The Math Object

- The Math object has a bunch of useful methods and properties.

Property	Description
PI	The value of PI, the ratio of a circle's circumference to its diameter.
E	The base of the natural logarithm, the natural logarithm of 1.
LN2	The natural logarithm of 2.
LN10	The natural logarithm of 10.
LOG2E	The base 2 logarithm of E.
LOG10E	The base 10 logarithm of E.
SQRT1_2	The square root of 1/2.
SQRT2	The square root of 2.

Example

```
console.log(Math.PI); // 3.141592653589793
console.log(Math.E); // 2.718281828459045
console.log(Math.LN2); // 0.6931471805599453
console.log(Math.LN10); // 2.302585092994046
console.log(Math.LOG2E); // 1.4426950408889634
console.log(Math.LOG10E); // 0.4342944819032518
console.log(Math.SQRT1_2); // 0.7071067811865476
console.log(Math.SQRT2); // 1.4142135623730951
```

- Math object has no constructor, we need not to create an object for it.

Math object methords

- Math object contains a bunch of methods used for mathematical operations/calculations.

Methord	Description
abs()	Returns the absolute value of a number.
acos()	Returns the arccosine of a number.
asin()	Returns the arcsine of a number.
atan()	Returns the arctangent of a number.
atan2()	Returns the arctangent of the quotient of its arguments.
ceil()	Returns the smallest integer greater than or equal to a number.

Methord	Description
`cos()`	Returns the cosine of a number.
`exp()`	Returns e to the power of a number.
`floor()`	Returns the largest integer less than or equal to a number.
`log()`	Returns the natural logarithm (base E) of a number.
`max()`	Returns the largest of zero or more numbers.
`min()`	Returns the smallest of zero or more numbers.
`pow()`	Returns a number raised to a power.
`random()`	Returns a random number between 0 and 1.
`round()`	Rounds a number to the nearest integer.
`sin()`	Returns the sine of a number.
`sqrt()`	Returns the square root of a number.
`tan()`	Returns the tangent of a number.

- For example to get a random number between 0 and 1, we can use the following code:

```
var randomNumber = Math.random();
console.log(randomNumber); // 0.9888888888888889
```

- Intrestingly enough, the random number is not a whole number, so to get a random number between (0-9) or (1-10), we can use the following code:

```
var randomNumber = Math.random() * 10;
console.log(randomNumber); // 9.999999999999998
// to get a whole number (0-9), we can use the following code
var randomNumber = Math.floor(Math.random() * 10); // 0, 1, 2, 3, 4, 5, 6,
7, 8, 9
// or ceil method (1-10)
var randomNumber = Math.ceil(Math.random() * 10); // 1, 2, 3, 4, 5, 6, 7,
8, 9, 10
```

Quick quiz

- Q. What is the difference between Math.random() and Math.floor(Math.random() * 10) ?

  `Math.random()` returns a random number between 0 and 1.
  `Math.floor(Math.random() * 10)` returns a random whole number between 0 and 10.

- Q. Which methord is used to find square root of a number?

```
Math.sqrt()
```

- Q. What will be the result of `Math.sqrt(9)`?

```
3
```