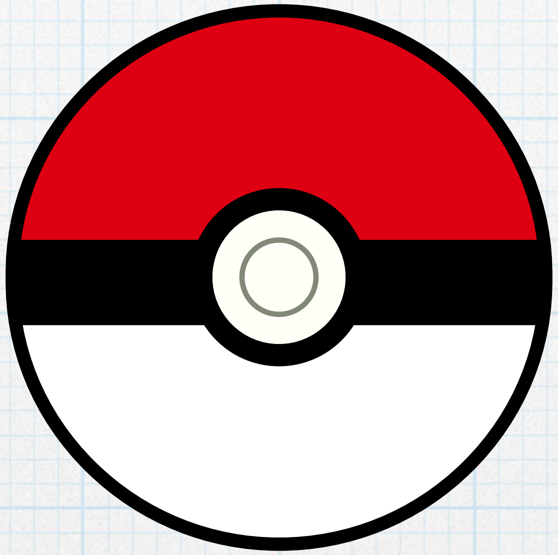
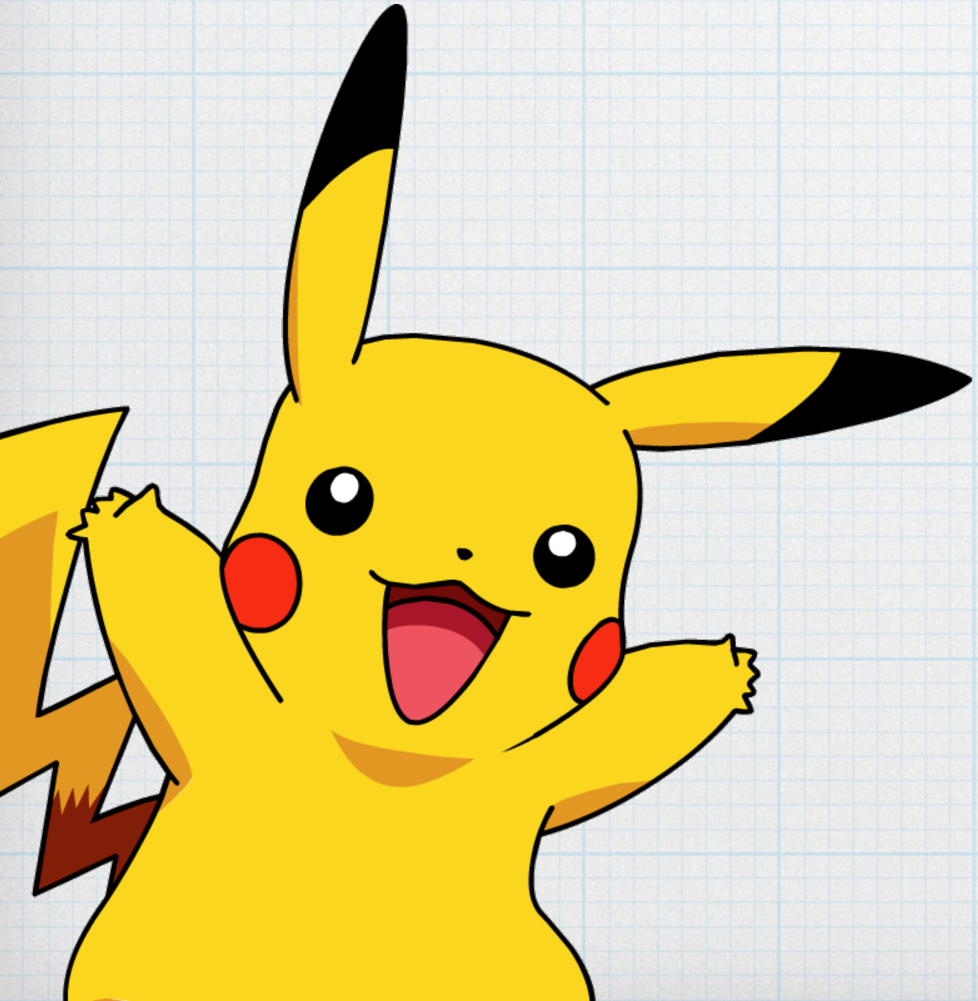
Using Javascript to draw an animated Poké Ball

