RATIONAL NUMBERS

Real numbers(R)- Rational and irrational numbers taken togrther are real numbers

Rational Numbers(Q)
....0.14473,....0.005....2/3...1/5
.....200.05.....

Integer(I or Z)..--3,2,-1,0,1,2,3....

Whole Numbers (W)
0,1,2,3.....

Natural Numbers (N)
1,2,3,.....

Irrational numbers($\bar{Q}$)
Ex: √2.√7.3-√5.√2+√8

Prime Number
- Positive number 'p' is prime if p>1 & p does not have factor other than 1.Ex-2,3....

Co-prime Number
- Two numbers a and b are co-prime if the only common divisor of a and b is 1. Ex-3 and 5

Twin Prime
- Prime numbers differing by two are said to be twin prime. Ex: 5 and 7, 11 and 13

Prime triplet
- They are set of three consecutive prime numbers with difference of two. Ex: 3, 5 and 7

Composite Number
- Number greater than 1 and not a prime number,is a composite number. Ex-6,8,9

"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 6:** The number should be divisible by 2 and 3. Ex 12
- **Division by 8:** The last three digits should be divisible by 8. Ex 33176
- **Division by 9:** The sum of its digit is divisible by 9. Ex 198 (1+9+8=18 is divisible by 9)
- **Division by 10:** The last digit should be 0. Ex 1120
- **Division by 11:** The difference between sum of even digits and sum of odd digits should be either 0 or multiple of 11. Ex 72512 (sum of even = 2+1=3 and sum of odd places= 7+5+2=14. Their difference is 13-3=11)

Rationalizing factor (RF): The product of two rational factor is a rational, each is called rationalizing factor of other. Ex: (√3+1) × (√3-1) = 3-1 = 2 is rational. (√3+1) and (√3-1) are RF of each other

RATIONAL NUMBERS

Rationalisation

- **It is a process of multiplying an irrational number by its rationalising factor.**
- **Step 1:** Divide and multiply by rationalising factor of the denominator
- **Step 2** : Simplify , if necessary

PROPERTIES OF NUMBERS

CLOSURE PROPERTY : For any two numbers 'a' and 'b' belonging to N, W, I or Q. Then **(a+b), (a-b), (a×b) and (a÷b)** also belongs to N, W, I or Q respectively

COMMUTATIVE PROPERTY : For any two numbers 'a' and 'b' belonging to N, W, I or R, it can be shown **that a+b= b+a ; a-b≠b-a ; a×b=b×a ; a÷b≠b÷a**

ASSOCIATIVE PROPERTY : For any three numbers 'a' ,'b'and 'c' belonging to N, W, I or R, it can be shown **that a+(b+c)= (a+b)+c ; a-(b-c)≠(a-b)-c ; a×(b×c)=(a×b)×c ; a÷(b÷c)≠(a÷b)÷c**

DISTRIBUTIVE PROPERTY : For any three numbers 'a' ,'b'and 'c', the following results are true **a×(b+c)= (a×b)+(a×c) and a×(b-c)= (a×b)-(a×c)**

- If zero is added to any number, the value of the number remains unchanged. **This property of zero is called "Identity for Addition".** Ex : 5+0=5
- If one is multiplied with any number, the value of number remains unchanged. **This property of one is called "Identity for Multiplication"**. Ex: (-6)×1=(-6)