

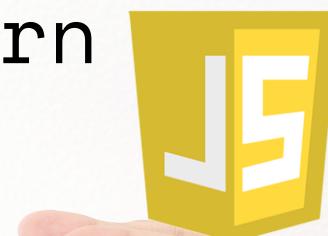


ARRAY CALLBACK METHODS

ARRAY

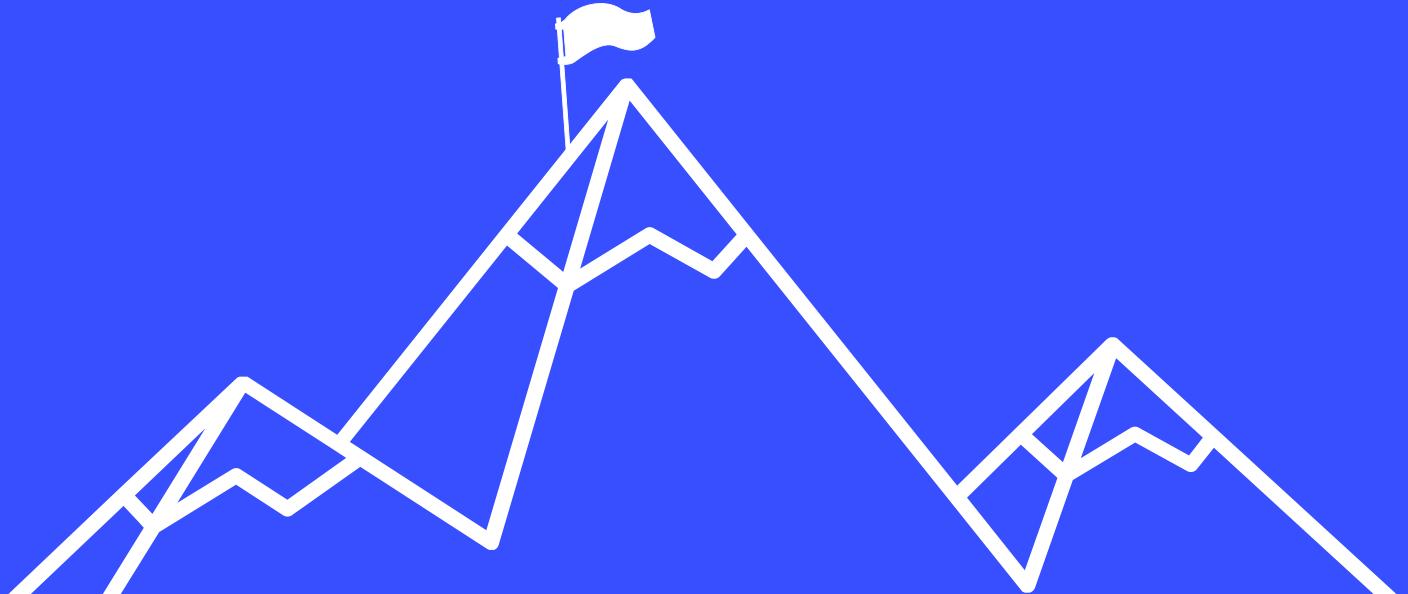
CALLBACK METHODS

- Arrays come with many built-in methods that accept callback functions
- Now that we've covered callbacks, we can learn these methods!
- SUPER USEFUL! 🎉



GOALS

- Use the new arrow function syntax
- Understand and use these methods:
 - forEach
 - map
 - filter
 - find
 - reduce
 - some
 - every



