Introduction to Integers

Natural Number :- The Number Start from 1 and continue up to infinity, i.e., 1, 2, 3, 4, 5,… are called **natural numbers (N).**

Whole Number :- The Number Start from 0 and continue up to infinity, i.e., 0, 1, 2, 3, 4, 5,… are called **whole numbers (W).**

Integers :- The system of whole numbers together with negative numbers is called **integers** i.e., …, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, …… .

The system of integers consists of the following :

1. Natural numbers, i.e., 1, 2, 3, 4, ….
2. Zero. i.e 0
3. Whole numbers, i.e., 0,1,2,3,4, … .
4. Negative numbers, i.e -1, -2, -3, -4, …

Note:-

1. Zero is neither positive nor negative, it is simply an integer.
2. All natural number are positive integers.
3. We use the sign minus (-) with negative integers. It is does not indicate the subtraction, rather this sign is a part of the numbers
4. Both the positive and negative numbers are called directed numbers as they indicate the direction. They are also called the sign numbers.

Integers are used as the directed numbers.

For eg:

If +5 represents a profit of Rs. 5, then -5 represent a loss of Rs.5

Example:-

A freezing system starts cooling the room at the rate of 4^0C per hour. If at the beginning, the temperature of the room is 30^0C, find the number of hours it takes to lower down the room temperature to -2^0C.

Solution   Total temperature to be lowered down

= Find temperature – Initial temperature

= -2^0C - 30^0C = -32^0C

Rate of cooling = 4^0C per hour

Number of hours required

= $-32_{/-4}$ (negative sign (-) indicate the temperature lower down)

= $32_{/4}$

= 8 hours

Representation of Integers on a Number Line

Step1 : Draw a line and mark some points at equal distances.

Step2: Mark a point as zero (0) on it.

Step3: Point to the right of zero are positive integers and are marked as +1, +2, +3, +4, etc.

Step4 : Point to the left of zero are negative integers and are marked as -1, -2, -3, -4, etc.

Comparison of Integers

Step1 : Mark the point on the number line, which represent integers, i.e., whole numbers, negative number, zero.

Step2: The number of the right side is greater than the number on the left side as the value of the number increase as we move towards the right and decreases as we move towards the left.

Absolute Value of Integers

The absolute value of an integers is always non-negative (i.e. 0 or positive), regardless of the sign of the integer. The two vertical bar ' l l ' represent the absolute value. If represent an integer, then

 l a l =a if a is +ve or zero

 l a l =-a if a is –ve.

Example:

 Find the absolute value of the following :

   (i)   -5   (ii) 0

Solution (i) The absolute value of

       -5 = l-5l = -(-5) = 5

 (ii) The absolute value of

       0 = l0l = 0

Since , integer 0 is neither –ve not +ve, the absolute value of zero is zero i.e., l0l = 0.