Vatsalya sr.sec. school, vidisha

Class –v (mathematics)

Chapter -1

Number and numeration

Here chunnu & munnu talking to each other

Chunnu   **munnu**

Chunnu: can you read this number?

    569872

Munuu: yes,

Five, six, nine, eight, seven, two.

Chunnu: No……..

This is wrong way, to read the number,

To read and write large number we use place value chart.

Indian place value chart (up to 9-places)

In Indian place value chart, 9 places are grouped in to four periods.

Periods	Crores		Lakhs		Thousands		Ones		
Places	TC	C	TL	L	T-TH	TH	H	T	O
	Ten Crores 10,00,00,000	Crores 1,00,00,000	Ten Lakhs 10,00,000	Lakhs 1,00,000	Ten Thousands 10,000	Thousands 1,000	Hundreds 100	Tens 10	Ones 1
	0	5	2	1	0	5	7	4	7

= 5,21,05,747

Five crore, twenty one lakh, five thousand, seven hundred fourty seven

In the given numeral,(see the above table)

05, 21,05,747

Starting from right, the first three places make the ones period

The next two places make the thousands period

The next two places make the lakhs period, and

Last two places i.e. 05 make the crores period.

Method of writing a numeral

In a given numeral, we separate the periods by using commas (,). Or in modern notation, we leave a short space between the periods, instead of using comma.

Numeral	Written as	Read as

52643	52,643 Or 52 643	Fifty two thousand, six hundred forty three.
881995	8,81,995 Or 8 81 995	Eight lakh, eighty one thousands, nine hundred ninety five.
49237308	4,92,37,308 Or 4 92 37 308	Four crore, ninrty two lakh, thirty seven thousand, three hundred eight.

Successor and predecessor

Successor- the number one more than any given number is called the successor.

 For example,

   Given number 86

   Than successor of given number 86 is

   Successor = given number+ 1

   =86+1

   =87 answer

Predecessor- the number one less than any given number is called the predecessor.

   For example,

   Given number 86

   Than predecessor of given number 86 is

   Predecessor = given number – 1

   = 86-1

   =85 answer

Exercise 1.1

1. **Put the commas between periods and write the following numbers in words:**
    a) 2354618
    b) 46238252

c) 33422547

d) 8756106

e) 242832707

f) 23040317

g) 704008007

2. Write the number for the following:

   a) Three crore sixteen lakh thirty thousand four hundred fifty-nine.

   b) Five crore twenty one lakh seventy one thousand one hundred eleven.

   c) Thirty four crore ninety three lakh sixty four thousand four hundred.

   d) Eighty crore sixty thousand two hundred ninety nine.

   e) Five crore three thousand eight.

   f) Forty-nine crore four hundred.

3. Write the successor of each of the following:

   a) 54654

   b) 511010200

   c) 45862

   d) 87464499

   e) 256849

   f) 45612

4. Write the predecessor of the following:

   a) 52649

   b) 412395

   c) 613427099

   d) 91321400

   e) 21362000

   f) 65478250

5. Observe the pattern and write the next two numbers:

   a) 26570420, 26580420, 26590420

   b) 60253187, 60253387, 60253587

   c) 14612587, 54612587, 94612587

   d) 268576408, 269076408, 269576408

Solution exercise - 1.1

1. a) 23,54,618 – twenty three lakh, fifty four thousand, six hundred eighteen.

   b) 4,62,38,252 – four crore, sixty two lakh, thirty eight thousand, two hundred fifty two.

   c) 3,34,22,547 – three crore, thirty four lakh, twenty two thousand,five hundred fifty seven.

2. a) 3,16,30,459
   b) 5,21,71,111
   c) 34,93,64,400
3. a) 54655   b) 511010201 c) 45863

4. a) 52648   b) 412394   c) 613427098

5. a)26600420,266104420   b) 60253787,60253987

Place value , expanded form and short form

1) Place value

Place value of a digit depends on the position of the digits in the number.

For example,

Place value of 2 in 5623489 is

20,000   twenty thousand.

2) Expanded form

Write the expanded form of numeral 2654
2654= 2000+600+50+4

3) Short form

Write the short form of:

400000+50000+9000+600+50+1

459651

4) Face value

The face value of a digit in given numeral is its own value, at whatever place it may be.
Example,
In the given numeral 6592, the face value of 9 is 9.

