# JavaScript Array Methods - Complete Guide

## 1. Mutating Methods

| Method | Purpose | Example |
|---|---|---|
| push() | Add elements at the end | ["apple","banana"].push("mango") → ["apple","banana","mango"] |
| pop() | Remove last element | ["red","green","blue"].pop() → "blue" |
| shift() | Remove first element | ["task1","task2"].shift() → "task1" |
| unshift() | Add elements at beginning | [3,4,5].unshift(1,2) → [1,2,3,4,5] |
| splice() | Add/Remove/Replace elements | ["C","C++","Java"].splice(1,1) → ["C","Java"] |
| sort() | Sort array | [10,5,30,2].sort((a,b)=>a-b) → [2,5,10,30] |
| reverse() | Reverse array | ["a","b","c"].reverse() → ["c","b","a"] |
| fill() | Fill with static value | new Array(5).fill(0) → [0,0,0,0,0] |
| copyWithin() | Copy elements within | [1,2,3,4,5].copyWithin(0,3) → [4,5,3,4,5] |

## 2. Non-Mutating Methods

| Method | Purpose | Example |
|---|---|---|
| concat() | Merge arrays | ["a"].concat(["b"]) → ["a","b"] |
| slice() | Extract part | ["cat","dog","lion"].slice(0,2) → ["cat","dog"] |
| includes() | Check presence | ["pizza","burger"].includes("burger") → true |
| indexOf() | First index | ["a","b","a"].indexOf("a") → 0 |
| lastIndexOf() | Last index | ["a","b","a"].lastIndexOf("a") → 2 |
| join() | Array → string | ["Hello","World"].join(" ") → "Hello World" |
| toString() | Array → string | [10,20].toString() → "10,20" |
| flat() | Flatten nested arrays | [1,[2,[3]]].flat(2) → [1,2,3] |
| flatMap() | Map + flatten | [1,2,3].flatMap(n=>[n,n*2]) → [1,2,2,4,3,6] |

## 3. Iteration & Utility Methods

| Method | Purpose | Example |
|---|---|---|
| forEach() | Loop elements | ["Alice","Bob"].forEach(u=>console.log(u)) |
| map() | Transform array | [1,2,3].map(n=>n*n) → [1,4,9] |
| filter() | Filter elements | [12,18,25].filter(a=>a>=18) → [18,25] |
| reduce() | Accumulate values | [10,20,30].reduce((a,b)=>a+b,0) → 60 |
| some() | At least one true | [45,60,85].some(s=>s>=80) → true |
| every() | All true | [70,80].every(m=>m>=50) → true |

| | | |
|---|---|---|
| find() | First match | [{price:500},{price:300}].find(p=>p.price<600) → {price:500} |
| findIndex() | Index of first match | [5,12,130].findIndex(n=>n>100) → 2 |
| entries() | Iterator [index,value] | ["x","y"].entries() → [0,"x"],[1,"y"] |
| keys() | Iterator of indexes | ["a","b"].keys() → 0,1 |
| values() | Iterator of values | ["apple","banana"].values() → "apple","banana" |
| from() | Array from iterable | Array.from("hi") → ["h","i"] |
| isArray() | Check array | Array.isArray([1,2]) → true |
| of() | Create array | Array.of(10,20) → [10,20] |