FOREACH



```
const nums = [9, 8, 7, 6, 5, 4, 3, 2, 1];

nums.forEach(function (n) {
  console.log(n * n)
  //prints: 81, 64, 49, 36, 25, 16, 9, 4, 1
});

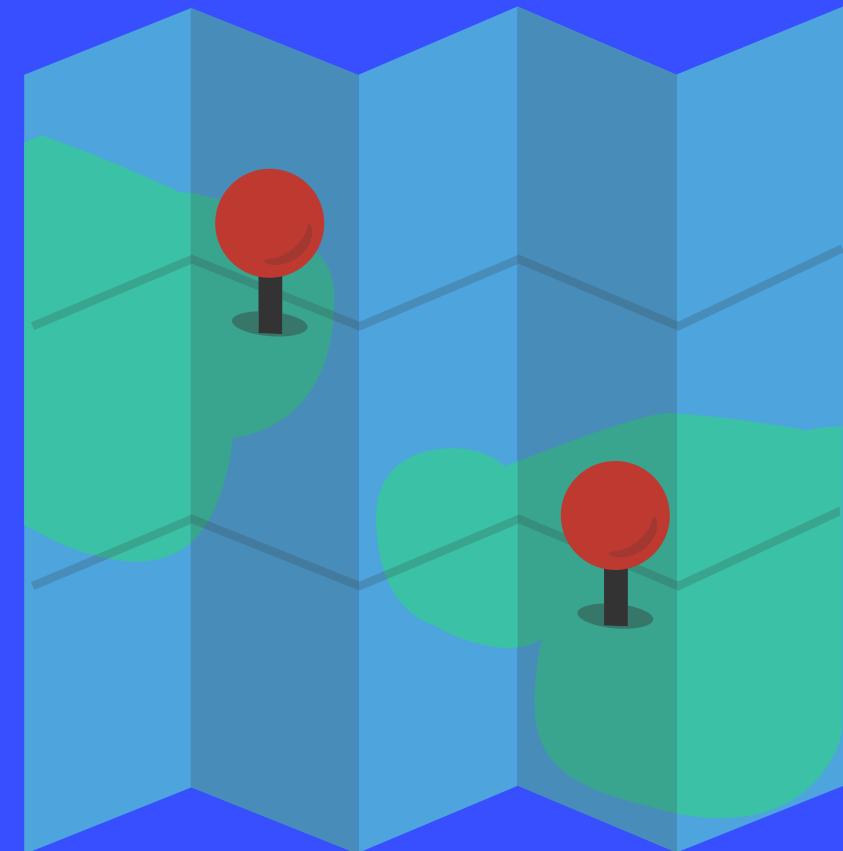
nums.forEach(function (el) {
  if (el % 2 === 0) {
    console.log(el)
    //prints: 8, 6, 4, 2
  }
})
```

Accepts a callback function.

Calls the function once per element in the array.

MAP

Creates a new array with the results of calling a callback on every element in the array



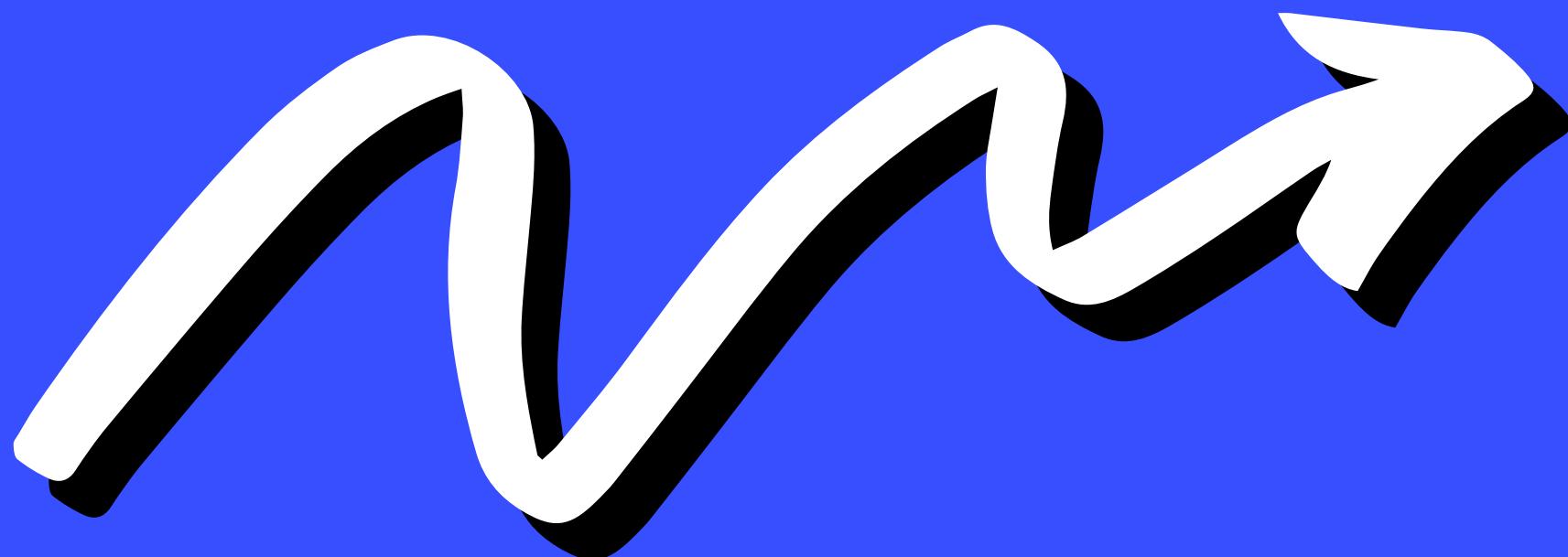
MAP



```
const texts = ['rofl', 'lol', 'omg', 'ttyl'];
const caps = texts.map(function (t) {
  return t.toUpperCase();
})
texts; //["rofl", "lol", "omg", "ttyl"]
caps; //["ROFL", "LOL", "OMG", "TTYL"]
```



ARROW FUNCTIONS!



