## **CHAPTER**

1

#### VI-MATHEMATICS-NCERT

### 1. KNOWING OUR NUMBERS (NOTES)

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https://sureshmathsmaterial.com/

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Number	In words
1	One
2	Two
3	Three
4	Four
5	Five
6	Six
7	Seven
8	Eight
9	Nine
10	Ten
11	Eleven
12	Twelve
13	Thirteen
14	Fourteen
15	Fifteen

16	Sixteen
17	Seventeen
18	Eighteen
19	Nineteen
20	Twenty
30	Thirty
40	Forty
50	Fifty
60	Sixty
70	Seventy
80	Eighty
90	Ninety
100	One hundred
200	Two hundred
300	Three hundred
400	Four hundred

500	Five hundred
600	Six hundred
700	Seven hundred
800	Eight hundred
900	Nine hundred
1,000	One thousand
2,000	Two thousand
3,000	Three thousand
4,000	Four thousand
5,000	Five thousand
6,000	Six thousand
7,000	Seven thousand
8,000	Eight thousand
9,000	Nine thousand
10,000	Ten thousand
90,000	Ninety thousand

# Try These

Can you instantly find the greatest and the smallest numbers in each row?

1. 382, 4972, 18, 59785, 750.

Ans. The greatest= 59785 and the smallest.= 18

**2.** 1473, 89423, 100, 5000, 310.

Ans. The greatest =89423 and the smallest =100

**3.** 1834, 75284, 111, 2333, 450.

**Ans.** The greatest=75284 and the smallest=111

4. 2853, 7691, 9999, 12002, 124

**Ans.** The greatest=12002 and the smallest=124.

(a) 4536, 4892, 4370, 4452.

Ans. The greatest=4892 and the smallest=4370.

(b) 15623, 15073, 15189, 15800.

Ans. The greatest=15800 and the smallest=15073.

(c) 25286, 25245, 25270, 25210.

**Ans.** The greatest=25286 and the smallest=25210.

(d) 6895, 23787, 24569, 24659.

Ans. The greatest=24659 and the smallest6895.

# Try These Q

1. Use the given digits without repetition and make the greatest and smallest 4-digit numbers.

Digits	greatest 4-digit number	smallest 4-digit number
(a) 2,8,7,4	8742	2478
(b) 9,7,4,1	9741	1479
(c) 4,7,5,0	7540	4057
(d) 1,7,6,2	7621	1267
(e) 5,4,0,3	5430	3045

2. Now make the greatest and the smallest 4-digit numbers by using any one digit twice

Digits	greatest 4-digit number	smallest 4-digit number
(a) 3,8,7	8873	3378
(b) 9,0,5	9950	5009
(c) 0,4,9	9940	4009
(d) 8,5,1	8851	1158

3. Make the greatest and the smallest 4-digit numbers using any four different digits with conditions as given .

Condition	greatest 4-digit number	smallest 4-digit number
(a) Digit 7 is always at ones place	9867	1027
(b) Digit 4 is always at tens place	9945	1045
(c) Digit 9 is always at hundreds place	9940	1905
(d) Digit 1 is always at thousands place	1987	1021

4. Take two digits, say 2 and 3. Make 4-digit numbers using both the digits equal number of times.

Ans:(i) 3322 (ii) 3223 (iii) 3232 (iv) 2323 (v) 2332 (vi) 2233

3322 is the greatest number and 2233 is the smallest number.

**Ascending order**: Arrangement from the smallest to the greatest.

**Descending order:** Arrangement from the greatest to the smallest.

- 1. Arrange the following numbers in ascending order:
- (a) 847, 9754, 8320, 571

Ascending order: 571, 847, 8320, 9754

Descending order: 9754, 8320, 847, 571.

(b) 9801, 25751, 36501, 38802

Ascending order: 9801, 25571, 36501, 38802.

Descending order: 38802, 36501, 25571, 9801.

## **Introducing 10,000**

The greatest 4-digit number+1 = 9999 + 1 = 10000 = Ten thousand (Smallest 5- digit number)

# Try These

### Read and expand the numbers.

- (i) 20,000 Twenty thousand  $20000 = 2 \times 10000$
- (ii) 26000- Twenty six thousand.

