## Lesson Content

VI Course Video - Lessons 1 - 5

OT Reading Material

# JavaScript: Numbers and Math, Strings, Variables

I. Introduction to JavaScript Explain: JavaScript brings interactivity to websites (e.g., animations, forms, dynamic content). Demo: Show an alert message in the browser console:

```
alert('Welcome to JavaScript!');
```

Highlight why alerts are basic and alternatives like console.log are preferred.

II. Numbers and Basic Math Explain: JavaScript can perform mathematical operations directly. Demo: Open the browser console and type:

```
console.log(2 + 3); // Addition
console.log(10 - 5); // Subtraction
console.log(4 * 3); // Multiplication
```

```
console.log(8 / 2); // Division
console.log(10 % 3); // Modulus (remainder)
```

```
console.log(2 + 2 * 3); // Order of operations
console.log((2 + 2) * 3); // Grouping with parentheses
```

### III. Variables: Storing and Updating Data Explain: Variables are containers for data.

Demo: Declare variables with let and const:

```
let age = 25;
console.log(age);

const pi = 3.14;
console.log(pi);
```

Reassign let:

```
age = 30;
console.log(age); // New value
```

```
Explain that const cannot be reassigned.
```

Activity: Ask students to declare variables for their name, age, and favorite color, then log them to the console.

### IV. Strings: Text Manipulation Explain: Strings store text values.

Demo: Show basic string usage:

```
let name = 'John';
console.log('Hello, ' + name + '!'); // String concatenation
```

Introduce template literals for cleaner syntax:

```
console.log(`Hello, ${name}!`);
```

```
const userName = 'Alice';
console.log(`Welcome, ${userName}!`);
```

V. Combining Numbers and Strings Explain: JavaScript can combine numbers and strings.

```
let score = 100;
console.log('Your score is: ' + score);
```

Show quirks of type coercion:

```
console.log('5' - 2); // 3
console.log('5' + 2); // '52'
```

VI. Simple Math Applications Explain: Use math to solve real-world problems.

Demo: Calculate the total price of items with tax:

```
const item1 = 10.99;
const item2 = 7.49;
const taxRate = 0.08;
```

```
const subtotal = item1 + item2;
const total = subtotal + subtotal * taxRate;

console.log(`Subtotal: $${subtotal.toFixed(2)}`);
console.log(`Total: $${total.toFixed(2)}`);
```

Activity: Ask students to calculate the total cost of items with a discount.

VII. Using alert and console.log Explain: alert displays pop-ups, console.log is better for debugging.

Demo: Show how to use console.log for debugging:

```
const score = 10;
console.log('Current score:', score);
```

Activity: Ask students to use console.log to display a custom message with their variables.

VIII. Understanding Data Types Explain: JavaScript supports different types like numbers, strings, and booleans. Demo: Use typeof to check data types:

```
console.log(typeof 2); // 'number'
console.log(typeof 'hello'); // 'string'
console.log(typeof true); // 'boolean'
```

Show examples of mixing types:

```
console.log('5' + 5); // '55'
console.log(5 + '5'); // '55'
```

IX. Practical Example: Inventory Tracker Explain: Combine numbers, strings, and variables to solve problems.

Demo: Track store inventory:

```
let inventory = 100;
console.log(`Initial inventory: ${inventory}`);

inventory -= 15; // Items sold
console.log(`After sales: ${inventory}`);
```

```
inventory += 10; // New stock added
console.log(`Final inventory: ${inventory}`);
```

Activity: Ask students to track the inventory of items in their imaginary store.

X. Exercises for Practice Basic Math: Calculate the total price of an item after tax.

```
const price = 20;
const tax = 0.1;
const total = price + price * tax;
console.log(`Total price: $${total.toFixed(2)}`);
```

String Concatenation: Create a welcome message for a user.

```
const firstName = 'Jane';
const lastName = 'Doe';
console.log(`Welcome, ${firstName} ${lastName}!`);

let score = 0;
console.log(`Score: ${score}`);
score += 10;
console.log(`Score after bonus: ${score}`);
```

# Exercises

I.
Basic Arithmetic Operations Write a script to calculate the total and the difference between two numbers. Use console.log to display the results.

II.
Greeting with Variables Create a script that asks for a user's name

and favorite color, then outputs a greeting message.

III.
Calculate Total Price with Tax Write a script to calculate the total price of an item after applying a 7% tax.

IV.
Concatenate Strings Write a script that combines the first and last name of a user and displays it in a single sentence.

V.
Track Inventory Write a script that starts with an inventory of 100 items. Subtract 15 items sold, add 20 new items to stock, and log the final inventory.

VI.
Write a script to calculate the final price of an item after adding tax and applying a discount. Assume:

- Original price: $120
- Tax rate: 10%
- Discount rate: 15%

Use variables and output the following:

- Price with tax.
- Final price after discount.

# Mark Lesson As Complete

Cape - Completed