1 Large Numbers

Expected Learning Outcomes

At the end of the chapter, learners will be able to:

- **recognise** and identify large numbers up to 9 digits.
- **interpret** and use the Indian place value chart up to 9 digits.
- **analyse** and determine the place value of digits in large numbers.
- **construct** the expanded form of large numbers.
- **examine** and explain the International place value chart up to 9 digits.
- **form** numbers based on given conditions.
- **estimate** by rounding off numbers.

Recap

Rahul and Miraj are starting a business together by investing some amount jointly.

1. Place commas for the amount contributed by Rahul and Miraj.
2. Write the amount donated by Rahul and Miraj in words.

INTRODUCTION TO LARGE NUMBERS

Aman saw a TV with a price tag of ₹1,25,000. His father pointed out an even more expensive model priced at ₹9,99,999. Aman realised this was the largest 6-digit number he knew. Then his father showed him how adding just one rupee to this price would create the smallest 7-digit number.

Smallest and largest numbers

- **Largest 6-digit number:** 9,99,999

  Smallest 7-digit number: 9,99,999 + 1 = 10,00,000

Largest 6-digit number →		9	9	9	9	9	9
+							1
Smallest 7-digit number →	1	0	0	0	0	0	0

- **Largest 7-digit number:** 99,99,999

  Smallest 8-digit number: 99,99,999 + 1 = 1,00,00,000

Largest 7-digit number →		9	9	9	9	9	9	9
+								1
Smallest 8-digit number →	1	0	0	0	0	0	0	0

- **Largest 8-digit number:** 9,99,99,999

  Smallest 9-digit number: 9,99,99,999 + 1 = 10,00,00,000

Largest 8-digit number →		9	9	9	9	9	9	9	9
+									1
Smallest 9-digit number →	1	0	0	0	0	0	0	0	0

- **Largest 9-digit number:** 99,99,99,999

Fact Funda

The distance from Earth to the Moon is about 3,84,400 kilometers - a number that uses 6 digits.

Try These

1. Write the successor and predecessor of:
   a. 456231 b. 51006 c. 72302
2. Write the number names of the following as per the Indian place value, placing commas at the correct place.
   a. 632107 b. 10945 c. 233001
3. Arrange in ascending and descending order.
   a. 50008, 670034, 399771, 110099 b. 212006, 212389, 532091, 532249

INDIAN PLACE VALUE CHART

The Indian number system uses a unique method of grouping digits. It is widely used in India and some neighbouring countries. Let us explore this system up to 9 digits.

The place value chart is divided into different periods of 2 or 3 digits each.

Crores		Lakhs		Thousands		Ones		
Ten Crores	Crore	Ten Lakhs	Lakh	Ten Thousands	Thousands	Hundrends	Tens	Ones
(TC)	(C)	(TL)	(L)	(Ten Th)	(Th)	(H)	(T)	(O)
10,00,00,000	1,00,00,000	10,00,000	1,00,000	10,000	1,000	100	10	1

Legend: C: Crores, L: Lakhs, Th: Thousands, H: Hundreds, T: Tens, O: Ones

UNDERSTANDING THE PERIODS

- **Ones Period:** The rightmost three digits (Ones, Tens, Hundreds)
- **Thousands Period:** The next two digits (Thousands, Ten Thousands)
- **Lakhs Period:** The next two digits (Lakhs, Ten Lakhs)
- **Crores Period:** The next two digits (Crores, Ten Crores)

Each column represents a place value ten times greater than the one to its right.

Writing Large Numbers

When writing large numbers in the Indian system, we group digits and separate them with commas as follows:

- The rightmost three digits form the first group (Ones period).
- Moving left, we then group in pairs of two digits.
- This creates the structure: Crores, Lakhs, Thousands, Ones.

Example: 23,45,67,892

Here,

- 892 is the Ones period.
- 67 is the Thousands period.
- 45 is the Lakhs period.
- 23 is the Crores period.

Fact Funda

The periods after Crores are Arabs, Kharabs, etc.

