

## Question 1: What are the different types of operators in JavaScript?

### Examples of Every JavaScript Operator

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#### 1. Arithmetic Operators

Perform mathematical operations:

- + (Addition):
    - `console.log(10 + 5); // 15`
  - - (Subtraction):
    - `console.log(10 - 5); // 5`
  - \* (Multiplication):
    - `console.log(10 * 5); // 50`
  - / (Division):
    - `console.log(10 / 5); // 2`
  - % (Remainder):
    - `console.log(10 % 3); // 1`
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#### 2. Assignment Operators

Assign or update variable values:

- = (Assign):
  - `let x = 10;`
- += (Add and Assign):
  - `x += 5; // x = x + 5`
  - `console.log(x); // 15`
- -= (Subtract and Assign):
  - `x -= 3; // x = x - 3`
  - `console.log(x); // 12`
- \*= (Multiply and Assign):
  - `x *= 2; // x = x * 2`
  - `console.log(x); // 24`
- /= (Divide and Assign):
  - `x /= 4; // x = x / 4`

- `console.log(x); // 6`
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### 3. Comparison Operators

Compare two values:

- `==` (Equal to):
  - `console.log(5 == "5"); // true`
  - `===` (Strictly Equal):
  - `console.log(5 === "5"); // false`
  - `!=` (Not Equal):
  - `console.log(5 != "6"); // true`
  - `!==` (Strictly Not Equal):
  - `console.log(5 !== "5"); // true`
  - `>` (Greater Than):
  - `console.log(10 > 5); // true`
  - `<` (Less Than):
  - `console.log(5 < 10); // true`
  - `>=` (Greater Than or Equal):
  - `console.log(10 >= 10); // true`
  - `<=` (Less Than or Equal):
  - `console.log(5 <= 10); // true`
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### 4. Logical Operators

Combine or invert conditions:

- `&&` (AND):
  - `console.log(10 > 5 && 5 > 2); // true`
  - `||` (OR):
  - `console.log(10 > 5 || 5 < 2); // true`
  - `!` (NOT):
  - `console.log(!(10 > 5)); // false`
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### 5. Bitwise Operators

Perform bit-level operations:

- **& (AND):**
- `console.log(5 & 1); // 1 (0101 & 0001 = 0001)`
- **| (OR):**
- `console.log(5 | 1); // 5 (0101 | 0001 = 0101)`
- **^ (XOR):**
- `console.log(5 ^ 1); // 4 (0101 ^ 0001 = 0100)`
- **~ (NOT):**
- `console.log(~5); // -6 (inverts all bits)`
- **<< (Left Shift):**
- `console.log(5 << 1); // 10 (0101 becomes 1010)`
- **>> (Right Shift):**
- `console.log(5 >> 1); // 2 (0101 becomes 0010)`

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## 6. Special Operators

- **Ternary Operator** (condition ? trueValue : falseValue):
- `let age = 20;`
- `console.log(age >= 18 ? "Adult" : "Minor"); // Adult`
- **typeof**: Returns the type of a value.
- `console.log(typeof 5); // "number"`
- **instanceof**: Checks if an object belongs to a class.
- `console.log([] instanceof Array); // true`

### Question 2: What is the difference between == and === in JavaScript?

- **== (Loose Equality)**: Compares values after type conversion.
- `console.log(5 == "5"); // true (string "5" is converted to number)`
- **=== (Strict Equality)**: Compares values and types, without type conversion.
- `console.log(5 === "5"); // false (different types)`

**Key Point:** Use === for precise comparisons to avoid unexpected results.