

Operators & Expressions in Java

■ **Introduction** Operators are special symbols in Java used to perform operations on variables and values. Expressions are combinations of variables, values, and operators that are evaluated to produce a result.

■ Types of Operators

1. Arithmetic Operators

- +, -, *, /, %
- Example:
- `int a = 10, b = 3;`
- `System.out.println(a + b); // 13`

`System.out.println(a % b); // 1`

2. Relational (Comparison) Operators

- ==, !=, >, <, >=, <=
- Example:
- `int x = 5, y = 8;`

`System.out.println(x < y); // true`

3. Logical Operators

- &&, ||, !
- Example:
- `boolean a = true, b = false;`

`System.out.println(a && b); // false`

4. Assignment Operators

- =, +=, -=, *=, /=, %=
- Example:
- `int num = 10;`

`num += 5; // num = 15`

5. Unary Operators

- +, -, ++, --, !
- Example:
- `int a = 5;`

- a++;

```
System.out.println(a); // 6
```

6. Ternary Operator

- condition ? trueValue : falseValue
- Example:
- int age = 18;
- String result = (age >= 18) ? "Adult" : "Minor";

```
System.out.println(result); // Adult
```

■ Expressions An expression is a combination of variables, constants, and operators that **results in a single value**.

- Example:

```
int result = (10 + 5) * 2; // result = 30
```

■ Example Program Using Operators

```
public class OperatorExample {  
    public static void main(String[] args) {  
        int a = 10, b = 5;  
        boolean check = (a > b) && (b > 0);  
  
        System.out.println("Addition: " + (a + b));  
        System.out.println("Is a > b and b > 0? " + check);  
    }  
}
```

■ Output

Addition: 15

Is a > b and b > 0? true

■ Summary Table

Operator Type	Symbols	Description		
Arithmetic	+, -, *, /, %	Perform basic arithmetic		
Relational	==, !=, >, <, >=, <=	Compare two values		
Logical	&&, , !	Combine multiple conditions		
Assignment	=, +=, -=, etc.	Assign values to variables		
Unary	+, -, ++, --, !	Operate on a single operand		
Ternary	? :	Conditional expression		