

JavaScript Quick Reference

ES6+ · DOM · Fetch · Async

Basics

Variables

```
let name = "Alice"; // reassignable
const PI = 3.14; // constant
var old = "avoid"; // function-scoped (legacy)
```

Data Types

string	Text: "hello" or 'hello'
number	Integer or float: 42, 3.14
boolean	true / false
null	Intentional empty value
undefined	Declared but not assigned
object	Key-value pairs: { a: 1 }
array	Ordered list: [1, 2, 3]

Type Checking & Conversion

```
typeof "hello" // "string"
typeof 42 // "number"
Number("42") // 42
String(100) // "100"
parseInt("3.9") // 3
parseFloat("3.14") // 3.14
```

Strings

Template Literals

```
const name = "Alice";
`Hello, ${name}!` // Hello, Alice!
`Total: ${2 + 3}` // Total: 5
`Multi
line string`
```

String Methods

s.length	Number of characters
s.toUpperCase()	UPPERCASE copy
s.toLowerCase()	lowercase copy
s.trim()	Remove leading/trailing whitespace
s.split(",")	Split into array
s.includes("x")	Contains check → bool
s.indexOf("x")	First index (-1 if none)
s.slice(1, 4)	Substring by index
s.replace(a, b)	Replace first / all matches
s.startsWith(x)	Check prefix → bool

Arrays

Creating & Accessing

```
const fruits = ["apple", "banana", "cherry"];
fruits[0] // "apple"
fruits.length // 3
fruits.at(-1) // "cherry"
```

Mutating Methods

arr.push(x)	Add to end
arr.pop()	Remove & return last
arr.unshift(x)	Add to start
arr.shift()	Remove & return first
arr.splice(i, n)	Remove n items at index i
arr.sort()	Sort in place (lexicographic)
arr.reverse()	Reverse in place

Non-Mutating Methods

arr.map(fn)	Transform each element
arr.filter(fn)	Keep elements where fn is true
arr.reduce(fn, init)	Accumulate into single value
arr.find(fn)	First match or undefined
arr.findIndex(fn)	Index of first match (-1)
arr.includes(x)	Contains check → bool
arr.slice(a, b)	Shallow copy of portion
arr.join(",")	Join into string
arr.forEach(fn)	Iterate (no return value)
[...a, ...b]	Concatenate arrays (spread)

Objects

Creating & Accessing

```
const user = { name: "Alice", age: 20 };
user.name // "Alice"
user["age"] // 20
user.gpa = 3.85; // add/update
```

Destructuring & Spread

```
const { name, age } = user;
const copy = { ...user, age: 21 };
```

Object Methods

Object.keys(o)	Array of keys
Object.values(o)	Array of values
Object.entries(o)	Array of [key, value] pairs
Object.assign(t, s)	Copy properties s → t
"k" in obj	Key exists? → bool
delete obj.k	Remove property
Object.freeze(o)	Make immutable (shallow)

Control Flow

if / else if / else

```
if (score >= 90) {
  grade = "A";
} else if (score >= 80) {
  grade = "B";
} else {
  grade = "C";
}
```

Ternary & Falsy Values

```
const status = score >= 60 ? "pass" : "fail";
const name = user.name ?? "Anonymous";
// Falsy: false, 0, "", null, undefined, NaN
```

switch

```
switch (color) {
  case "red": stop(); break;
  case "green": go(); break;
  default: wait();
}
```

Loops

for / for...of / for...in

```
for (let i = 0; i < 5; i++) { }
for (const item of ["a", "b"]) { } // arrays
for (const key in obj) { } // object keys
```

while / do...while

```
while (count < 10) { count++; }
do { count++; } while (count < 10);
```

break & continue

```
if (i === 5) break; // exit loop
if (i % 2 === 0) continue; // skip iteration
```

Functions

Declaration & Arrow

```
function greet(name) {
  return `Hello, ${name}!`;
}
const greet = (name) => `Hello, ${name}!`;
const square = x => x * x;
```

Default Parameters & Rest

```
function greet(name = "World") { }
function sum(...nums) {
  return nums.reduce((a, b) => a + b, 0);
}
```

Callbacks

```
[1, 2, 3].map(x => x * 2); // [2, 4, 6]
[1, 2, 3].filter(x => x > 1); // [2, 3]
```

Classes

```
class Dog {
  constructor(name) { this.name = name; }
  bark() { return `${this.name} says Woof!`; }
}
class Puppy extends Dog {
  constructor(name, toy) {
    super(name);
    this.toy = toy;
  }
}
```

Error Handling

```
try {
  JSON.parse("bad json");
} catch (err) {
  console.error(err.message);
} finally {
  console.log("always runs");
}
```

