Lesson 1: Data Types & Variables

Quick Reference Guide 📚

🎯 What is JavaScript?

Language	Purpose	Analogy
HTML	Structure	Skeleton 🦴
CSS	Style	Clothes 👗
JavaScript	Behavior	Brain 🧠

JavaScript makes websites interactive!

📦 Variables

Variables store data. Think of them as **labeled boxes**.

Creating Variables

```
let playerName = "Alex";      // Can change later
const maxHealth = 100;        // Cannot change (constant)
```

let vs const

Keyword	Can Change?	Use For
`let`	✅ Yes	Score, health, level
`const`	❌ No	Game title, max values

Pro Tip: Start with `const`. Use `let` only if the value needs to change.

🏷️ Data Types

String (Text)

```
let name = "Alex";           // Double quotes
let greeting = 'Hello';      // Single quotes
let message = `Welcome`;     // Backticks
```

⚠️ `"42"` is a string, not a number!

Number

```
let score = 2500;            // Integer
let health = 99.5;           // Decimal
let temp = -10;              // Negative
```

❌ No quotes on numbers!

Boolean

```
let isGameOver = false;
let hasKey = true;
```

Only two values: `true` or `false` (no quotes!)

🔍 Checking Types

```
typeof "Hello"    // "string"
typeof 42         // "number"
typeof true       // "boolean"
typeof "42"       // "string" ← tricky!
```

📝 Variable Naming Rules

✅ **Good:** `playerName`, `totalScore`, `isGameOver`

❌ **Bad:**

- `player name` (no spaces!)
- `1player` (can't start with number)
- `let` (reserved word)

Use camelCase: `firstName`, `highScore`, `isPlayerReady`

⚠️ Common Bugs

Bug 1: String + Number

```
"5" + 3    // "53" (NOT 8!)
5 + 3      // 8 ✅
```

Bug 2: Changing const

```
const lives = 3;
lives = 2;    // ❌ Error!
```

Fix: Use `let` if the value needs to change.

🖥️ Console Commands

```
console.log("Hello!");           // Print text
console.log(score);              // Print variable
console.log("Score:", score);    // Print both
console.log(typeof score);       // Print type
```

Open Console: Press `F12` or `Ctrl + Shift + J`

✅ Quick Checklist

Before moving on, make sure you can:

- [ ] Create variables with `let` and `const`
- [ ] Explain when to use each one
- [ ] Create strings, numbers, and booleans
- [ ] Use `typeof` to check a variable's type
- [ ] Use `console.log()` to display output
- [ ] Name variables using camelCase

Lesson 1 Reference | Unit 4: JavaScript Fundamentals