Reading Large Numbers

To read numbers in the Indian system, we name each group according to its period:

- **Ones:** Read as usual (Ones, Tens, Hundreds)

- **Thousands:** Read as Thousand
- **Lakhs:** Read as Lakh
- **Crores:** Read as Crore

So, we can read 23,45,67,892 as Twenty-three crore, forty-five lakh, sixty-seven thousand, eight hundred ninety-two.

Example: Place commas in the number 567890123 according to the Indian place value system.

Solution:

TC	C	TL	L	TTh	Th	H	T	O
5	6	7	8	9	0	1	2	3

Starting from the right, group the first 3 digits, then pairs of 2 digits: (56)(78)(90)(123).

Insert commas between groups.

56,78,90,123

Example: Write the number "Seventy-eight crore ninety lakh twelve thousand three hundred forty-five" in digits according to the Indian place value system.

Solution: Write digits for each period: Crores (78), Lakhs (90), Thousands (12), Ones (345). Add commas between periods.

78,90,12,345

Example: Read the number 345678901 according to the Indian place value system.

Solution:

TC	C	TL	L	TTh	Th	H	T	O
3	4	5	6	7	8	9	0	1

First, add commas: 34,56,78,901. Then read each period: 34 (crores), 56 (lakhs), 78 (thousands), 901 (ones). Combine without using "and" between periods.

Thirty-four crore fifty-six lakh seventy-eight thousand nine hundred one.

Do It Yourself

1. Place commas in the following numbers according to the Indian place value system:
   a. 234567890
   b. 100234567
2. Write the following numbers in digits according to the Indian place value system:
   a. Forty-five crore thirty-six lakh eighty-nine thousand four hundred four

b. Ninety crore nine lakh nine thousand nine

3. Read the following numbers according to the Indian place value system:
   a. 678901234
   b. 500600700

PLACE VALUE OF LARGE NUMBERS

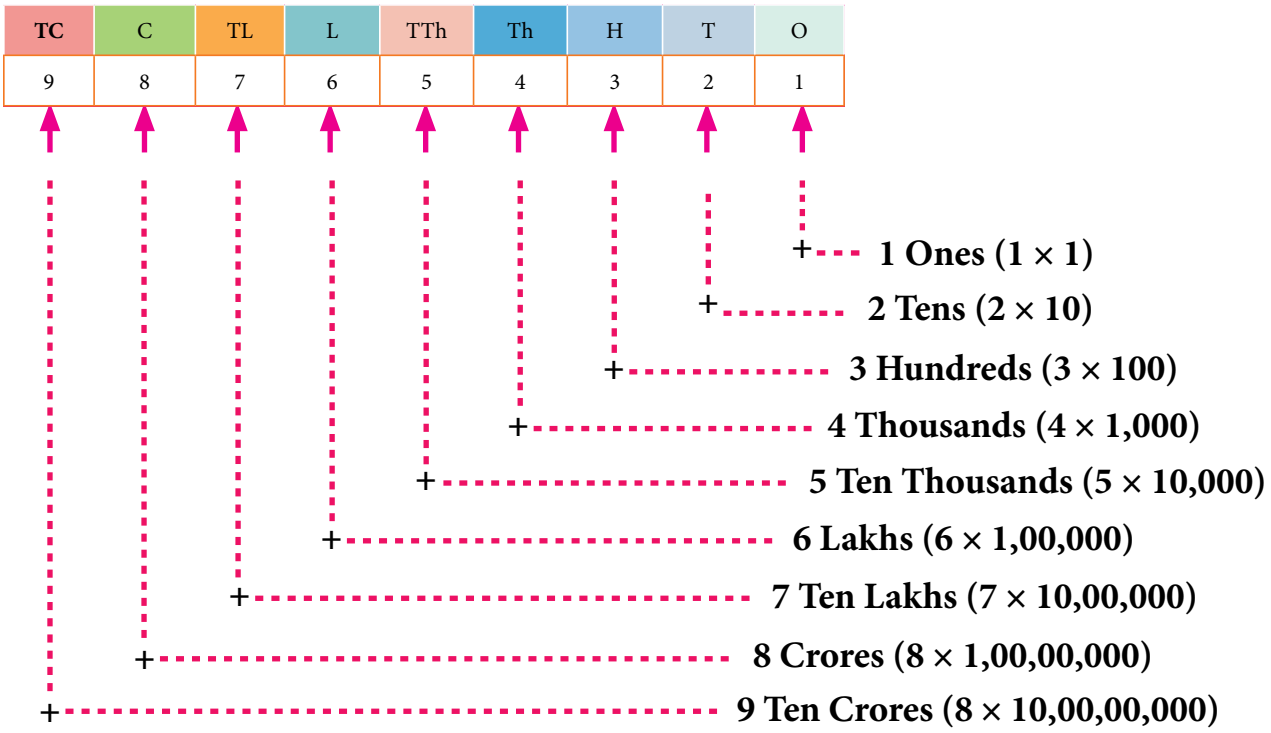
Place value is the value of a digit based on its position in a number. In a numeral system, the place value of a digit increases by a specific factor (usually 10 in decimal systems) as it moves from right to left.

