

Java Operators

What are Operators?

When we do calculations in real life, we use symbols.

Examples:

- + for addition
- > for comparison

In Java, **operators are symbols used to perform actions on values.**

They help us:

- Calculate numbers
- Compare values
- Combine conditions

Don't worry if this feels new — operators become easy once you see examples.

Why Operators are Important

Programs do not just store data.

They **work on data.**

Examples:

- Add two numbers
- Check if a student passed
- Decide which code should run

All this is done using operators.

Simple Operator Example

```
int a = 10;
```

```
int b = 5;
```

```
int sum = a + b;
```

Let us break this slowly:

- int → data type
- a, b, sum → variable names
- = → assigns value
- + → adds values

So here, Java adds 10 and 5, then stores 15 in sum.

Types of Operators in Java

Java operators are grouped based on their purpose.

We will look at the **most important ones used daily**.

1. Arithmetic Operators

Used for mathematical calculations.

Operator	Meaning	Example
+	Addition	$a + b$
-	Subtraction	$a - b$
*	Multiplication	$a * b$
/	Division	a / b
%	Remainder	$a \% b$

Example:

```
int x = 10;  
int y = 3;  
  
System.out.println(x % y);
```

Here:

- % gives the **remainder**
- Result will be 1

(Students often confuse % — just remember it gives what is left.)

2. Relational (Comparison) Operators

Used to compare two values.

The result is always:

- true or false

Operator	Meaning	Example
==	Equal to	$a == b$
!=	Not equal to	$a != b$
>	Greater than	$a > b$
<	Less than	$a < b$
>=	Greater or equal	$a >= b$
<=	Less or equal	$a <= b$

Example:

```
int age = 18;  
System.out.println(age >= 18);
```

This checks:

- Is age **18 or more?**

Result will be true.

3. Logical Operators

Used to combine multiple conditions.

Operator	Meaning	Example
&&	AND	a && b
	OR	a b
!	NOT	!a

Example:

```
int marks = 75;  
boolean result = marks > 35 && marks <= 100;
```

Explanation:

- Both conditions must be true
- If one fails, result becomes false

(This is very common in exams and interviews.)

4. Assignment Operators

Used to assign values to variables.

Operator	Meaning	Example
=	Assign value	a = 10
+=	Add and assign	a += 5
-=	Subtract assign	a -= 2

Example:

```
int a = 10;  
a += 5;
```

This means:

- $a = a + 5$

- Final value of a becomes 15
-

5. Unary Operators

Used with a **single variable**.

Operator	Meaning	Example
++	Increase by 1	a++
--	Decrease by 1	a--

Example:

```
int count = 5;  
count++;
```

After this:

- count becomes 6

(If this feels confusing now, that's okay — it becomes clear with practice.)

Combining Operators (Very Important)

Most real programs use **multiple operators together**.

Example:

```
int x = 10;  
int y = 20;  
boolean result = (x < y) && (x + 5 > 10);
```

Explanation:

- $x < y$ → relational
- $x + 5$ → arithmetic
- $\&\&$ → logical

Java evaluates step by step.

Remember This

Operators tell Java **what action to perform**.

If you understand:

- What the symbol means
- What type of result it gives

Then operators are never confusing.