1. **Write the following numbers in the place value chart and find the place value of the digits 2 in each case:**
   a) 9750924
   b) 8062406
   c) 250083
   d) 9325960

   Answer :- a) 20

   b) 2000

   c) 200000

   d) 20000

2. **Write the place value of 3 , both in figures and words:**
   a) 26539
   b) 546936900
   c) 85643695
   d) 5368456

   Answer: - a) 30, thirty

   b) 30000, thirty thousand

3. **Find the difference between the place value and face value of 4 in each of the following:**
   a) 78415933
   b) 61847308
   c) 25174028

Answer:- a) 400000-4=399996

b) 40000-4= 39996

c) 4000-4=3996

4. **Write the following numbers in expanded form:**
   a) 582570
   b) 2851743
   c) 9187216
   d) 2030283

e) 62495338

Answer a) 500000+80000+2000+500+70+0

       b) 2000000+800000+50000+1000+700+40+3

5. **Write the following in short form:**
   a) **900000+9000+700+80+9**
   b) **600000+3000+60+7**
   c) **500000+3000+200+10+3**
   d) **700000+6000+20+1**

Answer: -a) 909789

      b) 603067

      c) 503213

      d) 706021

Comparison of numbers

Greater number > smaller number

(this is the symbol used to

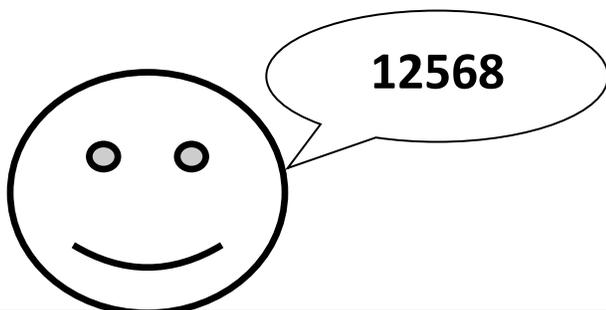**indicate greater and smaller number)**
   For example,
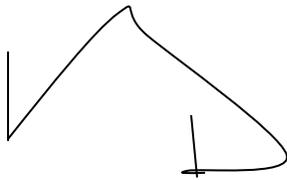**25 is greater than 12, in mathematical symbolic language this can be represent as,**
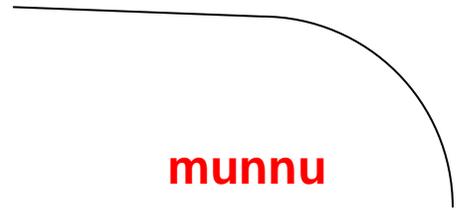**25>12.**

Rules for comparing numbers

Case – 1

(When both numbers have different number of digits)

12568

125431

Chunnu   **munnu**

Whose number is greater...................??????????

Here,

Number of digits in both numbers is not equal

So .....

The number with more digits is greater.

125431 > 12568

(6- Digit number)   (5- Digit number)

So finally here munnu's number is greater because it have more digits than chunnu;s number.

Case – 2

(When both numbers have equal number of digits)

In this case we compare the digits from extreme left.

Examples,

1. **7378606 > 5369005 (7>5)**
2. **6895001 > 6874012   (9>7)**

Formation of Greatest and smallest

Case 1: Repetition of digits is not allowed.

Example 1: Write the smallest number using the digits 5, 3, 0, 1, 6, 8, and 7 only once.

Solution: for writing the smallest number,

We place the smallest digits at the left most place and write the other digits in ascending order.

0135678 but this is wrong – because 0 cannot come at the extreme left.

1035678-   Answer

Example 2: write the greatest number using the digits 7, 3, 1, 9, 6, 4, 0, and 2 only once.

Solution: for writing the greatest number,

We place the greatest digit at the left most place and other digits in ascending order.

97643210.

Case 2: Repetition of digits is allowed.

Example 3: write greatest and smallest 6- digit numbers by using the digits1, 7, 4, 0, and 2.

Greatest number- 774210 (greatest digit repeated on the left most places)

Smallest number- 100247 (smallest digit repeated on the left most places, except 0)

Ascending – Descending Order of Numbers

Ascending – ascending means arranging numbers from smallest to greatest.

Descending- descending means arranging numbers from greatest to smallest.

Exercise 1.3

1. Put the correct sign between the numbers <,=, > :
     a) 423590 , 423592
     b) 772112, 771221
     c) 5035624, 5053629
     d) 83573890, 83573690
     e) 912148302, 912148302

Solution: a) 423590 < 423592

         b) ……... > ………..

         c) ……… < ………..

         d) ………> ………..

         e) ……… = ………..

2. Encircle the greatest number and make box on smallest number in each of the following:
   a) 674851, 702581, 518421, 1375821
   b) 60910845, 16090845, 66090845, 50669845
   c) 78796342, 75696342, 5768543, 8765342
   d) 567438921, 329834765, 329815674, 567438291

Solution: a) smallest number: 518421, greatest number: 1375821

b) Smallest number: 16090845, greatest number: 66090845

c) Smallest number: 5768543, greatest number: 78796342

d) Smallest number: 329815674, greatest number: 567438921

3. Write the smallest number formed by using each of the digits 2, 9, 6, 0, 8, 1, 3 and 7 only once.
   Sol. 10236789
4. Write the largest number formed by using of the digits 4, 1, 0, 8, 6, 3, 9 and 5 only once.
   Sol. 98654310
5. Write the smallest and greatest numbers of 7 digits by using 0, 1, 3, 5, and 8 only.
   Sol. 1000358 , 8885310
6. Write the smallest and greatest numbers of 6 digits by using 0, 2, 9, 4, and 6 only.
   Sol. 200469, 996420
7. Write the smallest and greatest numbers of 6 digits by using 9, 3, 0, 6, 4, 1 only once such that the digit 3 always appears at the hundreds place.
   Sol. 964310, 104369
8. Arrange the following numbers in ascending order.
   a) 852367, 8524620, 85105, 88729
   b) 3168108, 3485006, 3425006, 3489006
   c) 39831638, 8287681, 28372, 78673838
   d) 533452159, 527835218, 536176128, 526152830

