eighty seven lakh seventy thousand eight hundred seventy five
6. Five crore ninety nine lakh ninety thousand five hundred seventy eight

C. Arrange the following numbers both in ascending and descending orders.

1. 97356829, 79528436, 82759431, 53132348
2. 72937456, 6995727, 53142729, 9475278
3. 7965432, 8256731, 9476543, 2795684

D. Write the following numbers in expanded form.

1. 1234567
2. 69995000
3. 24978999
4. 6543218

E. Write the predecessor and successor of the following numbers.

1. 7564379
2. 24978999
3. 89257900
4. 89257900

F. Form the greatest and smallest numbers with the following digits.

1. 9, 2, 8, 6, 7, 4, 3, 5
2. 2, 5, 6, 0, 7, 8, 9
3. 7, 9, 5, 3, 6, 2, 8
4. 3, 7, 0, 9, 8, 6, 5, 4

G. Round off the following numbers as directed.

1. 4956788 → to the nearest 100
2. 9875463 → to the nearest 1000
3. 29785673 → to the nearest 10

H. Write the place value and face value of the encircled digits.

1. 925(7)6543
2. 854639(6)
3. 7(2)54583
4. (5)489753