StarX Innovations and IT Solutions

Numbers and Booleans

■ JavaScript Numbers

1. Basic Concept
- JavaScript has only one type of number (no separate int, float, double).
- Examples:

```
let x = 100; // Integer
let y = 99.5; // Floating-point
```

2. Number Representation
- Stored as 64-bit floating point (IEEE 754 standard).
- Range: approx. ±1.79E+308
- Precision: up to 15–16 digits.

3. Special Number Values
- Infinity → dividing by 0 → `5 / 0 // Infinity`
- -Infinity → negative division by 0 → `-5 / 0 // -Infinity`
- NaN (Not-a-Number) → invalid math operation → `"abc" / 2 // NaN`

4. Number Methods
- Number(value) → converts to number
- parseInt("12.3") → 12
- parseFloat("12.3") → 12.3
- isNaN(value) → checks if value is NaN
- isFinite(value) → checks if value is finite

5. Common Math Operations

```
let a = 10, b = 3;
a + b → 13
a - b → 7
a * b → 30
a / b → 3.333...
a % b → 1
```

6. Math Object (Built-in)

```
Math.round(4.6) → 5
Math.floor(4.9) → 4
Math.ceil(4.1) → 5
Math.random() → random 0–1
Math.pow(2, 3) → 8
Math.sqrt(25) → 5
```

■ JavaScript Booleans

1. Basic Concept
- Booleans → only true or false.

```
let isCodingFun = true;
let isRaining = false;
```

2. Comparison Operators

```
5 > 3 → true
5 < 3 → false
10 == "10" → true
10 === "10" → false
```

3. Logical Operators
- AND (&&) → true if both true → `(5 > 3 && 10 > 5) → true`
- OR (||) → true if at least one true → `(5 > 10 || 10 > 5) → true`
- NOT (!) → reverses value → `!(5 > 3) → false`

4. Truthy & Falsy Values
- Falsy: 0, "", null, undefined, NaN, false
- Truthy: 1, "hello", [], {}, true

5. Boolean Conversion

```
Boolean(0) → false
Boolean(123) → true
Boolean("") → false
Boolean("JS") → true
```