Operators in TypeScript

1) Arithmetic Operators

These operators perform basic mathematical operations.

- + (Addition): Adds two numbers → 10 + 5 = 15
- - (Subtraction): Subtracts one number from another → 10 - 5 = 5
- * (Multiplication): Multiplies two numbers → 10 * 5 = 50
- / (Division): Divides one number by another → 10 / 5 = 2
- % (Modulus): Returns the remainder of division → 10 % 3 = 1
- ** (Exponentiation): Raises a number to a power → 2 ** 3 = 8

2) Assignment Operators

Used to assign values to variables.

- += → x += 5 (same as x = x + 5)
- -= → x -= 5 (same as x = x - 5)
- *= → x *= 5 (same as x = x * 5)
- /= → x /= 5 (same as x = x / 5)
- %= → x %= 5 (same as x = x % 5)

3) Increment & Decrement Operators

Used to increase or decrease a value by 1.

- ++ (Increment)
    - x++ (Post-increment: First use the value, then increase it)
    - ++x (Pre-increment: First increase, then use the value)
- -- (Decrement)
    - y-- (Post-decrement: First use the value, then decrease it)
    - --y (Pre-decrement: First decrease, then use the value)

4) Relational/Comparison Operators

Used to compare values and return true or false.

- < (Less than) → 10 < 20 → true

- > (Greater than) → 10 > 20 → false
- <= (Less than or equal to) → 10 <= 10 → true
- >= (Greater than or equal to) → 20 >= 15 → true
- == (Equality check, only compares value) → 10 == "10" → true
- != (Not equal) → 10 != 20 → true
- === (Strict equality, compares both value and type) → 10 === "10" → false
- !== (Strict inequality) → 10 !== "10" → true

5) Logical Operators

Used to combine multiple conditions.

- && (AND) → Returns true if **both** conditions are true
  - Example: (x > 5 && x < 15) → true only if x is between 5 and 15
- || (OR) → Returns true if **at least one** condition is true
  - Example: (x > 10 || y < 5) → true if any condition is true
- ! (NOT) → Reverses the condition (true → false, false → true)
  - Example: !(x > 5) → If x > 5 is true, ! makes it false

6) Ternary Operator (Conditional Operator)

A shortcut for if-else.

- **Syntax:**

  condition ? value_if_true : value_if_false;

- **Example:**

```
let age = 18;
let result = age >= 18 ? "Adult" : "Minor";
console.log(result); // "Adult"
```

If age is 18 or more, it prints "Adult", otherwise "Minor".