```
<!DOCTYPE html><html><body><h1>JavaScript Array Iterations</h1>
<p id="demo1"></p><p id="demo2"></p><p id="demo3"></p>
<p id="demo4"></p><p id="demo5"></p><p id="demo6"></p>
<p id="demo7"></p><p id="demo8"></p><p id="demo9"></p>
<p id="demo10"></p><p id="demo11"></p><p id="demo12"></p>
<p id="demo13"></p><script>
const numbers1 = [45, 4, 9, 16, 25];
const numbers2 = numbers1.map(value => value * 2);
document.getElementById("demo1").innerHTML =
numbers1.join("<br>");
document.getElementById("demo2").innerHTML = numbers2;
//faltmap()
const numbers3 = numbers2.flatMap(value => value * 2);
document.getElementById("demo3").innerHTML = numbers3;
//filter()
const numbers4 = numbers3.filter(value => value >= 100);
document.getElementById("demo4").innerHTML = numbers4.join(",");
//reduce
const numbers5 = numbers4.reduce((total, value) => total + value);
document.getElementById("demo5").innerHTML = "The sum is " +
numbers5;
//every
const allOver20 = numbers3.every(value => value > 20);
document.getElementById("demo6").innerHTML = "All over 20 is " +
allOver20;
//some
const someOver20 = numbers3.some(value => value > 20);
document.getElementById("demo7").innerHTML = "Some over 20 is " +
someOver20;
//find
const first = numbers3.find(value => value < 20);
document.getElementById("demo8").innerHTML = "First number less 20
is " + first;
//index
const index = numbers3.findIndex(value => value < 20);
document.getElementById("demo9").innerHTML =
"First number less 20 has index " + index;
//indexOf
const fruits = ["Apple", "Orange", "Apple", "Mango"];
const position1 = fruits.indexOf("Apple") + 1;
document.getElementById("demo10").innerHTML =
"Apple is found in first position " + position1;
//lastIndexOf
const position2 = fruits.lastIndexOf("Apple") + 1;
document.getElementById("demo11").innerHTML =
"Apple is found in last position " + position2;
//from
const myArr = Array.from("ABCDEFG");
document.getElementById("demo13").innerHTML = myArr;
</script></body></html>
```

# JavaScript Array Iterations

45
4
9
16
25

90,8,18,32,50

180,16,36,64,100

180,100

The sum is 280

All over 20 is false

Some over 20 is true

First number less 20 is 16

First number less 20 has index 1

Apple is found in first position 1

Apple is found in last position 3

A,B,C,D,E,F,G

```
<!DOCTYPE html>

<html>

<body>


<h2>JavaScript const</h2>

<p id="demo1"></p>

<p id="demo2"></p>

<script>


const cars = ["Saab", "Volvo", "BMW"];

// Change an element:

cars[0] = "Toyota";


// Add an element:

cars.push("Audi");

document.getElementById("demo1").innerHTML = cars;

//Out of Blok

{

  const cars = ["Avanza", "Volvo", "BMW"];

  // Here cars[0] is "Toyota"

  document.getElementById("demo2").innerHTML = cars;

}




</script>

</body>

</html>
```

# JavaScript const

Toyota,Volvo,BMW,Audi

Avanza,Volvo,BMW

```
<!DOCTYPE html><html><body>
<h2>JavaScript Math</h2>
<p id="demo1"></p><p id="demo2"></p><p id="demo3"></p>
<p id="demo4"></p><p id="demo5"></p><p id="demo6"></p>
<p id="demo7"></p><p id="demo8"></p><p id="demo9"></p>
<p id="demo10"></p><p id="demo11"></p><script>
//Math Properties (Constants)
document.getElementById("demo1").innerHTML =
"<p><b>Math.E:</b> " + Math.E + "</p>" +
"<p><b>Math.PI:</b> " + Math.PI + "</p>" +
"<p><b>Math.SQRT2:</b> " + Math.SQRT2 + "</p>" +
"<p><b>Math.SQRT1_2:</b> " + Math.SQRT1_2 + "</p>" +
"<p><b>Math.LN2:</b> " + Math.LN2 + "</p>" +
"<p><b>Math.LN10:</b> " + Math.LN10 + "</p>" +
"<p><b>Math.LOG2E:</b> " + Math.LOG2E + "</p>" +
"<p><b>Math.Log10E:</b> " + Math.LOG10E + "</p>";
//Math Round()
document.getElementById("demo2").innerHTML = Math.round(4.6);
//Math Ceil()
document.getElementById("demo3").innerHTML = Math.ceil(5.4);
//Math Floor()
document.getElementById("demo4").innerHTML = Math.floor(-6.5);
//Math Trunch()
document.getElementById("demo5").innerHTML = Math.trunc(8.7);
//Math Sign() is 1 Negative , Null, 1 Positive
document.getElementById("demo6").innerHTML = Math.sign(100);
//Math Power()
document.getElementById("demo7").innerHTML = Math.pow(2,2);
//Math sqrt
document.getElementById("demo8").innerHTML = Math.sqrt(81);
//Math Absolute
document.getElementById("demo9").innerHTML = Math.abs(-10);
//Math Sin
document.getElementById("demo10").innerHTML =
"The sine value of 90 degrees is " + Math.sin(90 * Math.PI / 180);
//MAth Cos()
document.getElementById("demo11").innerHTML =
"The cosine value of 0 degrees is " + Math.cos(0 * Math.PI / 180);
</script></body></html>
```

