1 ROMAN NUMERALS

In class III, we have learnt reading and writing of Roman numerals upto 39 (XXXIX). In this section, we shall extend learning of reading and writing of these numerals upto 100. We already know that there are seven basic symbols to write any Roman numeral. These symbols with their corresponding Hindu-Arabic numerals are given below:

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

In Roman system, there is no symbol for zero. This system is also not a place value system.

BASIC RULES TO FORM ROMAN NUMERALS

Rule 1 : Repetition of a Roman numeral means addition.

Examples : $II = 1 + 1 = 2$, $III = 1 + 1 + 1 = 3$, $XX = 10 + 10 = 20$, $XXX = 10 + 10 + 10 = 30$.

Caution : (1) Only I, X, C, M can be repeated. V, L and D cannot be repeated.
(2) No numeral can be repeated more than three times.

Rule 2 : A smaller numeral written to the right of a larger numeral is always added to the larger numeral.

Examples : $VI = 5 + 1 = 6$, $VII = 5 + 1 + 1 = 7$, $VIII = 5 + 1 + 1 + 1 = 8$, $XI = 10 + 1 = 11$, $XII = 10 + 1 + 1 = 12$, $XV = 10 + 5 = 15$, $LX = 50 + 10 = 60$, $LXX = 50 + 10 + 10 = 70$.

Rule 3 : A smaller numeral written to the left of a larger numeral is always subtracted from the larger numeral.

Examples : $IV = 5 - 1 = 4$, $IX = 10 - 1 = 9$, $XL = 50 - 10 = 40$, $XC = 100 - 10 = 90$.

Caution : (1) V, L and D are never subtracted.
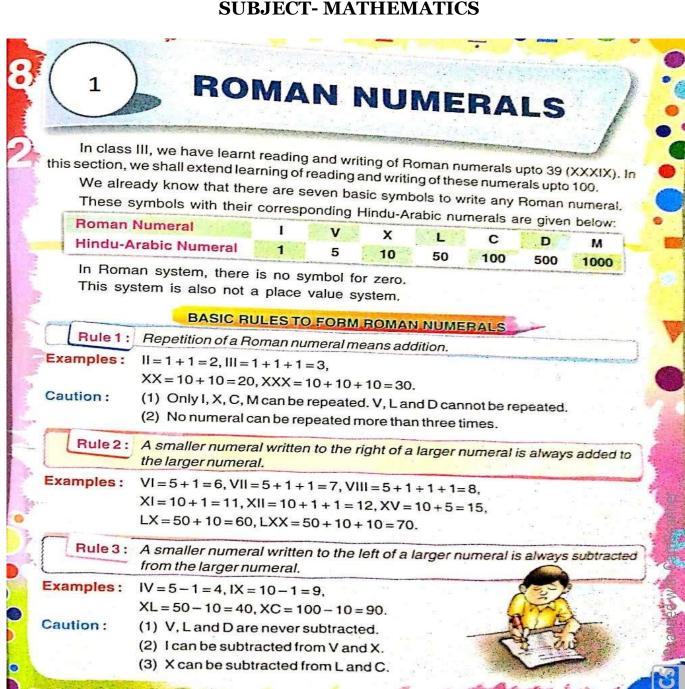(2) I can be subtracted from V and X.
(3) X can be subtracted from L and C.

Rule 4 : When a smaller numeral is placed between two larger numerals, then it is always subtracted from the larger numeral immediately following it.

Examples. $XIV = 10 + (5-1) = 14$, $XIX = 10 + (10-1) = 19$.

WRITING ROMAN NUMERALS FOR HINDU-ARABIC NUMERALS UPTO 100

The numerals 1 to 9 and 10, 20, 30, 40, ..., 100 can be written in Roman numerals using the above rules as shown below :

Hindu-Arabic Numeral	Roman Numeral	Hindu-Arabic Numeral	Roman Numeral
1	I	10	X
2	II	20	XX
3	III	30	XXX
4	IV	40	XL
5	V	50	L
6	VI	60	LX
7	VII	70	LXX
8	VIII	80	LXXX
9	IX	90	XC
		100	C

When we write any number upto 100 in Roman numeral, we separate the tens and ones and then first write the Roman numeral for the tens and then write the Roman numerals for the ones to the right of it.

Thus, we have :

(a) 52 $= 50 + 2$
     $= LII$

(b) 67 $= 60 + 7$
     $= LXVII$

(c) 78 $= 70 + 8$
     $= LXXVIII$

(d) 49 $= 40 + 9$
     $= XLIX$

(e) 84 $= 80 + 4$
     $= LXXXIV$

(f) 96 $= 90 + 6$
     $= XCVI$

Similarly, we have :

(a) $XCVIII = 90 + 8 = 98$.

