Math Object

Math object

Introduction to the Math object

The ***Math*** object provides properties for mathematical constants and methods to perform mathematical functions.

Math properties.

`Math.PI`	Value of π, approximately 3.142 π is the ratio of a circle's circumference to the circle's diameter.
`Math.E`	Euler's number, approximately 2.718 Euler's number is the base of natural logarithms.
`Math.LN2`	Natural logarithm of 2, approximately 0.693 Math.LN10 is the natural log of 10.
`Math.LOG10E`	Base 10 logarithm of E, approximately 0.434 Math.LOG2E is the base 2 log of E.
`Math.SQRT2`	Square root of 2, approximately 1.414 Math.SQRT1_2 is the square root of 1/2.

Math Methods

Common Math object methods.

Method	Description	Example
abs(x)	Returns the absolute value of x	Math.abs(-5); *// 5*
ceil(x)	Returns x rounded up to the nearest integer	Math.ceil(2.1); *// 3*
cos(x)	Returns the cosine of the radians x	Math.cos(Math.PI) *// -1*

floor(x)	Returns x rounded down to the nearest integer	Math.floor(2.9) *// 2*
log(x)	Returns the natural logarithm of x	Math.log(Math.E) *// 1*
max(n1, n2, n3, ...)	Returns the largest number	Math.max(5, 2, 8, 1) *// 8*
min(n1, n2, n3, ...)	Returns the smallest number	Math.min(5, 2, 8, 1) *// 1*
pow(x, y)	Returns x to the power of y	Math.pow(2, 3) *// 8*
round(x)	Returns x rounded to the nearest integer	Math.round(3.5) *// 4*
sin(x)	Returns the sine of radians x	Math.sin(Math.PI) *// 0*
sqrt(x)	Returns the square root of x	Math.sqrt(25) *// 5*
tan(x)	Returns the tangent of radians x	Math.tan(Math.PI / 4) *// 1*

Producing random numbers

Many applications, especially games and simulations, need random numbers to simulate random processes. The ***Math.random()*** method returns a pseudo-random number ≥ 0 and < 1.
A ***pseudo-random number*** is a number generated by an algorithm that approximates randomness, but is not truly random.

Display 5 random numbers with Math.random().

```
for (let i = 0; i < 5; i++) {
  console.log(Math.random());
}
```

0.5216294566239728

0.5399290004983317

0.05689844662407162

0.8711941395310085

0.7131957592778093

The code below shows a getRandomNumber() function that performs the necessary calculations to generate a random integer between two integers.

Display five random numbers between 1 and 10.

```
// Return a random integer between min and max (inclusive).
function getRandomNumber(min, max) {
  return Math.floor(Math.random() * (max - min + 1)) + min;
}

for (let i = 0; i < 5; i++) {
  console.log(getRandomNumber(1, 10));
}
```

7

3

1

8

4