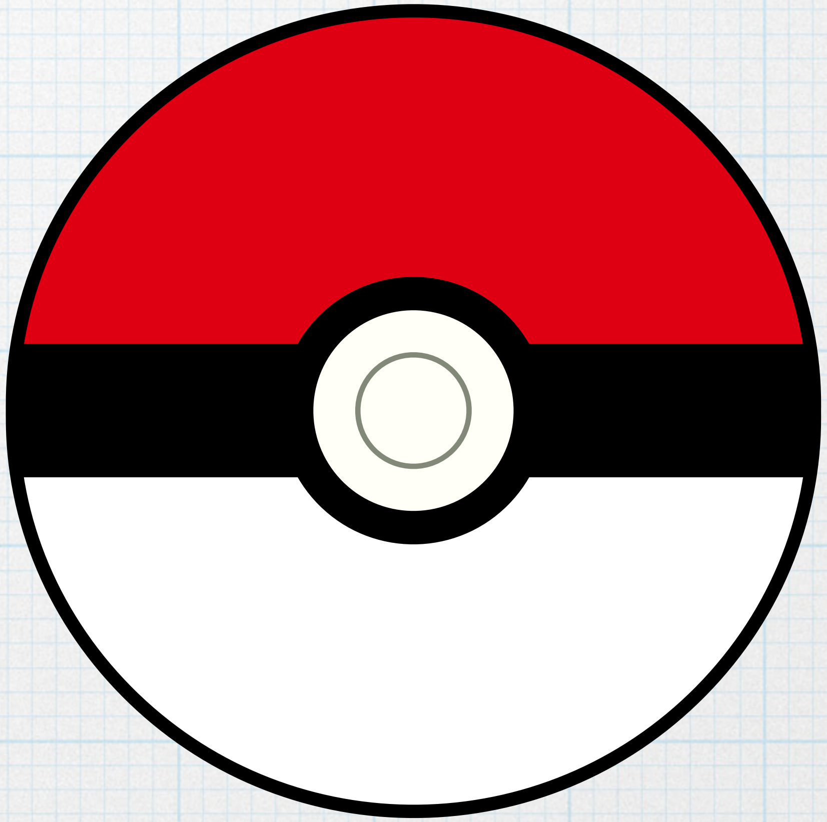




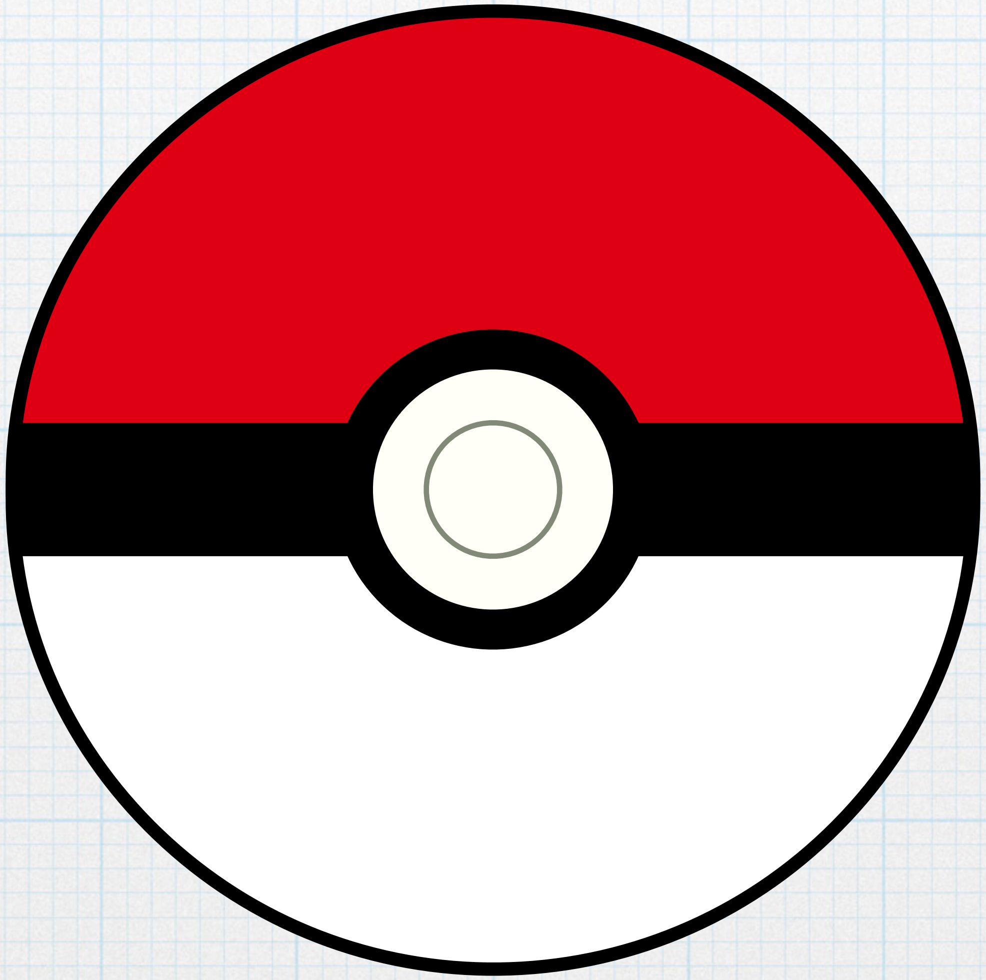
Nolan LeMaster
Tim LeMaster

Introduction

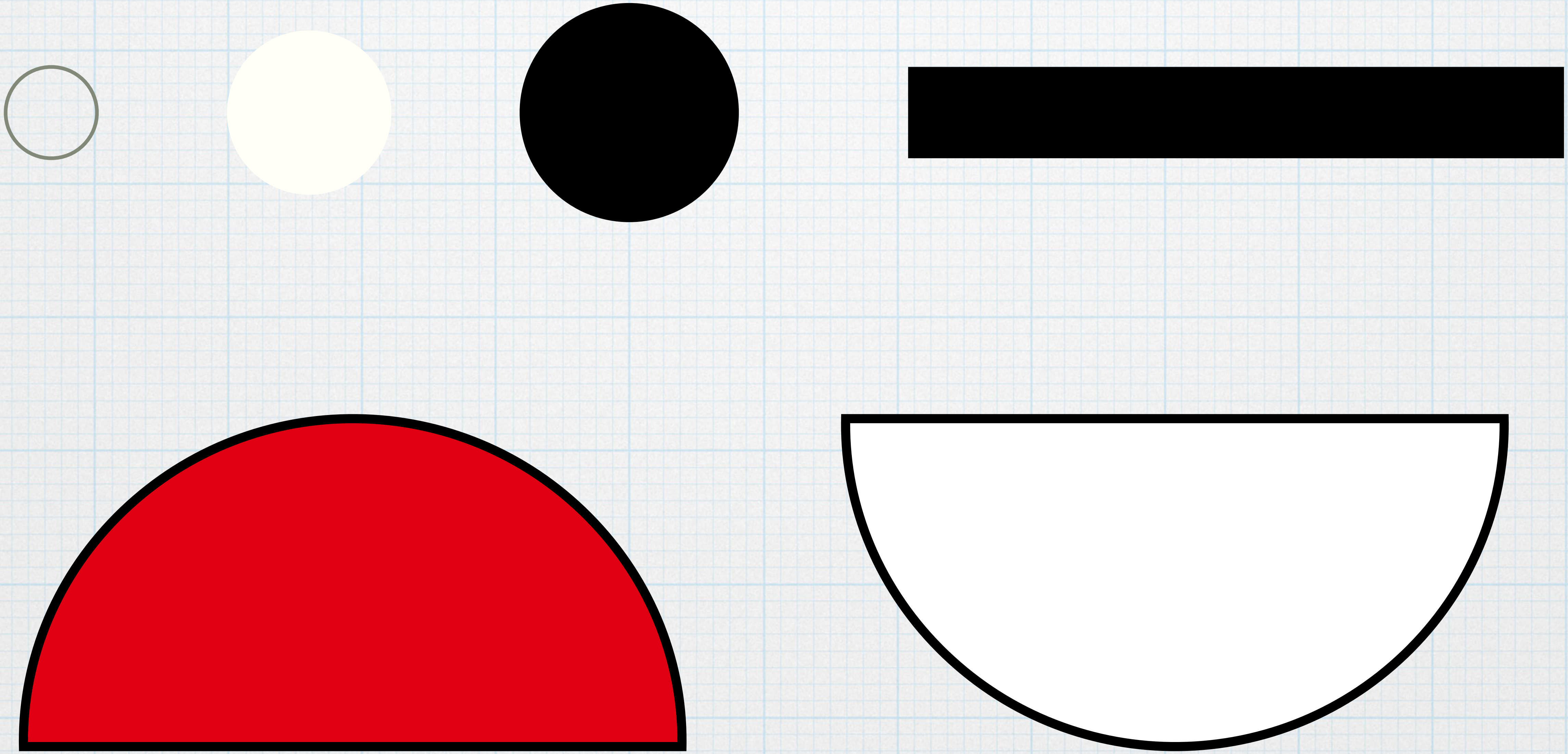
- Drawing a Poke Ball
  - Breaking down a Poke Ball into simple shapes
  - Drawing simple shapes with ProcessingJS
- Animating a Poke Ball
  - Deciding what to Animate
  - Animating shapes with ProcessingJS
  - Adding a surprise inside!



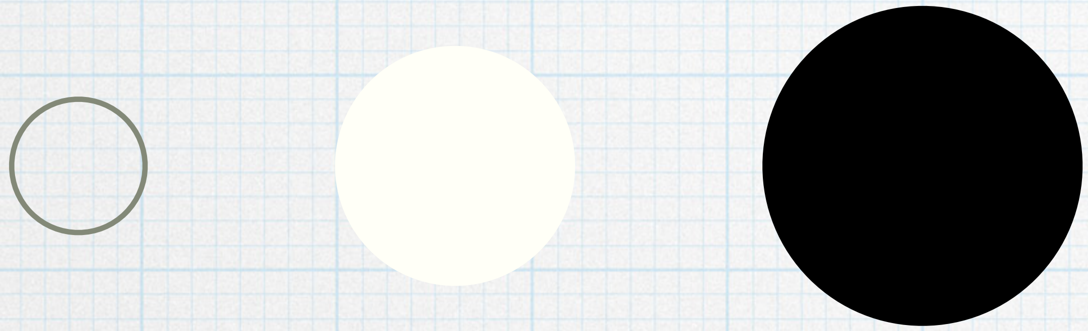
Breaking down a Poké Ball into simple shapes



