

2

Numbers Up to 10000



4-digit Numbers

In previous class you have learnt number system upto 3-digit numbers using the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. Now, you will learn about numbers more than three digits.

A 4-digit number consists of four digits. For example, 4698, 2586, 7852, 8326 etc. are 4-digit numbers. You have also learnt that 999 is the greatest 3-digit number.

$$999 = 9 \text{ hundreds} + 9 \text{ tens} + 9 \text{ ones}$$

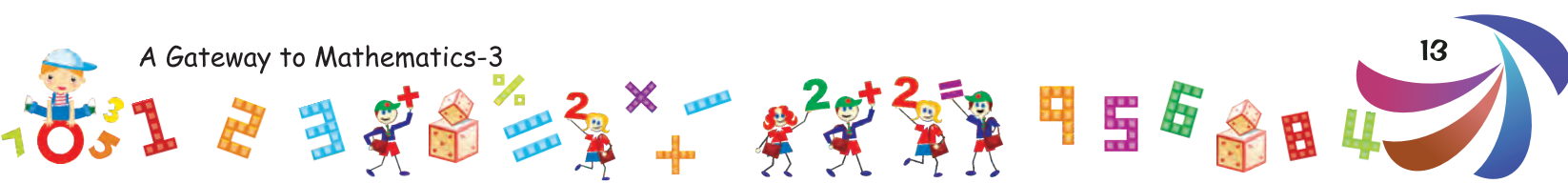
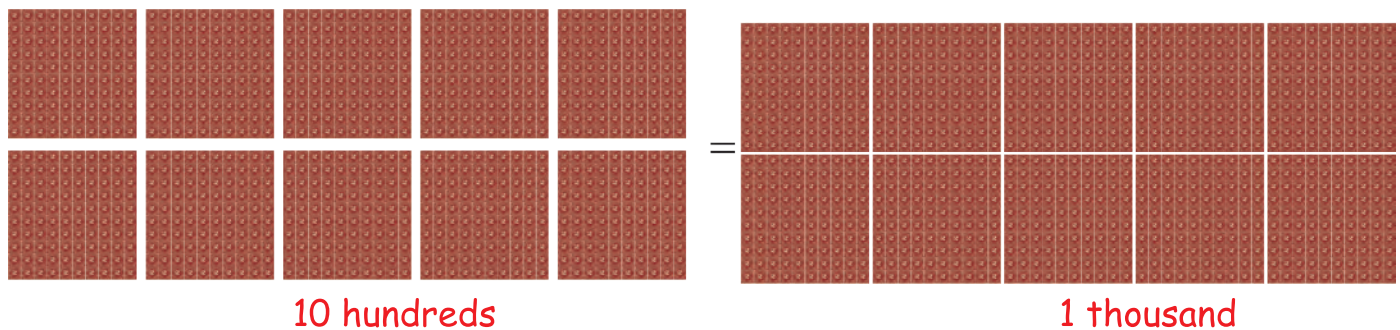
Let us add 1 to 999.

$$\begin{aligned} 999 + 1 &= 9 \text{ hundreds} + 9 \text{ tens} + 9 \text{ ones} + 1 \text{ one} \\ &= 9 \text{ hundreds} + 9 \text{ tens} + 10 \text{ ones} \\ &= 9 \text{ hundreds} + 9 \text{ tens} + 1 \text{ ten} \\ &= 9 \text{ hundreds} + 10 \text{ tens} \\ &= 9 \text{ hundreds} + 1 \text{ hundred} \\ &= 10 \text{ hundreds} = 1 \text{ thousand} \end{aligned}$$

	1	1		
	9	9	9	
+				1
	1	0	0	0

1 thousand is written as 1000.

1000 is the smallest 4-digit number.





Numbers Greater than 1000

Each number after 1000 can be obtained by adding 1 to that number.