(b) $LXXI = 70 + 1 = 71$.

(c) $LXIX = 60 + 9 = 69$.

(d) $XLIV = 40 + 4 = 44$.

1. The roman numerals from which I can be subtracted are V and_____
a. I   b. X   c. L   d. C
2. Which of the following is meaningless?
a. XIV   b.XIX   c. IXVI   d.XXVI
3.99 is the same as
a. IC   b.IXIX   c. XCIX   d.CIX
4.22 is written in roman numerals as
a. XXII   b.XVVII   c. VVVVII   d.none of these
5. Which of the following option is the Roman numeral for 65?
a.LXXV   b.XLV   c.LVX   d.LXV

QB) Calculation based questions.
1. Write the roman numerals for each of the following Hindu- Arabic numerals-
a. 44   b.99   c. 85
2. Write the Hindu –Arabic numerals corresponding to each of the following-
a. XXIX   b.LV   c.LXIV

3. Compare the following by using>, < or =
a. LXII _____ XLII
b. XCIX _____ XCIV
4. Compare the following
1. 58+28_____ LXXXIV
2.81-32 _____L

QC) Word Problems-

1. Simran had 40 pencils. She shared the pencils equally into boxes. How many pencils were there in each box? (write this problem using roman numerals)
2. My sister is 5 years younger than me. If I am 20 years old, how old is my sister? (Write the answer as using roman numerals).

1. Write the answers in Roman Numerals-
a.6×7=_____
b.40+50=_____
c.960÷10=_____

2. Perform the indicated operation and write the answer in Roman Numerals-
a. LXXX ÷VIII=_____
b. XXVIII+XXVII=_____
c.LXXXII- XLVI=_____

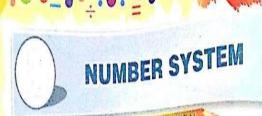3. Color the boxes that match across the three columns alike

5	Eighteen	XIX
9	Seven	XVII
13	Nineteen	VII
18	Nine	XIII
7	Five	IX
19	Thirteen	V

3. Match the following-

Column A		Column B
a) XII	-	20
b) VIII	-	12
c) IX	-	8
d) XX	-	9

5 Define the following-

a. Roman Numerals   b. Hindu –Arabic Numerals

Chapter - 2

NUMBER SYSTEM

NUMBER AND NUMERAL

We may express numbers in figures as well as in words.

The group of figures representing a number is called the numeral for that number.

FIVE-DIGIT & SIX-DIGIT NUMBERS

In class III, we have studied upto 4-digit numbers. We know that :

The smallest 4-digit number is 1000.

The largest 4-digit number is 9999.

The number 1 more than 9999 is 10000.

We read 10000 as **Ten-thousand.**

The smallest number of 5-digits is 10000.

Thus, in the place-value chart, the fifth place from right is called the **ten-thousands place.**

T-Th | Th H T O

Thus, we have larger numbers as given below :

Numeral	Read as
10000	Ten thousand
10001	Ten thousand one
10002	Ten thousand two
....	....
10010	Ten thousand ten
....	....
10099	Ten thousand ninety-nine
10100	Ten thousand one hundred
....	....
10900	Ten thousand nine hundred
....	....
10999	Ten thousand nine hundred ninety-nine
11000	Eleven thousand
11001	Eleven thousand one
....	....
99000	Ninety-nine thousand
....	....
99999	Ninety-nine thousand nine hundred ninety-nine

The largest 5-digit number is 99999.

The number 1 more than 99999 is 100000. We read 100000 as **one-lakh.**

The smallest 6-digit number is 100000.

Thus, in the place value chart, the sixth place from the right is the **lakhs place.**

Proceeding as in the above table, we start from 100000 and reach up to 999999.

The largest 6-digit number is 999999.

The number 1 more than 999999 is 1000000. We read 1000000 as **ten-lakhs.**

The smallest 7-digit number is 1000000.

The seventh place in a number is called the **ten-lakhs place.**

The greatest 7-digit number is 9999999.

INDIAN NUMBER SYSTEM

The number system that we have learnt above is the Indian number system.

It is also called the **Hindu-Arabic system of numeration.**

In this system, we have the place value chart as shown below :

Periods→	LAKHS		THOUSANDS		ONES		
Places →	Ten-Lakhs 1000000	Lakhs 100000	Ten-Thousands 10000	Thousands 1000	Hundreds 100	Tens 10	Ones 1
	TL	L	T-Th	Th	H	T	O

The seven places have been grouped into three periods or bunches :

(a) The first three places make the **ones period.**

(b) The next two places make the **thousands period.**

(c) The next two places make the **lakhs period.**

INTERNATIONAL NUMBER SYSTEM

This system is followed by a large number of countries (especially the western countries) in the world.