Breaking down a Poké Ball into simple shapes

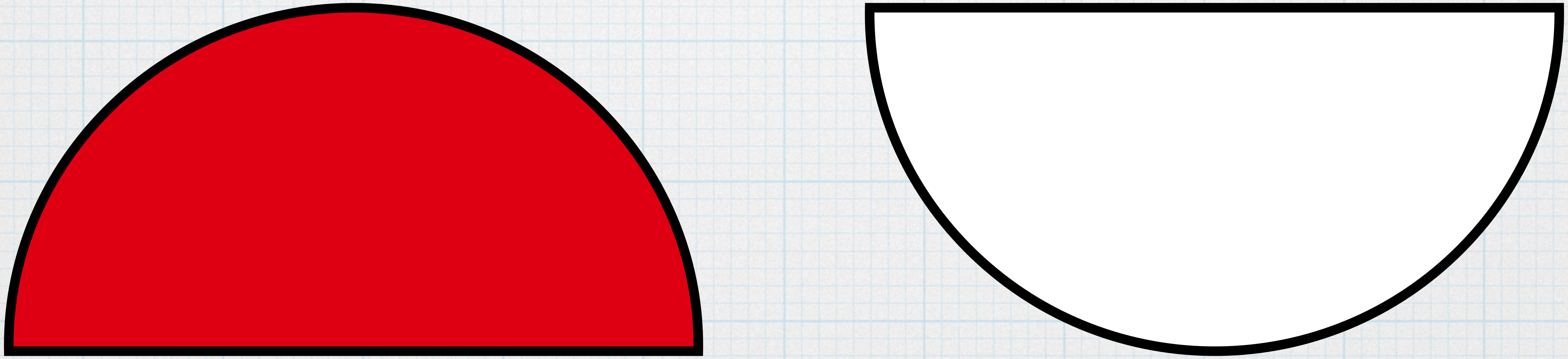


Breaking down a Poké Ball into simple shapes



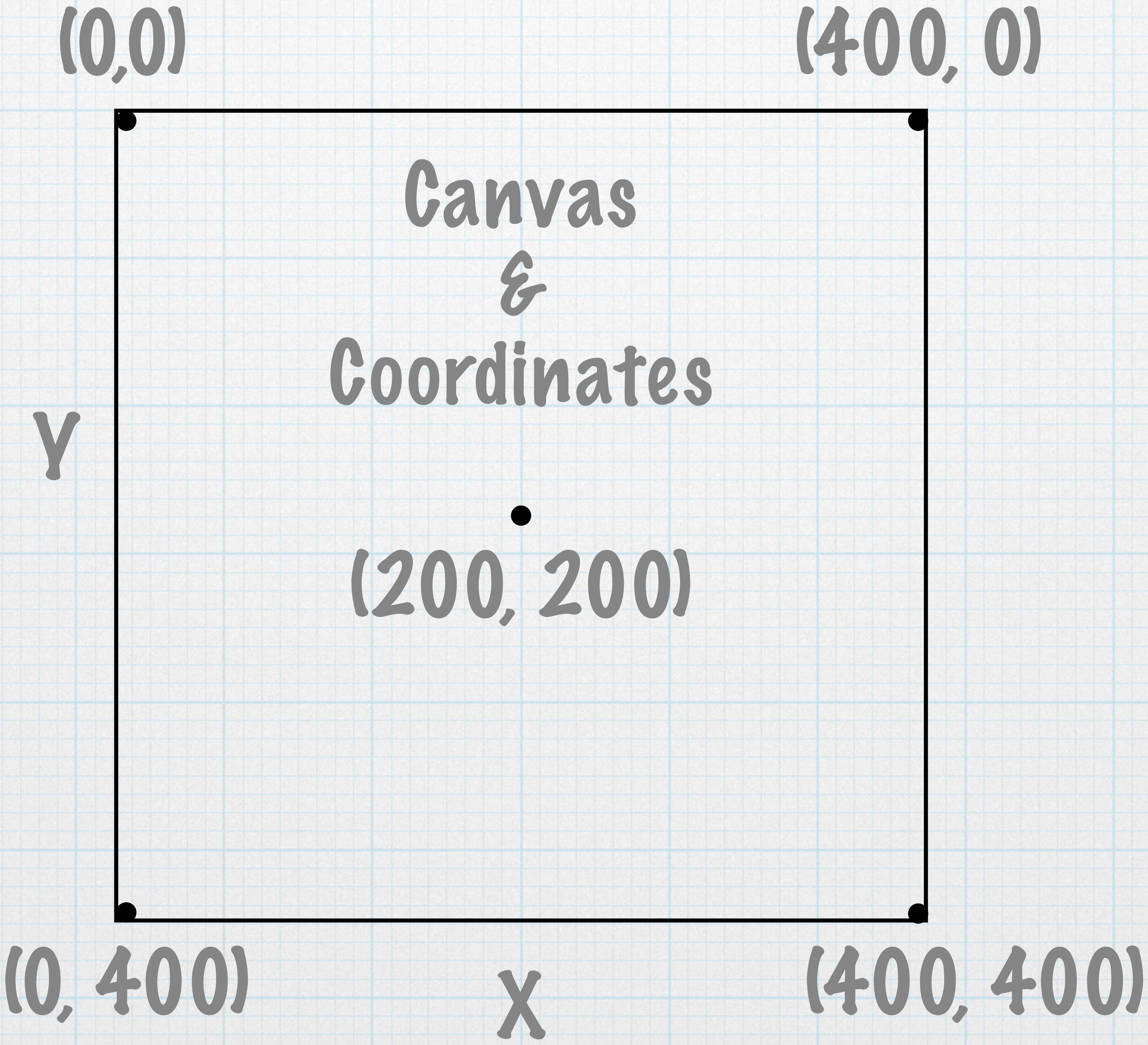
Circles

Lines



Arcs

Drawing simple shapes with ProcessingJS



(0,0)

(400, 0)

Canvas
&
Coordinates

Y

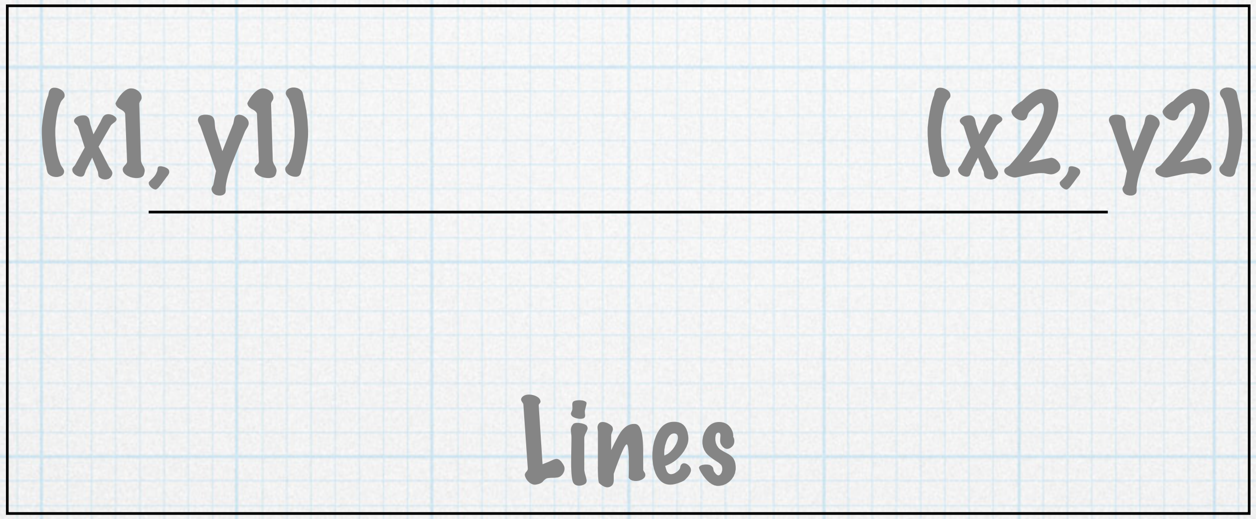
(200, 200)

(0, 400)

X

(400, 400)

