



## is rest and spread operator

The **rest operator** and **spread operator** are both represented by three dots (...) in JavaScript, but they are used for opposite purposes:

- **Rest Operator (...):**

- Collects multiple elements and packs them into a single array or object.
- Commonly used in function parameters and destructuring to handle an indefinite number of arguments or elements.
- Example in a function:

```
function sum(...numbers) {  
  return numbers.reduce((total, num) => total + num, 0);  
}  
// sum(1, 2, 3) returns 6
```

- Example in array destructuring:

```
const [first, ...others] = [1, 2, 3, 4];  
// first = 1, others = [2, 3, 4]
```

- Think: **"gathers" values into an array.** [\[1\]](#) [\[2\]](#) [\[3\]](#)

- **Spread Operator (...):**

- Unpacks or "spreads" the elements of an array or object into individual components.
- Used in array literals, object literals, and function calls to expand elements.
- Example with arrays:

```
const arr1 = [1, 2, 3];  
const arr2 = [...arr1, 4, 5];  
// arr2 = [1, 2, 3, 4, 5]
```

- Example with objects:

```
const obj1 = { a: 1 };  
const obj2 = { ...obj1, b: 2 };  
// obj2 = { a: 1, b: 2 }
```

- Example with function calls:

```
const nums = [1, 2, 3];  
Math.max(...nums); // returns 3
```

- Think: "**spreads**" array or object values. [\[4\]](#) [\[5\]](#) [\[1\]](#)

## Summary Table

Operator	Syntax	Main Use	Example
Rest	<code>...</code>	Gathers into array	<code>function fn(...args) {}</code>
Spread	<code>...</code>	Spreads out elements	<code>[...array1, ...array2]</code>

In short, the rest operator **collects** values into an array, whereas the spread operator **spreads** elements out from an array or object. [\[2\]](#) [\[3\]](#) [\[1\]](#) [\[4\]](#)

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1. <https://www.telerik.com/blogs/rest-spread-operators-explained-javascript>
2. <https://www.freecodecamp.org/news/javascript-rest-vs-spread-operators/>
3. <https://www.freecodecamp.org/news/javascript-spread-and-rest-operators/>
4. <https://www.geeksforgeeks.org/javascript/what-is-the-rest-parameter-and-spread-operator-in-javascript/>
5. [https://www.w3schools.com/react/react\\_es6\\_spread.asp](https://www.w3schools.com/react/react_es6_spread.asp)