In this system, we write :

1 lakh = 100 thousands.

10 lakhs = 1 million.

Thus, we have periods of **ones, thousands** and **millions.**

Periods →	MILLIONS			THOUSANDS			ONES		
Places →	Hundred-Millions 100000000	Ten-Millions 10000000	Millions 1000000	Hundred-thousands 100000	Ten-thousands 10000	Thousands 1000	Hundreds 100	Tens 10	Ones 1
	HM	TM	M	H-Th	T-Th	Th	H	T	O

Reading And Writing A Numeral :

While reading a numeral, all the digits in the same period are read together and the name of the period (except the ones) is read along with it.

While writing a numeral, we separate the periods using commas.

Study the following examples.

SOLVED EXAMPLES

Example 1. Write each of the following numerals in the Indian system by separating the periods, using commas :

(a) 13645   (b) 39087   (c) 105674

(d) 1370654   (e) 3650009   (f) 267509

Solution: Separating the periods of ones, thousands and lakhs from right, we may write :

	Given Numeral							Using Commas
	TL	L	T-Th	Th	H	T	O	
(a)			1	3	6	4	5	13,645
(b)			3	9	0	8	7	39,087
(c)		1	0	5	6	7	4	1,05,674
(d)	1	3	7	0	6	5	4	13,70,654
(e)	3	6	5	0	0	0	9	36,50,009
(f)		2	6	7	5	0	9	2,67,509

Example 2. Write the number-name for each of the following numerals in the Indian system :

(a) 30207   (b) 480695   (c) 360018

(d) 1636506   (e) 1400008   (f) 1836054

Solution: We first arrange the given numerals in the place value chart. Separating the periods of ones, thousands and lakhs from right, in each numeral, we may read :

	Given Numeral						Number-Name
	TL	L	T-Th	Th	H	T	O	
(a)				3	0	2	0	7	Thirty thousand two hundred seven
(b)		4	8	0	6	9	5	Four lakh eighty thousand six hundred ninety-five
(c)		3	6	0	0	1	8	Three lakh sixty thousand eighteen
(d)	1	6	3	6	5	0	6	Sixteen lakh thirty-six thousand five hundred six
(e)	1	4	0	0	0	0	8	Fourteen lakh eight
(f)	1	8	3	6	0	5	4	Eighteen lakh thirty–six thousand fifty–four

Points To Note :

(a) Do not write the periods in plural.

Never write 9347 as Nine thousands three hundreds forty seven.

Correct form is : Nine thousand three hundred forty seven.

(b) Do not use the word 'and' before tens and ones.

Reading 9347 as Nine thousand three hundred and forty seven, is wrong. Here 'and' should not be used.

Example 3. Rewrite the following numbers with proper commas, using international place-value chart :

(a) 634782   (b) 1362475   (c) 48237596

Solution : Arranging the given numerals in an international place-value chart and separating the periods, we may write :

	Given Numeral								Using Commas
	HM	TM	M	H-Th	T-Th	Th	H	T	O	
(a)				6	3	4	7	8	2	634,782
(b)			1	3	6	2	4	7	5	1,362,475
(c)		4	8	2	3	7	5	9	6	48,237,596

FACE VALUE AND PLACE VALUE

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.

Thus, in the numeral 53472 :

The face value of 2 is 2 ;

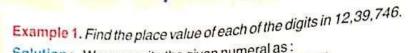The face value of 7 is 7 ;

The face value of 4 is 4, and so on.

Place Value or Local Value of a Digit in a Numeral :

Place-value of a digit = (Face-value of the digit) × (Value of the place).

Place-value of 0 is always 0, wherever it may be.

Example 1. *Find the place value of each of the digits in 12,39,746.*

Solution : We may write the given numeral as :

TL	L	T-Th	Th	H	T	O
1	2	3	9	7	4	6

From place-value chart, clearly we have :

Place value of 6 = 6 ones = $6 \times 1 = 6$;

Place value of 4 = 4 tens = $4 \times 10 = 40$;

Place value of 7 = 7 hundreds = $7 \times 100 = 700$;

Place value of 9 = 9 thousands = $9 \times 1,000 = 9,000$;

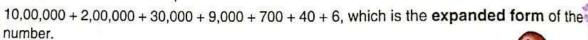Place value of 3 = 3 ten-thousands = $3 \times 10,000 = 30,000$;

Place value of 2 = 2 lakhs = $2 \times 1,00,000 = 2,00,000$;

Place value of 1 = 1 ten-lakh = $1 \times 10,00,000 = 10,00,000$.

EXPANDED NOTATION

In the above example, we saw the place value of each digit in the number 12,39,746.