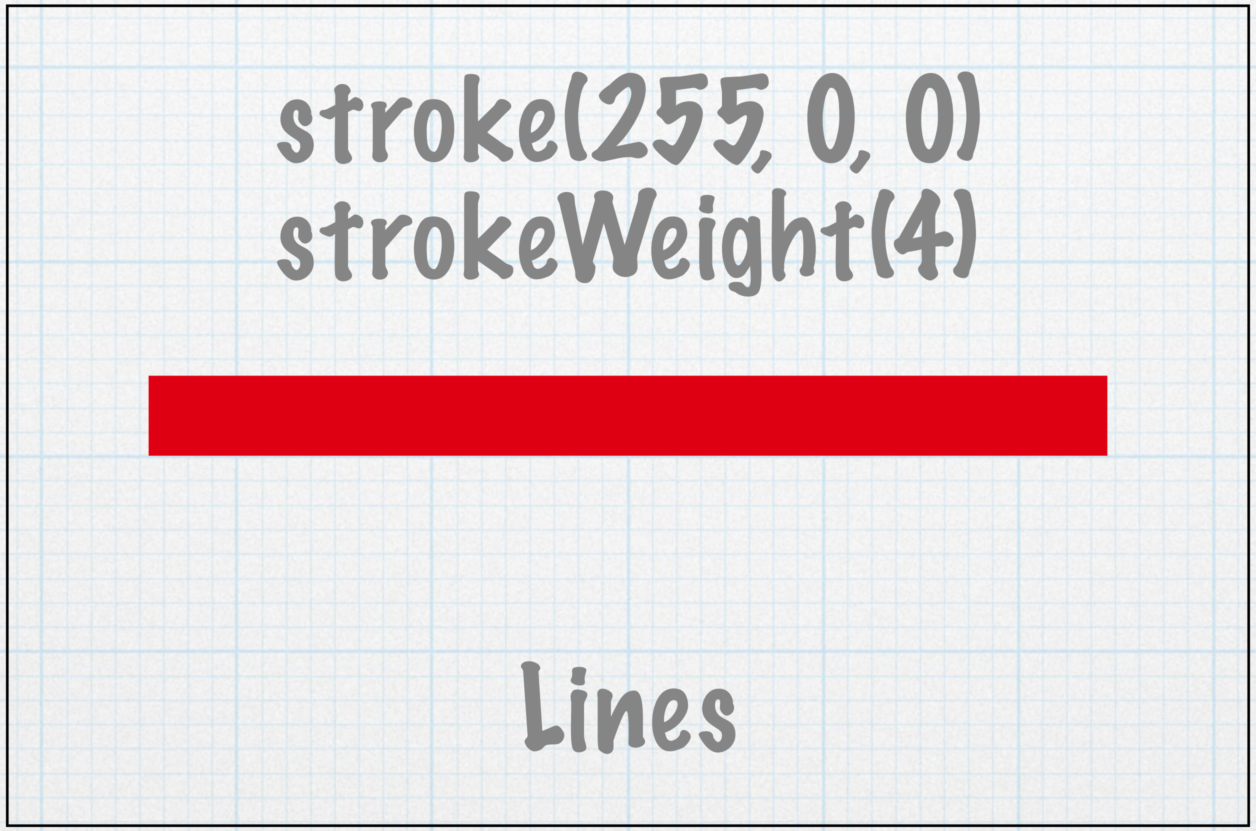
Drawing simple shapes with ProcessingJS



line(x1, y1, x2, y2)

x1 = start x position
x2 = end x position
y1 = start y position
y2 = end y position

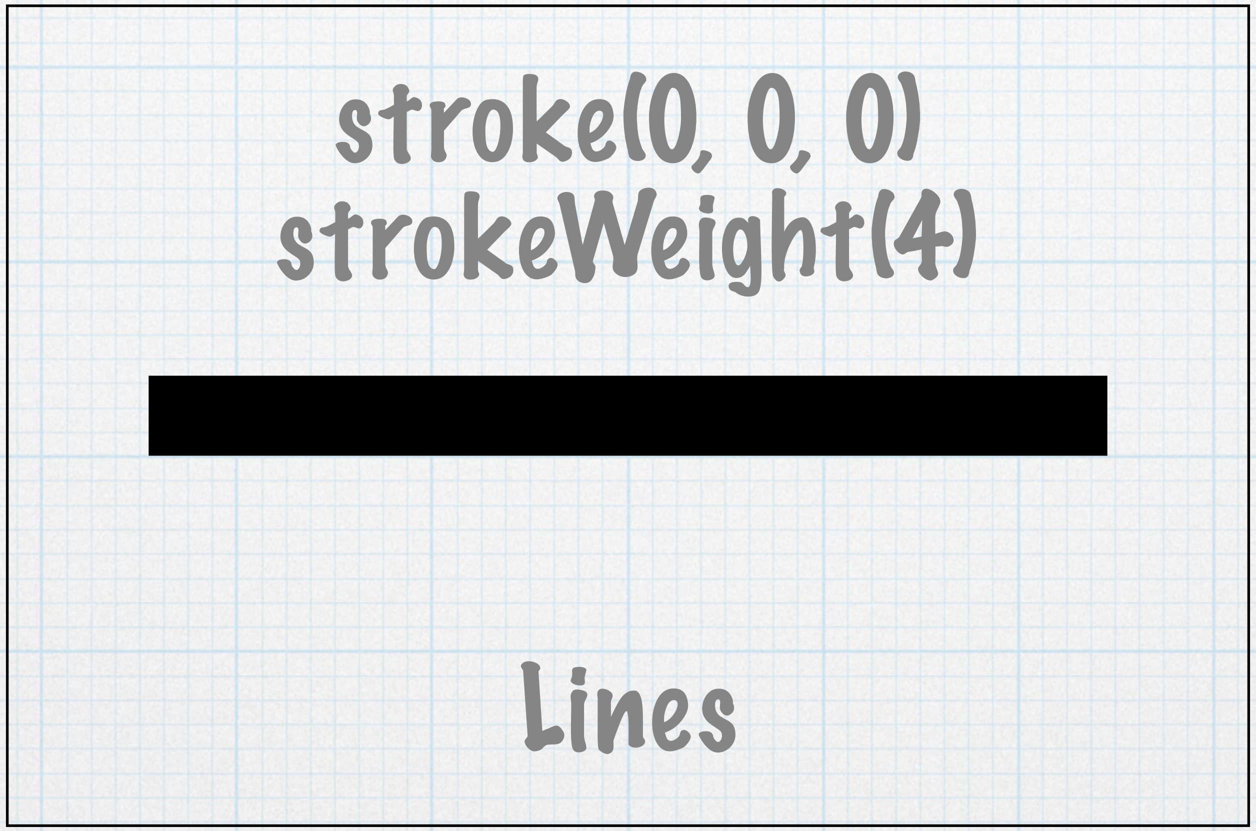
Drawing simple shapes with ProcessingJS



```
stroke(255, 0, 0)
strokeWeight(4)
```

Color: stroke(red, green, blue)
Thickness: strokeWeight(weight)

Drawing simple shapes with ProcessingJS

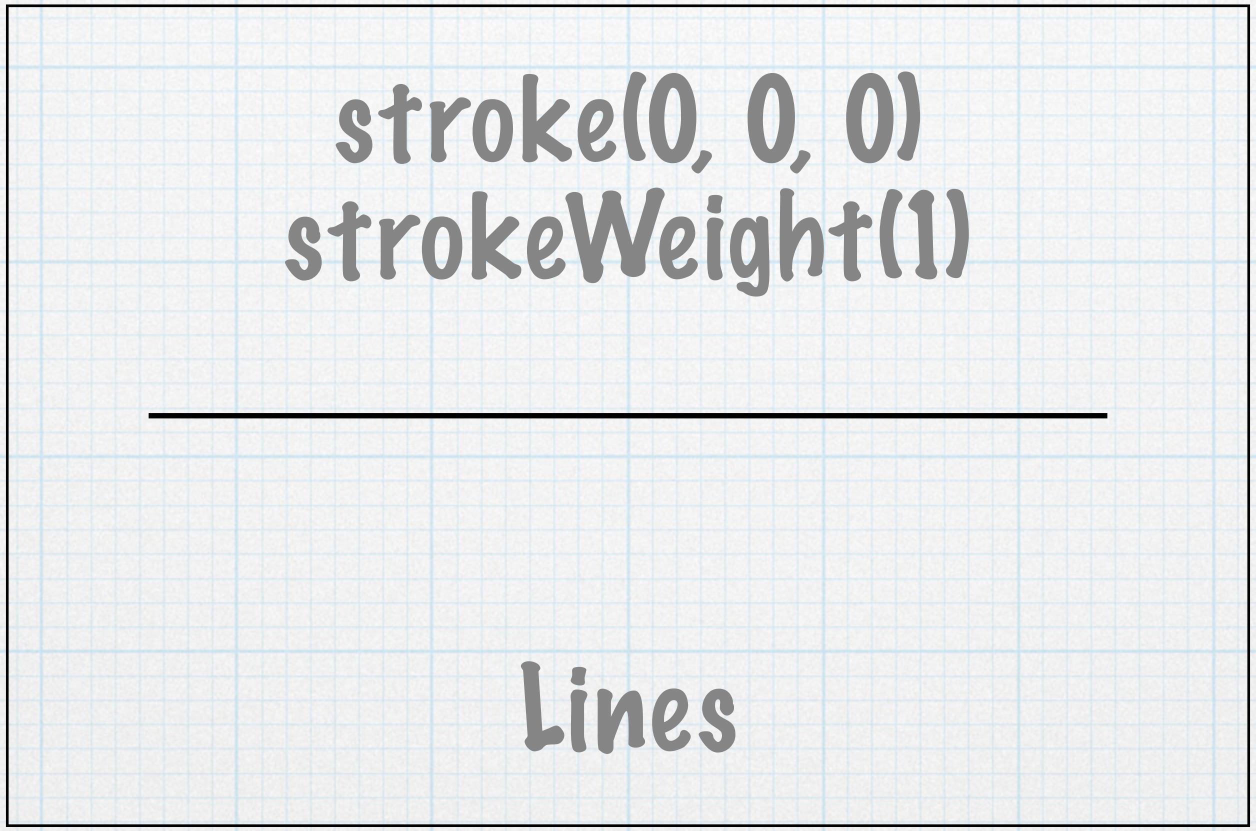


stroke(0, 0, 0)
strokeWeight(4)

