

# **Large Numbers**

# We'll cover the following key points:

- → Numbers upto 1 Lakh
- → Representation of Numbers upto 1 Lakh on the abacus
- → Face Value and Place Value
- → Period
- → Ordering of Numbers

- → Ascending and Descending Order
- → Numbers Beyond One Lakh
- → International System of Numeration
- → Roman Numerals



Hi, I'm EeeBee

# Do you Remember fundamental concept in previous class:

- → Introduction of numbers upto ten thousand
- → Ordering of Numbers

In class 3<sup>rd</sup> we learnt

→ Representing 4-Digit Number on the Abacus



Still curious? Talk to me by scanning the QR code.

# **Learning Outcomes**

# By the end of this chapter, students will be able to:

- Understand and read large numbers up to 1,00,000 (e.g., 45,678, 98,234).
- Write large numbers in expanded form (e.g., 45,678 = 40,000 + 5,000 + 600 + 70 + 8).
- Learn the place value of digits in large numbers (e.g., ones, tens, hundreds, thousands, and lakhs).
- Compare large numbers using symbols like >, <, and = (e.g., 45,678 > 23,456).
- Arrange large numbers in ascending (smallest to largest) and descending (largest to smallest) order.
- Round large numbers to the nearest 10, 100, or 1,000 (e.g., 72,384 rounded to the nearest 100 is 72,400).
- · Solve word problems involving large numbers (e.g., adding the total number of students in 5 schools).



One day, the traffic police of a city took up the job of recording the number of vehicles passing through a busy road during the peak hours, *i.e.*, from 9 a.m. to 12 p.m.



They recorded the movement as follows:

Cars: 5843

Bikes: 6820

Buses: 2720

Scooters: 4260

- 1. Which vehicle passed the most and which vehicle passed the least? Also write their number names.
- 2. Round off the number of each vehicle to the nearest 100.

# **Numbers upto 1 Lakh**

A number is formed by digits. Any number can be formed by using the 10 digits: 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. In the previous class, we studied upto 4-digit numbers i.e. 9999. If the numeral for a number is formed by four digits then the numeral is written as a four digit numeral and number is a 4-digit number.

If we add 1 to 9999 we get 10000, i.e., ten thousand which is the smallest 5-digit number.

### We know that

1 more than 9 is 10, i.e. 9 + 1 = 101 more than 99 is 100, i.e. 99 + 1 = 1001 more than 999 is 1000, i.e. 999 + 1 = 10001 more than 9999 is 10000, i.e. 9999 + 1 = 100001 more than 99999 is 100000, i.e. 99999 + 1 = 100000



# We observe the following numbers:

- (i) The number next to the largest 1-digit number (9) is the smallest 2-digit number (10).
- (ii) The number next to the largest 2-digit number (99) is the smallest 3-digit number (100).
- (iii) The number next to the largest 3-digit number (999) is the smallest 4-digit number (1000).
- (iv) The number next to the largest 4-digit number (9999) is the smallest 5-digit number (10000).
- (v) The number next to the largest 5-digit number (99999) is the smallest 6-digit number (100000).

The numbers beyond	Ten thousand are developed as under:
How we write?	How we read?
10000	Ten thousand
10001	Ten thousand one
10002	Ten thousand two
10009	Ten thousand nine
10010	Ten thousand ten
10099	Ten thousand ninety-nine
10100	Ten thousand one hundred
10101	Ten thousand one hundred one

10999	Ten thousand nine hundred ninety-nine
11000	Eleven thousand
11001	Eleven thousand one
19999	Nineteen thousand nine hundred ninety-nine
20000	Twenty thousand
20001	Twenty thousand one
99998	Ninety-nine thousand nine hundred ninety-eight
99999	Ninety-nine thousand nine hundred ninety-nine
100000	One lakh

# Representation of Numbers upto 1 Lakh on the abacus



An abacus is a tool used for reading and counting numbers. Each rod can have a maximum of 9 beads.

**Example 1:** Represent the number 26347 and 58538 on the abacus.

# **Solution:**

The given numbers have five digits. So, the abacus should have at least 5 spikes.