Clearly, 12,39,746 can be expressed as :

$10,00,000 + 2,00,000 + 30,000 + 9,000 + 700 + 40 + 6$, which is the **expanded form** of the number.

The numeral 12,39,746 is the **ordinary** or **short form**.

Example 2. Write 9,65,703 in the expanded form.

Solution : Given numeral may be written as :

L	T-Th	Th	H	T	O
9	6	5	7	0	3

$\therefore 965703 = 9$ lakhs + 6 ten-thousands + 5 thousands + 7 hundreds + 0 tens + 3 ones

$= 9 \times 1,00,000 + 6 \times 10,000 + 5 \times 1,000 + 7 \times 100 + 0 \times 10 + 3 \times 1$

$= 9,00,000 + 60,000 + 5,000 + 700 + 3$.

SUCCESSOR AND PREDECESSOR
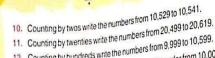
Successor of a Number :

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

Thus, the successor of 9999 is 10000;
the successor of 85293 is 85294.

Predecessor of a Number :

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

Thus, the predecessor of 60700 is 60699;
the predecessor of 100000 is 99999.

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10. Counting by twos write the numbers from 10,529 to 10,541.
11. Counting by twenties write the numbers from 20,499 to 20,619.
12. Counting by hundreds write the numbers from 9,999 to 10,599.
13. Counting by fives write the numbers in reverse order from 10,000 to 9,900.
14. Discover the pattern and name the next four numbers:
    (a) 7345, 7353, 7361, ..., ..., ..., ...
    (b) 10501, 10511, 10521, ..., ..., ..., ...
    (c) 23709, 23699, 23689, ..., ..., ..., ...
    (d) 20000, 19998, 19996, ..., ..., ..., ...
    (e) 100000, 99900, 99800, ..., ..., ..., ...

COMPARISON OF NUMBERS

We have already learnt the method of finding the greater of the two given numbers upto 4-digit numbers.

We follow the same rules for large numbers.

Rule 1 : *If two numbers with different number of digits are given, then the number which has more digits is the greater of the two.*

Thus, 5983 > 697, since 5983 has 4 digits while 697 has 3 digits.

Rule 2 : *Suppose we have to compare two numbers with the same number of digits.*
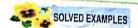
Step 1. *First compare the digits at the left most place in both the numbers.*

Step 2. *If they are equal in value, compare the second digits from the left in both the numbers.*

Step 3. *If the second digits from the left are equal, compare the third digits from the left in both the numbers.*

Step 4. *Continue until you come across unequal digits at the corresponding places.*

Now, the number with greater such digit is the greater of the two.

SOLVED EXAMPLES

Example 1. Which is greater : 9875 or 16004 ?

Solution : Clearly, 9875 consists of 4 digits, while 16004 contains 5 digits.
Since a number with more digits is greater, so 16004 > 9875.

Example 2. Which is greater : 87,951 or 79,865?

Solution : Both are 5-digit numbers.
Compare their left most digits i.e. 8 in 87,951 and 7 in 79,865. And, 8 > 7.
∴ 87,951 > 79,865.

Example 3. Compare 6,45,385 and 6,45,403.

Solution : Both the numbers have 5 digits. Both have the same digits at the lakhs, ten-thousands and thousands places.

So, we compare the digits at hundreds place.

This digit is 3 in 6,45,385 and 4 in 6,45,403. And, 3 < 4.

∴ 6,45,385 < 6,45,403.

ASCENDING-DESCENDING ORDER

Numbers in **ascending order** *means the numbers from smaller to greater.*

Numbers in **descending order** *means the numbers from greater to smaller.*

Example 4. *Arrange the following numbers in ascending order :*
50,60,713   5,62,302   45,82,916   55,62,310   45,81,996

Solution : Let us arrange the given numbers in a place value chart.

TL	L	T-Th	Th	H	T	O
5	0	6	0	7	1	3
	5	6	2	3	0	2
4	5	8	2	9	1	6
5	5	6	2	3	1	0
4	5	8	1	9	9	6

5,62,302 is a 6-digit number, while all others are 7-digit numbers.

∴ 5,62,302 is the smallest number.

Of the remaining numbers, the first and fourth numbers have 5 as the left most digit, while the third and fifth numbers have 4 as the left most digit.

Since 5 > 4, so the first and fourth numbers are greater than the third and fifth numbers.

Now, we compare 45,82,916 and 45,81,996. Both these numbers have the same digits at the ten lakhs, lakhs and ten-thousands places. So, we compare the digits at the thousands place.

This digit is 2 in 45,82,916 and 1 in 45,81,996.

Since 1 < 2, so 45,81,996 < 45,82,916.

Next we compare 50,60,713 and 55,62,310.