26000=2×10000+6×1000

(iii) 38400-Thirty eight thousand four hundred

 $38400=3 \times 10000 + 8 \times 1000 + 4 \times 100$ 

(iv) 65740 -Sixty five thousand seven hundred forty.

 $65740 = 6 \times 10000 + 5 \times 1000 + 7 \times 100 + 4 \times 10$ 

(v) 89324 - Eighty nine thousand three hundred twenty four

 $89324 = 8 \times 10000 + 9 \times 1000 + 3 \times 100 + 2 \times 10 + 4 \times 1$ 

(vi) 50000- Fifty thousand

 $50000=5\times10000$ 

(vii) 41000-Fortyone thousand.

 $41000 = 4 \times 10000 + 1 \times 1000$ .

(viii) 47300- Forty seven thousand three hundred.

 $47300=4\times10000+7\times1000+3\times100$ .

(ix) 57630- Fifty seven thousand six hundred thirty.

 $57630=5\times10000+7\times1000+6\times100+3\times10$ 

(x) 29485- Twenty nine thousand four hundred eighty five.

 $29485=2 \times 10000 + 9 \times 1000 + 4 \times 100 + 8 \times 10 + 5 \times 1$ 

(xi) 29085- Twenty nine thousand eighty five.

 $29085 = 2 \times 10000 + 9 \times 1000 + 8 \times 10 + 5 \times 1$ 

(xii) 20085- Twenty thousand eighty five.

 $20085=2 \times 10000 + 8 \times 10 + 5 \times 1$ 

(xiii) 20005- Twenty thousand five.

 $20005=2 \times 10000 + 5 \times 1$ 

## Introducing 1,00,000

Greatest 5-digit number+1=99,999+1=**1,00,000** is named one lakh(Six digit smallest number)

# Try These

## Read and expand the numbers

(i) 3,00,000 - Three lakh

$$3,00,000 = 3 \times 1,00,000$$

(ii) 3,50,000 - Three lakh fifty thousand

$$3,50,000 = 3 \times 1,00,000 + 5 \times 10,000$$

(iii) 3,53,500 three lakh fifty three thousand five hundred

$$3,53,500 = 3 \times 1,00,000 + 5 \times 10,000 + 3 \times 1000 + 5 \times 100.$$

(iv) 4,57,928 – Four lakh fifty seven thousand nine hundred twenty eight.

$$4,57,928 = 4 \times 1,00,000 + 5 \times 10,000 + 7 \times 1000 + 9 \times 100 + 2 \times 10 + 8 \times 1$$

(v) 4,07,928 – Four lakh seven thousand nine hundred twenty eight.

$$4,07,928 = 4 \times 1,00,000 + 7 \times 1000 + 9 \times 100 + 2 \times 10 + 8 \times 1$$

(vi) 4,00,829 – Four lakh eight hundred twenty eight.

$$4,00,829 = 4 \times 1,00,000 + 8 \times 100 + 2 \times 10 + 8 \times 1$$

(vii) 4,00,029 - Four lakh twenty nine.

$$4,00,029 = 4 \times 1,00,000 + 2 \times 10 + 9 \times 1$$

## Larger numbers

#### Complete the pattern:

$$9 + 1 = 10$$

$$99 + 1 = 100$$

$$999 + 1 = 1000$$

$$9.999 + 1 = 10.000$$

$$99,999 + 1 = 1,00,000$$

$$9,99,999 + 1 = 10,00,000$$

$$99,99,999 + 1 = 1,00,00,000$$

## Try These

$$1. 10-1=9$$

1. Give five examples where the number of things counted would be more than 6-digit number

2. Starting from the greatest 6-digit number, write the previous five numbers in descending order.

Ans: 9,99,999; 9,99,998; 9,99,997; 9,99,996; 9,99,995; 9,99,994

3. Starting from the smallest 8-digit number, write the next five numbers in ascending order and read them.

Ans: 1,00,00,000; 1,00,00,001; 1,00,00,002; 1,00,00,003; 1,00,00,004; 1,00,00,005.