The place value of a digit can be obtained by multiplying the digit by the value of the position it occupies in the number.

Let us take the 9-digit number: 98,76,54,321

TC	C	TL	L	TTh	Th	H	T	O
9	8	7	6	5	4	3	2	1

We can represent the place value of each digit as:



Note: The face value of a digit is the value of the digit itself. The place value and face value of 0 is zero only.

EXPANDED FORM OF LARGE NUMBERS

Expanded form is a method of representing a number that displays the value of each digit or group of digits. It represents the number as a sum of each digit or group multiplied by its corresponding place value. This is achieved by adding the place value of each digit individually, starting from the leftmost digit and moving rightward.

Let us illustrate this with the number 78,65,43,210:

78,65,43,210 can be expressed as: 70,00,00,000 + 8,00,00,000 + 60,00,000 + 5,00,000 + 40,000 + 3,000 + 200 + 10 + 0

Alternatively, it can be written explicitly by considering each place value:

$7 \times 10,00,00,000 + 8 \times 1,00,00,000 + 6 \times 10,00,000 + 5 \times 1,00,000 + 4 \times 10,000 + 3 \times 1,000 + 2 \times 100 + 1 \times 10 + 0 \times 1$

Short form

The short form of a number is its standard numerical representation, where digits are written in order from left to right, with each digit representing a specific place value. It is the most common and concise way to write numbers.

The short form of the expanded form : 20,00,00,000 + 5,00,00,000 + 60,00,000 + 5,00,000 + 90,000 + 3,000 + 200 + 10 + 0 is 25,65,93,210.

Example: Write the place value of the underlined digit in 58,32,14,697.

Solution: The underlined digit is 1, which is in the ten thousands place. It is place value is 10,000 (ten thousand), calculated as $1 \times 10,000 = 10,000$.

Example: Write the expanded form of 746329851.

Solution: **Expanded form:** 70,00,00,000 + 4,00,00,000 + 60,00,000 + 3,00,000 + 20,000 + 9,000 + 800 + 50 + 1

Or, more explicitly: $(7 \times 10,00,00,000) + (4 \times 1,00,00,000) + (6 \times 10,00,000) + (3 \times 1,00,000) + (2 \times 10,000) + (9 \times 1,000) + (8 \times 100) + (5 \times 10) + (1 \times 1)$

Example: Write the short form of the following expanded number: 50,00,00,000 + 3,00,00,000 + 40,00,000 + 2,00,000 + 80,000 + 7,000 + 60 + 5

Solution: To write the short form, we combine the values from each place:

The short form of a number is calculated by adding the following:

50,00,00,000 + 3,00,00,000 + 40,00,000 + 2,00,000 + 80,000 + 7,000 + 60 + 5.

Combining these, we get: 53,42,87,065

Therefore, the short form of the expanded number is 53,42,87,065.

Do It Yourself

1. For the number 13,42,78,509:
   a. What is the place value of the digit 7? b. Write this number in expanded form.
2. Consider the number 15,06,03,042:
   a. What is the place value of the digit 5? b. Write this number in expanded form.
3. For the number 78,09,00,305:
   a. What is the place value of the digit 9? b. Write this number in expanded form.

