1 PLACE VALUE

Warm Up

A. A factory manufactured 81,293 shirts last year. This year it has manufactured two lakh thirty-four thousand nine hundred sixty-seven shirts. ANS

Fill in the blanks.

1. The number name of 81,293 is _____
2. The place value of the digit 8 in 81,293 is _____
3. The expanded form of 81,293 is _____

Answer the questions based on the number two lakh thirty-four thousand nine hundred sixty-seven.

4. Write the number with commas. _____
5. Write the predecessor of the number. _____
6. Write the period of the digit 2 in the number. _____

B. Type the smallest 5-digit number formed with the digits 8, 1, 2, 9, 3. ANS

_____

C. Type the greatest 6-digit number formed with the digits 2, 3, 4, 9, 6, 7. ANS

_____

7-DIGIT NUMBERS

We have planted 9,99,999 trees in our state.
Today I will plant 1 more tree.

```
  9 9 9 9 9 9   ⟶ largest 6-digit number
+         1
-----------
  1 0 0 0 0 0 0 ⟶ smallest 7-digit number
```

Wow! What a large number this is.

Writing a 7-digit number in the Indian place value system

How will we write 10,00,000 in the Indian place value system?

PERIODS ⟶	LAKHS		THOUSANDS		ONES		
PLACES ⟶	TL	L	TTh	Th	H	T	O
	1	0	0	0	0	0	0

TTh stands for ten thousands and TL stands for ten lakhs.

In words, 10,00,000 is written as ten lakh.

EXAMPLE 1 **Write the number 4290516 in the Indian place value system. Also write it with commas and in words.**

ANS.

LAKHS		THOUSANDS		ONES		
TL	L	TTh	Th	H	T	O
4	2	9	0	5	1	6

Digits in the same period are read together.

With commas: 42,90,516

forty-two lakh — ninety thousand — five hundred sixteen

In words: forty-two lakh ninety thousand five hundred sixteen

Quick TIP

Use commas to separate the periods. Start from the right. Group the digits in threes and then in twos.

I Can Do It!

A. Type the following numbers using commas. Also type the numbers in words. ANS

1. 1778468	2. 8345723	3. 3663942	4. 5682111
5. 7466433	6. 9898121	7. 2301475	8. 4875069
9. 6931320	10. 5813400	11. 9990888	12. 8050625

B. Fill in the blanks to complete the number names. ANS

1. 49,70,400: forty-nine lakh
2. 10,11,234: thirty-four
3. 72,56,940: _____
4. 63,00,544: _____
5. 95,87,365: _____

8-DIGIT NUMBERS

I know that 99,99,999 is the largest 7-digit number.
What is 99,99,999 + 1?

```
  9 9 9 9 9 9 9   ⟶ largest 7-digit number
+           1
-------------
  1 0 0 0 0 0 0 0 ⟶ smallest 8-digit number
```

This is fun!

Writing an 8-digit number in the Indian place value system

How will we write 1,00,00,000 in the Indian place value system?

PERIODS ⟶	CRORES	LAKHS		THOUSANDS		ONES		
PLACES ⟶	C	TL	L	TTh	Th	H	T	O
	1	0	0	0	0	0	0	0

In words, 1,00,00,000 is written as one crore.

EXAMPLE 2 Write the number 15023860 in the Indian place value system. Also write it with commas and in words.

ANS.

CRORES	LAKHS		THOUSANDS		ONES		
C	TL	L	TTh	Th	H	T	O
1	5	0	2	3	8	6	0

With commas: one crore ← 1,50,23,860 → eight hundred sixty

fifty lakh twenty-three thousand

In words: one crore fifty lakh twenty-three thousand eight hundred sixty

Exercise 1.1

A. Type the following numbers using commas. Also type the numbers in words. ANS

1. 8895790
2. 94568341
3. 5528310
4. 34541000
5. 3466433
6. 34812115
7. 42791090
8. 89671435
9. 22778468
10. 39345723
11. 37773942
12. 95682111