Look at some of the numbers.

$$1000 + 1 = 1001 \text{ (One thousand one)}$$

$$1001 + 1 = 1002 \text{ (One thousand two)}$$

$$1002 + 1 = 1003 \text{ (One thousand three) and so on}$$

The following are few numbers up to 9999.

$$1092 + 1 = 1093 \text{ (One thousand ninety three)}$$

$$1175 + 1 = 1176 \text{ (One thousand one hundred seventy six)}$$

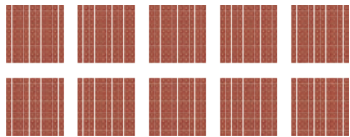
$$1563 + 1 = 1564 \text{ (One thousand five hundred sixty four)}$$

$$2426 + 1 = 2427 \text{ (Two thousand four hundred twenty seven)}$$

$$9998 + 1 = 9999 \text{ (Nine thousand nine hundred ninety nine)}$$

9999 is the greatest 4-digit number.

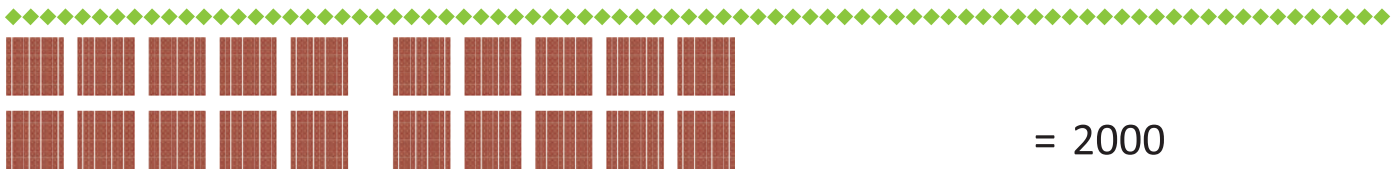
Counting in Thousands



1000

= 1000

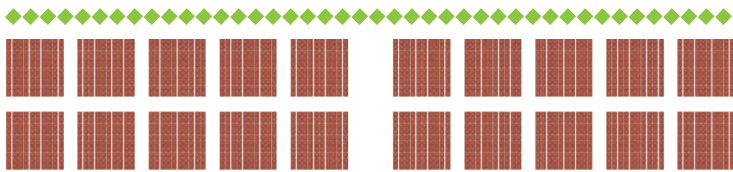
One thousand



= 2000

Two thousands

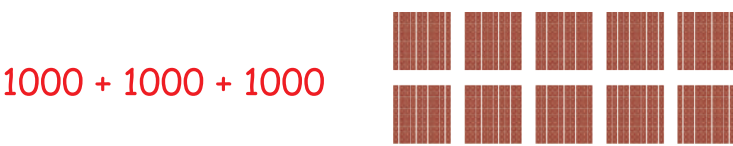
1000 + 1000

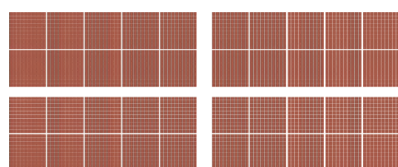


= 3000

Three thousands

1000 + 1000 + 1000

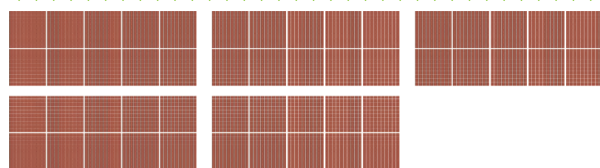




= 4000

Four thousands

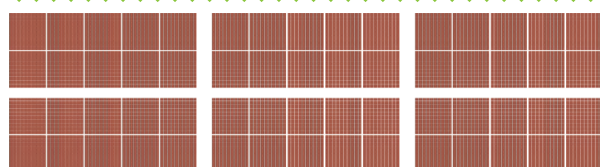
$$1000 + 1000 + 1000 + 1000$$



= 5000

Five thousands

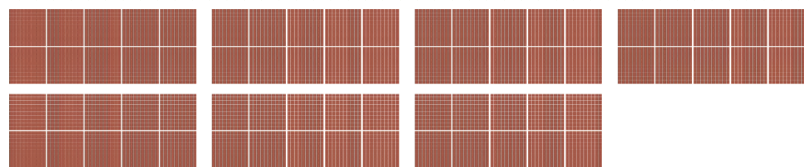
$$1000 + 1000 + 1000 + 1000 + 1000$$



= 6000

Six thousands

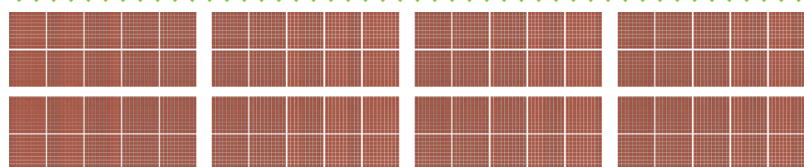
$$1000 + 1000 + 1000 + 1000 + 1000 + 1000$$



