

NUMBER SYSTEM

| Number | Numeral | Numeration |
|--------|---------|------------|
| 31 | 31 | Thirty one |

- A numeral is a symbol representing a given number and numeration represents that in words.
- **HINDU ARABIC SYSTEM OF NUMERATION: Ex: 98, 76, 54, 321**

| | | | | | | | | |
|-------------|-------|------------|------|----------------|----------|---------|------|------|
| 10 Crore | Crore | 10 Lakh | Lakh | 10 Thousand | Thousand | Hundred | Tens | Ones |
|-------------|-------|------------|------|----------------|----------|---------|------|------|

- **INTERNATIONAL SYSTEM OF NUMERATION : Ex: 987, 654, 321**

| | | | | | | | | |
|----------------|---------------|---------|-----------------|----------------|----------|---------|------|------|
| 100 Million | 10 Million | Million | 100 Thousand | 10 Thousand | Thousand | Hundred | Tens | Ones |
|----------------|---------------|---------|-----------------|----------------|----------|---------|------|------|

Place Value is the value of the digit according to its position .

Ex: **Place value of 6 in 4603 is 600**

Phase Value of every digit used in the number is digit itself.

Ex: **Phase value of 6 in 4603 is 6.**

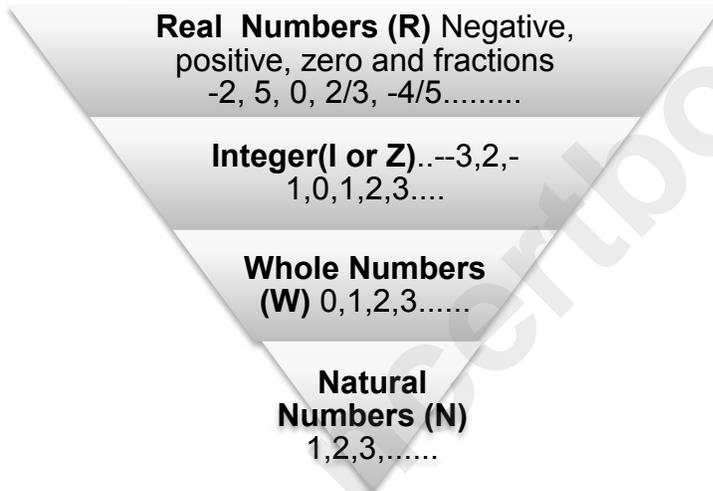
Approximation is the value or quantity that is nearly but not exactly same as the original one. If the value of the digit is greater than or equal 5 then round off to the next place value else round off to previous value

Ex: The table below shows approximation of 12345 to different place values

| Approximation to 10000 | Approximation to 1000 | Approximation to 100 | Approximation to 10 | Approximation to 1 |
|------------------------|-----------------------|----------------------|---------------------|--------------------|
| 10000 | 12000 | 12300 | 12350 | 123456 |

NUMBER SYSTEM

| | | |
|-------|---|---|
| (i) | • Including zero (0): To obtain the smallest digit from given digits put zero to extreme left and put digits in the increasing order from extreme left place value | Ex: Given 0,1,2,3,4,5,6 Number = 0123456 |
| (ii) | • Excluding zero (0): To obtain the smallest digit from given digits put digits in the increasing order from extreme left place value | Ex: Given 1,2,3,4,5,6 Number = 123456 |
| (iii) | • Including zero (0): To obtain the greatest digit from given digits put zero to extreme right and put digits in the decreasing order from extreme left place value | Ex: Given 0,1,2,3,4,5,6 Number = 6543210 |
| (iv) | • Excluding zero (0): To obtain the greatest digit from given digits put digits in the decreasing order from extreme left place value | Ex: Given 1,2,3,4,5,6 Number = 654321 |



“TESTS OF DIVISIBILITY”

- ❖ **Division by 2:** The last digit should be divisible by 2. Ex 52
- ❖ **Division by 3:** The sum of its digit is divisible by 3.
Ex 192 (1+9+2=12 is divisible by 3)
- ❖ **Division by 4:** The last two digits should be divisible by 4. Ex 172
- ❖ **Division by 5:** The last digit should be either 0 or 5. Ex 65, 90
- ❖ **Division by 10:** The last digit should be 0. Ex 1120

Even Natural Numbers (E) : Natural numbers divisible by 2. $E = \{ 2, 4, 6, 8, 10, 12, 14, \dots \}$

Odd Natural Numbers (O) : Natural numbers which are not divisible by 2 $O = \{ 1, 3, 5, 7, 9, \dots \}$

Prime Natural Number (P) : A natural number that is greater than 1 and divisible only by itself and 1 is called prime number. $P = \{ 2, 3, 5, 7, 11, \dots \}$