Both these numbers have the same digits at the ten-lakhs place.

So, we compare their digits at the lakhs place.

This digit is 0 in 50,60,713 and 5 in 55,62,310. And, 0 < 5.

So, 50,60,713 < 55,62,310.

QA) Multiple Choice Questions-

1. Place value and face value will be the same in the_____- place.
   a. Ones   b. hundreds   c. tens   d. thousands

2. The number just before 9990 is_____
   a. 9991   b.9909   c.9988   d.9989

3. The place value of 2 in 2548 is_____
   a. 200   b.2020   c.2000   d.2002

4. _____ is the smallest 4- digit numeral formed by the digit 8,0,6,7.
   a. 0678   b.7068   c.6078   d.7086

5. The expanded form of the numeral 3003 is_____
   a. 300+30 b. 3000+30   c.3000+3   d. 300+3000

QB) Calculation based questions-

1. Arrange the following numerals in Indian place- value chart and then rewrite them with commas at the right places:
   a. 200105   b.1560034

2. Write the following numerals in words in the Indian system:
   a.53106   b. 6152496

3. Write in figures as well as in words-
   a. the smallest number of 5 digits
   b. the largest number of 5- digits

4. Write the number names of the following in the international system-
   a.360520   b.5059082

5. Express the following numbers written in the Indian system in figures, placing at the right places;
   a. Fifteen thousand six hundred eighty-two
   b. Ten lakh twenty
   c. Eight lakh one thousand seven

6. Arrange the following numbers in ascending order-
   685475, 288231,485712,369258,321654

QC) Word Problems-

1. Find the difference between the place value and face value of 6 in 4,61,503

2. Find the difference between the place value and face value of 8 in 48,96,500 and 15,80,776

3. counting by twos write the numbers from 10,529 to 10,541

4. Counting by twenties write the numbers from 20,499 to 20,619

5. Counting by hundreds write the numbers from 9,999 to 10,599

6. Counting by fives write the numbers in reverse order from 10,000 to 9,900

QD) Higher order thinking Questions-

1. Discover the patterns and name the next four numbers-

     a. 7345, 7353, 7361, _____,_____,_____,_____

     b. 20000, 19998, 19996, _____,_____,_____,_____

2. Write the smallest 3- digit number using the following digits only once:

     a. 5, 7 and 1

3. Write the greatest 4- digit number using the following digits only once:

     a. 0, 2, 7 and 5

4. Write the greatest 3- digit number using the digits 8 and, repeating 4 two times.

5. Encircle the largest number among the given numbers-

     a. 1,00,300; 1,01,000; 1,00,297; 1,00,403; 1,00,960

QE) Define the following-
1. Ascending order
2. Descending order
3. Successor
4. Predecessor
5. Place Value

ADDITION AND SUBTRACTION

ADDITION

In class III, we have learnt the addition of two or more numbers upto 4-digit numbers. We shall extend the same idea of addition to 5-digit and 6-digit numbers.

Addendum And Sum : When some numbers are added, then each of the numbers to be added is known as an **addendum** and the result obtained after addition is called the **sum**.

ADDITION WITHOUT CARRYING

Rule : *Arrange the addends under each other in the place-value chart and add them column wise from right to left, i.e. first add the ones, then the tens, then the hundreds and so on.*

Example 1. *Add* 41367 *and* 24512.

Solution : Arranging the addends column wise and adding, we get :

T-Th	Th	H	T	O
4	1	3	6	7
2	4	5	1	2
6	5	8	7	9

Explanation : We add column wise, step by step, as shown below :

Step 1 : *Adding ones* $\rightarrow$ 7 ones + 2 ones = 9 ones.

Step 2 : *Adding tens* $\rightarrow$ 6 tens + 1 ten = 7 tens.

Step 3 : *Adding hundreds* $\rightarrow$ 3 hundreds + 5 hundreds = 8 hundreds.

Step 4 : *Adding thousands* $\rightarrow$ 1 thousand + 4 thousands = 5 thousands.

Step 5 : *Adding ten-thousands* $\rightarrow$ 4 ten-thousands + 2 ten-thousands

$= 6$ ten-thousands.

So, the sum of the given addends is 65879.

Example 2. *Find the sum* : $14243 + 32403 + 1102 + 141$.

Solution : Arranging the addends under each other in the place value chart and adding column wise, we get :

Example 1. *Add* 75364 *and* 23678.

Solution : Arranging the addends under each other in the place-value chart and adding columnwise, we get :

T-Th	Th	H	T	O	
	(1)	(1)	(1)		← carry
7	5	3	6	4	
+ 2	3	6	7	8	
9	9	0	4	2	

Explanation : We add columnwise.