Lines

Color: stroke(red, green, blue)
Thickness: strokeWeight(weight)

Drawing simple shapes with ProcessingJS

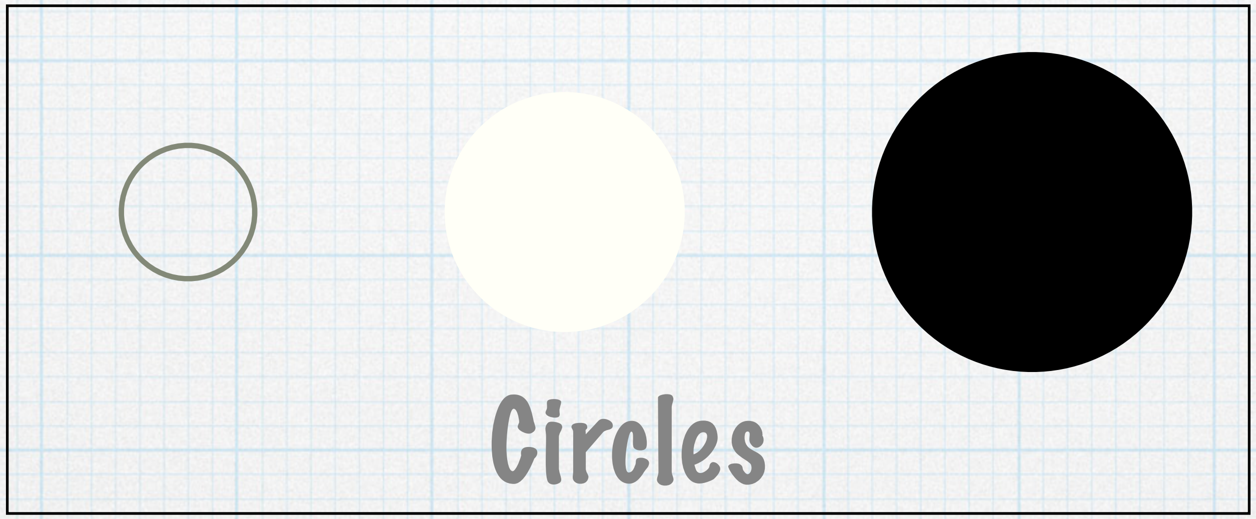


stroke(0, 0, 0)
strokeWeight(1)

Lines

Color: stroke(red, green, blue)
Thickness: strokeWeight(weight)

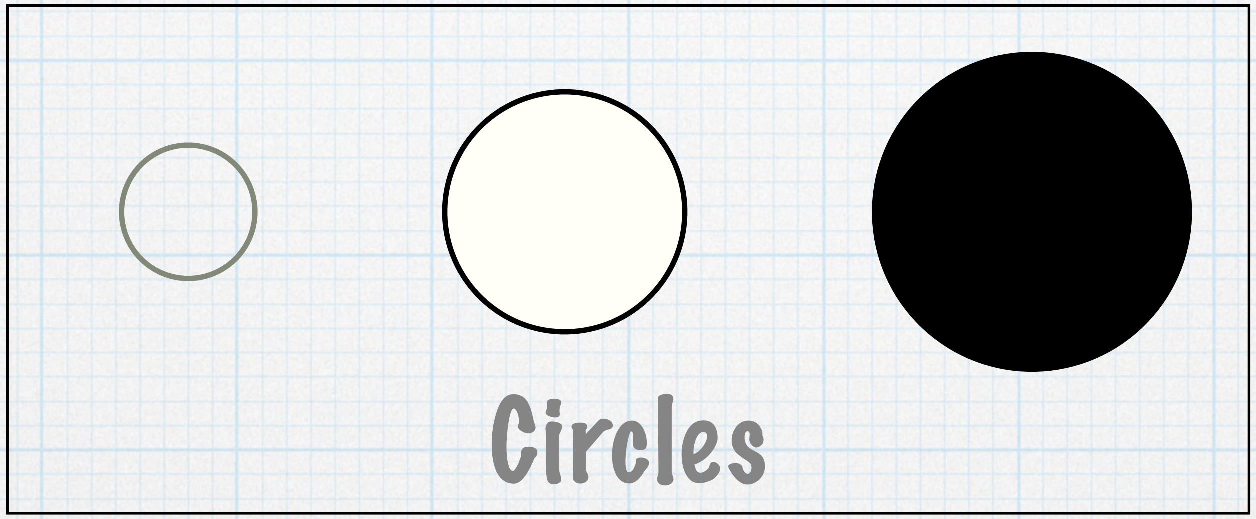
Drawing simple shapes with ProcessingJS



ellipse(x, y, w, h)

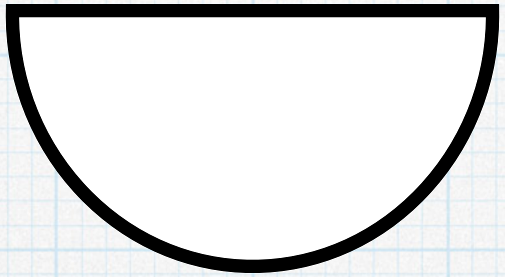
x = center x position
y = center y position
w = width
h = height

Drawing simple shapes with ProcessingJS



Color: fill(red, green, blue)
Outline: stroke(red, green. blue)
Outline thickness: strokeWeight(weight)

