**Detailed Summary Table for Java Operator Evaluation**

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| Type of Operation | Operators | Order of Evaluation | Example | Explanation |
| Arithmetic | +, -, \*, /, % | Left-to-right | int result = 10 + 5 \* 2; | \* is evaluated first (5 \* 2), then +, resulting in 20. |
| String Concatenation | + (when used with strings) | Left-to-right | "Hello " + "World!" | Concatenates "Hello " with "World!" to produce "Hello World!". |
| Increment / Decrement | ++, -- (prefix) | Right-to-left | int a = ++b; | ++b increments b first, then assigns the result to a. |
|  | ++, -- (postfix) | Left-to-right | int a = b++; | b++ assigns b to a first, then increments b. |
| Relational Operators | <, <=, >, >= | Left-to-right | if (a < b) | Evaluates if a is less than b. |
| Equality Operators | ==, != | Left-to-right | a == b | Checks if a is equal to b. |
| Logical AND / OR | &&, || | Left-to-right | a && b | Evaluates a; if a is false, stops and returns false. If a is true, evaluates b. |
| Bitwise AND / OR / XOR | &, |, ^ | Left-to-right | a & b | Performs bitwise AND on each bit of a and b. |
| Bitwise NOT | ~ | Right-to-left | ~a | Flips all bits in a. |
| Shift Operators | <<, >>, >>> | Left-to-right | a << 2 | Left-shifts a by 2 bits. |
| Assignment Operators | =, +=, -=, \*=, /=, %= | Right-to-left | int x = y = 5; | First assigns 5 to y, then y to x. |
| Conditional (Ternary) | ?: | Right-to-left | a > b ? x : y | Evaluates a > b; if true, returns x; if false, returns y. |
| Type Casting | (type) | Right-to-left | (int) 4.5 | Casts 4.5 to an int, resulting in 4. |
| Method Calls | object.method() | Left-to-right | str.toUpperCase() | Calls toUpperCase() on str. |
| Array Access | array[index] | Left-to-right | arr[2] | Accesses the third element of arr. |
| Member Access (dot operator) | object.field, object.method() | Left-to-right | obj.field | Accesses field of obj. |
| Lambda Expression | -> | Left-to-right | (x) -> x + 1 | Creates a lambda function that adds 1 to x. |
| Method Reference | :: | Left-to-right | String::toUpperCase | References String’s toUpperCase method. |
| Grouping with Parentheses | () | Left-to-right | (a + b) \* c | Groups a + b to ensure it’s evaluated before multiplying by c. |
| Logical NOT | ! | Right-to-left | !isTrue | Negates isTrue; if isTrue is true, result is false. |
| Compound Expressions | +=, -=, \*=, etc. | Right-to-left | a += 5 | Adds 5 to a and assigns the result to a. |