B. Type the number names of the following. ANS

1. 1,10,11,234: _____
2. 3,72,56,940: _____
3. 6,05,01,378: _____
4. 9,99,99,999: _____

C. Type the numbers. Mark the periods with commas. ANS

1. seven lakh twenty-two thousand one hundred forty-two _____
2. thirty-five lakh five thousand two hundred thirteen _____
3. five crore twelve lakh sixteen thousand seven hundred five _____
4. sixty-eight thousand nine hundred eighty-six _____
5. two crore five lakh twenty thousand two _____

D. Type the numbers in the Indian place value system. ANS

1. eighteen lakh five hundred
2. one crore four lakh fifty-eight thousand
3. six crore six lakh
4. one crore four lakh eight thousand one
5. nine crore fifty-eight lakh three thousand eleven

Quick TIP

The place value of a digit depends on the place of the digit in the number. The place value of 0 is always 0.

UNDERSTANDING NUMBERS

Expanded form of a number

EXAMPLE 3 Write the expanded form of 95210736.

The expanded form of a number is the sum of place values of all the digits.

	9	5	2	1	0	7	3	6
Place	crores	ten lakhs	lakhs	ten thousands	thousands	hundreds	tens	ones
Place Value	9,00,00,000	50,00,000	2,00,000	10,000	0	700	30	6
Expanded Form	9 crores + 9,00,00,000	5 ten lakhs + 50,00,000	2 lakhs + 2,00,000	1 ten thousands + 10,000	0 thousands + 0	7 hundreds + 700	3 tens + 30	6 ones + 6

How will we write a number that does not have thousands, hundreds and tens?

Write the digits of the number according to the periods and places. Then, write zeros in the empty places.

EXAMPLE 4 Write the number for ninety lakh nine.

PERIODS →	LAKHS		THOUSANDS		ONES		
PLACES →	TL	L	TTh	Th	H	T	O
	9	0	0	0	0	0	9

ANS. 90,00,009

Successor of a number

EXAMPLE 5 What is the successor of 9,52,10,736?

9,52,10,736 + 1 = 9,52,10,737

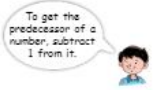
ANS. The successor of 9,52,10,736 is 9,52,10,737.

Predecessor of a number

EXAMPLE 6 What is the predecessor of 9,52,10,736?

9,52,10,736 – 1 = 9,52,10,735

ANS. The predecessor of 9,52,10,736 is 9,52,10,735.



I Can Do It!

A. Type the expanded form of each number. ANS

1. 36241226 2. 92400035 3. 43518991

B. Type the predecessor of each number. ANS

1. 63491203 2. 7670875 3. 38461924

C. Type the successor of each number. ANS

1. 18931459 2. 84718940 3. 999999

COMPARING NUMBERS

When the number of digits is the same

EXAMPLE 7 Compare 4,75,26,148 and 4,75,78,148.

4, 7 5, 2 6, 1 4 8 4, 7 5, 7 8, 1 4 8

4 = 4

7 = 7

5 < 7

ANS. 4,75,26,148 < 4,75,78,148

When the number of digits is different

EXAMPLE 8 Compare 34,76,241 and 8,47,624.

34,76,241 (7-digit number) 8,47,624 (6-digit number)

ANS. 34,76,241 > 8,47,624

ORDERING OF NUMBERS

EXAMPLE 9 Arrange the following numbers in the Indian place value system in ascending order.

1,40,07,525 5,27,358 19,00,100 5,27,868

ANS.

CRORES	LAKHS		THOUSANDS		ONES		
C	TL	L	TTh	Th	H	T	O
		5	2	7	3	5	8
		5	2	7	8	6	8
	1	9	0	0	1	0	0
1	4	0	0	7	5	2	5

EXAMPLE 10 Arrange the following numbers in the Indian place value system in descending order.

8,67,53,241 8,76,53,241 9,87,999 19,87,999

ANS.