# JavaScript Math

**Math.E:** 2.718281828459045

**Math.PI:** 3.141592653589793

**Math.SQRT2:** 1.4142135623730951

**Math.SQRT1_2:** 0.7071067811865476

**Math.LN2:** 0.6931471805599453

**Math.LN10:** 2.302585092994046

**Math.LOG2E:** 1.4426950408889634

**Math.Log10E:** 0.4342944819032518

5

6

-7

8

1

4

9

10

The sine value of 90 degrees is 1

The cosine value of 0 degrees is 1

```
<!DOCTYPE html>

<html>

<body>



<h2>JavaScript Math.random()</h2>



<p id="demo1"></p>

<p>Every time you click the button, getRndInteger(min, max) returns a random number between 0

and 9 (both included):</p>

<button onclick="document.getElementById('demo2').innerHTML = getRndInteger(0,10)">Click Me</button>

<p id="demo2"></p>

<script>

var diceRoll = Math.floor(Math.random() * 6) + 1;

document.getElementById("demo1").innerHTML = "Result of a dice roll: " + diceRoll;

// A Proper Random Function

function getRndInteger(min, max) {

  return Math.floor(Math.random() * (max - min)) + min;

}

</script>



</body>

</html>
```

# JavaScript Math.random()

Result of a dice roll: 4

Every time you click the button, getRndInteger(min, max) returns a random number between 0 and 9 (both included):

Click Me

2

```
<!DOCTYPE html>
<html>
<body>

<h1>JavaScript Booleans</h1>
<p>Display the value of Boolean(10 > 9):</p>

<p id="demo1"></p>
<p id="demo2"></p>
<p id="demo3"></p>
<p id="demo4"></p>
<p id="demo5"></p>
<p id="demo6"></p>
<p id="demo7"></p>
<p id="demo8"></p>
<p id="demo9"></p>
<script>
document.getElementById("demo1").innerHTML = Boolean(10 > 9);
document.getElementById("demo2").innerHTML = "0 is " + Boolean(0);
document.getElementById("demo3").innerHTML = "1 is " + Boolean(1);
document.getElementById("demo4").innerHTML = "Empty string is " +
Boolean("");
document.getElementById("demo5").innerHTML = "Undefined is " +
Boolean(undefined);
document.getElementById("demo6").innerHTML = "Null is " +
Boolean(null);
document.getElementById("demo7").innerHTML = "NaN is " +
Boolean(NaN);
//Booleans as Objects
let x = false;         // x is a boolean
let y = new Boolean(false);  // y is an object
document.getElementById("demo8").innerHTML = (x==y);
document.getElementById("demo9").innerHTML = (x===y);
</script>

</body>
</html>
```

# JavaScript Booleans

Display the value of Boolean(10 > 9):

true

0 is false

1 is true

Empty string is false

Undefined is false

Null is false

NaN is false

true

false

```
<!DOCTYPE html>
<html>
<body>

<h1>JavaScript Comparison</h1>

<p>Input your age and click the button:</p>

<input id="age"  />

<button onclick="myFunction()">Try it</button>

<p id="demo1"></p>
<p id="demo2"></p>
<p id="demo3"></p>
<script>
//The () ? : Ternary Operator
function myFunction() {
  let voteable;
  let age = Number(document.getElementById("age").value);
  if (isNaN(age)) {
    voteable = "Input is not a number";
  } else {
    voteable = (age < 18) ? "Too young" : "Old enough";
  }
  document.getElementById("demo1").innerHTML = voteable + " to vote";
}
//Operator Nullish Coalescing (??)
let name = null;
let text = "missing";
let result = name ?? text;
document.getElementById("demo2").innerHTML = "The name is " + result;
//Chaining Operator (?.)
const car = {type:"Fiat", model:"500", color:"white"};
let names = car?.type;
document.getElementById("demo3").innerHTML = names;
</script>

</body>
</html>
```

# JavaScript Comparison

Input your age and click the button:

18 Try it

Old enough to vote

The name is missing

Fiat

```
x = 10;
y = 5;
alert(x [ ] y);
```

Correct!

