

# 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.

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## 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.

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## 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.

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## Types of Operators in Java

Java operators are grouped based on their purpose.

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

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### 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.)

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### 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.

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### 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.)

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### 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

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## 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.)

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## 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:

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

Java evaluates step by step.

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## 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.