= 7000

Seven thousands

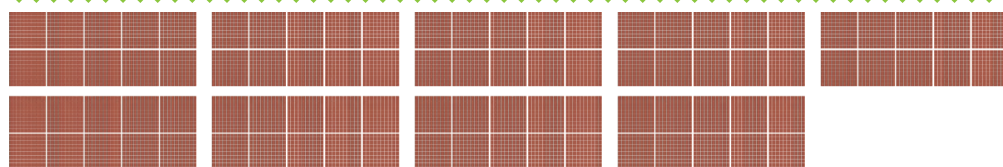
$$1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000$$



= 8000

Eight thousands

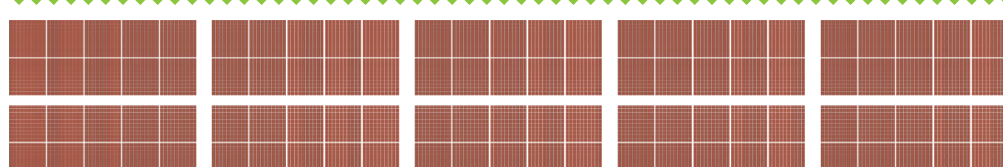
$$1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000$$



= 9000

Nine thousands

$$1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000$$



= 10,000

Ten thousands

$$1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000 + 1000$$



Exercise 2.1

1. Complete the number grids by filling the missing numbers. As you write the numbers, say them aloud.

a.

1001									
1011									
1021									
1031									
1041									1050

b.

5051									
5061									
5071									
5081									
5091									6000

2. Write all the numbers that come in between.

a. 4649 and 4656 →,,,,,

b. 8006 and 8013 →,,,,,

3. Counting by twos, write the numbers in between.

a. 2785 and 2795,,,

b. 6020 and 6030,,,

4. Counting by fives, write the numbers starting from.

a. 4985,,,,,

b. 8935,,,,,



5. Counting by tens, write the numbers starting from.

a. 6728,,,,,

b. 9745,,,,,



Facts to Know

- ❖ 10,000 is the smallest 5-digit number.
- ❖ 9999 is the greatest 4-digit number.




Forming Numbers

The smallest 4-digit number is 1000 and the numbers beyond 1000 should have a minimum of four digits. To write a 4-digit number, we should add one more place to the hundreds place, i.e. the thousands place.

Th	H	T	O
1	0	0	0

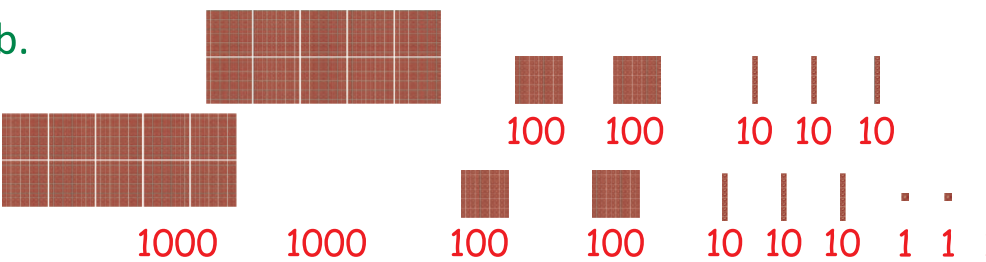
For Examples : Write the numbers and number names for the following.

a. 

Th	H	T	O
1	0	5	1

 1 thousand 5 tens 1 one = 1051

It is read as one thousand fifty one.

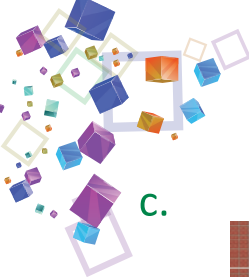
b. 

