Question 1: What are the different types of operators in JavaScript? Explain with examples.

o Arithmetic operators

o Assignment operators

o Comparison operators

o Logical operators

**1. Arithmetic Operators**

These operators perform basic mathematical operations.

| **Operator** | **Description** | **Example** | **Result** |
| --- | --- | --- | --- |
| + | Addition | 5 + 2 | 7 |
| - | Subtraction | 5 - 2 | 3 |
| \* | Multiplication | 5 \* 2 | 10 |
| / | Division | 10 / 2 | 5 |
| % | Modulus (Remainder) | 5 % 2 | 1 |
| ++ | Increment | a = 5; a++ | 6 |
| -- | Decrement | a = 5; a-- | 4 |

**2. Assignment Operators**

These are used to assign values to variables.

| **Operator** | **Description** | **Example** | **Result** |
| --- | --- | --- | --- |
| = | Assign | x = 10 | x = 10 |
| += | Add and assign | x += 5 | x = x + 5 |
| -= | Subtract and assign | x -= 2 | x = x - 2 |
| \*= | Multiply and assign | x \*= 3 | x = x \* 3 |
| /= | Divide and assign | x /= 2 | x = x / 2 |
| %= | Modulus and assign | x %= 4 | x = x % 4 |

**3. Comparison Operators**

Used to compare two values and return a boolean (true or false).

| **Operator** | **Description** | **Example** | **Result** |
| --- | --- | --- | --- |
| == | Equal to (loose equality) | 5 == '5' | true |
| === | Equal value and type (strict) | 5 === '5' | false |
| != | Not equal | 5 != '5' | false |
| !== | Not equal value or type | 5 !== '5' | true |
| > | Greater than | 6 > 5 | true |
| < | Less than | 3 < 5 | true |
| >= | Greater than or equal to | 5 >= 5 | true |
| <= | Less than or equal to | 4 <= 3 | false |

**4. Logical Operators**

Used to combine multiple conditions/expressions.

| **Operator** | **Description** | **Example** | **Result** |
| --- | --- | --- | --- |
| && | Logical AND | true && false | false |
| || | Logical OR | true || false | true |
| ! | Logical NOT | !true | false |

**✅ Example Code:**

*let a = 10;*

*let b = 5;*

*// Arithmetic*

*console.log(a + b); // 15*

*console.log(a % b); // 0*

*// Assignment*

*a += 2;*

*console.log(a); // 12*

*// Comparison*

*console.log(a === 12); // true*

*console.log(b < 3); // false*

*// Logical*

*console.log(a > 10 && b < 10); // true*

*console.log(!(b === 5)); // false*

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

| **Feature** | **== (Loose Equality)** | **=== (Strict Equality)** |
| --- | --- | --- |
| **Name** | Loose Equality | Strict Equality |
| **Compares** | Value only | Value **and** Data Type |
| **Type Conversion** | ✅ Yes (performs type coercion) | ❌ No (no type coercion) |
| **Use Case** | When flexible comparison is needed | When strict and predictable comparison is needed |
| **Example 1** | 5 == '5' → true | 5 === '5' → false |
| **Example 2** | 0 == false → true | 0 === false → false |
| **Safer to Use?** | ❌ May cause unexpected results | ✅ Preferred in most cases |