Drawing simple shapes with ProcessingJS

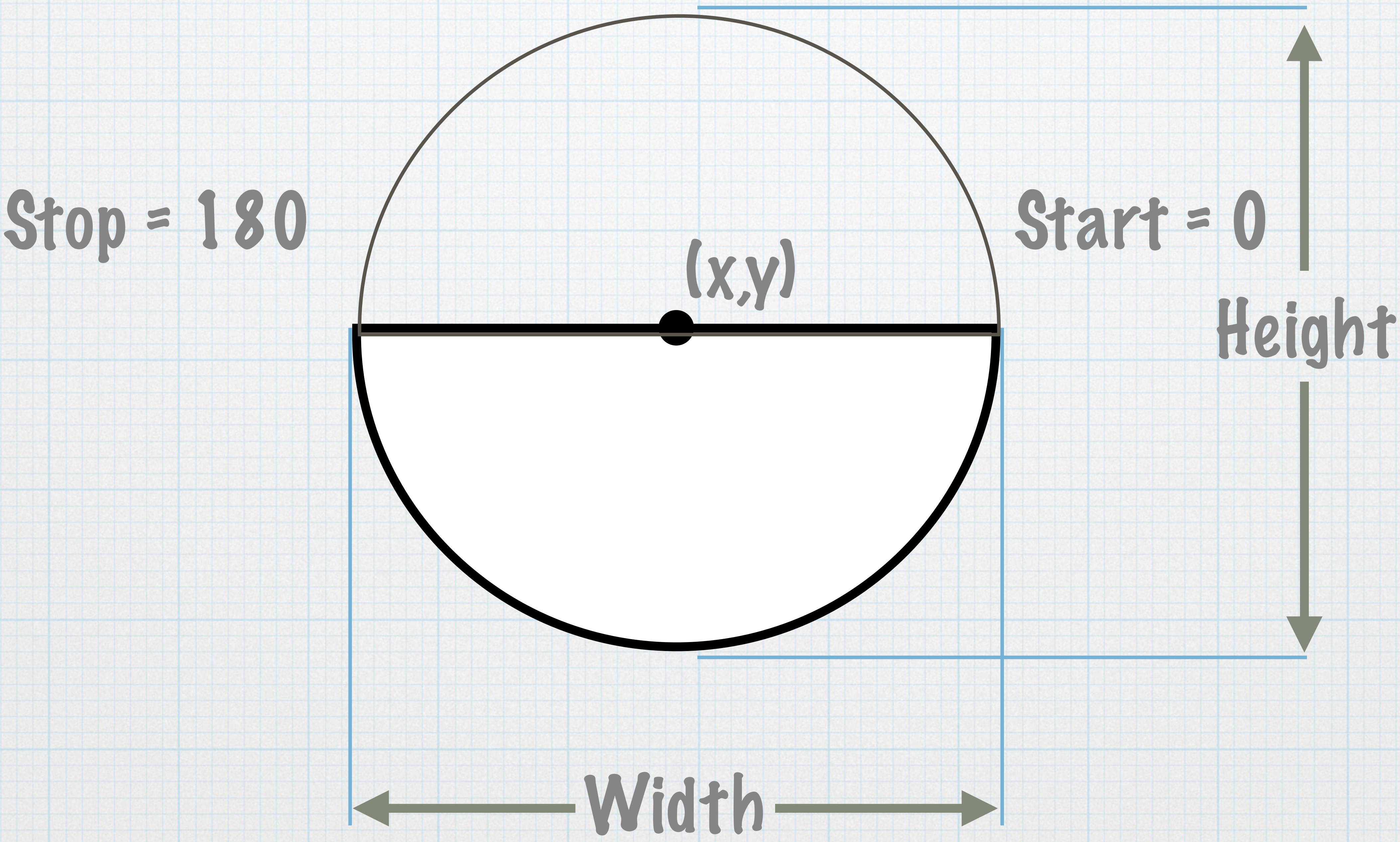


Arcs

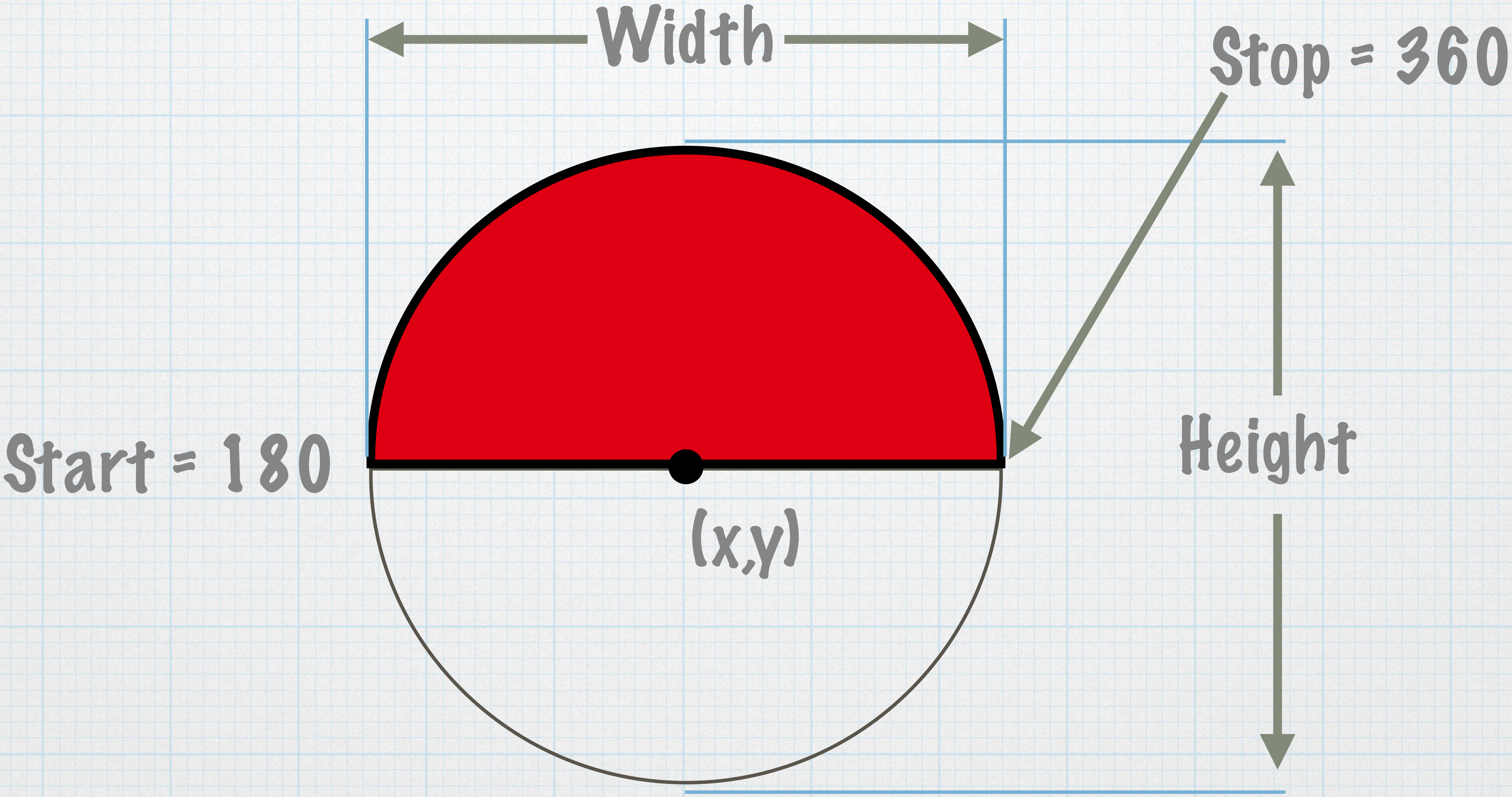
arc(x, y, w, h, start, stop)

x = center x postion (completed ellipse)
y = center y position (completed ellipse)
w = width
h = height
start = start angle
stop = stop angle