	Indian system of numeration (hindu-arabic)										
Crores			Lakhs		Thousands		Units				
TThCr	ThCr	HCr TCr Cr Tlakh Lakh		TTh	Th	Н	T	0			
	International system place value chart										
Billions Million			Millions	3	Th	ousands			Ones		
HBil	TBil	Bil	HMil	TMil	Mil	HTh	TTh	Th	Н	T	О

# Try These 🔾

- 1. Read these numbers. Write them using placement boxes and then write their expanded forms.
- (i) 4,75,320 Four lakh seventy five thousand three hundred twenty.  $4,75,320 = 4 \times 1,00,000 + 7 \times 10,000 + 5 \times 1,000 + 3 \times 100 + 2 \times 10$
- (ii) 98,47,215 Ninety eight lakh forty seven thousand two hundred fifteen.

 $98,47,215 = 9 \times 10,00,000 + 8 \times 1,00,000 + 4 \times 10,000 + 7 \times 1,000 + 2 \times 100 + 1 \times 10 + 5 \times 1$ 

(iii) 9,76,45,310 - Nine crore seventy six lakh forty five thousand three hundred ten.

$$9,76,45,310 = 9 \times 1,00,00,000 + 7 \times 10,00,000 + 6 \times 1,00,000 + 4 \times 10,000 + 5 \times 1,000 + 3 \times 100 + 1 \times 10$$

(iv) 3,04,58,094 – Three crore four lakh fifty eight thousand ninety four.  $3,04,58,094 = 3 \times 1,00,00,000 + 4 \times 1,00,000 + 5 \times 10,000 + 8 \times 1,0008 + 9 \times 10 + 4 \times 1$ 

- (a) The smallest number=4,75,320
- **(b)** The greatest number=9,76,45,310.
- (c) Ascending order: 4,75,320; 98,47,215; 3,04,58,094; 9,76,45,310.

  Descending order: 9,76,45,310; 3,04,58,094; 98,47,215; 4,75,320.
- Read these numbers. Write these numbers using placement boxes and then using commas in Indian as well as International System of Numeration. Arrange these in ascending and descending order. (i) 527864 (ii) 95432 (iii) 18950049 (iv) 70002509

Sol: Indian system of Numeration:

(i) 5,27,864 (ii) 95,432 (iii) 1,89,50,049 (iv) 7,00,02,509

International System of Numeration

(i) 527,864 (ii) 95,432 (iii) 18,950,049 (iv) 70,002,509

Ascending order: (i) 95,432 (ii) 5,27,864 (iii) 18,950,049 (iv) 70,002,509

Descending order: (i) 70,002,509 (ii) 18,950,049 (iii) 5,27,864 (iv) 95,432

# Try These

- 1. You have the following digits 4, 5, 6, 0, 7 and 8. Using them, make five numbers each with 6 digits.
  - (a) Put commas for easy reading. (b) Arrange them in ascending and descending order.

Sol: (i) 4,56,078 (ii) 5,60,784 (iii) 6,08,457 (iv) 7,45,086 (v) 8,54,067

Ascending order: (i) 4,56,078 (ii) 5,60,784 (iii) 6,08,457 (iv) 7,45,086 (v) 8,54,067

Descending order: (i) ) 8,54,067 (ii) 7,45,086 (iii) ) 6,08,457 (iv) 5,60,784 (v) 4,56,078

2. Take the digits 4, 5, 6, 7, 8 and 9. Make any three numbers each with 8 digits. Put commas for easy reading

Sol: (i) 4,56,57,,489 (ii) 5,67,78,498 (iii) 6,45,54,789

3. From the digits 3, 0 and 4, make five numbers each with 6 digits. Use commas.

Sol: (i) 3,03,430 (ii) 3,04,340 (iii) 4,30,034 (iv) 4,03,330 (v) 4,33,004

## EXERCISE 1.1

- 1. Fill in the blanks:
  - (a) 1 lakh = Ten ten thousand.
  - **(b)** 1 million = **Ten** hundred thousand.
  - (c) 1 crore = Ten ten lakh.
  - (d) 1 crore = Ten million.
  - (e) 1 million =**Ten** lakh
- 2. Place commas correctly and write the numerals:
- (a) Seventy three lakh seventy five thousand three hundred seven.

