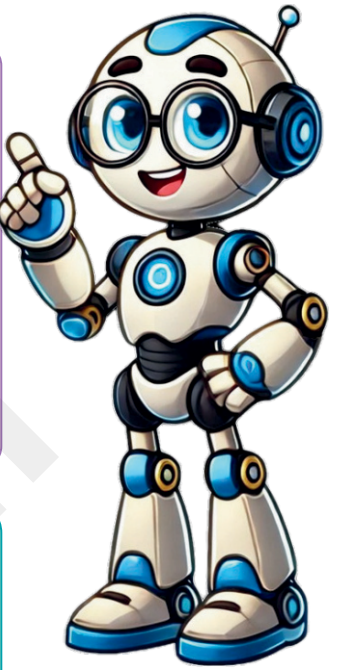
2 Large Numbers

We'll cover the following key points:

- →Extension of Numbers
- →Place Value Chart
- →Reading and Writing of Numbers
- →International System of Numeration
- →Comparing the two systems
- →Place-value of a Digit
- →Comparing Numbers
- →Roman Numerals
- →Numerals Above 39
- →Rounding Whole Numbers



EeeBee

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

Do you Remember fundamental concept in previous class.
In class 4th we learnt

- →Numbers Beyond One Lakh
- →Place Value Chart

In class 3rd we learnt

- →Introduction of numbers upto ten thousand
- →Place Value

Learning Outcomes

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

- Recognize and write large numbers in both standard and expanded forms.
- Understand and apply the Indian and International systems of numeration to read and write large numbers.
- Compare and order large numbers using place value concepts.
- Perform arithmetic operations (addition, subtraction, multiplication, and division) on large numbers accurately.
- Estimate sums, differences, products, and quotients of large numbers for practical applications.
- Represent large numbers using scientific notation for convenience and clarity.
- Solve real-life problems involving large numbers in various contexts, such as population, distance, and finance.

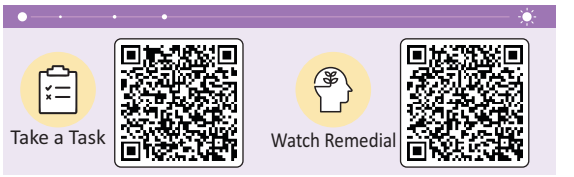
Write the standard numeral and its number name in the Hindu-Arabic System for the following. One has been done for you.

2000000	
400000	
3000	= 24,03,118
100	
10	
8	Twenty-four lakh, three thousand, one hundred eighteen

6000000	
500000	
30000	=
800	
10	
8	

50000000	
6000000	
900000	=
20000	
1000	
700	
80	
6	

Extension of Numbers



We have learnt about numbers having one digit to six digits in the previous classes. Let us study the numbers having more than six digits. We know that the greatest 5-digit number is 99,999.

Similarly, the smallest 6-digit number is 1,00,000 and the greatest 6-digit number is 9,99,999. If we add 1 to the greatest 6-digit number, we get 7-digit numbers.

	TL	L	TTh	Th	H	T	O	
		1 1	1 1	1 1	1 1	1 1		
		9	9	9	9	9	9	← Largest 6-digit number
+							1	
	1	0	0	0	0	0	0	← Smallest 7-digit number

It is read as **ten lakh**.

If we start from 10,00,000 and proceed further, we will reach 99,99,999. It is the greatest 7-digit number. If we add 1 to 99,99, 999, we will get 1,00,00,000.

	C	TL	L	TTh	Th	H	T	O	
		1	1	1	1	1	1		
		9	9	9	9	9	9	9	← Largest 7-digit number
+								1	
	1	0	0	0	0	0	0	0	← Smallest 8-digit number

It is read as **one crore**.