Th	H	T	O
2	4	6	3

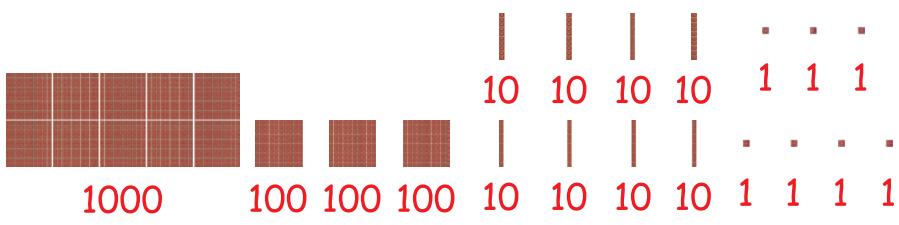
 2 thousands 4 hundreds 6 tens 3 ones = 2463

It is read as two thousand four hundred sixty three.





c.



Th	H	T	O
1	3	8	7

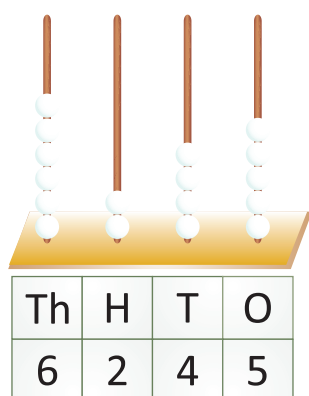
1 thousand 3 hundreds 8 tens 7 ones = 1387
 It is read as one thousand three hundred eighty seven.



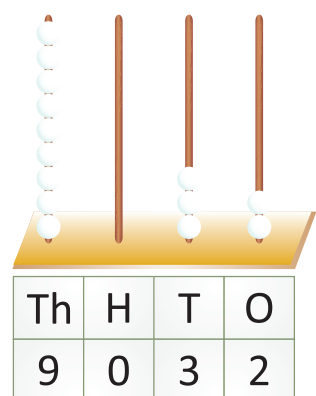
Numbers on the Abacus

An **Abacus** is a counting tool. We can read the numbers shown on an abacus. The abacuses given below have four rods. The first one from the right is for the ones, the second for the tens, the third for the hundreds and the last one for the thousands place.

Look at the abacuses shown below and read the numbers.



Six thousand two hundred forty five



Nine thousand thirty two

Exercise 2.2

1. Write the numeral for each of the following.

- a. Eight thousand six hundred sixty four
- b. Seven thousand five hundred ninety
- c. Nine thousand three hundred ninety five



- d. Five thousand fifty six
- e. Six thousand seven hundred three
- f. Four thousand two hundred

2. Write the number name for each of the following.

- a. 4263
- b. 8497
- c. 6028
- d. 3540
- e. 9009
- f. 7777

3. Count the beads and write the number in each box.

a.

Th	H	T	O

b.

Th	H	T	O

c.

Th	H	T	O

d.

Th	H	T	O

e.

Th	H	T	O

f.

Th	H	T	O



4. Draw the correct number of beads on the abacus according to the number given below.

a.

Th	H	T	O
5	2	2	4

b.

Th	H	T	O
7	4	0	6

c.

Th	H	T	O
6	4	6	3

d.

Th	H	T	O
4	0	7	5

e.

Th	H	T	O
8	8	0	0

f.

Th	H	T	O
3	5	3	0



Place Value and Face Value

Place Value

The **place value** of a digit depends on its place or position in the number. As the digit moves to the left, its value increases. If it moves one place to the left, its value increases ten times.

For Example : The value of the first place from the extreme right is 'one'; the value of the place to its left is 'ten', which is 10 times greater than 1. The value of the place to the left of the tens place is 'hundred' which is 10 times greater than 10 and so on.....

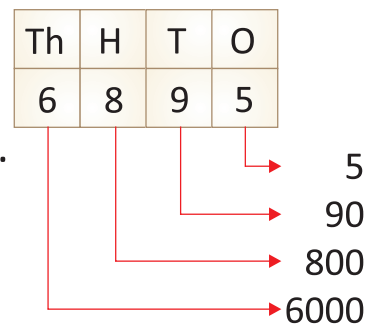
Example I : Find the place value of the digits in 6895.

Solution : The place value of 5 in 6895 is 5 ones, i.e. 5.