Correct It

✗	✓
4561309 in Indian system can be written as 45, 61,309 and its words can be written as forty-five lakhs sixty-one thousands three hundred nine.	**4561309** in Indian system can be written as 45, 61,309 and its words can be written as forty-five lakh sixty-one thousand three hundred nine.

Exercise 1.1

1. Place commas as per the Indian place value system and write them in words.

a. 74185296	b. 85203697	c. 95174628	d. 10203040
e. 50607080	f. 11223344	g. 99887766	h. 78901234

2. Write the place value of underlined digits.

a. 765432109	b. 9876543	c. 21098765	d. 432109876
e. 5432109	f. 65432109	g. 32109876	h. 210987654

3. Write the number names in figures.

a. Forty-two crore thirty-one lakh sixty-five thousand four hundred twenty-three

b. Seventy-eight crore ninety-three lakh twelve thousand seven hundred eighty-nine

c. Twenty-five crore sixty-seven lakh eighty-nine thousand one hundred fifty-six

d. Ninety-one crore forty-five lakh twenty-three thousand six hundred seventy-eight

e. Thirty-seven crore eighty-two lakh fifty-six thousand twelve

4. Write the expanded form of the following.

a. 78901234	b. 890123456	c. 3210987	d. 43210987
e. 654321098	f. 7654321	g. 87654321	h. 765432109

5. Write the short form of the following.

a. 80,00,00,000 + 5,00,00,000 + 70,00,000 + 4,00,000 + 30,000 + 8,000 + 700 + 60 + 2

b. 90,00,00,000 + 6,00,00,000 + 80,00,000 + 5,00,000 + 40,000 + 7,000 + 600 + 70 + 3

c. 60,00,00,000 + 3,00,00,000 + 50,00,000 + 2,00,000 + 10,000 + 6,000 + 500 + 40 + 4

d. 50,00,00,000 + 2,00,00,000 + 40,00,000 + 1,00,000 + 50,000 + 5,000 + 400 + 30 + 5

e. 40,00,00,000 + 7,00,00,000 + 30,00,000 + 6,00,000 + 60,000 + 4,000 + 300 + 20 + 6

INTERNATIONAL PLACE VALUE CHART

Golu came across an interesting statistic while browsing the internet: approximately 23196634 people visit the Golden Temple in Amritsar every year. He was surprised to see the number written as 23,196,634, which looked different from how he usually saw large numbers written.

In the **international** place value system, numbers are divided into different periods. Each period represents a significant grouping of digits. Here are the main periods, starting from the right:

Millions			Thousands			Ones		
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
(H)	(T)	(O)	(H)	(T)	(O)	(H)	(T)	(O)

1. **Ones Period:** The rightmost three digits (ones, tens, hundreds) for example; 634 in 323,196,634
2. **Thousands Period:** The next three digits to the left for example; 196 in 323,196,634
3. **Millions Period:** The next three digits for example; 323 in 323,196,634

Writing Large Numbers

When writing large numbers in the international system (up to hundreds of millions), we group digits and separate them with commas as follows:

- The rightmost three digits form the first group.
- Moving left, we then group in sets of three digits.
- This creates the structure: Hundreds of Millions, Tens of Millions, Millions, Thousands, Ones.

Fact Funda

The periods after millions are billions, trillions, etc.

Example: 234,567,890

Here,

- 890 is the Ones group.
- 567 is the Thousands group.
- 234 is the Millions group (including hundreds of millions).

Reading Large Numbers

To read numbers in the international system, we name each group according to its place value:

- **Ones:** Read as usual (Ones, Tens, Hundreds).
- **Thousands:** Read as Thousand.
- **Millions:** Read as Million.

So, we can read 234,567,890 as Two hundred thirty-four million, five hundred sixty-seven thousand, eight hundred ninety.

In this system, we don't typically use separate terms for "tens of millions" or "hundreds of millions" when reading the number aloud. We simply state the full number of millions.

Example: Write 891234567 in the international system.

Solution: This number is written with commas separating every three digits from right to left, making it easier to read and identify the periods (ones, thousands, millions).

So, it will be 891,234,567

Example: Write 456,789,012 in words.

