

Alg: 3:-

1.1. INTRODUCTION TO REAL NUMBERS: MR. REDDY'S

1. Natural Numbers:  $\{1, 2, 3, 4, 5, 6, 7, 8, \dots\}$
2. PRIME NUMBER:  $2, 3, 5, 7, 11, \dots$  ( $> 1$ , and is divisible only by itself.)
3. Composite Numbers:  $4, 6, 8, 9, \dots$  (Natural numbers other than 1, that is NOT A PRIME number.)
4. WHOLE NUMBERS:  $\{0, 1, 2, 3, 4, 5, \dots\}$
5. INTEGERS:  $\{\dots, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, \dots\}$   
Negative Integers                      Positive Integers
6. Rational Numbers:  $\left\{ \frac{p}{q}, p, q \text{ are integers and } q \neq 0 \right\}$   
Ex:  $\frac{2}{3}, \frac{-9}{2}, \dots$  [non-repeating and terminating or Repeating and non-terminating]
7. Irrational Numbers:  $\sqrt{2}, \sqrt{5}, \sqrt{7}, \dots, \pi, e, \dots$  (non-repeating and non-terminating)
8. Real Numbers: Rational and Irrational Numbers:-
9.  $N \in W \in Z \in Q \in Q' \in R \in C$  [  $\in$  = belongs to ]

$N$  = Natural Numbers;  $W$  = whole Numbers;  $Z$  = Integers  
 $Q$  = Rational Numbers;  $Q'$  = Irrational Numbers;  $R$  = Real Numbers;  
 $C$  = Complex numbers:-

10) INEQUALITIES:-  $\left| \begin{array}{l} a < b; \\ \text{Less than} \end{array} \right| \left| \begin{array}{l} a > b \\ \text{greater than} \end{array} \right|$   
 $5 < 8$                        $10 > -2$

11) ABSOLUTE VALUE:  $|5| = 5$ ;  $|-4| = 4$ ;  $-|-2| = -2$   
ABSOLUTE VALUE OF positive or Negative Number is always positive  
 $|0| = 0$ ;

12). ROSTER METHOD:-  $\{0, 1, 2, 3, 4, \dots\}$

13). empty set or Null-set:  $\emptyset$  or  $\{\}$

14). Set Builder Form:-  $\{x \mid x > -3, x \in \text{Integers}\}$

means, The Set of all  $x$ , such that  $x$  is greater than  $-3$  and  $x$  is an element of Integers:-

15). Union:-  $A \cup B$ ;  $A = \{2, 3, 4\}$ ;  $B = \{0, 1, 2, 3\}$   
 $A \cup B = \{0, 1, 2, 3, 4\}$  all the elements belong to  $A$  and  $B$ .

16). Intersection:-  $A \cap B$ ;  $A = \{2, 3, 4\}$ ;  $B = \{0, 1, 2, 3\}$   
 $A \cap B = \{2, 3\}$  all the elements common to both  $A$  and  $B$ .

17). Graph:  $\{x \mid x > -2\}$

18). Graph of  $\{x \mid x \leq 3\}$

19).  $(-3, 2)$   $\rightarrow$  open interval

$(-3, 2]$   $\rightarrow$  Left open, Right closed

$[-3, 2)$   $\rightarrow$  Left closed, Right open

$[-3, 2]$   $\rightarrow$  closed interval.

Semi-closed.

20)  $(-3, 2)$    
open dots

21)  $(-3, 2]$

22)  $[-3, 2)$

23)  $[-3, 2]$