CRORES	LAKHS		THOUSANDS		ONES		
C	TL	L	TTh	Th	H	T	O
8	7	6	5	3	2	4	1
8	6	7	5	3	2	4	1
	1	9	8	7	9	9	9
		9	8	7	9	9	9

Greatest and smallest numbers

EXAMPLE 11 Write the greatest 8-digit number using the digits 0, 1, 2, 3, 4, 5, 6, 7 without repeating the digits.

Write the greatest digit on the extreme left.

Write the next greatest digit to its right, and so on.

ANS. The greatest 8-digit number is 7,65,43,210.

EXAMPLE 12 **Write the smallest 8-digit number using the digits 0, 1, 2, 3, 4, 5, 6, 7 without repeating the digits.**

Write the smallest digit on the extreme left.

Write the next smallest digit to its right, and so on.

ANS. The smallest 8-digit number is 1,02,34,567.

Get It Right!

The smallest 5-digit number using the digits 3, 1, 0, 2, 7

01237 ✗ (In a number, zero at the beginning has no meaning)

10237 ✓

HOTS Questions

Write the smallest and the greatest 8-digit numbers by repeating the digits in your notebook. Use all the digits. ANS

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

Subject Link

Country A has a population of 7,64,31,281. Its area is 12,87,263 sq. km.
Country B has a population of 7,64,32,181 and an area of 12,86,263 sq. km.

Fill in the blanks. ANS

1. Country A has _____ (more / less) population.
2. Country B has _____ (more / less) area.

Exercise 1.2

A. Mark the periods. Also type the number names. ANS

1. 6016243
2. 4752083
3. 795008
4. 72300418
5. 14010790
6. 9040011
7. 5781500
8. 37058402

B. Type the period and the place value of each coloured digit. ANS

1. 74,02,615
2. 14,01,079
3. 5,78,23,511
4. 6,09,12,519
5. 9,15,352
6. 74,73,892
7. 4,00,00,040
8. 3,05,52,611

C. Type the expanded form of each number. ANS

1. 31,24,056
2. 1,75,211
3. 4,70,20,000
4. 93,08,489
5. 6,17,38,125
6. 12,12,012
7. 6,59,318
8. 47,24,408

D. Type the standard form of each. ANS

1. 5,00,000 + 2,000 + 600 + 10 + 1 _____
2. 70,000 + 400 + 30 + 5 _____
3. 60,000 + 20 + 8 _____
4. 8,00,00,000 + 60,00,000 + 70,000 + 5,000 + 2 _____
5. 7 crores + 4 ten lakhs + 5 thousands + 2 hundreds + 7 tens _____
6. 6 ten lakhs + 1 lakh + 5 ten thousands + 3 thousands _____
7. 8 crores + 2 ten thousands + 1 thousand + 4 hundreds + 7 ones _____

E. Type the predecessor of each number. ANS

1. 14,32,121
2. 69,05,070
3. 8,52,008
4. 35,14,100
5. 1,00,00,000
6. 5,00,05,000
7. 9,52,34,123
8. 7,86,00,506

F. Type the successor of each number. ANS

1. 42,57,198
2. 17,35,000
3. 8,10,309
4. 3,16,12,319
5. 5,29,79,499
6. 9,99,99,998
7. 7,00,22,111
8. 5,12,34,000

G. Compare each pair of numbers. Put >, < or = in the ◯. ANS

1. 9,65,43,219 ◯ 96,89,219
2. 1,43,72,000 ◯ 1,45,72,000
3. 8,37,54,168 ◯ 8,37,45,168
4. 1,50,00,009 ◯ 1,50,00,109

H. Make the smallest and the greatest numbers using the given digits. Do not repeat any digit. ANS

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

INTERNATIONAL PLACE VALUE SYSTEM

In the International place value system, the periods are **ones**, **thousands** and **millions**. Three digits are placed in each period and separated by commas.

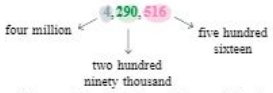
PERIODS →	MILLIONS			THOUSANDS			ONES		
PLACES →	Hundred millions	Ten millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones

EXAMPLE 13 **Write the number 4290516 in the International place value system. Also write it with commas and in words.**

ANS.