Solution: We read each group of three digits followed by its period name, moving from left to right. Four hundred fifty-six million, seven hundred eighty-nine thousand, twelve.

Example: Write "three hundred forty-five million, six hundred seventy-eight thousand, nine hundred one" in numerals.

Solution: Each word group can be converted to a three-digit number, with commas separating the ones, thousands, millions periods from right to left.

So, it will be 345,678,901.

RELATION BETWEEN INDIAN AND INTERNATIONAL PLACE VALUE SYSTEM

The Indian system uses lakhs and crores, while the international system uses millions and billions.

- 1 lakh = 100,000.

- 10 lakhs = 1 million.
- 1 crore = 10 million.
- 100 crore = 1 billion (1 arab in the Indian system).

The main difference lies in the grouping of digits. The Indian system groups by two digits after the hundreds place, while the international system groups by three digits.

Indian System	International System
1,00,000 (1 lakh)	100,000 (One hundred thousand)
10,00,000 (10 lakh)	1,000,000 (1 million)
1,00,00,000 (1 crore)	10,000,000 (10 million)
10,00,00,000 (10 crore)	100,000,000 (100 million)
1,00,00,00,000 (1 arab)	1,000,000,000 (1 billion)

Did You Know?

Exploring India, Cross-Curricular

Exploring India

Golden Temple

The Golden Temple, or Sri Harmandir Sahib, is a stunning example of India's rich heritage and culture. Located in Amritsar, Punjab, this gleaming golden building is the holiest place for Sikhs and welcomes people of all backgrounds. Built in the 16th century, the temple showcases beautiful Indian architecture and is surrounded by a pool of sacred water. One of its most special features is the langar, a free kitchen that serves meals to thousands of visitors daily, reflecting the Indian values of generosity and equality. The Golden Temple not only represents Sikh faith but also symbolizes India's religious diversity, artistic craftsmanship, and spiritual importance. It stands as a shining jewel in India's cultural crown, attracting visitors from around the world who come to admire its beauty and experience its peaceful atmosphere.

Exercise 1.2

1. Place commas as per international value system.

a. 78345621 b. 9012387 c. 456789012 d. 23456789

e. 99654321 f. 72300673 g. 876954102 h. 34567890

2. Write the following number in words as per the international place value system.

a. 845278301 b. 40062890 c. 56789012 d. 178705234

e. 4890123 f. 89012345 g. 901234567 h. 999934567

3. Write these numbers based on the international place value system by placing commas.

a. Thirty-four crore fifty-six lakh seventy-eight thousand nine hundred one

b. One crore twenty-three lakh forty-five thousand six hundred seventy-eight

c. Ninety-nine crore ninety-nine lakh ninety-nine thousand nine hundred ninety-nine

d. Five crore sixty-seven lakh eighty-nine thousand twelve

e. Twelve crore thirty-four lakh fifty-six thousand seven hundred eighty-nine

4. Fill in the blanks.

a. 1 crore = _____ millions

b. 25 million =_____ thousands

c. 100 crores = _____ millions

d. 50 lakh = _____ millions

e. 12 million = _____ lakhs

FORMING NUMBERS

When we have a set of digits, we can create many different numbers by rearranging them in various positions.

a. For the Largest Number:

- Arrange all given digits in descending order (from greatest to smallest).
- If more digits are needed, repeat the process starting with the greatest digit.

Example: Form the largest number using digits 5, 2, 8, 1, 9, 3, 7,

Solution: To form the largest number, we simply arrange the given digits in descending order.

9875321

b. For the Smallest Number:

- Arrange all given digits in ascending order (from smallest to greatest).
- If zero is present, place it in the second position to ensure the number doesn't start with zero.

Example: Form the smallest number using digits 6, 1, 4, 3, 8, 2, 7, 5, 9.

Solution: 123456789

Example: Form the smallest 8-digit number using 5, 0, 2, 8, 1, 4, 7, 6.

Solution: Arrange non-zero digits in ascending order, then place 0 in the second position to keep it 8 digits while staying as small as possible.

5, 0, 2, 8, 1, 4, 7, 6 → 10245678

Example: With the given digits 5, 0, 2, 8, 1, 4, 7, 6; form the smallest 8-digit number.