Adding ones :
    4 ones + 8 ones = 12 ones
                = 1 ten + 2 ones.
    Write 2 under ones' column.
    Carry over 1 to tens' place.

Adding tens :
    1 ten (carried over) + 6 tens + 7 tens = 14 tens
                               = 10 tens + 4 tens
                               = 1 hundred + 4 tens.
    Write 4 under tens' column.
    Carry over 1 to hundreds' place.

Adding hundreds :
    1 hundred (carried over) + 3 hundreds + 6 hundreds
                                = 10 hundreds
                                = 1 thousand + 0 hundred.
    Write 0 under hundreds' column.
    Carry over 1 to thousands' place.

Adding thousands :
    1 thousand (carried over) + 5 thousands + 3 thousands = 9 thousands.
    Write 9 under thousands' column.

Adding ten-thousands :
    7 ten-thousands + 2 ten-thousands = 9 ten–thousands.
    Write 9 under ten-thousands' column.
    ∴ The required sum is 99042.

In class III, we have learnt about subtraction without and with borrowing for smaller numbers consisting of 4 or less digits. We use the same idea of subtraction for larger numbers consisting of 5 or more digits.

Minuend, Subtrahend and Difference :

In a problem on subtraction, we use the following terms :

The larger number from which we subtract the other number, is known as **minuend.**

The number which is subtracted is called **subtrahend.**

The result of subtraction is called the **difference** *between the given numbers.*

SUBTRACTION WITHOUT BORROWING

Rule : In order to find the difference between two given numbers, arrange the digits of subtrahend under those of minuend in the place value chart.

Now subtract columnwise. That is :

Subtract ones from ones, tens from tens, hundreds from hundreds, thousands from thousands, ten-thousands from ten-thousands and so on.

SOLVED EXAMPLES

Example 1. *Subtract* 42365 *from* 87596.

Solution : Here minuend is 87596 and subtrahend is 42365.

Arrange the digits of the given numbers in column form in the place-value chart and subtracting columnwise, we get :

T-Th	Th	H	T	O
8	7	5	9	6
− 4	2	3	6	5
4	5	2	3	1

∴ 87596 − 42365 = 45231.

Explanation :
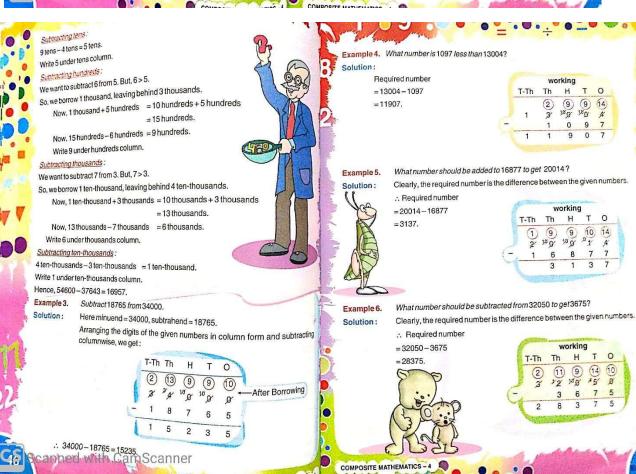
Subtracting ones :   6 ones − 5 ones = 1 one.
                          Write 1 under ones column.

Subtracting tens :   9 tens − 6 tens = 3 tens.
                          Write 3 under tens column.

SUBTRACTION WITH BORROWING

Example 1. Subtract 38967 from 56423.

Solution: Here minuend = 56423, subtrahend = 38967.

Arranging the digits of the given numbers in column form and subtracting columnwise, we get:

T-Th	Th	H	T	O	
④	⑮	⑬	⑪	⑬	← After Borrowing
5̸	6̸	4̸	2̸	3̸	
− 3	8	9	6	7	
1	7	4	5	6	

∴ 56423 − 38967 = 17456.

Explanation:

Subtracting ones:

We want to subtract 7 from 3. But, 7 > 3.

So, from tens column we borrow 1 ten, leaving behind 1 ten.

Now, 1 ten + 3 ones = 10 ones + 3 ones = 13 ones.

∴ 13 ones − 7 ones = 6 ones.

Write 6 under ones column.

Subtracting tens:

We want to subtract 6 from 1. But, 6 > 1.

So, from hundreds column we borrow 1 hundred, leaving behind 3 hundreds.

Now, 1 hundred + 1 ten = 10 tens + 1 ten = 11 tens.

∴ 11 tens − 6 tens = 5 tens.

Write 5 under tens column.

Subtracting hundreds:

We want to subtract 9 from 3. But, 9 > 3.

So from thousands column, we borrow 1 thousand, leaving behind 5 thousands.

Now, 1 thousand + 3 hundreds

= 10 hundreds + 3 hundreds = 13 hundreds.

