

CS 105: Introduction to Computer Programming (using JavaScript) Variables, Assignment Statements and the draw() function callback.

Instructor: **Joel Castellanos**

e-mail: joel@unm.edu

Web: <http://cs.unm.edu/~joel/>

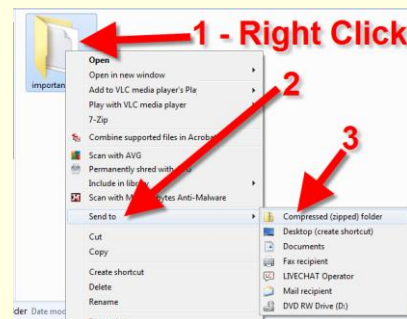
Office: Farris Engineering Center
Room 2110



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Creating a .ZIP Archive

- ZIP is an archive file format that supports lossless data compression.
- A .ZIP file may contain one or more files or directories that may have been compressed.
- .ZIP files can be created in Windows, MacOS and Linux.



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Quiz: JavaScript Mathematics Operators

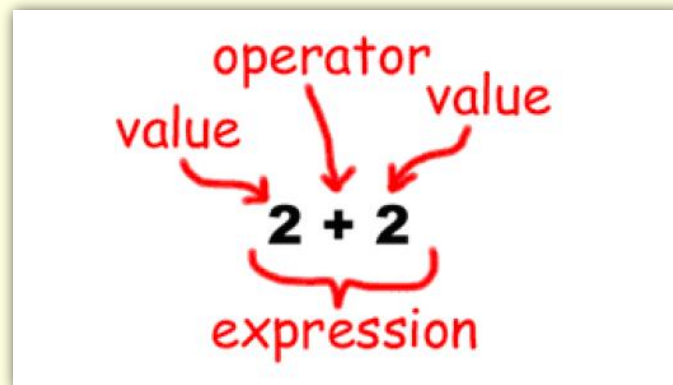
In the JavaScript programming language, the mathematics operators for addition, subtraction, multiplication and division are:

- a) +, -, *, and /
- b) +, -, x, and ÷
- c) +, -, x, and ÷
- d) +, -, x, and ≈
- e) +, -, x, and ∇

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A JavaScript Expression

- A JavaScript expression is made up of values and operators.

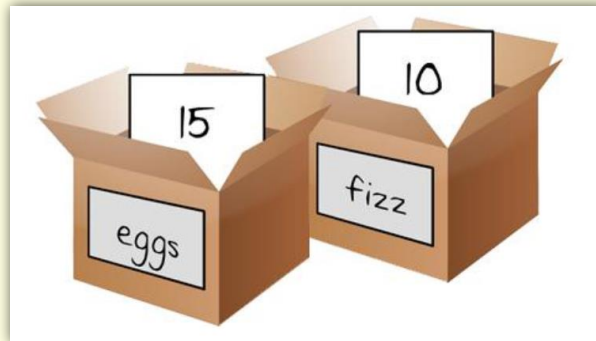


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Storing Values in Variables

```
var eggs = 15
var fizz = 10
eggs = eggs + fizz
eggs = eggs + fizz
```

In JavaScript, = is the *assignment operator*.



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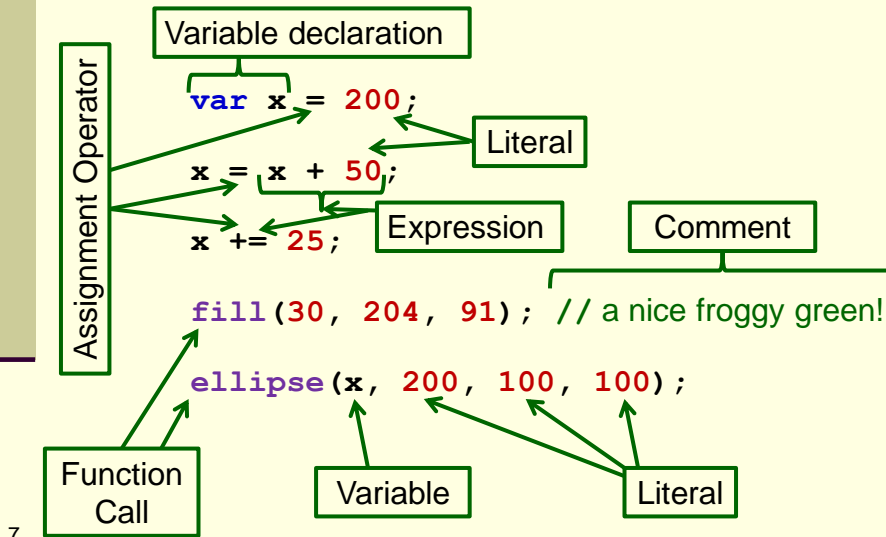
Quiz: What is the value of x when the circle is drawn?

```
var x = 200;
x = x + 50;
x += 25; //same as x = x + 25;
fill(30, 204, 91); // a nice froggy green!
ellipse(x, 200, 100, 100);
```

- a) 25
- b) 50
- c) 75
- d) 200
- e) 275

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Vocabulary



Quiz: Evaluating an Expression

What is the value of the JavaScript expression below?