Solution: Arrange non-zero digits in ascending order (1, 2, 4, 5, 6, 7, 8). Place 0 in the second position to keep it an 8-digit number while ensuring it is as small as possible. This creates the smallest valid 8-digit number using all given digits.

10245678

c. When Repeating Digits or when digits are less:

- For the largest number: Repeat the greatest digit first.
- For the smallest number: Repeat the smallest non-zero digit first.

Example: Form the smallest and greatest 8-digit number using the digits 5, 7, 1, 0, 2

Solution: Smallest 8-digit number: 10000257

Greatest 8-digit number: 77775210

Do It Yourself

1. a. Form the largest 7-digit number using the digits 3, 8, 1, 0, 6, 4.
   b. Form the smallest 7-digit number using the digits 3, 8, 1, 0, 6, 4.
2. a. Form the largest 9-digit number using the digits 7, 2, 9, 5, 0, 1.
   b. Form the smallest 9-digit number using the digits 7, 2, 9, 5, 0, 1.
3. a. Form the largest 8-digit number using the digits 4, 6, 3, 0, 8.
   b. Form the smallest 8-digit number using the digits 4, 6, 3, 0, 8.

ROUNDING OFF

Sarah, a city event planner, organised a music festival. She had three attendance projections:

Venue A: 45,678 **Venue B:** 123,456 **Venue C:** 789,012

She rounded these to 46,000; 123,500; and 789,000 respectively.

Using these rounded figures, Sarah estimated a total attendance of 958,500, simplifying her planning for the massive event.

Rounding to the nearest 10: Look at the ones digit. If it is 5 or more, round up. If it is 4 or less, round down.

Example: Round 47 to the nearest 10.

Solution: The ones digit is 7, which is 5 or more. So we round up to 50.

Rounding to the nearest 100: Look at the tens digit. If it is 5 or more, round up. If it is 4 or less, round down.

Example: Round 352 to the nearest 100.

Solution: The tens digit is 5, which is 5 or more. So we round up to 400.

Rounding to the nearest 1000: Look at the hundreds digit. If it is 5 or more, round up. If it is 4 or less, round down.

Example: Round 5,816 to the nearest 1000.

Solution: The hundreds digit is 8, which is 5 or more.

So we round up to 6,000 by increasing the thousands digit by 1 and changing all lower digits to 0.

Teacher's Note

Use a visual number line to help students understand the concept of rounding. Mark key points like multiples of 10, 100, or 1000.

Example: Round 4,372 to the nearest 1000.

Solution: The hundreds digit is 3, which is less than 5. So we round down to 4,000 by keeping the thousand digit the same and changing all lower digits to 0.

Rounding to the nearest 10,000: Look at the thousands digit. If it is 5 or more, round up. If it is 4 or less, round down.

Example: Round 68,947 to the nearest 10,000.

Solution: The thousands digit is 8, which is 5 or more. So we round up to 70,000 by increasing the ten thousands digit by 1 and changing all lower digits to 0.

Example: Round 24,315 to the nearest 10,000.

Solution: The thousands digit is 4, which is less than 5. So we round down to 20,000 by keeping the ten thousands digit the same and changing all lower digits to 0.

Rounding to the nearest lakh (1,00,000): Look at the ten thousands digit. If iIt is 5 or more, round up. If it is 4 or less, round down.

Example: Round 2,74,529 to the nearest lakh.

Solution: The ten thousand digit is 7, which is 5 or more. So we round up to 3,00,000 by increasing the lakhs digit by 1 and changing all lower digits to 0.

Example: Round 5,42,861 to the nearest lakh.

Solution: The ten thousand digit is 4, which is less than 5. So we round down to 5,00,000 by keeping the lakhs digit the same and changing all lower digits to 0.