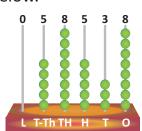
The number 26347 contains 7 ones, 4 tens, 3 hundreds, 6 thousands and 2 ten-thousands.

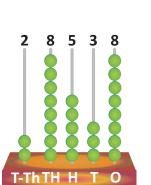
Therefore, 26347 is represented on the abacus as shown at the right.

Now, 58538 contains 8 ones, 3 tens, 5 hundreds, 8 thousands and 5 tenthousands.

Representation of 58538 on abacus is shown at below.

Similarly, we can represent 1 lakh (i.e. 100000) on the abacus. Since 1 lakh contains 6 digits, the abacus should have at least 6 spikes.





6

T-ThTH H T



			•		
<b>1</b> . '	M	rite '	In \	MORC	c
<b>_</b> .	vv	IIILE		NUIU	13

(	(a)	25783

(b) 62875

(c) 40120

(d) 80001

(f) 20060

(g) 56204

(h) 36756

# 2. Write in numerals:

- (a) Seven thousand five hundred eighty \_\_\_\_\_\_.
- (b) Twenty thousand nine hundred seventeen .
- (c) Sixteen thousand six hundred fifty-six \_\_\_\_\_\_.
- (d) Twenty thousand six hundred fifteen \_\_\_\_\_\_.
- (e) Thirty thousand nine hundred eighty-one \_\_\_\_\_\_.
- **3.** Write the largest 5-digit number.
- 4. Write the largest 6-digit number.
- 5. Write the ascending order of the numbers from:
  - (a) 31536 to 31542

- (b) 42588 to 42594
- 6. Counting by 5's write the missing numbers:
  - (a) 65785, \_\_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_,
  - (b) 32875, \_\_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_
  - (c) 32741, \_\_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_

# 7. Counting by 10's write the missing numbers:

- (a) 78900, \_\_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_
- (b) 41788, \_\_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_
- (c) 67597, \_\_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_

# **Face Value and Place Value**

### **Face Value**

The face value of a digit is the value of that digit in a number.

### **Place Value**

A number gets its value according to its place in the number. The product of the digit (face value) and value of its place is called the **place value** of the digit. In previous classes, we have already learnt the place values of the numbers upto 5 digits.



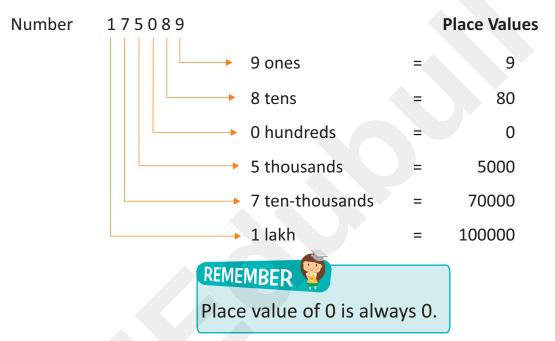
Ten-thousands	Thousands	Hundreds	Tens	Ones
10000	1000	100	10	1

We observe that the value of each place increases 10 times as we move from right to left, i.e. ones to tens, tens to hundreds, hundreds to thousands and thousands to ten-thousands. Similarly, we can show the place value chart of 6-digit number, i.e. 1 lakh.

Lakhs	Ten-thousands	Thousands	Hundreds	Tens	Ones
100000	10000	1000	100	10	1

**Example 2:** Find the place value of each digit in 175089.

# **Solution:**



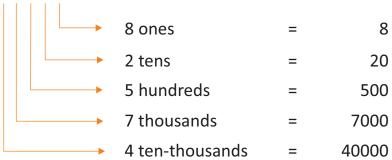
**Example 3:** Arrange the numbers 91548 and 172854 in the place value chart. **Solution:** 

	Lakhs (L)	Ten-thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
	100000	10000	1000	100	10	1
91548→		9	1	5	4	8
172854→	1	7	2	8	5	4