ARROW FUNCTIONS



"syntactically compact alternative"
to a regular function expression



```
const square = (x) => {
  return x * x;
}
```

```
const sum = (x, y) => {
  return x + y;
}
```

ARROW FUNCTIONS



```
//parens are optional if there's only one parameter:  
const square = x => {  
    return x * x;  
}  
  
//Use empty parens for functions w/ no parameters:  
const singASong = () => {  
    return "LA LA LA LA LA LA";  
}
```

IMPLICIT RETURN

All these functions do the same thing:



```
const isEven = function (num) { //regular function expression
    return num % 2 === 0;
}
const isEven = (num) => { //arrow function with parens around param
    return num % 2 === 0;
}
const isEven = num => { //no parens around param
    return num % 2 === 0;
}
const isEven = num => ( //implicit return
    num % 2 === 0
);
const isEven = num => num % 2 === 0; //one-liner implicit return
```

FIND

returns the value of the **first element** in the array that satisfies the provided testing function.



```
let movies = [
  "The Fantastic Mr. Fox",
  "Mr. and Mrs. Smith",
  "Mrs. Doubtfire",
  "Mr. Deeds"
]
let movie = movies.find(movie => {
  return movie.includes('Mrs.')
}) // "Mr. and Mrs. Smith"

let movie2 = movies.find(m => m.indexOf('Mrs') === 0);
// "Mrs. Doubtfire"
```

FILTER

Creates a new array with all elements that pass the test implemented by the provided function.



```
const nums = [9, 8, 7, 6, 5, 4, 3, 2, 1];
const odds = nums.filter(n => {
    return n % 2 === 1; //our callback returns true or false
    //if it returns true, n is added to the filtered array
})
//[9, 7, 5, 3, 1]

const smallNums = nums.filter(n => n < 5);
//[4, 3, 2, 1]
```

EVERY

tests whether **all** elements in the array pass the provided function. It returns a Boolean value.



```
const words = ["dog", 'dig', 'log', 'bag', 'wag'];

words.every(word => {
  return word.length === 3;
}) //true

words.every(word => word[0] === 'd'); //false

words.every(w => {
  let last_letter = w[w.length - 1];
  return last_letter === 'g'
}) //true
```

SOME

Similar to `every`, but returns true if ANY of the array elements pass the test function



```
const words = [ 'dog', 'jello', 'log', 'cupcake', 'bag', 'wag' ];

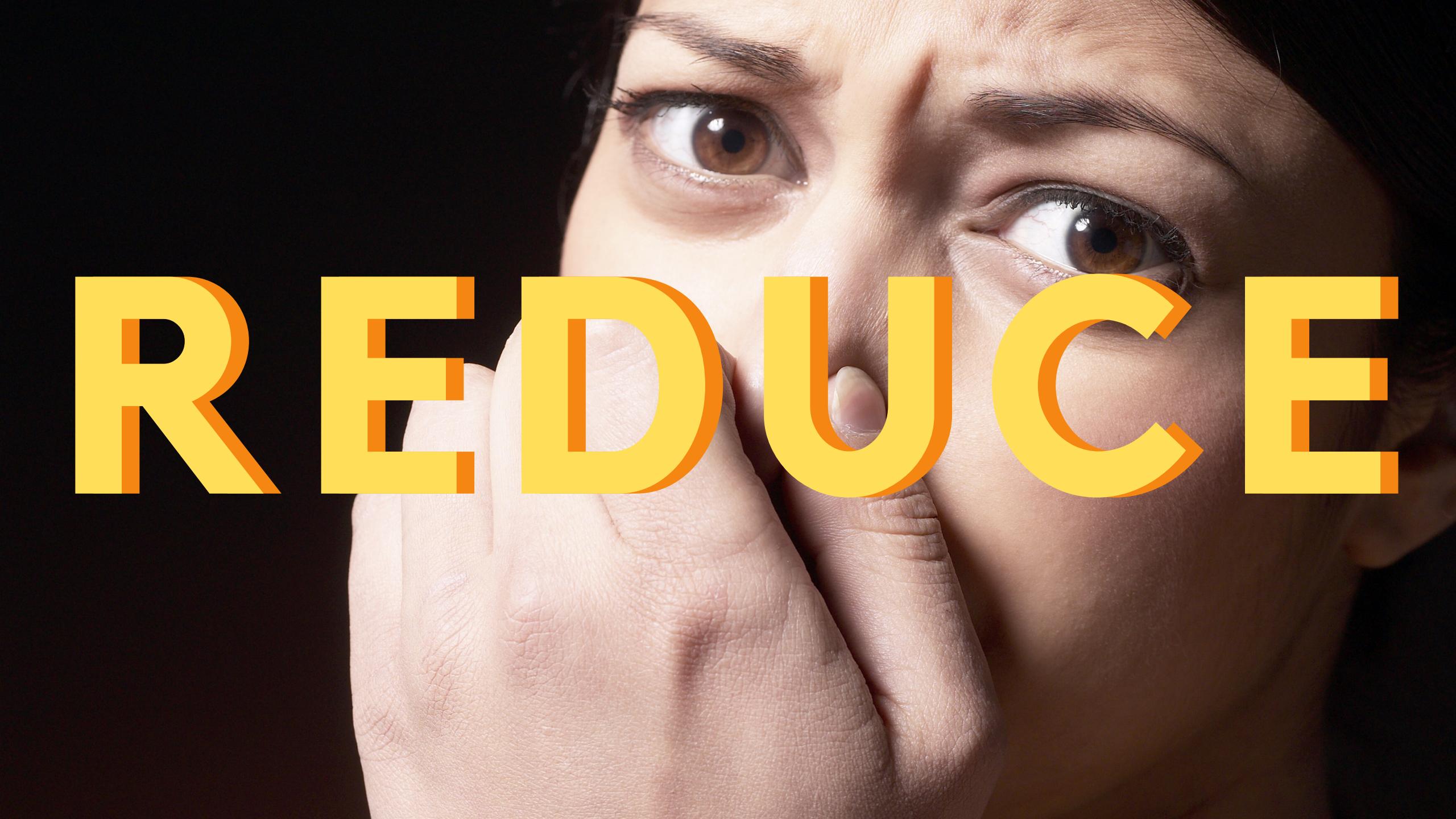
//Are there any words longer than 4 characters?
words.some(word => {
  return word.length > 4;
}) //true

//Do any words start with 'Z'?
words.some(word => word[0] === 'Z'); //false

//Do any words contain 'cake'?
words.some(w => w.includes('cake')) //true
```