**Ans:** 73,75,307

(b) Nine crore five lakh forty one.

Ans: 9,05,00,041

(c) Seven crore fifty two lakh twenty one thousand three hundred two.

**Ans:** 7,52, 21,302.

(d) Fifty eight million four hundred twenty three thousand two hundred two.

Ans: 58,423,202.

(e) Twenty three lakh thirty thousand ten.

Ans: 23,30,010

- 3. Insert commas suitably and write the names according to Indian System of Numeration.
- (a) 8,75,95,762

Ans: Eight crore seventy-five lakh ninety-five thousand seven hundred sixty two.

(b) 85,46,283

Ans: Eighty-five lakh forty-six thousand two hundred eighty-three.

(c) 9,99,00,046

Ans: Nine crore ninety-nine lakh forty six

(d) 9,84,32,701

Ans: Nine crore eighty-four lakh, thirty-two thousand seven hundred one.

- 4. Insert commas suitably and write the names according to International System of Numeration:
- (a) 78,921,092

Ans: Seventy-eight million, nine hundred twenty-one thousand, ninety-two

**(b)** 7,452,283

Ans: Seven million four hundred fifty-two thousand two hundred eighty-three.

(c) 99,985,102

Ans: Ninety-nine million nine hundred eighty-five thousand, one hundred two

(d) 48,049,831

Ans: Forty-eight million forty-nine thousand eight hundred thirty one.

## Large Numbers in Practice

- (a) 10 millimetres = 1 centimetre
- (b) 1 metre = 100 centimetres = 1000 millimetres
- (c) 1 kilometre = 1000 metres=100,000 centimetres= 10,00,000 millimetres
- (d) 1 gram = 1000 milligrams
- (e) 1 kilogram = 1000 grams=10, 00,000 milligrams.
- (f) 1 litre = 1000 millilitres.

## Try These

1. How many centimetres make a kilometre?

Sol: 100,000 centimetres=1 kilometre

2. Name five large cities in India. Find their population. Also, find the distance in kilometres between each pair of these cities.

Sol:

City	Population
Hyderabad	10,801,000
Delhi	32,941,000
Mumbai	21,297,000
Kolakata	15,333,000
Bengaluru	13,608,000

(i)

Two cities	Distance
Hyderabad-Delhi	1559 km
Hyderabad-Mumbai	716 km
Hyderabad - Kolkata	1192 km
Hyderabad-Bengaluru	575 km

3. How many milligrams make one kilogram?

Sol: 10,00,000 milligrams=1 kilogram.

4. A box contains 2,00,000 medicine tablets each weighing 20 mg. What is the total weight of all the tablets in the box in grams and in kilograms?

Sol: Weight of 1 tablet=20 mg

Weight of 2,00,000 tablets =  $2,00,000 \times 20 \text{ mg}$ 

=40,00,000 mg=4000 g=4 kg.

- 5. A bus started its journey and reached different places with a speed of 60 km/hour. The journey is shown on
- (i) Find the total distance covered by the bus from A to D.

Sol: AB+BC+CD= 4170 +3410+2160=9740 km

(ii) Find the total distance covered by the bus from D to G.

Sol: DE+EF+FG=8140+4830+2550=15520 km

(iii) Find the total distance covered by the bus, if it starts from A and returns back to A.

Sol: AB+BC+CD+DE+EF+FG+GA=9740 km+15520 km+1290 km=26550 km

(iv) Can you find the difference of distances from C to D and D to E?

Sol: DE-CD=8140 km-2160 km=5980 km

(v) (a) Time taken by the bus to reach A to B =  $\frac{\text{Distance}}{\text{Speed}} = \frac{4170}{60} = 69\frac{1}{2} \text{ hours}$ 

3410 km

2160 km

1290 km

F) 2550 km

4830 km

(b) Time taken by the bus to reach C to D = 
$$\frac{\text{Distance}}{\text{Speed}} = \frac{2160}{60} = 36 \text{ hours}$$

(c) Time taken by the bus to reach E to G = 
$$\frac{\text{Distance}}{\text{Speed}} = \frac{4830 + 2550}{60} = \frac{7380}{60} = 123 \text{ hours}$$

(d) Time taken by the bus to total journey = 
$$\frac{\text{Distance}}{\text{Speed}} = \frac{26550}{60} = 442\frac{1}{2} \text{ hours}$$

6.