Exercise 1.3

1. Form the smallest and biggest 8-digit number using the given digits.

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

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

2. Form the smallest and biggest 9-digit number using the given digits.

a. 3, 0, 7, 9 b. 1, 5, 8, 2 c. 7, 4, 0, 6 d. 9, 2, 5, 1

e. 4, 8, 3, 6 f. 2, 7, 1, 5 g. 8, 0, 4, 3 h. 3, 5, 7, 8

3. Round the following to the nearest 1000.

a. 94608253 b. 173950482 c. 6284071 d. 39516280

e. 704825193 f. 2593764 g. 81409375 h. 461728035

4. Round the following to the nearest 100000.

a. 8246091 b. 916384270 c. 3702586 d. 14963708

e. 628051943 f. 7513942 g. 95608353 h. 175950582

Play Time

Play-based Learning, Communication

Fish Bowl Game

The teacher will put number cards with 7, 8, or 9-digit numbers into fish bowls. When it is your turn, go to the front and pick three slips from the bowls. Write each number in the place value chart on the board. Compare these three numbers, first by their number of digits. If they have the same number of digits, compare them from left to right, looking at the place values. Arrange the numbers in ascending order (smallest to largest) based on your comparison. Explain to the class how you ordered the numbers. Return all three slips to the bowls before going back to your seat.

Chapter Assessment

1. Choose the correct option. Decision Making, Observation

a. Ninety-eight million, seven hundred sixty-five thousand, four hundred thirty-two can be written as:

i. 908,765,432 ☐ ii. 98,70060,432 ☐ iii. 9,87,65,432 ☐ iv. 98,765,432 ☐

b. Eighty-two crore fifty-five thousand sixty-three can be written as:

i. 82,55,063 ☐ ii. 82,00,55,063 ☐ iii. 820,055,063 ☐ iv. 8,25,50,063 ☐

c. The largest 8-digit number that can be formed using the digits: 4, 5, 2, 0, 1, 6, 8, 3 is:

i. 8,65,43,210 ☐ ii. 80765432 ☐ iii. 1,02,34,568 ☐ iv. 8,46,53,210 ☐

2. Place commas as per the Indian place value system and write them in words.

a. 62347890 b. 73401582 c. 84512369 d. 20304050

e. 60708090 f. 22334455 g. 88776655 h. 56789012

3. Fill in the blanks.

a. Write the expanded form of 65432109. Answer: __ + __ + __ + __ + __ + __ + __ + __

b. Write the short form of: 70,00,00,000 + 4,00,00,000 + 60,00,000 + 3,00,000 + 20,000 + 9,000 + 800 + 50 + 1: _____

c. Write the expanded form of 987654321: __ + __ + __ + __ + __ + __ + __ + __ + __

d. Write the short form of: 50,00,00,000 + 2,00,00,000 + 40,00,000 + 1,00,000 + 80,000 + 5,000 + 300 + 20 + 7: _____

e. Write the expanded form of 12345678: __ + __ + __ + __ + __ + __ + __ + __

4. Place commas and write the following numbers in words as per the international place value system.

a. 723451908 b. 50073981

c. 67890123 d. 234567890

e. 5678901 f. 78901234

g. 890123456 h. 888845678

5. Form the smallest and biggest 8-digit numbers using the given digits.

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

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

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

6. Write the expanded form of the following.

a.	45678912	b.	567890123	c.	9876543	d.	98765432
e.	321098765	f.	5432109	g.	54321098	h.	432109876

7. Round off the following to the nearest 100000.

a.	7359082	b.	824571369	c.	5108497	d.	23871596
e.	739162854	f.	6428053	g.	85719364	h.	261840735

8. Spot the errors and correct them.

a. 76,45,821 - Seventy-six million forty-five lakh eighty-two thousand one hundred twenty-one.

b. 52,38,674 - Fifty-two million thirty-eight lakh sixty-seven thousand four hundred seventy-four.

c. 89,23,156 - Eighty-nine million twenty-three lakh fifteen thousand six hundred fifty-six.

d. 41,67,935 - Forty-one million sixty-seven lakh ninety-three thousand five hundred thirty-five.

e. 63,59,248 - Sixty-three million fifty-nine lakh twenty-four thousand eight hundred forty-eight.