Drawing simple shapes with ProcessingJS



Drawing simple shapes with ProcessingJS

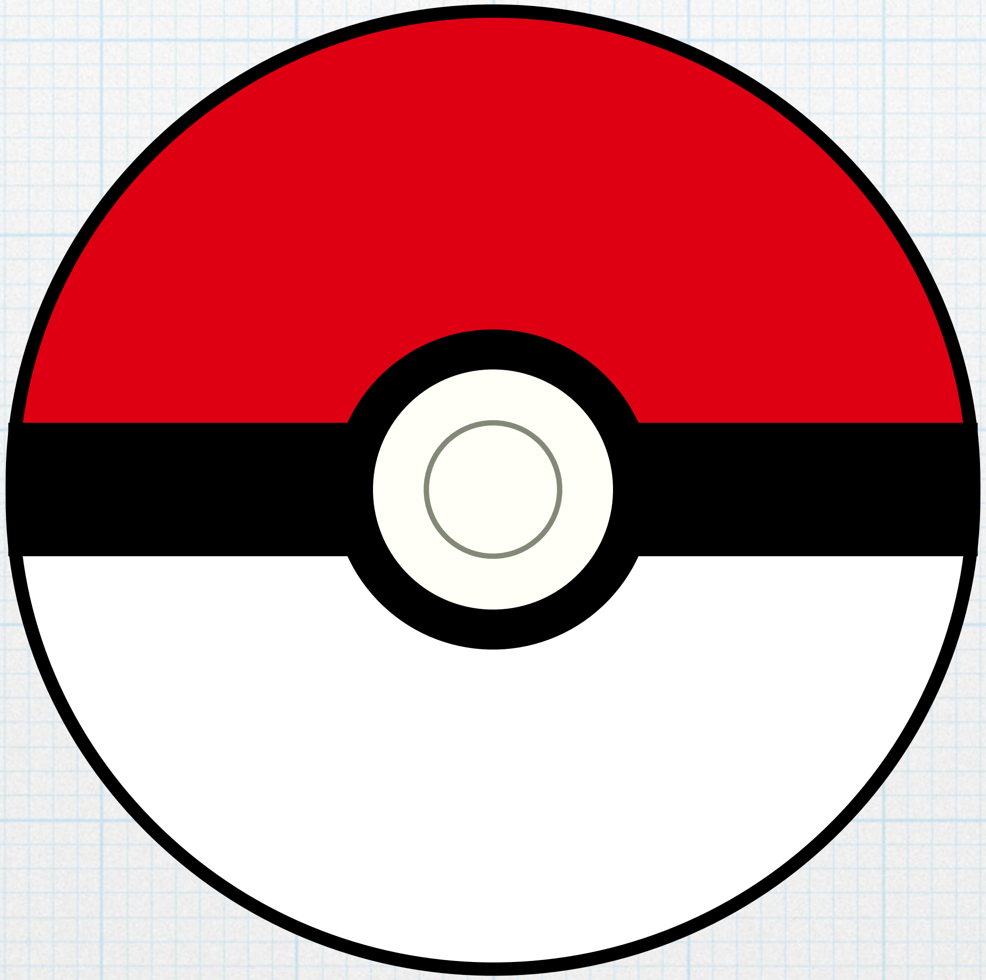


Putting it all together

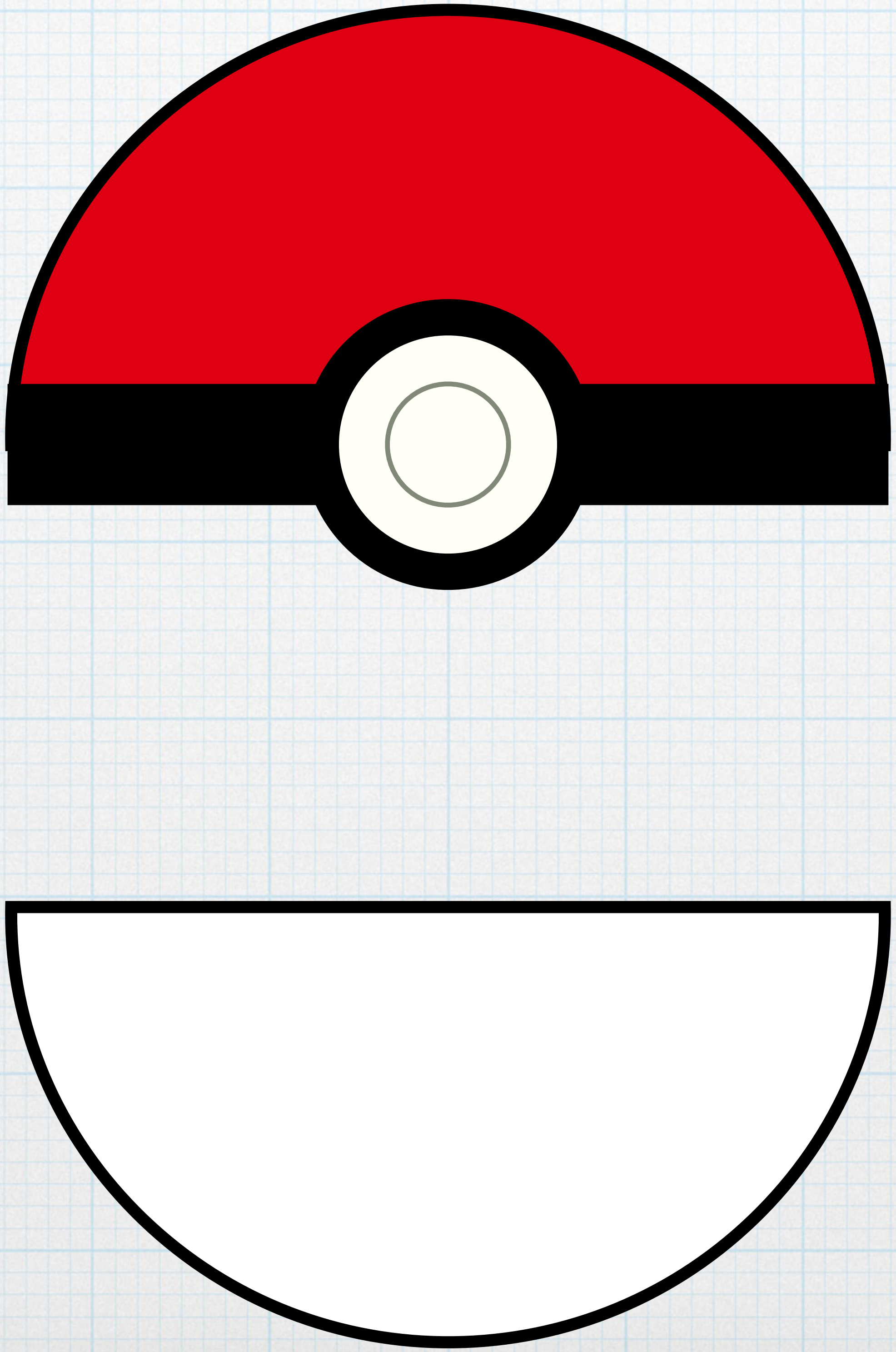
Starter https://bit.ly/2TGimX3

Solution https://bit.ly/2QUg0Mb

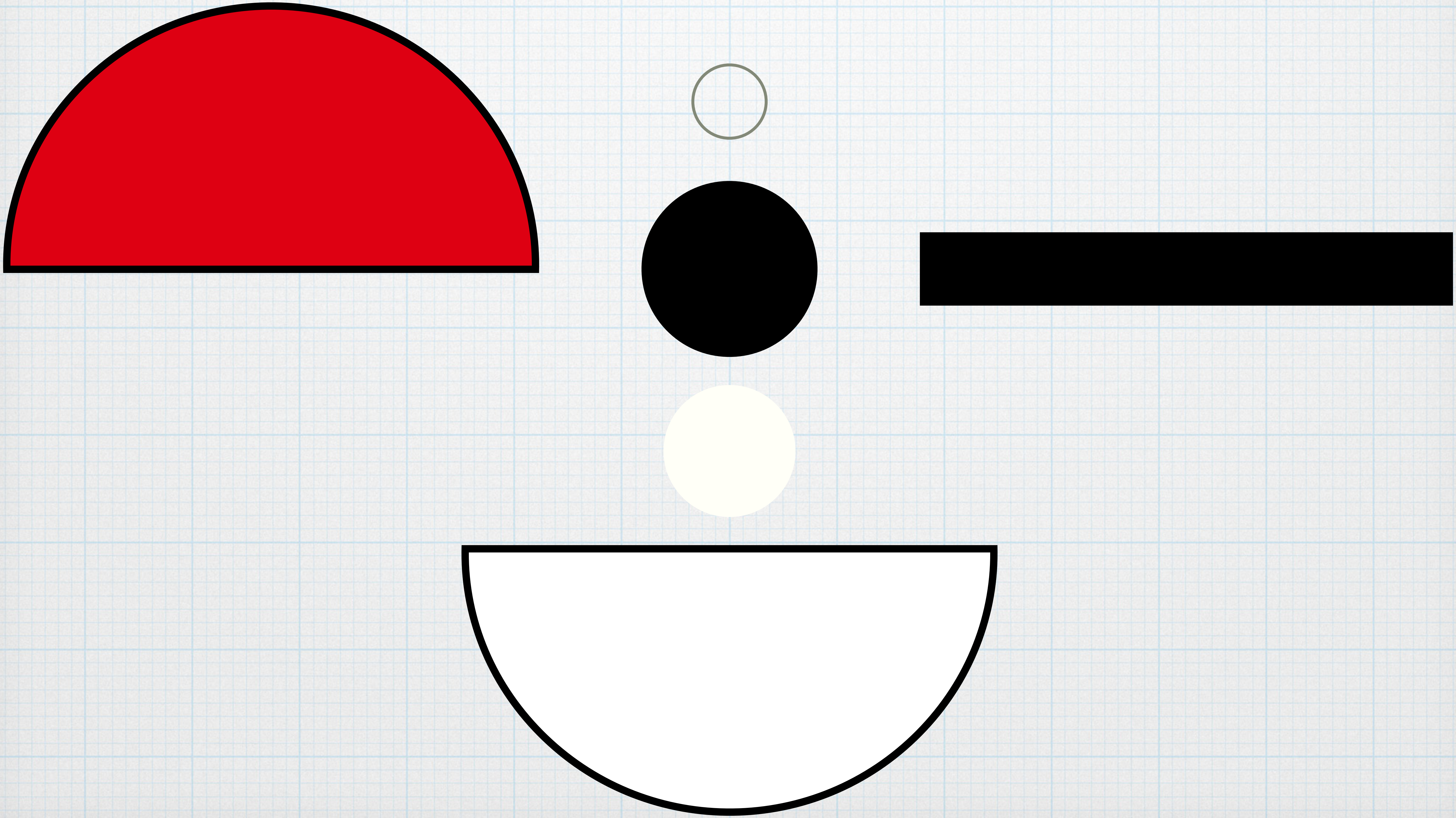
Deciding what to Animate



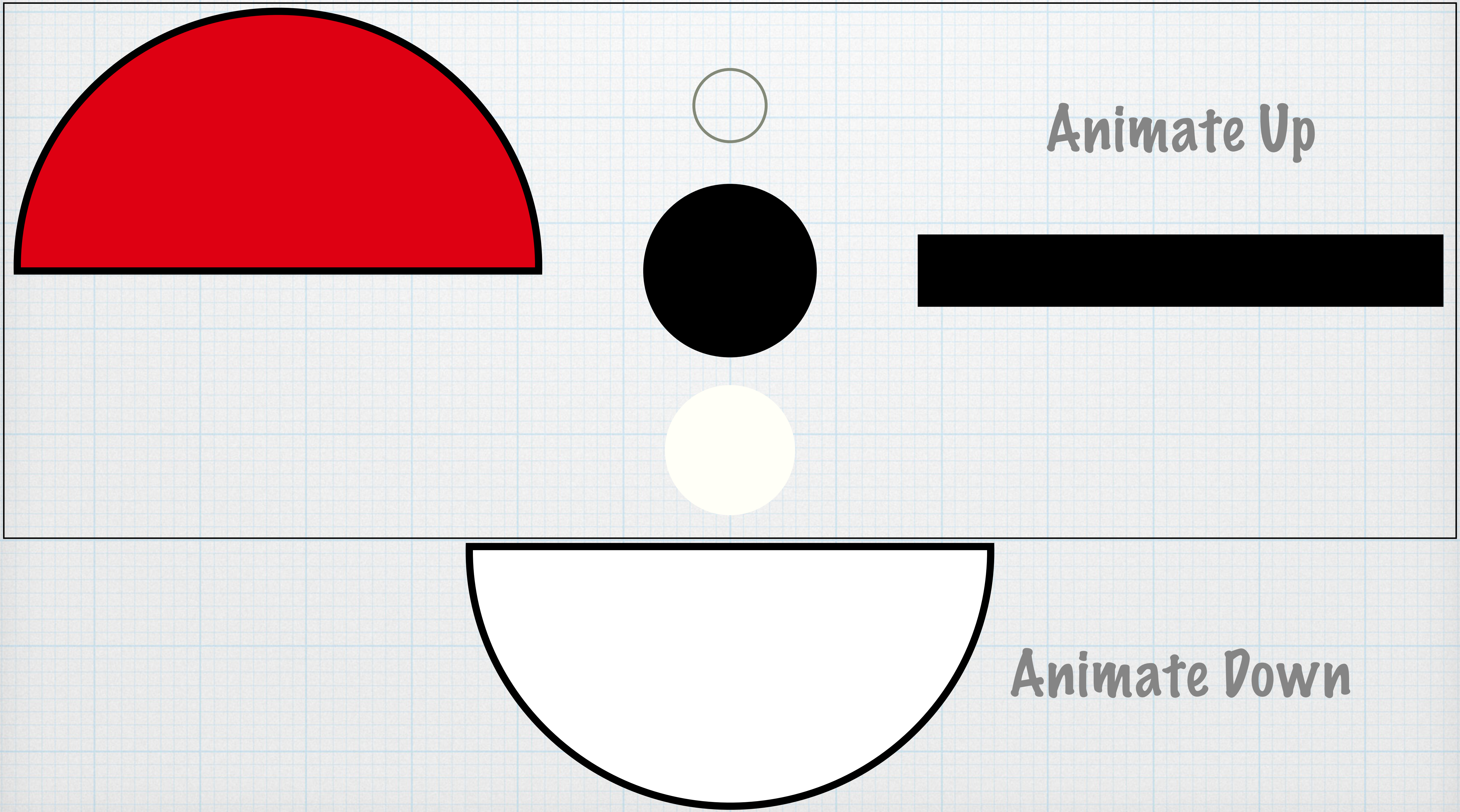
Deciding what to Animate



Deciding what to Animate



Deciding what to Animate



Animate Up

Animate Down

Animating shapes with ProcessingJS

```
draw = function() {}
```