Place Value Chart

CRORES		LAKHS		THOUSANDS		ONES		
Ten Crores	**One Crore**	**Ten Lakhs**	**One Lakh**	**Ten Thousands**	**One Thousand**	**Hundreds**	**Tens**	**Ones**
100000000	10000000	1000000	100000	10000	1000	100	10	1
7	8	5	7	5	6	2	5	3

For example, see the number 785756253 (a 9-digit number) in the place value chart. We read it as seventy-eight crore fifty-seven lakh fifty-six thousand two hundred fifty- three. From the place value chart, we find that the value is increasing 10 times as we move from right to left i.e. from ones to crores.

We write place values in the tabular form as follows:

Periods →	Crores		Lakhs		Thousands		Ones		
Numbers	Ten crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
1 = one									1
10 = ten								1	0
100 = One hundred							1	0	0
1000 = One thousand						1	0	0	0
10000 = Ten thousands					1	0	0	0	0
100000 = One lakh				1	0	0	0	0	0
1000000 = Ten lakhs			1	0	0	0	0	0	0
10000000 = One crore		1	0	0	0	0	0	0	0
100000000 = Ten crores	1	0	0	0	0	0	0	0	0

Reading and Writing of Numbers

First period in the above table having three places is called the **ones period**.

The next period having two places is called the **thousands period**. The next period having two places is called the **lakhs period**. Similarly, next the crores period consists of two places. We separate the periods by putting a comma (,).

REMEMBER

The ones period consists of 3 places and each of the next period consists of 2 places.

Example 1: Read the following numbers and write them in words:

(i) 93254282 (ii) 635725399

Also, write the above numerals in a place value chart form.

Solution : (i) 93254282 = 9,32,54,282

= Nine crore thirty-two lakh fifty-four thousand two hundred eighty-two

(ii) 635725399 = 63, 57, 25, 399

= Sixty-three crore fifty-seven lakh twenty-five thousand three hundred ninety-nine

Place Value Chart

Numbers	Ten crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
(i) 93254282		9	3	2	5	4	2	8	2
(ii) 635725399	6	3	5	7	2	5	3	9	9

International System of Numeration

The British System is called the International System. In this system, only 3 Periods- **Ones**, **Thousands** and **Millions** are used to group the first nine places. These places are grouped in three periods. Here, all the digits of a period are read together and the name of the period (except the ones) is read along with them.

The places in various periods are given below:

Periods →	Millions			Thousands			Ones		
Places →	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Example 2: Rewrite the following numbers, separating the digits in periods, using the Indian Place Value.

(i) 29675083 (ii) 957325432 (iii) 928533456

Solution : (i) 29675083 = 2, 96, 75, 083

(ii) 957325432 = 95,73,25,432

(iii) 928533456 = 92, 85, 33, 456

Example 3: Using International System of Numeration, write the number-names for each of the following numerals:

(i) 532572819 (ii) 285323259

Solution: (i) 532572819 = 532,572, 819

= five hundred thirty-two million five hundred seventy-two thousands eight hundred nineteen

(ii) 285323259 = 285,323,259

= Two hundred eighty-five million three hundred twenty-three thousand two hundred fifty-nine

Comparing the two systems

Now let us compare '**Indian System of Numerations**' and '**International System of Numeration**' using the numbers: (i) 815253635 and (ii) 925454721.

I. Comparison of Numerals

Periods Crores →	Lakhs		Thousands				Ones		
Indian System	Ten crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
(i)	8	1	5	2	5	3	6	3	5
(ii)	9	2	5	4	5	4	7	2	1
International System	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
Periods →	**Millions**			**Thousands**			**Ones**		

II. Comparison of Number-names

Indian System	International System
(I) 81,52,53,635 Eighty-one crore fifty-two lakh fifty-three thousand six hundred thirty-five	815,253,635 Eight hundred fifteen million two hundred fifty-three thousand six hundred thirty- five
(ii) 92,54,54,721 Ninety-two crore fifty-four lakh fifty-four thousand seven hundred twenty-one	925,454,721 Nine hundred twenty-five million four hundred fifty-four thousand seven hundred twenty-one

Exercise 2.1

Knowledge Application

1. Multiple Choice Questions (MCQs)

Choose the correct option.