REDUCE
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REDUCE



A close-up photograph of a woman's face. Her eyes are looking directly at the camera with a neutral expression. Her hands are positioned in front of her face, with her fingers covering her mouth and nose, obscuring the lower half of her face. The lighting is dramatic, highlighting the contours of her face and the texture of her skin.

REDUCE

REDUCE

Executes a reducer function
on each element of the array,
resulting in a single value.



SUMMING AN ARRAY



```
[3, 5, 7, 9, 11].reduce((accumulator, currentValue) => {  
  return accumulator + currentValue;  
});
```

Callback	accumulator	currentValue	return value
first call	3	5	8
second call	8	7	15
third call	15	9	24
fourth call	24	11	35

FINDING MAX VAL



```
let grades = [89, 96, 58, 77, 62, 93, 81, 99, 73];

const topScore = grades.reduce((max, currVal) => {
  if (currVal > max) return currVal;
  return max;
})
topScore; //99
```

```
//A shorter option w/ Math.max & implicit return
const topScore = grades.reduce((max, currVal) => (
  Math.max(max, currVal)
))
```

INITIAL VALUE



```
[4, 5, 6, 7, 8].reduce((accumulator, currentValue) => {  
    return accumulator + currentValue;  
});  
//RETURNS: 30
```

```
[4, 5, 6, 7, 8].reduce((accumulator, currentValue) => {  
    return accumulator + currentValue;  
}, 100);  
//RETURNS: 130
```

TALLYING



```
const votes =  
['y','y','n','y','n','y','n','y','n','n','y','y'];  
const tally = votes.reduce((tally, vote) => {  
  tally[vote] = (tally[vote] || 0) + 1;  
  return tally;  
}, {}); //INITIAL VALUE: {}  
  
tally; //{y: 7, n: 6}
```

SORT PT. 2

`arr.sort(compareFunc(a, b))`

- If $compareFunc(a, b)$ returns less than 0
 - Sort a before b
- If $compareFunc(a, b)$ returns 0
 - Leave a and b unchanged with respect to each other
- If $compareFunc(a, b)$ returns greater than 0
 - Sort b before a

SORT



```
const prices = [400.50, 3000, 99.99, 35.99, 12.00, 9500];
```

```
prices.sort();
//[12, 3000, 35.99, 400.5, 9500, 99.99]
```

```
prices.sort((a, b) => a - b)
//[12, 35.99, 99.99, 400.5, 3000, 9500]
```

```
prices.sort((a, b) => b - a);
//[9500, 3000, 400.5, 99.99, 35.99, 12]
```