The place value of 9 is 9 tens, i.e. 90.

The place value of 8 is 8 hundreds, i.e. 800.

The place value of 6 is 6 thousands, i.e. 6000.





Face Value

The value of an individual digit is called its **face value**. Face value of a digit is the same as the digit itself.

For Example: Face value of 2 in 23 is 2 and the face value of 9 in 698 is 9.

Example II : Find the place value and face value of the digits in 6209.

Solution : The place value of 9 is 9 ones, i.e. 9.

The face value of 9 is 9.

The place value of 0 is 0 ten, i.e. 0.

The face value of 0 is 0.

The place value of 2 is 2 hundreds, i.e. 200.

The face value of 2 is 2.

The place value of 6 is 6 thousands, i.e. 6000.

The face value of 6 is 6.

Th	H	T	O	Place Value	Face Value
6	2	0	9		
				9	9
				00	0
				200	2
				6000	6



Facts to Know

- ❖ If the digit in any place of a number is 0, we do not put any bead in the corresponding rod.



Exercise 2.3

1. Write the place value of the underlined digit for each of the following.

a. 4854 b. 2408 c. 4864

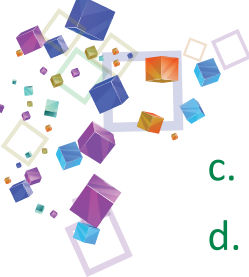
d. 6728 e. 7283 f. 9067

2. Tick (✓) the number which has.....

a. 8 in the tens place 4836 8487 9844

b. 2 in the thousands place 2749 4232 8422





- c. 4 in the hundred place 4512 8436 7614
- d. 3 in the ones place 3694 4639 6483

3. Write the place value and face value of each digit in the following numbers.

a.

Th	H	T	O
6	9	4	2

Place Value	Face Value
-------------	------------

b.

Th	H	T	O
8	4	0	6

Place Value	Face Value
-------------	------------

Diagram showing red arrows connecting digits to their respective place and face value labels.

4. Look at the place values of the digits and write the number.

a.

Th	H	T	O

b.

Th	H	T	O

Diagram showing red arrows pointing from place value labels to the corresponding empty boxes in the place value chart.



Expanded Form and Standard (Short) Form

Writing a number as the sum of the place values of its digits is known as the **expanded form** of the number.

The standard form of a number is given by combining the face value of each digit at the correct places.

For Example :

3878	3000 + 800 + 70 + 8									
↓	↓									
Short form	Expanded form									
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr> <tr><td>3</td><td>8</td><td>7</td><td>8</td></tr> </table>	Th	H	T	O	3	8	7	8
Th	H	T	O							
3	8	7	8							



Example III : Write the following numbers in the expanded form.

- a. 8629 b. 4484 c. 6435 d. 5734

Solution : a. $8629 = 8000 + 600 + 20 + 9$

b. $4484 = 4000 + 400 + 80 + 4$

c. $6435 = 6000 + 400 + 30 + 5$

d. $5734 = 5000 + 700 + 30 + 4$

Example IV : Write $7000 + 300 + 40 + 3$ in standard form.

Solution : $7000 + 300 + 40 + 3 = 7343$

Exercise 2.4

1. Write each of the following in the expanded form.

a. $5839 = \dots + \dots + \dots + \dots$

b. $6304 = \dots + \dots + \dots + \dots$

c. $8079 = \dots + \dots + \dots + \dots$

d. $2340 = \dots + \dots + \dots + \dots$

2. Write each of the following in the short form.

a. $5000 + 900 + 60 + 4 = \dots$

b. $6000 + 80 + 2 = \dots$

c. $8000 + 600 + 8 = \dots$

d. $2000 + 800 + 30 + 4 = \dots$



Comparison of Numbers

In order to compare 4-digit numbers, the following rules are used.

Rule 1 : In two 4-digit numbers, first compare their thousands places.



Example V : Which is greater 7689 or 8962 ?

Solution : Thousands places are 7 and 8, where $8 > 7$.
Therefore, $8962 > 7689$.

Rule 2 : If thousands places are equal, then compare their hundreds places.

Example VI : Compare 8428 and 8682.

Solution : Hundreds places are 4 and 6, where $4 < 6$.
Therefore, $8428 < 8682$.