MILLIONS		THOUSANDS			ONES	
Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
4	2	9	0	5	1	6

With commas:



In words: four million two hundred ninety thousand five hundred sixteen

EXAMPLE 14 **Write the number 27349811 in the International place value system. Also write it with commas and in words.**

ANS.

MILLIONS		THOUSANDS			ONES		
Ten millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
2	7	3	4	9	8	1	1

With commas: 27,349,811

In words: twenty-seven million three hundred forty-nine thousand eight hundred eleven

Exercise 1.3

A. Type the numbers. Mark the periods with commas. ANS

1. seven million two hundred forty-six thousand one hundred thirty-seven _____
2. five hundred eighty-six thousand five hundred fifteen _____
3. twelve million seventy-one thousand four hundred _____
4. sixty million six hundred thousand twelve _____
5. two million twelve thousand six hundred eleven _____
6. four million six hundred forty thousand _____
7. nineteen million _____
8. sixty-five million four thousand one _____
9. seventy-two million eight hundred ninety-nine _____
10. eighty-four million seven thousand nine hundred six _____

B. Type in words. ANS

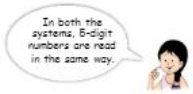
1. 47,012,615	2. 1,500,273	3. 18,606,111	4. 598,005
5. 38,000,197	6. 20,020,020	7. 9,999,100	8. 65,643,128
9. 92,143,056	10. 3,555,789	11. 463,562	12. 55,304,619

COMPARING THE TWO SYSTEMS

The Indian system and the International system are two different ways of reading and writing numbers. However, the value of a number does not change.

Indian system	TC	C	TL	L	TTh	Th	H	T	O
International system	HM	TM	M	HTh	TTh	Th	H	T	O

	INDIAN SYSTEM		INTERNATIONAL SYSTEM
6-digit numbers	1 lakh	=	100 thousand
7-digit numbers	10 lakh	=	1 million
8-digit numbers	1 crore	=	10 million
9-digit numbers	10 crore	=	100 million



Exercise 1.4

A. Mark the periods with commas according to the two place value systems and type the numbers in words in each system. ANS

1. 2365358
2. 34282627
3. 87013569
4. 90150028
5. 81552101
6. 99160001

B. In the number 783425, type the digit in the ANS

1. hundreds place. _____
2. hundred thousands place. _____
3. ten thousands place. _____
4. ones place. _____

C. Compare each pair of numbers. Put >, < or = in the ◯. ANS

1. 542,478 ◯ 5,42,748
2. 4,35,69,385 ◯ 43,560,381
3. 274,369 ◯ 2,73,469
4. 8,35,93,261 ◯ 83,593,099

D. Type the number. ANS

1. seven million seven hundred seven
2. 80,00,000 + 4,00,000 + 10 + 2
3. 5,00,000 + 10,000 + 600 + 40
4. eighty million seven hundred thousand

ROUNDING OFF NUMBERS

There are about 3000 children in our school.

Our teacher told us there are 3004 children.

I rounded off 3004 to the nearest ten and said 3000.

Rounding off to the nearest 10

EXAMPLE 15 Round off 19601, 19605 and 19607 to the nearest 10.

1 9 6 0 **1**	1 9 6 0 **5**	1 9 6 0 **7**
↓ 1 < 5	↓ 5 (halfway)	↓ 7 > 5
so rounded down to 19600	so rounded up to 19610	so rounded up to 19610

ANS. 19601 rounded off to the nearest 10 is 19600;
19605 rounded off to the nearest 10 is 19610;
19607 rounded off to the nearest 10 is 19610.

Rounding off to the nearest 100

EXAMPLE 16 Round off 68930, 68950 and 68960 to the nearest 100.