### Raman's shop

Things	Price	The sales during the last year		
Apples Oranges Combs Tooth brushes Pencils Note books Soap cakes	₹ 40 per kg ₹ 30 per kg ₹ 3 for one ₹ 10 for one ₹ 1 for one ₹ 6 for one	Apples Oranges Combs Tooth brushes Pencils Note books Soap cakes	2457 kg 3004 kg 22760 25367 38530 40002 20005	

(a) Can you find the total weight of apples and oranges Raman sold last year?

Weight of apples = 2457 kg

Weight of oranges = 3004 kg

Therefore, total weight = 2457 kg + 3004 kg = 5461 kg

Answer – The total weight of oranges and apples = 5461 kg.

(b) Can you find the total money Raman got by selling apples?

Ans: The total money Raman got by selling apples=₹40×2457=₹98,280

(c) Can you find the total money Raman got by selling apples and oranges together?

Ans: the total money Raman got by selling apples and oranges together

(d) Make a table showing how much money Raman received from selling each item. Arrange the entries of amount of money received in descending order. Find the item which brought him the highest amount. How much is this amount?

#### Ans:

Things	Price	sales	Amount received
Apples	₹ 40 per kg	2457 kg	40×2457= ₹98,280
Oranges	₹ 30 per kg	3004 kg	30×3004= ₹90,120
Combs	₹3 for one	22760	3×22760= ₹68,280
Tooth brushes	₹ 10 for one	25367	10×25367= ₹2,53,670
Pencils	₹1 for one	38530	1×38,530= ₹38,530

Note books	₹6 for one	40002	6×40,002= ₹2,40,012
Soap cakes	₹8 for one	20005	8×20005= ₹1,60,040

The highest amount of money is received brought the item is "tooth brushes.

The amount=₹2,53,670.

Example 1: Population of Sundarnagar was 2,35,471 in the year 1991. In the year 2001 it was found to be increased by 72,958. What was the population of the city in 2001?

Solu: Population of the city in 2001 = Population in 1991 + Increase in population 
$$235471 + 72958 = 2,35,471 + 72,958 = 3,08,429$$
.

Example 2: In one state, the number of bicycles sold in the year 2002-2003 was 7,43,000. In the year 2003-2004, the number of bicycles sold was 8,00,100. In which year were more bicycles sold? and how many more?

Sol: the number of bicycles sold in the year 2002-2003=7,43,000

In the year 2003-2004=8,00,100

More bicycles were sold more in the year 2003-2004 than in 2002-2003

The number of more bicycles was sold in the year 2003-2004.

800100 - 743000 057100

$$= 8,00,100 - 7,43,000 = 57,100$$

Example 3: The town newspaper is published every day. One copy has 12 pages. Everyday 11,980 copies are printed. How many total pages are printed everyday.

Example 4: The number of sheets of paper available for making notebooks is 75,000. Each sheet makes 8 pages of a notebook. Each notebook contains 200 pages. How many notebooks can be made from the paper available?

3000

Sol: One sheet=8 pages 
$$\frac{75000}{\times 8} = \frac{200}{600000} = \frac{600000}{0000}$$

75,000 sheets=75,000×8 pages=6,00,000 pages

One note book=200 pages

Number of note books= $6,00,000 \div 200 = 3000$ 

### **EXERCISE 1.2**

1. A book exhibition was held for four days in a school. The number of tickets sold at the counter on the first, second, third and final day was respectively 1094, 1812, 2050 and 2751. Find the total number of tickets sold on all the four days.

The total number of tickets sold on all the four days=7,707

2. Shekhar is a famous cricket player. He has so far scored 6980 runs in test matches. He wishes to complete 10,000 runs. How many more runs does he need?

