The JavaScript Math Library

To access functions in this library, put "Math." in front of the function call (for example, if you want to call the cosine function on some variable x, type Math.cos(x))

The list of functions from the Math library below is not exhaustive.

Random:
random() returns a value in the range [0,1)

Trigonometric Functions: Note that these functions use radians, not degrees
sin(x), cos(x), tan(x)
asin(x), acos(x), atan(x)

Other functions:

max(x1,…,xn)	min(x1,…,xn)
abs(x)	round(x)
ceil(x)	floor(x)
exp(x)	log(x) **natural log
sqrt(x)	pow(x,y)

Examples:

1. Randomly generate an integer in the range [0,10]
   *Solution: Math.floor(Math.random()*11)…. Why does this work?*

2. Randomly generate an integer in the range [5,10]
   *Solution: 5+Math.floor(Math.random()*6)…. Why?*

3. Randomly generate an integer in the range [a,b]
   Solution: a+Math.floor(Math.random()(b-a+1))…. Why?*

4. Randomly generate an integer between a and b (including a and b) without knowing whether a>b, a<b or a=b.

5. Round a number x to the ten's place.
   *Solution: (Math.round(x/10)*10)… Why?*

Exercises: Using the built-in JS Math library functions, write code that would do the following:

a) Have your computer randomly pick a number in the list: 0, 0.5, 1, 1.5, 2, 2.5, 3.

b) Round a number to two decimal places.

c) Chop off a number at two decimal places.

d) Find the smallest of two numbers n1 and n2.

e) Find the largest of three numbers n1, n2 and n3.

f) Take the square root of the number 6.

g) Take the cube root of the number 6.

Solutions to the questions on the previous page.
Attempt the problems *before* looking at the solutions.

a) Have your computer randomly pick a number in the list: 0, 0.5, 1, 1.5, 2, 2.5, 3.

*Solution: 0.5*Math.floor(Math.random()*6);*

b) Round a number x to two decimal places.

*Solution: Math.round(x*100)/100;*

c) Chop off a number at two decimal places.

*Solution: Math.floor(x*100)/100;*

d) Find the smallest of two numbers n1 and n2.

Solution: Math.min(n1, n2);

e) Find the largest of three numbers n1, n2 and n3.

Solution: Math.max(n1, n2, n3);

f) Take the square root of the number 6.

Solution: Math.sqrt(6);

g) Take the cube root of the number 6.

Solution: Math.pow(6,1/3);
Or Math.cbrt(6)