`1 + 2 * 5`

- a) `1+2*5`
- b) `125`
- c) `15`
- d) `11`
- e) `1212121212`

JavaScript Order of Operations

```
>> 2 + 3 * 10
```

```
32
```

```
>> (2 + 3) * 10
```

```
50
```

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Quiz: Evaluating an Expression

What is the value of the 4th JavaScript expression below?

```
a = 2
```

```
b = 3
```

```
c = 5
```

```
a + b + b + c
```

a) a+b+b+c

b) a + b + b + c

c) abbc

d) 13

e) 2335

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JavaScript is Case Sensitive

```
var ballX = 10
var speedX = 5;
ballX = ballX + speedx;
```

Unresolved variable or type

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HTML5 with JavaScript and p5.js

```
<!DOCTYPE html>
<html>
<head>
  <title> My Super Page </title>
  <script src="p5.js"></script>
</head>
<body>

<script>
"use strict";
// Global variables.

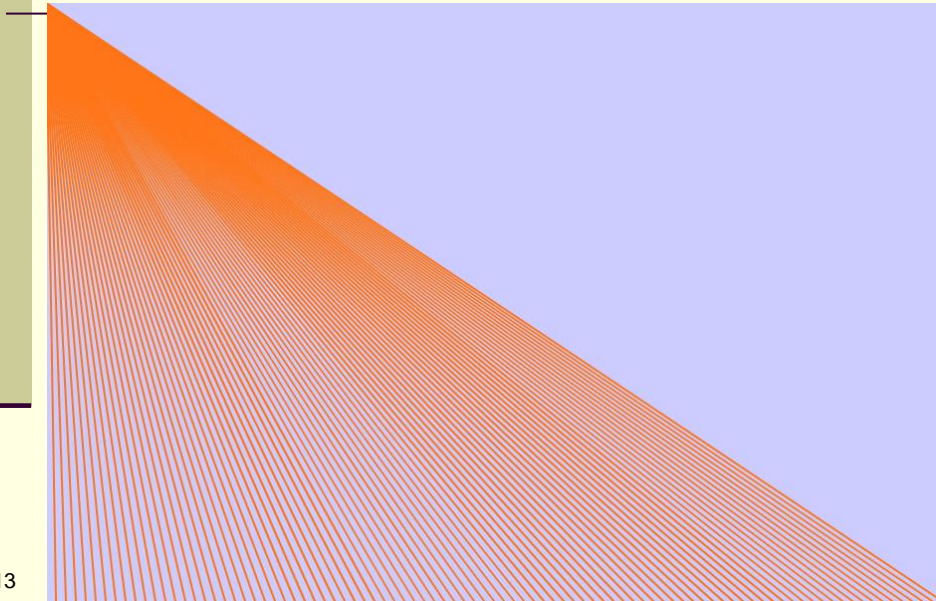
function setup()
{ // Called by p5.js when page loads
}

function draw()
{ // Called by p5.js every 60 times per second
}

</script>
</body>
</html>
```

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Goal: Draw This Image



Drawing Lines: Global Variables

⋮

```
<script>  
"use strict";  
// Global variables.  
var x = 0;
```

```
function setup()  
{  
⋮
```

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Drawing Lines: `function setup()`

// The `setup()` function is called by p5.js when page is loaded.

```
function setup()
```

→ {

```
  createCanvas(901, 600);
```

```
  var pumpkin = color(255, 117, 24);
```

```
  var periwinkle = color(204, 204, 255);
```

```
  background(periwinkle);
```

```
  stroke(pumpkin);
```

```
  strokeWeight(2);
```

→ }

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Drawing Lines: `function draw() v1`

// The `draw()` function is called by p5.js 60 times/sec.

```
function draw()
```

→ {

```
  line(0, 0, 0, 600);
```

```
  line(0, 0, 10, 600);
```

```
  line(0, 0, 20, 600);
```

```
  line(0, 0, 30, 600);
```

```
  line(0, 0, 40, 600);
```

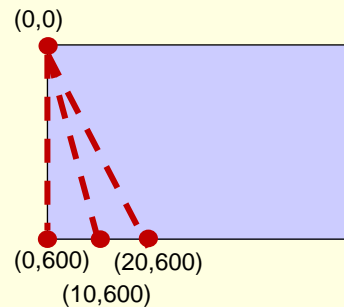
```
  line(0, 0, 50, 600);
```

```
  line(0, 0, 60, 600);
```

```
  line(0, 0, 70, 600);
```

```
  line(0, 0, 80, 600);
```

→ }



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Drawing Lines: `function draw()` v2

// The draw () function is called by p5.js 60 times/sec.

```
function draw()
```

```
{  
  line(0, 0, x, 600);  
  x = x + 10;  
}
```

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Drawing Lines: `function draw()` v3

// The draw () function is called by p5.js 60 times/sec.

```
function draw()
```

```
{  
  if (x < canvasWidth)  
  {  
    line(0, 0, x, canvasHeight);  
    x = x + 10;  
  }  
}
```

Conditional Control Flow.
MUCH more on this in next week's videos.

Add to global variables (also called *fields*):

```
var canvasWidth = 901;  
var canvasHeight = 600;
```

Change `setup()` :

```
createCanvas(canvasWidth, canvasHeight);
```

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Incrementing Variables

```
guessesTaken = guessesTaken + 1
```

- When one is added to a variable, programmers say: "the program is **incrementing** the variable" (because it is increasing by one).
- When one is subtracted from a variable, programmers say: "the program "is **decrementing** the variable" (because it is decreasing by one).

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Quiz: Setting Text Color

Which JavaScript / Processing function sets the color of the text (not outline of the text) in the canvas?

- a) `Color(r, g, b);`
- b) `color(r, g, b);`
- c) `stroke(r, g, b);`
- d) `fill(r, g, b);`
- e) `TextColor(r, g, b);`

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