(a) The numeral for 'eighty-three million three hundred twenty-eight thousand six hundred thirty-two 'is

(i) 83286322 ☐ (ii) 83328632 ☐ (iii) 830328602 ☐

(b) The numeral for 'nine hundred two million one hundred five thousand sixty-three' is

(i) 902105063 ☐ (ii) 92105063 ☐ (iii) 90215063 ☐

(c) The numeral for 'eleven crore thirty-three lakh fifty-one thousand seven-hundred sixty-two' is

(i) 113351762 ☐ (ii) 13351762 ☐ (iii) 11351762 ☐

2. Write the numeral for each of the following numbers:

(a) Five hundred eight million two thousand five.

(b) Sixty-eight million three hundred forty-two.

(c) Three crore fifty-six lakh twenty-six thousand two hundred ninety-one.

(d) Seventy-one crore eighty thousand four hundred ninety-five.

(e) Eighty crore two lakh eight thousand forty-seven.

3. Write the number-names for the following using:

(a) Indian System and **(b) International System of numeration** :

(i) 675628331 (ii) 36750083 (iii) 920835671

4. How many thousands make one lakh?

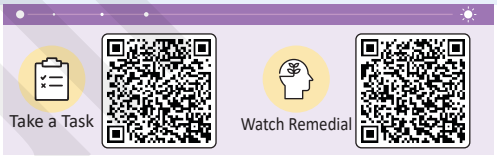
5. How many hundreds make ten thousands?

6. Write the period and place for each of the underlined digits according to the International system:

(a) 458973 (b) 9673842 (c) 4967528 (d) 145834

(e) 9433675 (f) 8750836 (g) 13367831

Place-value of a Digit



Every digit in a numeral has two values:

(i) Face value (ii) Place value or Local value

The place value of a digit depends upon its position it occupies in the number. It is given by :

Place value = Face value × Value of the place

For example in 32853287, the digit 8 is at one lakhs place. So, its place value is given by 8 × 100000 i.e. 800000. Of course, its face value is 8.

REMEMBER

- Numbers do not have place values. The digits in a number have place values.
- Each place in a number has 10 times the values of the place on its right.
- Place value of zero (0) at any place is always 0.

Example 4: Find the place value of all digits in the numeral 485725395.

Solution :

Digit	Face value of the Digit	Value of the Place of the digit	Place-value of the Digit		
4	4	Ten crores	4 × ten crores	=	400000000
8	8	One crore	8 × one crore	=	80000000
5	5	Ten lakhs	5 × ten lakhs	=	5000000

7	7	One lakh	7 × one lakh	=	700000
2	2	Ten thousands	2 × ten thousands	=	20000
5	5	One thousand	5 × one thousand	=	5000
3	3	One hundred	3 × one hundred	=	300
9	9	Tens	9 × tens	=	90
5	5	Ones	5 × ones	=	5

Example 5: Write 957825236 in expanded form.

Solution : 957825236 = 95,78,25,236

= 9, ten crores + 5, one crore + 7, ten lakhs + 8, one lakh + 2, ten thousands + 5, one thousand + 2, hundreds + 3, tens + 6, ones