Next ›

```
x = 10;
y = 10;
alert(x [ ] y);
```

Correct!

Next ›

```
x = 10;
y = 5;
alert(x [ ] y);
```

Correct!

Next ›

```
var age = n;
var voteable = (age [ ] 18) [ ] "Too young"
[ ] "Old enough";
alert(voteable);
```

Correct!

Next ›

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript if, else, and else if</h2>
<p>A time-based greeting:</p>

<p id="demo"></p>

<script>
const time = new Date().getHours();
let greeting;
if (time < 10) {
  greeting = "Good morning";
} else if (time < 20) {
  greeting = "Good day";
} else {
  greeting = "Good evening";
}
document.getElementById("demo").innerHTML = greeting;
</script>

</body>
</html>
```

# JavaScript if, else, and else if

A time-based greeting:

Good morning\

```
if [ ] x > y[ ] [ ]
  alert("Hello World");
[ ]
```

Correct!

Next ›

```
[ ] (x [ ] y) {
  alert("Hello World");
} [ ] {
  alert("Goodbye");
}
```

Correct!

Next ›

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript switch</h2>

<p id="demo"></p>

<script>
let day;
switch (new Date().getDay()) {
  case 0:
    day = "Sunday";
    break;
  case 1:
    day = "Monday";
    break;
  case 2:
    day = "Tuesday";
    break;
  case 3:
    day = "Wednesday";
    break;
  case 4:
    day = "Thursday";
    break;
  case 5:
    day = "Friday";
    break;
  case  6:
    day = "Saturday";
}
document.getElementById("demo").innerHTML = "Today is " + day;
</script>

</body>
</html>
```

# JavaScript switch

Today is Tuesday

```
[ ](fruits) {
  [ ] "Banana":
    alert("Hello")
    break;
  [ ] "Apple":
    alert("Welcome")
    break;
}
```

Correct!

Next ›

```
switch(fruits) {
  case "Banana":
    alert("Hello")
    break;
  case "Apple":
    alert("Welcome")
    break;
  [ ]
    alert("Neither");
}
```

Correct!

Next ›

```
<!DOCTYPE html>
<html>
<body>


<h2>JavaScript For Loop</h2>


<p id="demo1"></p>
<p id="demo2"></p>
<p id="demo3"></p>
<script>
//Expression
const cars = ["BMW", "Volvo", "Saab", "Ford"];
let i, len, text;
for (i = 0, len = cars.length, text = ""; i < len; i++) {
  text += cars[i] + "<br>";
}
document.getElementById("demo1").innerHTML = text;
//Using Var
var j = 5;
for (var j = 0; j < 10; j++) {
  // some statements
}
document.getElementById("demo2").innerHTML = j;
//Using Let
let k = 5;
for (let k = 0; k < 10; k++) {
  // some statements
}
document.getElementById("demo3").innerHTML = k;
</script>

</body>
</html>
```

# JavaScript For Loop

BMW
Volvo
Saab
Ford

10

5

```
let i;
[ ] ([ ] = [ ]; [ ] < [ ];
[ ]) {
  console.log(i);
}
```

Correct!

Next ›

```
const fruits = ["Apple", "Banana", "Orange"];
for (x [ ] [ ]) {
  console.log(x);
}
```

Correct!

Next ›

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript For In Loop</h2>
<p>The for in statement loops through the properties of an object:</p>

<p id="demo"></p>

<script>
const person = {fname:"John", lname:"Doe", age:25};

let txt = "";
for (let x in person) {
  txt += person[x] + " ";
}

document.getElementById("demo").innerHTML = txt;
</script>

</body>
</html>
```

# JavaScript For In Loop

The for in statement loops through the properties of an object:

John Doe 25

```
<!DOCTYPE html>

<html>

<body>



<h2>JavaScript For Of Loop</h2>

<p>The for of statement loops through the values of any iterable object:</p>



<p id="demo1"></p>

<p id="demo2"></p>

<script>

const cars = ["BMW", "Volvo", "Mini"];

let language = "JavaScript";

let text1 = "";

for (let x of cars) {

  text1 += x + "<br>";