∴ 13 hundreds − 9 hundreds = 4 hundreds.

Write 4 under hundreds column.

Subtracting thousands:

We want to subtract 8 from 5. But, 8 > 5.

So, from ten-thousands column, we borrow 1 ten-thousand leaving behind 4 ten-thousands.

Now, 1 ten-thousand + 5 thousands = 15 thousands.

∴ 15 thousands − 8 thousands = 7 thousands.

Write 7 under thousands column.

Subtracting ten-thousands:

4 ten-thousands − 3 ten-thousands = 1 ten-thousand.

So, write 1 under ten-thousands column.

Thus, 56423 − 38967 = 17456.

Example 2. Subtract 37643 from 54600.

Solution: Here minuend = 54600, subtrahend = 37643.

Arranging the digits of the given numbers under each other in the place-value chart and subtracting columnwise, we get:

T-Th	Th	H	T	O
④	⑬	⑮	⑨	⑩
5̸	4̸	6̸	0̸	0̸
− 3	7	6	4	3
1	6	9	5	7

∴ 54600 − 37643 = 16957.

Explanation:

Subtracting ones:

We want to subtract 3 from 0. But, 3 > 0.

So, we would like to borrow from tens place.

But there is 0 at tens place.

So, we borrow 1 hundred, leaving behind 5 hundreds.

Now, 1 hundred = 10 tens

= 9 tens + 1 ten = 9 tens + 10 ones.

Thus, we have 5 at hundreds place, 9 at tens place and 10 at ones place.

Now, 10 ones − 3 ones = 7 ones.

Write 7 under ones column.

Subtracting tens:

9 tens − 4 tens = 5 tens.

Write 5 under tens column.

Subtracting hundreds:

We want to subtract 6 from 5. But, 6 > 5.

So, we borrow 1 thousand, leaving behind 3 thousands.

Now, 1 thousand + 5 hundreds = 10 hundreds + 5 hundreds

= 15 hundreds.

Now, 15 hundreds − 6 hundreds = 9 hundreds.

Write 9 under hundreds column.

Subtracting thousands:

We want to subtract 7 from 3. But, 7 > 3.

So, we borrow 1 ten-thousand, leaving behind 4 ten-thousands.

Now, 1 ten-thousand + 3 thousands = 10 thousands + 3 thousands

= 13 thousands.

Now, 13 thousands − 7 thousands = 6 thousands.

Write 6 under thousands column.

Subtracting ten-thousands:

4 ten-thousands − 3 ten-thousands = 1 ten-thousand.

Write 1 under ten-thousands column.

Hence, 54600 − 37643 = 16957.

Example 3. Subtract 18765 from 34000.

Solution: Here minuend = 34000, subtrahend = 18765.

Arranging the digits of the given numbers in column form and subtracting columnwise, we get:

T-Th	Th	H	T	O	
②	⑬	⑨	⑨	⑩	
3̸	4̸	0̸	0̸	0̸	← After Borrowing
− 1	8	7	6	5	
1	5	2	3	5	

∴ 34000 − 18765 = 15235.

Example 4. What number is 1097 less than 13004?

Solution:

Required number

= 13004 − 1097

= 11907.

working

T-Th	Th	H	T	O
	②	⑨	⑨	⑭
	3̸	0̸	0̸	4̸
−	1	0	9	7
1	1	9	0	7

Example 5. What number should be added to 16877 to get 20014?

Solution: Clearly, the required number is the difference between the given numbers.

∴ Required number

= 20014 − 16877

= 3137.

working

T-Th	Th	H	T	O
①	⑨	⑨	⑩	⑭
2̸	0̸	0̸	1̸	4̸
− 1	6	8	7	7
	3	1	3	7

Example 6. What number should be subtracted from 32050 to get 3675?

Solution: Clearly, the required number is the difference between the given numbers.

∴ Required number

= 32050 − 3675

= 28375.

working

T-Th	Th	H	T	O
②	⑪	⑨	⑭	⑩
3̸	2̸	0̸	5̸	0̸
−	3	6	7	5
2	8	3	7	5

8. $51684 + 0 =$ ....

Example 1. A bulb manufacturing factory produced 86325 bulbs in January, 69770 bulbs in February and 107605 bulbs in March. How many bulbs did the factory produce altogether in these three months ?

Solution :

		① ② ① ① ① ← carry
Number of bulbs produced in January	=	8 6 3 2 5
Number of bulbs produced in February	=	6 9 7 7 0
Number of bulbs produced in March	= +	1 0 7 6 0 5
Total number of bulbs produced in 3 months	=	2 6 3 7 0 0

Hence, the total number of bulbs produced in 3 months is 263700.

Example 2. There are 425693 men, 372817 women and 296084 children in a city. What is the population of that city ?