Rule 3 : If hundreds places are also equal, then compare their tens places.

Example VII : Compare 8649 and 8663.

Solution : Tens places are 4 and 6, where $4 < 6$. Therefore, $8649 < 8663$.

Rule 4 : If tens places are also equal, then compare their ones place.

Example VIII : Compare 4828 and 4826.

Solution : Ones places are 8 and 6, where $8 > 6$. Therefore, $4828 > 4826$.

Rule 5 : If the numerals (numbers) have different number of digits, then the numeral with more number of digits is always greater number.

Example IX : Compare 6924 and 882.

Solution : 6924 has four digits whereas 882 has three digits, and we know the numeral with more number of digits is greater.
Therefore, $6924 > 882$.



Ascending and Descending Order

The arrangement of the given numbers from smallest to greatest order is known as **ascending order** or **increasing order**.





Example X : Arrange 4868, 4082, 7890, 8978 and 6688 in ascending order or increasing order.

Solution : $4082 < 4868 < 6688 < 7890 < 8978$. Therefore, ascending order is 4082, 4868, 6688, 7890, 8978.

The arrangement of the given numbers from greatest to smallest order is known as **descending order** or **decreasing order**.

Example XI : Arrange 2602, 2062, 5206, 5880, 4954 in descending order.

Solution : $5880 > 5206 > 4954 > 2602 > 2062$.
Therefore, descending order is $5880 > 5206, 4954, 2602, 2062$.

Successor : The number which comes just after a particular number is known as its **successor**. To find the successor of a number, add 1 to the given number.

Predecessor : The number which comes just before a given number is known as its **predecessor**. To find the predecessor of a given number, subtract 1 from the given number.

Example XII : Find the successor and the predecessor of 1889.

Solution : Successor of 1889 = $1889 + 1 = 1890$.
Predecessor of 1889 = $1889 - 1 = 1888$.

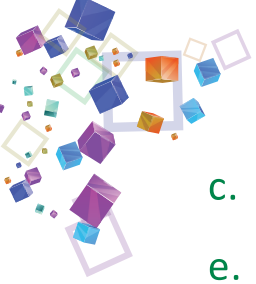
Example XIII: Write the successor and predecessor of 1999.

Solution : Successor of 1999 = $1999 + 1 = 2000$.
Predecessor of 1999 = $1999 - 1 = 1998$.

 **Exercise 2.5**

1. Compare the following numbers in pairs by using the symbol $>$ or $<$ in blank spaces.

a. 7282 6392 b. 7897 6897



c. 4007 8009

d. 4408 5048

e. 6788 5888

f. 8824 9920

2. Which of the following is the largest number?

a. 2847, 4682, 3705, 2044, 4894, 4658 =

b. 8834, 6094, 6608, 8038, 8942, 6926 =

c. 8082, 8608, 8604, 7008, 6808, 8806 =

d. 6264, 4625, 3664, 2654, 6452, 2458 =



3. Which of the following is the smallest number?

a. 6868, 8046, 4666, 6486, 6846, 6484 =

b. 5428, 4229, 5408, 4249, 2920, 2460 =

c. 7999, 7099, 9799, 9997, 7609, 9097 =

d. 4449, 4944, 4020, 3040, 3404, 2404 =

4. Arrange the following numbers in ascending order.

a. 4008, 8664, 8782, 9028, 3468

b. 4898, 6984, 9864, 9468, 6448

c. 4099, 4909, 4990, 4009, 4090

d. 7970, 7097, 7907, 7079, 9770

5. Write the following numbers in descending order.

a. 6876, 6867, 6807, 6808, 6888

b. 2786, 3664, 6682, 6244, 4626

c. 2890, 4300, 3001, 4003, 3040

d. 2064, 2890, 2980, 2908, 2809



6. Write the predecessor of the following.

- a. 4750 b. 6438 c. 8789 d. 9961

7. Write the successor of the following.

- a. 8999 b. 9742 c. 5798 d. 2600

8. Write the smallest and the greatest 4-digit numbers formed by the following digits without repeating any one of them.

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



Roman Numerals

We use the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 to represent all the numbers. A number system which includes 0 to 9 digits is called **decimal number system**. Decimal number system is used in our daily life.

