JavaScript Math Object

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

Example

```
Math.PI;            // returns 3.141592653589793
```

Try it Yourself »

Math.round()

Math.round(x) returns the value of x rounded to its nearest integer:

Example

```
Math.round(4.7);    // returns 5
Math.round(4.4);    // returns 4
```

Try it Yourself »

Math.pow()

Math.pow(x, y) returns the value of x to the power of y:

Example

```
Math.pow(8, 2);      // returns 64
```

Try it Yourself »

Math.sqrt()

Math.sqrt(x) returns the square root of x:

Example

```
Math.sqrt(64);      // returns 8
```

Try it Yourself »

Math.abs()

Math.abs(x) returns the absolute (positive) value of x:

Example

```
Math.abs(-4.7);     // returns 4.7
```

Try it Yourself »

Math.ceil()

Math.ceil(x) returns the value of x rounded **up** to its nearest integer:

Example

```
Math.ceil(4.4);     // returns 5
```

Try it Yourself »

Math.floor()

Math.floor(x) returns the value of x rounded **down** to its nearest integer:

Example

```
Math.floor(4.7);    // returns 4
```

Try it Yourself »

Math.sin()

Math.sin(x) returns the sine (a value between -1 and 1) of the angle x (given in radians).

If you want to use degrees instead of radians, you have to convert degrees to radians:

Angle in radians = Angle in degrees x PI / 180.

Example

```
Math.sin(90 * Math.PI / 180);     // returns 1 (the sine of 90 degrees)
```

Try it Yourself »

Math.cos()

Math.cos(x) returns the cosine (a value between -1 and 1) of the angle x (given in radians).

If you want to use degrees instead of radians, you have to convert degrees to radians:

Angle in radians = Angle in degrees x PI / 180.

Example

```
Math.cos(0 * Math.PI / 180);     // returns 1 (the cos of 0 degrees)
```

Try it Yourself »

Math.min() and Math.max()

Math.min() and Math.max() can be used to find the lowest or highest value in a list of arguments:

Example

```
Math.min(0, 150, 30, 20, -8, -200);  // returns -200
```

Try it Yourself »

Example

```
Math.max(0, 150, 30, 20, -8, -200);  // returns 150
```

Try it Yourself »

Math.random()

Math.random() returns a random number between 0 (inclusive), and 1 (exclusive):

Example

```
Math.random();     // returns a random number
```

Try it Yourself »

You will learn more about Math.random() in the next chapter of this tutorial.

Math Properties (Constants)

JavaScript provides 8 mathematical constants that can be accessed with the Math object:

Example

```
Math.E         // returns Euler's number
Math.PI        // returns PI
Math.SQRT2     // returns the square root of 2
Math.SQRT1_2   // returns the square root of 1/2
Math.LN2       // returns the natural logarithm of 2
Math.LN10      // returns the natural logarithm of 10
Math.LOG2E     // returns base 2 logarithm of E
Math.LOG10E    // returns base 10 logarithm of E
```

Try it Yourself »

Math Constructor

Unlike other global objects, the Math object has no constructor. Methods and properties are static.

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

Math Object Methods

Method	Description
abs(x)	Returns the absolute value of x
acos(x)	Returns the arccosine of x, in radians
asin(x)	Returns the arcsine of x, in radians
atan(x)	Returns the arctangent of x as a numeric value between -PI/2 and PI/2 radians
atan2(y, x)	Returns the arctangent of the quotient of its arguments
ceil(x)	Returns the value of x rounded up to its nearest integer
cos(x)	Returns the cosine of x (x is in radians)
exp(x)	Returns the value of E^x
floor(x)	Returns the value of x rounded down to its nearest integer
log(x)	Returns the natural logarithm (base E) of x
max(x, y, z, ..., n)	Returns the number with the highest value
min(x, y, z, ..., n)	Returns the number with the lowest value
pow(x, y)	Returns the value of x to the power of y
random()	Returns a random number between 0 and 1
round(x)	Returns the value of x rounded to its nearest integer
sin(x)	Returns the sine of x (x is in radians)
sqrt(x)	Returns the square root of x
tan(x)	Returns the tangent of an angle

Complete Math Reference

For a complete reference, go to our complete Math object reference.

The reference contains descriptions and examples of all Math properties and methods.

Test Yourself with Exercises!

Exercise 1 » Exercise 2 » Exercise 3 » Exercise 4 »

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