Throwing Errors

```
throw new Error("Something went wrong");
```

DOM

Selecting Elements

```
document.querySelector(".cls") // first match
document.querySelectorAll("li") // all matches
document.getElementById("main")
```

Modifying Elements

```
el.textContent = "new text";
el.innerHTML = "<b>bold</b>";
el.style.color = "red";
el.classList.add("active");
el.classList.toggle("hidden");
el.setAttribute("data-id", "42");
```

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Creating & Removing

```
const li = document.createElement("li");
li.textContent = "New item";
ul.appendChild(li);
el.remove();
```

Events

Listening

```
btn.addEventListener("click", (e) => {
  console.log(e.target);
});
btn.removeEventListener("click", handler);
```

Common Events

click	Mouse click on element
input	Value changed (input/textarea)
change	Value committed (select, checkbox)
submit	Form submitted
keydown	Key pressed
mouseover	Pointer enters element
mouseout	Pointer leaves element
DOMContentLoaded	HTML parsed, DOM ready
load	Page fully loaded

JSON

```
JSON.stringify({ a: 1 }) // '{"a":1}'
JSON.parse('{"a":1}') // { a: 1 }
JSON.stringify(obj, null, 2) // pretty print
```

Fetch API

GET Request

```
const res = await fetch("/api/users");
const data = await res.json();
```

POST Request

```
await fetch("/api/users", {
  method: "POST",
  headers: { "Content-Type": "application/json" },
  body: JSON.stringify({ name: "Alice" }),
});
```

Response Handling

res.ok	true if status 200-299
res.status	HTTP status code
res.json()	Parse body as JSON
res.text()	Body as plain text
res.headers	Response headers

Async / Await

```
async function loadData() {
  try {
    const res = await fetch(url);
    const data = await res.json();
    return data;
  } catch (err) {
    console.error(err);
  }
}
```

Parallel Requests

```
const [users, posts] = await Promise.all([
  fetch("/users").then(r => r.json()),
  fetch("/posts").then(r => r.json()),
]);
```

Promises

```
const p = new Promise((resolve, reject) => {
  if (ok) resolve(data);
  else reject(new Error("fail"));
});
p.then(val => { }).catch(err => { });
```

Promise Methods

Promise.all([])	Wait for all, fail on first error
Promise.allSettled([])	Wait for all, never short-circuits
Promise.race([])	First to settle (resolve or reject)
Promise.any([])	First to resolve

Modern Syntax

Optional Chaining & Nullish

```
user?.address?.city // undefined if any is null
arr?.[0] // safe array access
fn?.() // safe function call
val ?? "default" // fallback for null/undefined
```

Destructuring

```
const [a, b, ...rest] = [1, 2, 3, 4];
const { name, age = 0 } = user;
function draw({ x, y }) { }
```

Modules

Named & Default Exports

```
// math.js
export const PI = 3.14;
export function add(a, b) { return a + b; }

// logger.js
export default function log(msg) { }

// main.js
import { PI, add } from "./math.js";
import log from "./logger.js";
```

Map & Set

Map

```
const m = new Map();
m.set("key", "value");
m.get("key") // "value"
m.has("key") // true
m.delete("key");
m.size // 0
```

Set

```
const s = new Set([1, 2, 2, 3]);
s.size // 3 (duplicates removed)
s.add(4);
s.has(2) // true
[...s] // [1, 3, 4]
```

Timers

```
setTimeout(() => { }, 1000); // once after 1s
const id = setInterval(() => { }, 500); // repeat
clearInterval(id); // stop
```

Console

console.log(x)	Print to console
console.error(x)	Print error (red)
console.warn(x)	Print warning (yellow)
console.table(arr)	Display as table
console.time(label)	Start timer
console.timeEnd(label)	Stop timer, print elapsed

Math

Math.round(4.7)	5 (nearest integer)
Math.floor(4.7)	4 (round down)
Math.ceil(4.2)	5 (round up)
Math.max(1, 5, 3)	5
Math.min(1, 5, 3)	1
Math.random()	0 to 1 (exclusive)
Math.abs(-5)	5
Math.PI	3.14159...

Date

```
const now = new Date();
now.getFullYear() // 2026
now.getMonth() // 0-11 (Jan = 0)
now.getDate() // 1-31
now.getDay() // 0-6 (Sun = 0)
now.toISOString() // "2026-04-13T..."
now.toLocaleDateString() // locale string
Date.now() // ms since epoch
```

Storage

localStorage.setItem(k, v)	Store string (persists)
localStorage.getItem(k)	Retrieve value
localStorage.removeItem(k)	Delete key
localStorage.clear()	Remove all keys
sessionStorage	Same API, cleared on tab close

Storage Objects

```
localStorage.setItem("user", JSON.stringify(obj));
const user = localStorage.getItem("user");
```