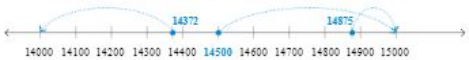
6 8 9 **3** 0	6 8 9 **5** 0	6 8 9 **6** 0
↓ 3 < 5	↓ 5 (halfway)	↓ 6 > 5
so rounded down to 68900	so rounded up to 69000	so rounded up to 69000

ANS. 68930 rounded off to the nearest 100 is 68900;
68950 rounded off to the nearest 100 is 69000;
68960 rounded off to the nearest 100 is 69000.

Rounding off to the nearest 1000

EXAMPLE 17 Round off 14372, 14500 and 14875 to the nearest 1000.

1 4 **3** 7 2	1 4 **5** 0 0	1 4 **8** 7 5
↓ 3 < 5	↓ 5 (halfway)	↓ 8 > 5
so rounded down to 14000	so rounded up to 15000	so rounded up to 15000



ANS. 14372 rounded off to the nearest 1000 is 14000;
14500 rounded off to the nearest 1000 is 15000;
14875 rounded off to the nearest 1000 is 15000.

Exercise 1.5

A. Round off the following numbers to the nearest 10. ANS

1. 5314 2. 8767 3. 1235 4. 10,432 5. 83,489 6. 1,00,993

B. Round off the following numbers to the nearest 100. ANS

1. 8150 2. 4608 3. 5483 4. 23,793 5. 83,089 6. 4,00,119

C. Round off the following numbers to the nearest 1000. ANS

1. 9211 2. 28,564 3. 65,932 4. 5,12,642 5. 7,38,197 6. 8,43,503

ROMAN NUMBERS

The Roman system for counting numbers uses seven letters from the Latin alphabet to represent number values.

Roman numbers	I	V	X	L	C	D	M
Hindu–Arabic numbers	1	5	10	50	100	500	1000

Rules for writing the Roman numbers

1. Repetition of numbers means addition. While I, X, C and M can be repeated, numbers V, L and D cannot be repeated.
   No number can be repeated more than 3 times.

   III = 3 XX = 20 CCC = 300
2. A smaller number written to the right of a number of greater value means addition.

   VII = 7 XXV = 25 LXX = 70 CXX = 120
3. A smaller number written to the left of a number of greater value means subtraction from the number placed after it.

   IV = 4 IX = 9 XL = 40 XC = 90 CD = 400
4. When a smaller number is placed between two numbers of greater value, it is subtracted from the number placed after it.

   XIX = 19 XXIV = 24 XXIX = 29

   LIX = 59 CXIV = 114 CCXXIX = 229

For subtraction, in addition to Rules 3 and 4, there are a few more conditions:

- I can only be subtracted from V and X.
- X can only be subtracted from L and C.
- C can only be subtracted from D and M.
- V, L and D are never subtracted.

EXAMPLE 18 Convert to Roman numbers.

a. 78 b. 133 c. 246 d. 458

ANS. a. 78 = 70 + 8 = LXX + VIII = LXXVIII

b. 133 = 100 + 30 + 3 = C + XXX + III = CXXXIII

c. 246 = 200 + 40 + 6 = CC + XL + VI = CCXLVI

d. 458 = 400 + 50 + 8 = CD + L + VIII = CDLVIII

EXAMPLE 19 Convert to Hindu–Arabic numbers.

a. XCI b. CXLIII c. CCLIX d. CCCLXVI

ANS. a. XCI = XC + I = 90 + 1 = 91

b. CXLIII = C + XL + III = 100 + 40 + 3 = 143

c. CCLIX = CC + L + IX = 200 + 50 + 9 = 259

d. CCCLXVI = CCC + LX + VI = 300 + 60 + 6 = 366

Exercise 1.6

A. Convert to Roman numbers. ANS

1. 64 2. 119 3. 165 4. 197
5. 178 6. 146 7. 115 8. 126
9. 233 10. 272 11. 355 12. 439

B. Convert to Hindu–Arabic numbers. ANS

1. XXIV 2. XCIII 3. LXXV 4. LXXXIV 5. XLVIII
6. CXLV 7. CXXIII 8. CXXXI 9. CCLV 10. CCLXVII
11. CCVIII 12. CCCXI 13. CDI 14. CDL 15. CDLXI

Maths Lab Activity

Aim: To understand numbers
You will need: Your notebook and a pencil
Preparation: Work in pairs.