= **900000000 + 50000000 + 7000000 + 800000 + 20000 + 5000 + 200 + 30 + 6**

Exercise 2.2 Knowledge Application

1. Match the following underlined digits to their place values :

(a) 25572532 (i) 5000000

(b) 25325724 (ii) 50000000

(c) 38752543 (iii) 500000

(d) 53468257 (iv) 500

(e) 84312590 (v) 50000

2. Fill in the blanks :

(a) 1 million = _____ thousands (b) 1 million = _____ lakhs

(c) 1 crore = _____ millions (d) 1 crore = _____ thousands

(e) 1 billion = _____ millions (f) 1 crore = _____ lakhs

3. Write the place value of 5 in each of the following numerals:

(a) 285698733 (b) 102530969 (c) 59236672 (d) 123578638

4. Write each of the following numbers in the expanded form :

(a) 12673387 (b) 373254278 (c) 384567569 (d) 2897567

5. Write each of the following numbers in compact (reduced) form :

(a) 300000000 + 20000000 + 40000 + 5

(b) 60000000 + 2600000 + 280000 + 700 + 7

(c) 40000000 + 3000000 + 80000 + 400 + 30 + 4

(d) 70000000 + 9000000 + 300000 + 40000 + 800 + 5

Comparing Numbers

We have learnt in the previous classes that numbers are compared by the place values of the digits in the numbers we shall follow the same rules for the comparison of bigger numbers.

Rule 1: The number with more digits is greater than the number with less digits.

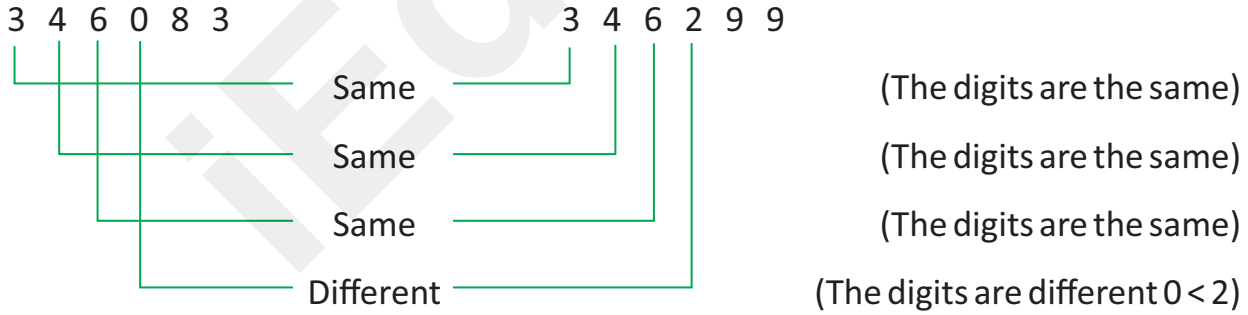
For Example : 675708369 > 95670283

Rule 2: If two numbers have the same number of digits, we compare them by comparing the digits from the extreme left and continue till two different digits are found. These digits are compared to decide the greater and smaller numbers.

Example 6: Compare 3, 46, 083 and 3, 46, 299.

Solution : Both the numbers have 6 digits.

So, we start comparing the digits from the left most end.

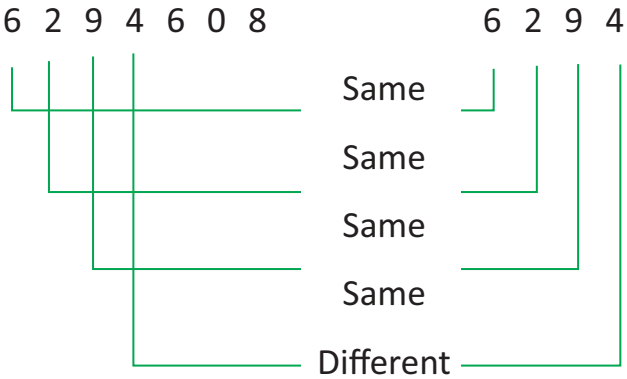


Hence, 3, 46,083 < 346,299

Example 7: Compare 62,94,608 and 62, 94, 516.

Solution : Both the numbers are 7-digit numbers.

So, we start comparing the digits from the extreme left.



(The digits are the same)

(The digits are the same)

(The digits are the same)

(The digits are the same)

(The digits are different 6 >5)

Hence, 62,94,608 > 62,94,516

We can apply the same method for comparing more than two numbers. After that, These numbers can be arranged either in ascending order or in descending order.