But in ancient times, the Romans used different numerals. Those are called **Roman numerals**. These numerals are still used occasionally on the faces of clocks to mark hours, to number a class, different sections of a book, a problem etc.

Roman numerals are formed by using the seven symbols given below.

I, V, X, L, C, D, M

ROMAN NUMERAL	READ AS	NUMBER NOTATION
I	eye	1
V	vee	5
X	eks	10
L	el	50
C	see	100
D	dee	500
M	em	1000

By using above Roman numerals, we can write different combinations of seven letters as given below.





NUMBER NOTATION

1
2
3
4
5
6
7
8
9
10

ROMAN NOTATION

I
II
III
IV
V
VI
VII
VIII
IX
X

NUMBER NOTATION

11
12
13
14
15
16
17
18
19
20

ROMAN NOTATION

XI
XII
XIII
XIV
XV
XVI
XVII
XVIII
XIX
XX



Rules for Writing Roman Numerals

Rule 1 : When certain Roman numerals are repeated, the number represented by them is their sum.

$$\text{II} = 1 + 1 = 2$$

$$\text{III} = 1 + 1 + 1 = 3$$

$$\text{XX} = 10 + 10 = 20$$

Rule 2 : When a Roman numeral is placed after another numeral of greater value, the value of the resulting numeral is equal to the sum of the numerals.

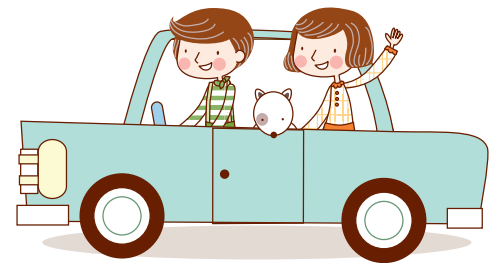
$$\text{VI} = 5 + 1 = 6$$

$$\text{VII} = 5 + 1 + 1 = 7$$

$$\text{VIII} = 5 + 1 + 1 + 1 = 8$$

$$\text{XI} = 10 + 1 = 11$$

$$\text{XVI} = 10 + 5 + 1 = 16$$





Rule 3 : When a Roman numeral is placed before numeral of greater value, the value of the resulting numeral is equal to the difference of the numerals.

$$IV = 5 - 1 = 4$$

$$IX = 10 - 1 = 9$$

Rule 4 : When a Roman numeral of smaller value is put between two numerals of greater value, it is subtracted from the numeral on its right.

$$XIV = 10 + 5 - 1 = 14$$

$$XIX = 10 + 10 - 1 = 19$$



Exercise 2.6

1. Compare the following numbers and fill in the blanks with '>', '<' or '='.

- a. XVI XVII
- b. VIII VIII
- c. XVI XIV
- d. XIX XX
- e. XIX XIX
- f. XII VII

2. Arrange in ascending order.

- a. X, IX, XV, VIII, XVII
- b. XI, XV, XVI, XIV, XX
- c. VII, IX, IV, VI, II
- d. IV, VIII, V, VI, VII

3. Arrange in descending order.

- a. VI, II, V, IX, VII
- b. XVI, XIII, XIX, XIV, IX
- c. IX, XI, X, XIII, XIV
- d. II, IV, III, VI, VIII





Points to Remember



- ❖ 9999 is the greatest 4-digit number.
- ❖ 1000 is the smallest 4-digit number.
- ❖ The value of a digit depends on its place or position in the number.
- ❖ Face value of a digit is the same as the digit itself.
- ❖ Arrangement of the given numbers from greatest to smallest is known as descending order or decreasing order.
- ❖ Arrangement of the given numbers from smallest to greatest is known as ascending order or increasing order.
- ❖ When a Roman numeral is placed after another numeral of greater value, the value of the resulting numeral is equal to the sum of the numerals.