HOTS

Write the following in the Indian place value system.

a. Three hundred twenty-eight million seven hundred fifty-two thousand nine hundred thirty-one

b. Five hundred ninety-four million two hundred eighteen thousand six hundred seventy-five

c. Seven hundred twelve million nine hundred forty-three thousand one hundred eighty-seven

d. Two hundred sixty-five million eight hundred thirty-nine thousand five hundred forty-two

e. Eight hundred seventy-one million four hundred sixty-five thousand two hundred ninety-eight

Cross-Curricular

Computational Thinking, Critical Thinking

India's cities are among the most populated in the world. As per a report, Mumbai, the largest city, has a population of 20,411,274 people. Delhi follows closely with 16,753,235 inhabitants. Kolkata is home to 14,850,066 residents, while Chennai has a population of 10,971,108. Bengaluru, India's tech hub, boasts 12,326,532 people. Hyderabad counts 9,746,731 inhabitants, and Ahmedabad has 8,059,441 residents.

Answer the following questions.

1. How would you write Mumbai's population (2,04,11,274) in words using the Indian number system?
2. Express Delhi's population (1,67,53,235) in words according to the Indian system.
3. Write out Kolkata's population (1,48,50,066) in words using Indian number system.

Mental Maths

Critical Thinking

1. Write the greatest 9-digit number in words as per internationl place value system.
2. Write the difference of place values of 5 in 625609521.
3. Write the short form of: 40000000 + 2000000 + 2.
4. Form the greatest 9-digit number: 6, 0, 1.
5. Write the number you will get after rounding 73241964 to the nearest lakhs.

Project

Art Integration, Creativity, Digital Literacy

Gather the number of visitors for four prominent Indian monuments: the Taj Mahal, Red Fort, Jantar Mantar, and Lotus Temple from the previous year. Next, prepare visuals by printing or cutting out images of these monuments. Create a chart or table that lists each monument alongside its visitor count. Sort this data in ascending order, from the monument with the fewest visitors to the one with the most. Assemble your findings by placing the sorted data and images on a poster board for a physical presentation, or in a digital format such as a PowerPoint slide or spreadsheet. Enhance your display with additional historical facts or context about each monument to provide more depth.

Lab Activity

Objective: To write numbers in their expanded form by using their birth dates

Play-based Learning, Experiential Learning, Collaboration, Communication

Materials Required:

- Paper and pencils
- Whiteboard and markers
- Calculator (optional)
- Sticky notes or index cards (for organising numbers)

Instructions:

1. Divide the class into groups of four students each.
2. Each student in the group will state their birth date in the format DD/MM/YYYY.
3. Using the birth dates, each group will combine the digits to form the largest possible 8-digit number. For example, if one student's birthday is 21/05/2015 and another's is 14/11/2015, take the digits 21 and 14 to create the largest number.
4. Once the largest 8-digit number is determined, write it on the whiteboard or a large sheet of paper.
5. Each group will then write the expanded form of the 8-digit number. For instance, if the number is 9112005, the expanded form will be 90000000 + 1000000 + 100000 + 2000 + 5.
6. Discuss within the group to ensure the expanded form is accurate.
7. Each group will present their 8-digit number and its expanded form to the class, explaining the process they used to arrive at their number.

Indian Place Value Chart								
Crores		Lakhs		Thousands		Ones		
TC	C	TL	L	T-Th	Th	H	T	O

Value Based Scenario

The members of a society have decided to donate a piece of land worth ₹4,59,99,011 to an orphanage home located nearby. Additionally, they plan to plant some trees on this land. What values are demonstrated by the members of the society? Also, express the cost of the land in words and provide its expanded form.

Solve the Riddles

Critical Thinking

I am a 7-digit number. The digits in my number are 2, 5, 1, 9, 3, 7, and 0. If I round myself to the nearest lakh, I become 22,00,000. Also, my last 5 digits are arranged in descending order starting from ten thousand.

1. What is the number?
2. Write the number name for it.
3. Write its expanded form.

Self Assessment

Use ✓ or ✗ to assess your knowledge.

Now, I can

1. recognize and identify large numbers up to 9 digits. ☐
2. interpret and use the Indian place value chart up to 9 digits. ☐
3. analyse and determine the place value of digits in large numbers. ☐
4. construct the expanded form of large numbers. ☐
5. examine and explain the International place value chart up to 9. ☐