Example 8: Form the greatest and smallest numbers with the digits 5, 6, 9, 0, 2 and 1.

Solution: **Greatest number :** Write the digits in descending order to get the greatest number. The required number is 9,65, 210.

Smallest number: Write the digits in ascending order, but put 0 in the second place to get the smallest number. The required number is 1, 02, 569.

Exercise 2.3 Knowledge Application

1. Compare the numbers using >,<, or = :

(a) 25, 306 ☐ 38, 409

(b) 5,80,100 ☐ 5,80,001

(c) 9,50,196 ☐ 9,50,691

(d) 4,89,10,110 ☐ 3,98,10,101

(e) 57,19,758 ☐ 57,19,758

(f) 1,29,93,603 ☐ 1,28,93,603

2. Insert commas and arrange the following numbers in ascending order :

(a) 1297456, 352094, 102943, 492301 _____

(b) 795826, 792856, 798856, 792586 _____

(c) 54129, 768247, 23576, 489277 _____

(d) 29654, 40865, 39572, 109754 _____

3. Insert commas and arrange the following numbers in descending order :

(a) 709462, 704692, 709642, 702649 _____

(b) 52967, 29086, 78652, 68725 _____

(c) 10584, 85401, 40158, 51084 _____

(d) 345673, 673454, 456743, 567453 _____

4. Form the greatest and smallest numbers by using the given digits only once :

(a) 2, 5, 6, 0, 9 and 7

(b) 2, 3, 4, 1, 0 and 7

(c) 3, 1, 6, 5, 8 and 7

(d) 3, 5, 8, 2, 0, 6 and 4

(e) 4, 8, 2, 1, 0, 6, 9 and 5

(f) 2, 0, 1, 6, 8, 9 and 5

Project Work

Conceptual Learning

Collect the bank account number of your family members write the first nine digits of the numbers in Indian and International number system in words.

S. No	Account Number	In words	
1.		In Indian System	International System

Take a Task

Watch Remedial

Roman Numerals

Numerals Upto 39

In previous classes, we have learnt the Roman numerals from 1 to 39. Roman numerals upto 39 are formed by using only three symbols i.e. **I, V, X**.

For IV : I is written to the left of V, i.e. 1 less than 5 or 5 – 1 = 4 = IV.

For IX : I is written to the left of X, i.e. 1 less than 10 or 10 – 1 = 9 = IX.

For VI : I is written to the right of V, i.e. 1 more than 5 or 5 + 1 = 6 = VI.

For XI : I is written to the right of X, i.e. 1 more than 10 or 10 + 1 = 11 = XI.

REMEMBER

I can be subtracted from X and V only once. V is never subtracted.

With the help of the rules given above, we can write Roman numerals from 1 to 39 as given in the following table.

Hindu-Arabic Numeral	1	2	3	4	5	6	7	8	9	10
Roman Numeral	I	II	III	IV	V	VI	VII	VIII	IX	X

Hindu-Arabic Numeral	11	12	13	14	15	16	17	18	19	20
Roman Numeral	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
Hindu- Arabic Numeral	21	22	23	24	25	26	27	28	29	30
Roman Numeral	XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX
Hindu-Arabic Numeral	31	32	33	34	35	36	37	38	39	
Roman Numeral	XXXI	XXXII	XXXIII	XXXIV	XXXV	XXXVI	XXXVII	XXXVIII	XXXIX	

Example 9: Express IV, XIX, XXXVI, XXIX in Hindu- Arabic numerals.

Solution : IV = 5–1 =4, XIX = 10 + (10–1) = 10 + 9 = 19,

XXXVI = 10 + 10 + 10 + 5 + 1 = 36, XXIX = 10 + 10 + (10–1) = 29

Example 10: Write 19, 27, 25, 33 in Roman numerals.

