

The JavaScript Math object allows you to perform mathematical tasks on numbers.

## The Math Object

Unlike other objects, the Math object has no constructor.

The Math object is static.

All methods and properties can be used without creating a Math object first.

## Math Properties (Constants)

The syntax for any Math property is : *Math.property*.

JavaScript provides 8 mathematical constants that can be accessed as Math properties

### Example:

```
<html>
<body>
<h2>JavaScript Math Constants</h2>
<p id="demo"></p>
<script>
document.getElementById("demo").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>";
</script>
</body>
</html>
```

### Output:

#### JavaScript Math Constants

**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

## Math Methods

The syntax for Math any methods is : *Math.method(number)*

Number to Integer

Math.round(x)	Returns x rounded to its nearest integer <b>Math.round(4.6)=5</b> <b>Math.round(4.5)=5</b> <b>Math.round(4.4)=4</b>
Math.ceil(x)	Returns x rounded <b>up</b> to its nearest integer <b>Math.ceil(4.2)=5</b>

Math.floor(x)	Returns x rounded <b>down</b> to its nearest integer <b>Math.floor(4.7)=4</b>
Math.trunc(x)	Returns the integer part of x <b>Math.trunc(4.7)=4</b>
Math.sign(x)	returns if x is negative, null or positive <b>Math.sign(0)=0</b> <b>Math.sign(10)=1</b> <b>Math.sign(-10)=-1</b>
Math.pow(x, y)	returns the value of x to the power of y <b>Math.pow(8,2)=64</b>
Math.sqrt(x)	returns the square root of x <b>Math.sqrt(64)=8</b>
Math.abs(x)	returns the absolute (positive) value of x <b>Math.abs(-4.7)=4.7</b>
Math.sin(x)	returns the sine (a value between -1 and 1) of the angle x (given in radians). <b>Angle in radians = (angle in degrees) * PI / 180.</b> <b>Example:</b> <script> document.getElementById("demo").innerHTML = "The sine value of 90 degrees is " + Math.sin(90 * Math.PI / 180); </script> <b>Output:</b> The sine value of 90 degrees is 1
Math.cos(x)	returns the cosine (a value between -1 and 1) of the angle x (given in radians). <b>Example:</b> <script> document.getElementById("demo").innerHTML = "The cosine value of 0 degrees is " + Math.cos(0 * Math.PI / 180); </script> <b>Output:</b> The cosine value of 0 degrees is 1
Math.min() and Math.max()	can be used to find the lowest or highest value in a list of arguments Math.min(0, 150, 30, 20, -8, -200); = -200 Math.max(0, 150, 30, 20, -8, -200); = 150
Math.random()	returns a random number between 0 (inclusive), and 1 (exclusive) Math.random(); = 0.3350420857408891

Math.log(x)	returns the natural logarithm of x. Math.log(2) = 0.6931471805599453
Math.log2(x)	returns the base 2 logarithm of x. Math.log2(2) = 1
Math.log10(x)	returns the base 10 logarithm of x. Math.log10(2) = 0.3010299956639812
cbrt(x)	Returns the cubic root of x Math.cbrt(125)= 5

## BOOLEAN:

A JavaScript Boolean represents one of two values: **true** or **false**.

### Example:

```
<p id="demo"></p>
<script>
document.getElementById("demo").innerHTML = Boolean(10 > 9);
</script>
```

### Output:

true

- The Boolean value of **0** (zero) is **false**
- The Boolean value of **""** (empty string) is **false**
- The Boolean value of **undefined** is **false**

#### Example:

```
let x;
Boolean(x);
```

- The Boolean value of **null** is **false**

#### Example:

```
let x = null;
Boolean(x);
```

- The Boolean value of **false** is (you guessed it) **false**

#### Example:

```
let x = false;
Boolean(x);
```

- The Boolean value of **NaN** is **false**

#### Example:

```
let x = 10 / "Hallo";
Boolean(x);
```

addEventListener()

<html>

```
<body>
```

```
<h1>The Document Object</h1>
```

```
<h2>The addEventListener() Method</h2>
```

```
<p>Click anywhere in the document to display "Hello World!".</p>
```

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

```
<script>
```

```
document.addEventListener("click", myFunction);
```

```
function myFunction() {
```

```
    document.getElementById("demo").innerHTML = "Hello World";
```

```
}
```

```
</script>
```

```
</body>
```

```
</html>
```