Solution: a) 85105 < 88729 < 852367 < 8524620

b) 3168108 < 3425006 < 3485006 <3489006

c) 28372 < 8287681< 39831638 < 78673838

d) 526152830 < 527835218 < 533452159 < 536176128

9. Arrange the following numbers in descending order:
   a) 516369, 516963, 566931, 593166
   b) 5465072, 5362012, 8698502, 9645702

c) 7878598, 7887589, 7885789, 7898578
d) 78512809, 61258903, 18837509, 671829389

Solution: a) 593166 > 566931> 516963 > 516369

b) 9645702 > 8698502 > 5465072 > 5362012

c) 7898578 > 7887589 > 7885789 > 7878598

d) 671829389 > 78512809 > 61258903 > 18837509

INTERNATIONAL PLACE VALUE CHART

international place value system								
periods	millions			thousands			ones		
symbols	HM	TM	M	H-Th	T- Th	Th	H	T	O
places	*HUNDRED MILLIONS*	*TEN MILLIONS*	*MILLIONS*	*HUNDRED THOUSAND*	*TEN THOUSAND*	*THOUSAND*	*HUNDRED*	*TENS*	ONES
value of the place	100000000	10000000	1000000	100000	10000	1000	100	10	1

Example: 586,304,921 is read as: five hundred eighty-six million, three hundred four thousand, nine hundred twenty one.

Note:

- Comma put after 3-3 digits form right.
- If we compare Indian and international place value charts, we will find that:
- 100 millions = 10 crore
- 10 millions = 1 crore
- 1 million = 10 lakhs
- 100 thousands = 1 lakh

Exercise 1.4

1. Rewrite the following numbers with proper commas using international system:
   a) 2523054
   b) 38112448
   c) 68765442
   d) 8421321
   e) 97654180
   f) 171560524

2. **Write the number names for the following in international system:**
    a) **2863975**
    b) **5568402**
    c) **9204652**
    d) **42560247**
    e) **89066418**
    f) **57001002**
    g) **934070123**
    h) **432106923**
    i) **886654132**

    Solution: a) Two million eight hundred sixty-three thousand nine hundred seventy- five.

    b) Five million five hundred sixty-eight thousand four hundred two.

    c, d, e, f, g, h, I – do from yourself.

Roman numerals :(7- symbol)

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

NOTE: # there is no symbol for zero in the Roman System.

 # This system is also not a place- value system.

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

Notes: I, X, C, and M can be repeated.

V, L and D cannot be repeated.

No numeral can be repeated more than three times.

Rule 2: when a symbol representing a smaller or the same number is placed on the right of another symbol, its value is added to the value of that symbol.

Examples: VI = 5+1 = 6

VII = 5+1+1= 7

XI = 10+1 = 11

XIII = 10+1+1+1 = 13

XVII = 10+5+1+1 = 17

LI = 50+1 =51

LXX = 50+10+10= 70

Rule 3: when a symbol representing a smaller number is placed to the left of another symbol, its value is subtracted from the value of that symbol.

Examples: IV = 5 – 1 = 4

IX = 10 – 1 =9

XL = 50 – 10 = 40

XCII = (100 – 10) + 1 +1 =92

Note: # symbol "I "can be subtracted from V and X only.

 # The symbol V, L and D are never subtracted.

 # I.e. VXX is meaningless because V is never subtracted.

 # X can be subtracted from L and C.

Rule 4: for numbers beyond 10, we first write the number in groups of 10s and 1s and then from the Roman numeral corresponding to the given number.

Examples: 11 = 10 + 1 =XI

12 = 10 + 2 = XII

25 = 10 + 10 + 5 = XXV

53 = 50 + 3 = LIII

49 = 40 + 9 = XLIX

Exercise 1.5

1. **Write the numerals in Roman numerals:**
   a) 17
   b) 25
   c) 38
   d) 60
   e) 48

f) 56
g) 77
h) 97

Solution: a) XVII   b) XXV   c) XXXVIII   d) LX e) XLVIII f) LVI g) LXXVII h) XCVII

2. Write the following in Hindu- Arabic numerals:
   a) X
   b) V
   c) D
   d) M
   e) XXX
   f) XXXVI
   g) LXXI
   h) XLI
   i) XLVII
   j) LVI
   k) XCVII
   l) XLIV
   m) LXXXVII
   n) XXXIV
   o) XC

Solution: a) 10 b) 5   c) 500 d) 1000   e) 30 f) 36   g) 71 h) 41 I) 47 j) 56 k) 97

   i)   44   m) 87   n)34   o) 90