# **Example 4:** Write 47528 in the expanded form.

Solution: Number 4 7 5 2 8

**Place Values** 



Hence, 47528 = 40000 + 7000 + 500 + 20 + 8

Or 47528 = 4 ten-thousands + 7 thousands + 5 hundreds + 2 tens + 8 ones

**Example 5:** Write 34528 in the expanded form in three different ways.

**Solution:** Expanded form of 34528 in three different ways are given by:

- (a) 34528 = 3 ten-thousands + 4 thousands + 5 hundreds + 2 tens + 8 ones
- (b)  $34528 = (3 \times 10000) + (4 \times 1000) + (5 \times 100) + (2 \times 10) + (8 \times 1)$
- (c) 34528 = 30000 + 4000 + 500 + 20 + 8

# Exercise 2.2

# 1. Fill in the blanks:

- (a) 35285 = ten-thousands + thousands + hundreds + tens + ones
- (b) 42934 = ten-thousands + thousands + hundreds + tens + ones
- (c) 94365 = ten-thousands + thousands + hundreds + tens + ones
- (d)  $46735 = ( \times 10000) + ( \times 1000) + ( \times 100) + ( \times 10) + ( \times 10$

# 2. Make the place value charts for the following numbers :

- (a) 67528
- (b) 4729
- (c) 17693
- (d) 75284
- (e) 90009

- 3. Write the place value of 6 in 25683 \_\_\_\_\_\_
- **4.** Write the place value of 5 in 72528 \_\_\_\_\_\_.
- **5.** Write the place value of 7 in 44762 \_\_\_\_\_\_ .

**6.** Match the following columns:

# Column A

- (a) Place value of zero
- (b) Place value of 9 in 9234
- (c) Place value of 9 in 12945
- (d) 60000 + 5000 + 200 + 90 + 6
- (e) 60000 + 500 + 90 + 6

## Column B

- (i) 65296
- (ii) 900
- (iii) 60596
- (iv) 9000
- (v) always zero

# Take a Task

# Watch Remed

# Period

To read numerals of large numbers without difficulty, we group the places into periods in the place value chart as shown below:

Periods (Houses) →	LAKHS	THOUSANDS		ON	IES	
Places →	One lakh	Ten-thousands	Thousands	Hundreds	Tens	Ones
	100000	10000	1000	100	10	1
75683 →		7	5	6	8	3

In the above table, 6 places are grouped in 3 periods, i.e. ones, thousands and lakhs.

### We observe that:

- 1. The first three places from the right make the 'Ones' period, the next two make the 'Thousands' period, and the next, i.e. sixth place makes the 'Lakhs' period.
- 2. While reading the numerals of a number, all the digits in the same period are read together. The name of the period (except the ones) is read along with them.

# For Example:

- (a) We read 45328 as forty-five thousand three hundred twenty-eight.
- (b) We read 20048 as 'twenty thousand forty-eight'.

We represent numbers 45328 and 20048 in place value chart as below:

	LAKHS	THOUSANDS		OI	NES	
	One lakh	Ten-thousands	Thousands	Hundreds	Tens	Ones
	100000	10000	1000	100	10	1
45328→		4	5	3	2	8
20048 →		2	0	0	4	8

# **Ordering of Numbers**

# Read the following:

124 > 25, as 3-digit number > 2-digit number

1234 > 923, as 4-digit number > 3-digit number

# Here, we note that

The numbers with more number of digits are greater than the numbers having less number of digits.

For Examples: 19256 > 4996; 5979 > 299; 45397 > 8996

Now, if both the numbers have same number of digits, we compare them by comparing the digits starting with the left-most digit and then moving from left to right.

**Example 6**: Which is greater?

(a) 38527 or 36782

(b) 45672 or 45679

**Solution:** In (a) and (b), both have the same number of digits.

Now we compare them from the left-most digits.

(a) The digits at the ten-thousands places are same, i.e. 3 = 3.

At thousands places, 8 > 6.

So, 38527 > 36782.

i.e. 38527 is the greater one.

(b) In 45672 and 45679, we have the following:

Digits of ten-thousands places are same.

Digits of thousands places are same.

Digits of hundreds place are same.

Digits of tens places are same.

Digits of ones places are different,

i.e. 9 > 2

Therefore, 45679 > 45672.

i.e. 45679 is the greater one.