Sol: Runs scored by Shekhar=6980

The number of runs he wants to complete=1000

More runs does Shekhar need=1000 - 6980 = 3020

3. In an election, the successful candidate registered 5,77,500 votes and his nearest rival secured 3,48,700 votes. By what margin did the successful candidate win the election?

Sol: Number of votes secured by successful candidate=5,77,500

Number of votes secured by rival candidate=3,48,700

The margin by the successful candidate win the election = 5.77,500 - 3.48,700 = 2.28,800

4. Kirti bookstore sold books worth ₹ 2,85,891 in the first week of June and books worth ₹ 4,00,768 in the second week of the month. How much was the sale for the two weeks together? In which week was the sale greater and by how much?

Total 
$$= 36,86,659$$

The sale for the two weeks together=₹ 6,86,659

The second week sale is the greater.

The greater sale = 4,00,768 - 2,85,891 = ₹1,14,877

- 5. Find the difference between the greatest and the least 5-digit number that can be written using the digits 6, 2, 7, 4, 3 each only once.
- Sol: The greatest number=76,432 ; The least number=23,467

Difference = 76,432 - 23,467 = 52965

6. A machine, on an average, manufactures 2,825 screws a day. How many screws did it produce in the month of January 2006?

Sol: Number of screws manufactured in a day=2,825 2825Number of screws manufactured in January=31×2,825=87,575 87575

- 7. A merchant had ₹ 78,592 with her. She placed an order for purchasing 40 radio sets at ₹ 1200 each. How much money will remain with her after the purchase?
- Sol: Price of one radio set=1200

Price of 40 radio sets=40×1200=48,000

Money available with merchant=78,592

Money remain after the purchase = 78,592 - 48,000 = 30,592

- 8. A student multiplied 7236 by 65 instead of multiplying by 56. By how much was his answer greater than the correct answer?
- Sol: The student multiplied by 65-56=9 times more

The answer greater than the correct answer= $7236 \times 9 = 65,124$ 

(or) Incorrect multiplication 7236 7236  $\times$  65  $\times$  56  $\times$  56  $\times$  56  $\times$  36180  $\times$  43416  $\times$  470340  $\times$  470340

The answer = 4,70,340 - 4,05,216 = 65,124

- 9. To stitch a shirt, 2 m 15 cm cloth is needed. Out of 40 m cloth, how many shirts can be stitched and how much cloth will remain?
- Sol: Total length of cloth= 40m=4000 cm

Cloth needed for one shirt=2 m 15 cm=215 cm

Now 
$$\frac{4000}{215} = \frac{800}{43} = 18\frac{26}{43}$$

Number shirts can be switched=18

The remaining cloth =  $4000 - 18 \times 125 = 4000 - 3870 = 130$  cm = 1 m 30 cm.

- 10. Medicine is packed in boxes, each weighing 4 kg 500g. How many such boxes can be loaded in a van which cannot carry beyond 800 kg?
- Sol: Weight of one box=4 kg 500 g=4500 g

Capacity of van=800 kg=800000 g

Now 
$$\frac{800000}{4500} = 177 \frac{35}{45}$$

Number of boxes can be loaded in the van = 177

**11.** The distance between the school and a student's house is 1 km 875 m. Everyday she walks both ways. Find the total distance covered by her in six days.

Sol: Distance covered in one day=  $2 \times 1$  km 875 m= $2 \times 1875$  m=3750 m

Distance covered in six days= $6 \times 3750 \text{ m} = 22500 \text{ m} = 22 \text{ km} 500 \text{ m}$ 

12. A vessel has 4 litres and 500 ml of curd. In how many glasses, each of 25 ml capacity, can it be filled?

Sol: Quantity of curd in vessel=4 litres 500 ml=4500 ml

Capacity of one glass=25 ml

Number of glasses to be filled= $4500 \div 25 = 180$ 

$$\begin{array}{r}
180 \\
25 \\
4500 \\
\underline{25} \\
200 \\
\underline{200} \\
0
\end{array}$$

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FOR VI CLASS TO X CLASS NCERT

**MATHEMATICS SOLUTIONS** 