Solution :

		① ① ① ① ① ① ← carry
Number of men in the city	=	4 2 5 6 9 3
Number of women in the city	=	3 7 2 8 1 7
Number of children in the city	= +	2 9 6 0 8 4
Total population of the city	=	1 0 9 4 5 9 4

Hence, the total population of the city is 1094594.

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26. What number should be subtracted from 22222 to get 9999?

Example 1. Mr. Rao earns ₹ 20160 per month. His total monthly expenditure is ₹ 11975. How much does he save every month?

Solution :

Total monthly income = ₹ 20160.
Total monthly expenditure = ₹ 11975.
Monthly saving = ₹ (20160 – 11975)
= ₹ 8185.

Hence, Mr. Rao saves ₹ 8185 per month.

Example 2. The price of a car is ₹ 186978 and that of a van is ₹ 215647. Which costs more and by how much?

Solution :

The price of a car = ₹ 186978.
The price of a van = ₹ 215647.
Clearly, 215647 > 186978.
∴ The van costs more than the car.
Difference in their prices
= ₹ (215647 – 186978)
= ₹ 28669.
∴ The van costs more than the car by ₹ 28669.

Example 3. The sum of two numbers is 90514. If one of the numbers is 48726, find the other number.
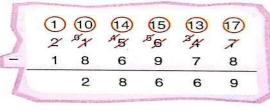
Solution : The sum of two numbers = 90514.
One number = 48726.
∴ The other number = (90514 – 48726)
= 41788.
Hence, the other number is 41788.

Subtracting hundreds :   5 hundreds – 3 hundreds = 2 hundreds.
Write 2 under hundreds column.

Subtracting thousands :   7 thousands – 2 thousands = 5 thousands.
Write 5 under thousands column.

Subtracting ten-thousands : 8 ten-thousands – 4 ten-thousands
= 4 ten-thousands.
Write 4 under ten-thousands column.

Hence, 87596 – 42365 = 45231.

Example 2.   *Find the difference between 79654 and 26312.*

Solution :   Both the given numbers are 5-digit numbers.

Comparing their digits at ten-thousands place, we find that 7 > 2.

∴ 79654 > 26312.

So, the minuend is 79654.

The subtrahend is 26312.

Arranging their digits in place-value chart and subtracting columnwise, we get:

T-Th	Th	H	T	O
7	9	6	5	4
2	6	3	1	2
5	3	3	4	2

Hence, the difference between the given numbers is 53342.

QA) Multiple Choice Questions-

1. What must be added to 3956 to get 6935?
     a.3956   b.6935   c.2979   d.3979
2. A man earns Rs.7250.25 and spends Rs.088.75? How much does he save?
     a.Rs.1162.50   b.Rs.1161.90   c.Rs.1161.50   d.Rs.1171.50
3. One more than which number is 72500?
     a.71499   b.72499   c.72501   d.72500
4. What is the difference between 4753 and 8000?
     a.3247   b.3857   c.4247   d.3257
5. In an election, 27895 votes were polled.6521 votes were found invalid. How many votes were valid?
     a.21374   b.34416   c.21376   d.6521

QB) Calculation based questions-

1. Arrange the following numbers in columns and find their sum;
     a.123574, 63312, 2003
     b.236381, 30516, 2102, 1000
2. Find the sum-
     a. 12 thousand+6 hundreds+14 tens+16 ones
     b. 8 ten thousand+4 thousands+a5 hundreds+12 tens

QC) Word problems-

1. Rajeev purchases a sofa set and a dining set costing Rs. 36875 and Rs. 87365 respectively. How much money he has to pay in total?
2. In a village, there were 52,800 children, 1, 54,000 men and rest females. If the total population of the village is 2, 70,000. Find the number of female populations of the village.
3. A music store ordered 4, 98,763 musical DVDs in 2014. They sold 3, 87,651 DVDs out of the total DVDs order. How many DVDs were left unsold?
4. There were 48213 bags of rice in a godown. If 19425 bags are taken out. How many bags remain there in the godown?
5. In an all Indian examination, 287300 candidates appeared. Out of these, 97435 failed. How many candidates passed?

QD) Higher Order Thinking Questions-

1. What number is 2897 less than 16000?
2. What number should be added to 37654 to get 100000?
3. What number should be subtracted from 22222 to get 9999?
4. Estimate the difference of the following
      a. 62901-31600
      b. subtract 18888 from 25444
5. Replace* by the correct digits;

a.   8940   b.   6 9 * 5
      - 7*21   *4 6 9
      _____   +   2 4 7
        1319   _____
                          9 6 5 *

QE) Define the following-

1. Grouping property of zero
2. Additive property of zero
3. Order property of zero