T-Th	Th	Н	Τ	0
3	8	5	2	7
same	different			
3	6	7	8	2

**計** 

T-Th	Th	Н	Т	0
4	5	6	7	2
same	same	same	same	different ∾
4	5	6	7	9

# **Ascending and Descending Order**

Arranging numbers from smallest to biggest is called **ascending order**. It is also called **increasing order**.

**Example:** 325, 149, 7088, 94836, 15608 in ascending order can be written as 149 < 325 < 7088 < 15608 < 94836.



Arranging numbers from biggest to smallest is called **descending order**. It is also called **decreasing order**.

**Example:** 528, 96583, 1108, 99 and 17508 in descending order can be written as 96583 > 17508 > 1108 > 528 > 99.

# Exercise 2.3

1.	. Multiple Choice Questions (MCQs). Tick (✓) the correct option.			
	(a)	In 28624, 6 is at		
		(i) tens place (ii) hundreds place (iii) thousands place		
	(b)	In 4 5 128, the circled digit is at		
		(i) hundreds place (ii) thousands place (iii) ten-thousands place		
2.	Write	e the numerals :		
	(a)	Twenty-five thousand six (b) Forty thousand ninety-nine		
	(c)	One lakh (d) Ninety-two thousand forty-six		
	(e)	Eight thousand nine		
3.	Write	the places of 'Thousands' period.		
4.	Write	the places of ' Ones' period.		
5.	Write	the period and place for the underlined digit :		
	(a)	405 <u>2</u> 8 (b) 33 <u>4</u> 29 (c) 7 <u>4</u> 108 (d) <u>1</u> 2586		
6.	Fill in	the boxes with > or < :		
	(a)	17653 28723 (b) 6728 8273 (c) 59923 32599		
	(d)	41378 41380 (e) 70500 71500 (f) 98088 98808		
	(g)	75423 24562 (h) 42862 24682		
<b>7.</b>	Find t	the smallest and the largest numbers in each of the following:		
	(a)	75283, 45828, 33427, 31848, 665500		
	(b)	33428, 32429, 44543, 43382, 24024		
	(c)	74289, 78943, 78562, 79994, 78543		
	(d)	21833, 21829, 21544, 21999, 12009		
8.		the possible 3-digit numbers using each of digits 8, 4, 9 (only once) and arrange in descending order.		

### Who Am I?

- I am a 4-digit number.
- My tens digit is first even number.
- My thousands digit is the successor of 7.
   My hundreds digit is the greatest digit.



# **Numbers Beyond One Lakh**

We can extend numbers beyond 1 lakh in the same way as we do from one to one lakh.

Now let us learn to read numbers with six digits using the place value chart.

For example, take the numerals 632854 and 999999.

One lakh	100000
Two lakh	200000
Three lakh	300000
Four lakh	400000
Five lakh	500000
Six lakh	600000
Seven lakh	700000
Eight lakh	800000
Nine lakh	900000

	LAKHS	THOUSA	ONES					
	One lakh Ten-thou		Thousands	Hundreds	Tens	Ones		
	100000	10000	1000	100	10	1		
632854→	6	3	2	8	5	4		
999999 →	9	9	9	9	9	9		

We read

- (i) 632854 as 'six lakh thirty-two thousand eight hundred fifty-four'.
- (ii) 999999 as 'nine lakh ninety-nine thousand nine hundred ninety-nine'.

999999 is the largest 6-digit number.

1 more than 999999 is 1000000 (read as 'ten lakh').

	<b>LAKHS</b> Ten-Lakhs One lakh		THOUSA	ONES					
			Ten-thousands	Thousands	Hundreds	Tens	Ones		
		100000	10000	1000	100	10	1		
999999→		9	9	9	9	9	9		
1000000	1	0	0	0	0	0	0		

Note that under the period Lakhs, we add a new place for ten lakhs.

Similarly, 9999999 + 1 = 10000000 (read as '1 crore').

 $1\,crore\,or\,10000000\,is\,the\,smallest\,8-digit\,number.$ 

The place value chart is to be further extended to its left to enter 1 crore and then 10 crores.

CRORES		LAK	(HS	THOUS	ANDS	ONES		
10 crores	1 crore	Ten lakhs	One lakh	Ten-thousands	Thousands	Hundreds	Tens	Ones
100000000	10000000	1000000	100000	10000	1000	100	10	1
	1	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0

The above chart is popularly know as Indian place value chart.