Steps

- Write your parents' mobile phone numbers in your partner's notebook.
- Your partner will strike out the first 2 digits, leaving an 8-digit number.
- She/he will then write the number names in the two place value systems.
- She/he will also rearrange the digits to make the smallest number and the greatest number.

Example:

	Father	Mother
Mobile number	9810058467	9868106171
8-digit number	~~98~~10058467	~~98~~68106171
Indian place value system	one crore fifty-eight thousand four hundred sixty-seven	six crore eighty-one lakh six thousand one hundred seventy-one
International place value system	ten million fifty-eight thousand four hundred sixty-seven	sixty-eight million one hundred six thousand one hundred seventy-one
Smallest number	10045678	10116678
Greatest number	87654100	87661110

A Value for Me

The Government approves a sum of ₹9 crore for the protection and conservation of wildlife habitats in a state. Rewrite this number using the International place value system. ANS

Mental Maths

A. Fill in the blanks. ANS

1. The period of 8 in 75,80,654 is _____
2. We add 1 to a given number to get the _____ of the number.
3. The predecessor of 47,52,100 is _____
4. _____ is the successor of one million.
5. _____ comes after 75,99,999.
6. 64,75,300 is _____ (greater/less) than 64,75,299.
7. Complete the sequence.
   1111, 2222, 3333, 4444, _____, _____
8. _____ + 1 = 23,75,100
9. 10,00,000 – 1 = _____
10. The place value of 5 in 3,54,273 is _____

B. Type True or False. ANS

1. The smallest 8-digit number without repeating a digit is 1,23,45,678. _____
2. The place value of zero in 5,03,526 is zero. _____
3. The numbers one crore, one lakh, ten thousand and one hundred are in ascending order. _____
4. 5,72,679 rounded off to the nearest 1000 is 5,80,000. _____
5. The Roman number CDX is 410. _____

C. Answer the following. ANS

1. What is the smallest 8-digit number called?
2. How many lakhs is one crore?
3. One million is equal to how many lakhs?
4. What is the smallest 6-digit number formed using the digits 9, 4, 0?
5. What number will you get on adding 1 to the greatest 5-digit number?

Worksheet

A. Tick (✓) the correct option. ANS

1. What is the number for seven crore five?
   a. 7,00,005 ☐ b. 7,00,050 ☐ c. 7,00,00,005 ☐ d. 7,00,00,050 ☐
2. What is the period of 9 in 23,908,543?
   a. 9 ☐ b. 9,00,000 ☐
   c. thousands ☐ d. hundred thousands ☐
3. What is the Hindu–Arabic number for CDI?
   a. 301 ☐ b. 401 ☐ c. 501 ☐ d. 601 ☐

B. Fill in the blanks. ANS

1. The number for five million sixteen thousand forty-two is _____
2. The greatest 8-digit number that can be formed using the digits 0, 2, 5, 6 and 8 is _____
3. The successor of the smallest 8-digit number is _____
4. 9 ten lakhs + 3 ten thousands + 5 tens = _____
5. The sum of the place values of the two 7's in 7,00,75,126 is _____

C. Arrange the following numbers in descending order. ANS

45,26,758 45,27,658 42,57,758 46,52,758

D. Make the greatest and the smallest 6-digit numbers using different digits with the digit 7 at the hundreds place. ANS

E. Read and type the numbers. ANS

There are only twenty-five thousand blue whales, one hundred thousand black rhinos, eight hundred ninety-five mountain gorillas and five hundred thousand elephants left on the earth. These animals will soon become extinct if we do not take care.

1. Blue whales : _____
2. Black rhinos : _____
3. Mountain gorillas : _____
4. Elephants : _____

F. Arrange the following Roman numbers in ascending order. ANS

CXXX CDXIX XXXIII LXIV XLIX