EXERCISE

1. Multiple Choice Questions (MCQs)

Tick (✓) the correct option:

- a. The place value of 2 in 2768 is
- | | | | |
|-------|---------|-----------|-----------|
| (i) 2 | (ii) 20 | (iii) 200 | (iv) 2000 |
|-------|---------|-----------|-----------|
- b. The greatest number formed by using the digits 8, 0, 2 and 6 only once is
- | | | | |
|----------|-----------|------------|-----------|
| (i) 8206 | (ii) 8026 | (iii) 8620 | (iv) 8260 |
|----------|-----------|------------|-----------|
- c. Roman numeral for 18 is
- | | | | |
|----------|------------|------------|----------|
| (i) XVII | (ii) XVIII | (iii) XXII | (iv) XIV |
|----------|------------|------------|----------|
- d. The smallest number formed by using the digits 9, 3, 7 and 8 only once is
- | | | | |
|----------|-----------|------------|-----------|
| (i) 7839 | (ii) 3789 | (iii) 3987 | (iv) 9837 |
|----------|-----------|------------|-----------|
- e. The face value of 6 in 3086 is
- | | | | |
|--------|----------|------------|--------|
| (i) 60 | (ii) 600 | (iii) 6000 | (iv) 6 |
|--------|----------|------------|--------|
- f. Eight thousand six hundred one is
- | | | | |
|----------|-----------|------------|-----------|
| (i) 8620 | (ii) 8601 | (iii) 8602 | (iv) 6802 |
|----------|-----------|------------|-----------|





2. Fill in the missing numbers.

7671				7675				
		7683						
								7700

3. Write the number name for each of the following.

- a. 5837 b. 9023 c. 5010 d. 7966

4. Write the place value and face value of each digit in the following numbers.

a.

Th	H	T	O	Place Value	Face Value
6	9	5	7		

b.

Th	H	T	O	Place Value	Face Value
8	4	6	0		

5. Write the expanded form for each of the following.

- a. 8506 b. 9475 c. 6683 d. 5942

6. Write the predecessor and successor for each of the following.

- a. 5820 b. 6899 c. 6809 d. 7240

7. Write the following numbers in ascending and descending orders.

	Ascending	Descending								
a. 8797, 7289, 7789, 9787	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
b. 6446, 6644, 4466, 4664	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
c. 6258, 6285, 2628, 2682	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
d. 6504, 6500, 6573, 6537	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				

8. Make the greatest and smallest numbers with the digits given below.

- a. 9, 6, 8 and 4 b. 4, 2, 0 and 8 c. 6, 8, 7 and 2



HOTS

Who am I?

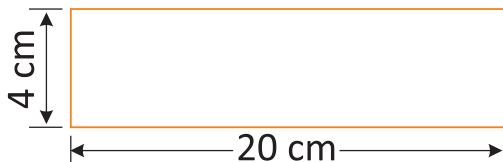
My tens place is 8 and ones place is not 0, 6, 2 or 4. I lie between 7150 and 7200 and I am an even number.

Lab Activity

Objective : To build an understanding of place value in 4 digit numbers.

Required Materials : Several strips of paper (20 cm by 4 cm) and pencils

Process : The strips may be folded into 4 equal parts. Students work in pairs and take turns to do the activity.



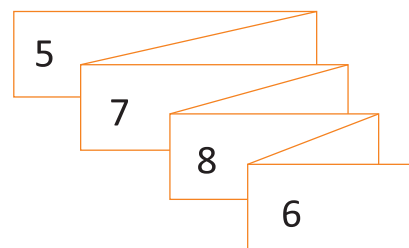
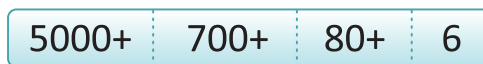
A strip of paper



Pencil

To build the number '5786':

- ❖ One student writes 5000+ in the first section of the strip, 700+ in the second section, 80+ in the third section and 6 in the last section.
- ❖ The other student folds the strip as shown.
- ❖ The number so formed is 5786.

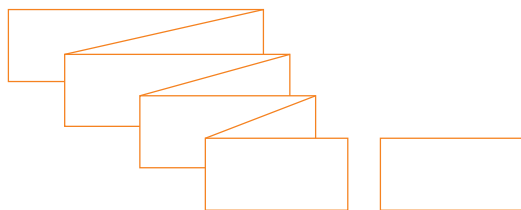


Record the Activity :

$$5000 + 700 + 80 + 6 = 5786$$

Do it yourself

$$6000 + 200 + 60 + 8$$



$$6000 + 600 + 80 + 4$$

