Addition of Integers

1. Addition of Integers

Addition of integers means combining two or more integers to find their total. Integers can be positive, negative, or zero.

2. Rules for Adding Integers:

Case 1: Both Integers are Positive

Add normally

Example: 3 + 5 = 8

Case 2: Both Integers are Negative

Add the numbers and keep the negative sign

Example: (−2) + (−4) = −6

Case 3: One Positive and One Negative Integer

Subtract the smaller number from the bigger one

Keep the sign of the bigger number (in value)

Example 1:

(+7) + (−3) = 4 (because 7 − 3 = 4 and 7 is positive)

Example 2:

(−6) + (+2) = −4 (because 6 − 2 = 4 and 6 is negative)

3. Properties of Addition of Integers

i. Closure Property:

The sum of two integers is always an integer.

Example: (−3) + 5 = 2

ii. Commutative Property:

Changing the order does not change the sum.

Example: (−2) + 4 = 4 + (−2)

iii. Associative Property:

Grouping of numbers does not affect the sum.

Example: (−1 + 2) + 3 = −1 + (2 + 3)

iv. Additive Identity:

Adding 0 to any integer gives the same integer.

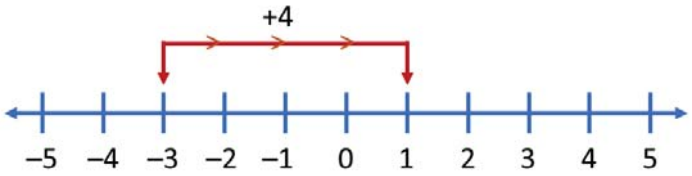
Example: (−5) + 0 = −5

4. Using Number Line for Addition

- Start at the first number
- Move right for adding a positive number
- Move left for adding a negative number

Example: (−3) + 4

Start at −3 and move 4 steps to the right ⟶ you land at 1



5. Summary:

To add integers, follow sign rules

- Same signs ⟶ Add and keep the sign
- Different signs ⟶ Subtract and keep the sign of the bigger number

Use number line for better understanding

Properties: Closure, Commutative, Associative, Additive Identity