10 crore ← 1 crore ←

# **International System of Numeration**

Most countries in the world follow another form of Place Value Chart.



It is given below.

We read 25678231 as 'twenty-five million six hundred seventy-eight thousand two hundred thirty-one.'

Periods (Houses)	MILLIONS			THOUSANDS			ONES		
(**************************************	Hundred Millions (100000000)	Ten Millions (10000000)	One Millions (1000000)	Hundred Thousands (100000)	Ten Thousands (10000)	One Thousand (1000)	Hundreds (100)	Tens (10)	Ones (1)
25678231→		2	5	6	7	8	2	3	1

In the International System, we use 9 digits in three different periods, i.e. ones, thousands and millions. The name of the period (except the ones) is read along with the digits.

The above chart is popularly known as Indian Place Value Chart.

Comparison of Place Value Charts of Indian and International System

	CRO	RES	LAK	(HS	THOUS	ANDS	ON	ONES	
Indian System	Ten Crores	One Crore	Ten Lakhs	One Lakh	Ten -thousands	One Thousand	Hundreds	Tens	Ones
	100000000	10000000	1000000	100000	10000	1000	100	10	1
Inter- national System	Hundred Millions	Ten Millions	One Million	Hundred Thousands	Ten Thousands	One Thousand	Hundreds	Tens	Ones
	100000000 10000000 10000000 10000000		100000	10000		100	10	₽	
	MILLIONS				THOUSAND	os	ON	IES	

Observing the table carefully, we notice that:

100 thousands = 1 lakh, 1 million = 10 lakhs 10 millions = 1 crore, 100 millions = 10 crores



1.	vvrit	e tne period ar	ia piace for tr	ie boi	a aigits :			
	(a)	32 <mark>5</mark> 628	(k	၁)	1 <b>7</b> 28212		(c)	4 <b>2</b> 6789
	(d)	543 <b>2</b> 94	(6	e)	1 <b>7</b> 8924		(f)	<b>2</b> 46769
2.	Writ	e in words botl	h Indian and I	ntern	national syst	em:		
	(a)	675283	(k	၁)	123462		(c)	465328
	(d)	116532	(6	e)	1000732		(f)	113242

- 3. How many thousands make one lakh?
- 4. How many hundreds make ten thousands?
- 5. Write the period and place for each of the bold digits according to the International System:
  - (a) 32**5**73 (b) 5**4**56324 (c) 642**6**789

# **Roman Numerals**

Roman is an ancient civilization which had its own symbols for writing various numbers. Sometimes, we see these symbols on the faces of clocks, at the railway and bus stations.

We often number our pages and questions with Roman symbols. The Romans used seven letters of the English alphabet in place of numbers. The letters with their corresponding Hindu-Arabic numerals are given below:

Roman Numerals	I	V	Χ	L	С	D	M
Hindu-Arabic numerals	1	5	10	50	100	500	1000

Using the seven symbols, all the numerals were built by adopting certain rules.

**Rule 1:** Repetition of letters means addition. Some letters are repeated up to 3 times. The letters I, X, C and M can be repeated at one given time.

**Example:** III = 1 + 1 + 1 = 3, XXX = 10 + 10 + 10 = 30

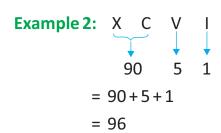
**Rule 2:** When a smaller letter is placed on the left of the bigger letter it means subtraction.

I can be subtracted from V and X only and X can be subtracted from L and C only but C can be subtracted from D and M only.