Solution : 19 = XIX, 27 = XXVII, 25 = XXV, 23 = XXIII

Numerals Above 39

To make the Roman numerals more than 39, we use the following symbols:

L = 50	**C = 100**
D = 500	**M = 1000**

30 = 10 + 10 + 10 **XXX**	**40** = 50 – 10 **XL**	50 **L**	**60** = 50 + 10 **LX**	**70** = 50 + 10 + 10 **LXX**	**80** = 50 + 10 + 10+ 10 **LXXX**	**90** = 100 – 10 **XC**	100 **C**	**110** = 100 + 10 **CX**	**150** = 100 + 50 **CL**

200 = 100 + 100 **CC**	**400** = 500 – 100 **CD**	**500** **D**	**700** = 500 + 100 + 100 **DCC**	**800** = 500 + 300 **DCCC**	**900** = 1000 – 100 **CM**	**1000** **M**	**1100** = 1000 + 100 **MC**

Rule :

X can be subtracted from **L** and **C** only once.
C can be subtracted from **D** and **M** only once.
Like **V**, both **L** and **D** are never subtracted.

There is another symbol '–' called bar. It is placed over a numeral, which shows that the numeral is multiplied by 1000. Thus, $\overline{V}$, $\overline{X}$ stand for 5000, 10000 respectively.

In Hindu-Arabic numerals,

MCCXVI is written as

$1000 + 100 + 100 + 10 + 5 + 1 = 1216$

$\overline{X}$ CMLIX is written as

$10 \times 1000 + (1000 - 100) + 50 + (10 - 1)$

$= 10000 + 900 + 50 + 9 = 10959$

In Roman numerals,

2346 is written as

$= (1000 + 1000) + (100 + 100 + 100) + (50 - 10) + 5 + 1$

= MMCCCXLVI

Exercise 2.4 Knowledge Application

1. Multiple Choice Questions (MCQs)

Choose the correct option.

(a) The roman numeral for 27 is

(i) CXVII ☐ (ii) XXVII ☐ (iii) XVII ☐

(b) The Hindu - Arabic numeral for CL is

(i) 100 ☐ (ii) 150 ☐ (iii) 170 ☐

2. Write in Roman numerals:

(a) 13 (b) 21 (c) 19 (d) 39 (e) 22 (f) 29 (g) 35 (h) 34

3. Write in Hindu-Arabic numerals:

(a) VI (b) VIII (c) XXIX (d) XIX (e) XXX (f) XVII (g) XXXII (h) XVI

4. Place the correct sign [=] or [≠] in the space provided:

(a) XXVIII _____ 20 + 8 (b) 30 + 4 _____ XXXVI

(c) XXVI _____ 20 + 6 (d) 30 + 8 _____ XXXIX

5. Write as Roman numerals:

(a) 21 (b) 43 (c) 48 (d) 149

(e) 86 (f) 264 (g) 99 (h) 411

6. Write as Hindu-Arabic numerals:

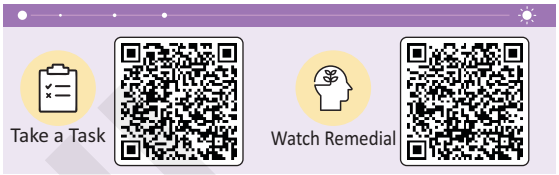
(a) CLVI (b) CC (c) CLXIX (d) CLXXV

(e) MXXVIII (f) CDIX (g) CXXVI (h) LXV

7. Which is greater?

(a) 16 or XXXVI (b) XIX or XIV (c) C or D (d) CM or MC

(e) CDI or DVII (f) CLVI or DLV



Rounding Whole Numbers

Sometimes in our daily life, we come across some situation where we do not get exact number. In such cases approximate answer to a problem is enough.

For example :

1. The number of students in your section is 48. You may say that there are about 50 students in your section.
2. The exact strength of students of your school is 1292. On being questioned by someone, you may answer that there are about 1300 students in your school.
3. The population of a district as per census is 28876478.