}

let text2 = "";

for (let y of language) {

  text2 += y + "<br>";

}

document.getElementById("demo1").innerHTML = text1;

document.getElementById("demo2").innerHTML = text2;

</script>



</body>

</html>
```

# JavaScript For Of Loop

The for of statement loops through the values of any iterable object:

BMW
Volvo
Mini

J
a
v
a
S
c
r
i
p
t

```
<!DOCTYPE html>

<html>

<body>



<h2>JavaScript While Loop</h2>



<p id="demo1"></p>

<p id="demo2"></p>

<script>

let text1 = "";

let i = 0;

while (i < 10) {

  text1 += "<br>The number is " + i;

  i++;

}

//Do While

let text2 = "";

j=10

do {

  text2 += "<br>The number is " + j;

  j--;

}

while (j > 0);

document.getElementById("demo1").innerHTML = text1;

document.getElementById("demo2").innerHTML = text2;

</script>



</body>

</html>
```

# JavaScript While Loop

The number is 0
The number is 1
The number is 2
The number is 3
The number is 4
The number is 5
The number is 6
The number is 7
The number is 8
The number is 9

The number is 10
The number is 9
The number is 8
The number is 7
The number is 6
The number is 5
The number is 4
The number is 3
The number is 2
The number is 1

```
let i = 0;
[ ] (i [ ] 10) {
  console.log(i);
  i++
}
```

Correct!

Next ›

```
let i = 0;
while (i < 10) {
  console.log(i);
  [ ] = [ ] [ ] [ ];
}
```

Correct!

Next ›

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Loops</h2>

<p>A loop with a <b>break</b> statement.</p>
<p id="demo1"></p>
<p>A loop with a <b>continue</b> statement.</p>
<p id="demo2"></p>
<p id="demo3"></p>
<script>
let text1 = "";
let text2 = "";
let text3 = "";
const cars = ["BMW", "Volvo", "Saab", "Ford"];
//Break
for (let i = 0; i < 10; i++) {
  if (i === 3) { break; }
  text1 += "The number is " + i + "<br>";
}
//Continue
for (let j = 0; j < 10; j++) {
  if (j === 3) { continue; }
  text2 += "The number is " + j + "<br>";
}
//Label
list: {
  text3 += cars[0] + "<br>";
  text3 += cars[1] + "<br>";
  break list;
  text3 += cars[2] + "<br>";
  text3 += cars[3] + "<br>";
}

document.getElementById("demo1").innerHTML = text1;
document.getElementById("demo2").innerHTML = text2;
document.getElementById("demo3").innerHTML = text3;
</script>

</body>
</html>
```

# JavaScript Loops

A loop with a **break** statement.

The number is 0
The number is 1
The number is 2

A loop with a **continue** statement.

The number is 0
The number is 1
The number is 2
The number is 4
The number is 5
The number is 6
The number is 7
The number is 8
The number is 9

BMW
Volvo

```
for (i = 0; i < 10; i++) {
  console.log(i);
  if (i == 5) {
    [ ];
  }
}
```

Correct!

Next ›

```
for (i = 0; i < 10; i++) {
  if (i == 5) {
    [ ];
  }
  console.log(i);
}
```

Correct!

Next ›

```
<!DOCTYPE html>

<html>

<body>

<h2>JavaScript Iterables</h2>

<p>Iterate over a Map:</p>



<p id="demo"></p>



<script>

// Create a Map

const fruits = new Map([

  ["apples", 500],

  ["bananas", 300],

  ["oranges", 200]

]);



// List all entries

let text = "";

for (const x of fruits) {

  text += x + "<br>";

}



document.getElementById("demo").innerHTML = text;

</script>

</body>

</html>
```

# JavaScript Iterables

Iterate over a Map:

apples,500
bananas,300
oranges,200

```
<!DOCTYPE html>

<html>

<body>

<h2>JavaScript Sets</h2>

<p>Add values to a Set:</p>



<p id="demo1"></p>

<p id="demo2"></p>

<script>

// Create a Set

const letters = new Set();



// Add Values to the Set

letters.add("a");

letters.add("b");

letters.add("c");

// List all Elements

let text = "";

letters.forEach (function(value) {

  text += value + "<br>";

})

// Display set

document.getElementById("demo1").innerHTML = letters.size;

document.getElementById("demo2").innerHTML = text;

</script>



</body>

</html>
```

# JavaScript Sets

Add values to a Set:

3

a
b
c