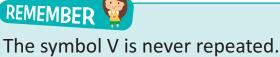
Example: 
$$IV = 5 - 1 = 4$$
,  $IX = 10 - 1 = 9$   
 $XL = 50 - 10 = 40$ ,  $XC = 100 - 10 = 90$   
 $CD = 500 - 100 = 400$ ,  $CM = 1000 - 100 = 900$ 

**Rule 3:** The value of some numbers can be found by addition. Actually it is like our expanded form.

Example 3: 
$$\begin{array}{cccc} C & D & 1 & 1 & 1 \\ & & 400 & 3 & 3 \\ & & = 400 + 3 = 403 & 3 \end{array}$$



Watch Remedial



The symbol V is never repeated. Also it is never subtracted

# 1. Write the Roman numerals for each of the following:

(a) 25

(b) 29

(c)

(d)

(e) 49

(f) 55

(g) 57

(h) 170

16

(i) 183

205

(j) 42

# 2. Write the Hindi-Arabic numerals for each of the following:

(a) XXIV

(b) XXXIII

(c) LXV

(d) XCVI

(e) CX

(f) XC

(g) CD

(h) XLV

(i) LIV

(j) LXXI

# 3. Write the sum in Roman numerals.

=

(b) XXIX + XV =

(c) 
$$L + XXX$$

(d) 
$$LX + XI =$$



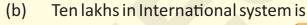




# 1. Tick ( $\checkmark$ ) the correct answer.

- (a) In 32469, 6 is in the
  - (i) ones period

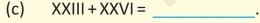
- (ii) hundreds period
- (iii) thousands period
- (iv) none of these



- (i) hundred thousands
- (ii) hundreds

(iii) one million

(iv) none of these



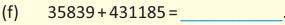
- (i) XXXIX
- (ii) XLXX
- (iii) LX
- (iv) XLIX

(d) XLVI - XIX - VIII =\_\_\_\_\_\_.

- (I) XXI
- (ii) IXX
- (iii) XIX
- (iv) IIX

(e) 75896-61796=\_\_\_\_.

- (I) 14300
- (ii) 14200
- (iii) 14100
- (iv) 14500



- (I) 457024
- (ii) 467024
- (iii) 357024
- (iv) 352470

	(e)	80857×89=		
		(I) 9196273		(ii) 6196273
		(iii) 8197273		(iv) None of these
2.	State	true or false :		
	(a)	Sixty-two lakh twenty-five thousa	nd fo	our hundred eight is 6225408.
	(b)	Two crore is 10000.		
	(c)	Four lakh eight thousand twenty-	three	e is 408023.
	(d)	Forty-one lakh eight thousand eig	htee	n is 41818.
	(e)	Ninety-six lakh five thousand fifte	en is	9605015.
3.	Fill in	the blanks:		
	(a)	The largest 5-digit number is		
	(h)	The smallest 6-digit number is		

- (b) The smallest 6-digit number is
- (c) 9999 + 1 = .
- (d) 10009 is read as ten thousand
- (e) 100000 is read as one\_\_\_\_\_.
- (f) The number next to 18523 is
- Match the following with the roman number: 4.

	Column A	Colu	mn E
(a)	50	(i)	C
(b)	100	(ii)	M
(c)	500	(iii)	V
(d)	1000	(iv)	L
(e)	5000	(v)	D



- **5.** Form the possible 3-digit numbers using each of digits 7, 8, 0 (only once) and arrange them in ascending order.
- Write the number names for the following according to the International System: 6.
  - (a) 6283271

- 42589321 (b)
- (c) 5783431





# Across ->

- 1. What comes after 4890?
- 2. What in figures-Nine thousand Nine hundred eight.
- 3. What comes before 9113?
- 4. Using digit 7, 0, 3, 2 write the smallest number.
- 5. Place value of 2 in 2896.
- 6. Predecessor of 100.

Α	cr	O	SS	$\Psi$

- 7. The largest 3-digit number.
- 8. The smallest 4-digit number.
- 9. What comes after 2309?
- 10. The smallest 4-digit number + 12.
- 11. The smallest 3-digit number.
- 12. Difference between face value and place value of 4 in 3412.

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

# Maths Lab Activity

Collaboration

There are seven balls with the following numbers written on them.

9

4

0

5

3

1

Rearrange the balls to form numbers according to the clues:

- 1. Make six numbers that are less than 54,00,000.
- 2. Form five even numbers that are more than 40,00,000.
- 3. Form the smallest number using all digits.
- 4. Make five odd numbers that are less than 50,00,000.

**Critical Thinking** 



 A student is asked to form the smallest 5-digit number using the digits 8, 0, 2, 6, 1 (each digit to be used once only). The number so formed is 1268. Is it right?