   For convenience, we may say that the population of the district is :

   (i) about 28876000 or (ii) about 28880000

   or (iii) about 28900000 or (iv) about 29000000

   or (v) about 30000000

From the above examples we conclude that :

In example 1: We have rounded the number 48 to 50.

This is rounding the number to the nearest ten.

In example 2: We have rounded the number 1292 to 1300.

This is rounding the number to the nearest hundred.

In example 3: (i) We have rounded the number 28876478 to 28876000. This is rounding the number to the nearest thousand.

(ii) We have rounded the number 28876478 to 28880000. This is rounding number to the nearest ten-thousand.

(iii) We have rounded the number 28876478 to 28900000. This is rounding the number to the nearest lakh.

(iv) We have rounded the number 28876478 to 29000000. This is rounding the number to the nearest ten lakh.

(v) We have rounded the number 28876478 to 30000000. This is rounding the number to the nearest crore.

Follow the steps given below to learn how to round off a number:

Rounding off Numbers

Working Rules

1. When we round a given number to the required place, we consider the digit just right to the required place. If this digit is 5 or more than 5, the digit at the required place is increased by 1 and all the other digits at the right side become zeroes.
2. If considered digit is less than 5, the digit at the required place remains the same and all the other digits at the right side become zeroes.

For example :

(i) 43 is rounded to 40 upto nearest ten.

(ii) 472 is rounded to 500 upto nearest hundred.

(iii) 2888 is rounded to 3000 upto nearest thousand.

(iv) 23450 is rounded to 20000 upto nearest ten-thousand.

(v) 788967 is rounded to 800000 upto nearest lakh.

(vi) 5872325 is rounded to 6000000 upto nearest ten lakh.

(vii) 31234588 is rounded to 30000000 upto nearest crore.

Example 11: Round each of the following to the nearest ten :

(i) 68 (ii) 73 (iii) 25

Solution: (i) 68 is nearer to 70 than to 60. So, we round it to 70.

(ii) 73 is nearer to 70 than to 80. So, we round it to 70.

(iii) 25 is midway of 20 and 30. So, we round it to 30.

Example 12: Round each of the following to the nearest hundred:

(i) 345 (ii) 681 (c) 775

Solution: (i) In 345, the tens digit $4 < 5$.

So, we round 345 to 300 (to the nearest hundred).

(ii) In 681, since $8 > 5$, we round 681 to 700.

(iii) In 775, since $7 > 5$, we round 775 to 800.

Example 13: Round 257485326 to the nearest:

(i) lakh (ii) ten-lakh

Solution : (i) For rounding 257485326 to the nearest lakh, consider the digit at ten-thousands place. It is 8 and $8 > 5$.

So, change 4 (the digit at lakhs place) to 5.

Thus, 257485326 rounded to nearest lakh is 257500000.

(ii) For rounding 257485326 to the nearest ten lakh,

look at the digit at lakhs place in 257485326. It is 4 and $4 < 5$.

So, the digit in ten lakhs place will remain unchanged.

Thus, 257485326 rounded to the nearest ten-lakh is 257000000.

Exercise 2.5 Knowledge Application

1. Multiple Choise Questions (MCQs)

Choose the correct option.

(a) Which one is the nearest ten of 489?

(i) 480 ☐ (ii) 500 ☐ (iii) 490 ☐

(b) Which one is the nearest hundred of 676?

(i) 600 ☐ (ii) 700 ☐ (iii) 800 ☐

2. Round each of the following to the nearest ten :

(a) 28 (b) 35 (c) 376 (d) 299 (e) 334

3. Round each of the following to the nearest hundred :

(a) 316 (b) 676 (c) 588 (d) 841 (e) 9456

4. Round each of the following to the nearest thousand :

(a) 5206 (b) 3850 (c) 2100 (d) 8556 (e) 22185

5. Round each of the following to the nearest ten thousand :

(a) 75396 (b) 78914 (c) 37564 (d) 42629 (e) 63760