If you create a function called "draw" in your code on Khan Academy it will be called repeatedly about 30 times a second.

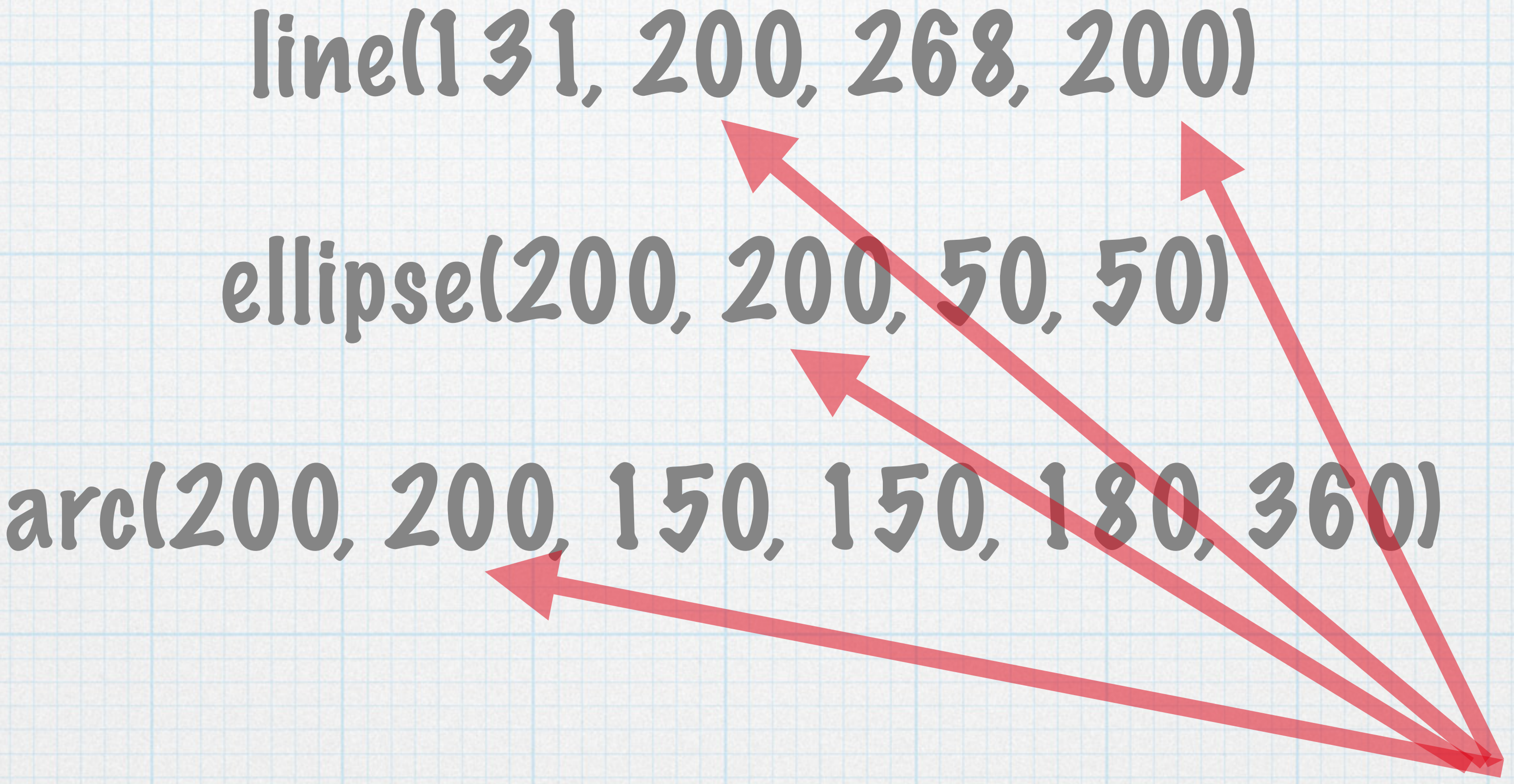
We can use this to modify the position of the shapes each time through the loop to make them move.

To make something move up and down we will modify the y parameters of it. Increasing will move it down the screen, decreasing will move it up the screen.

Animating shapes with ProcessingJS

```
line(131, 200, 268, 200)

ellipse(200, 200, 50, 50)

arc(200, 200, 150, 150, 180, 360)
```

Animating shapes with ProcessingJS

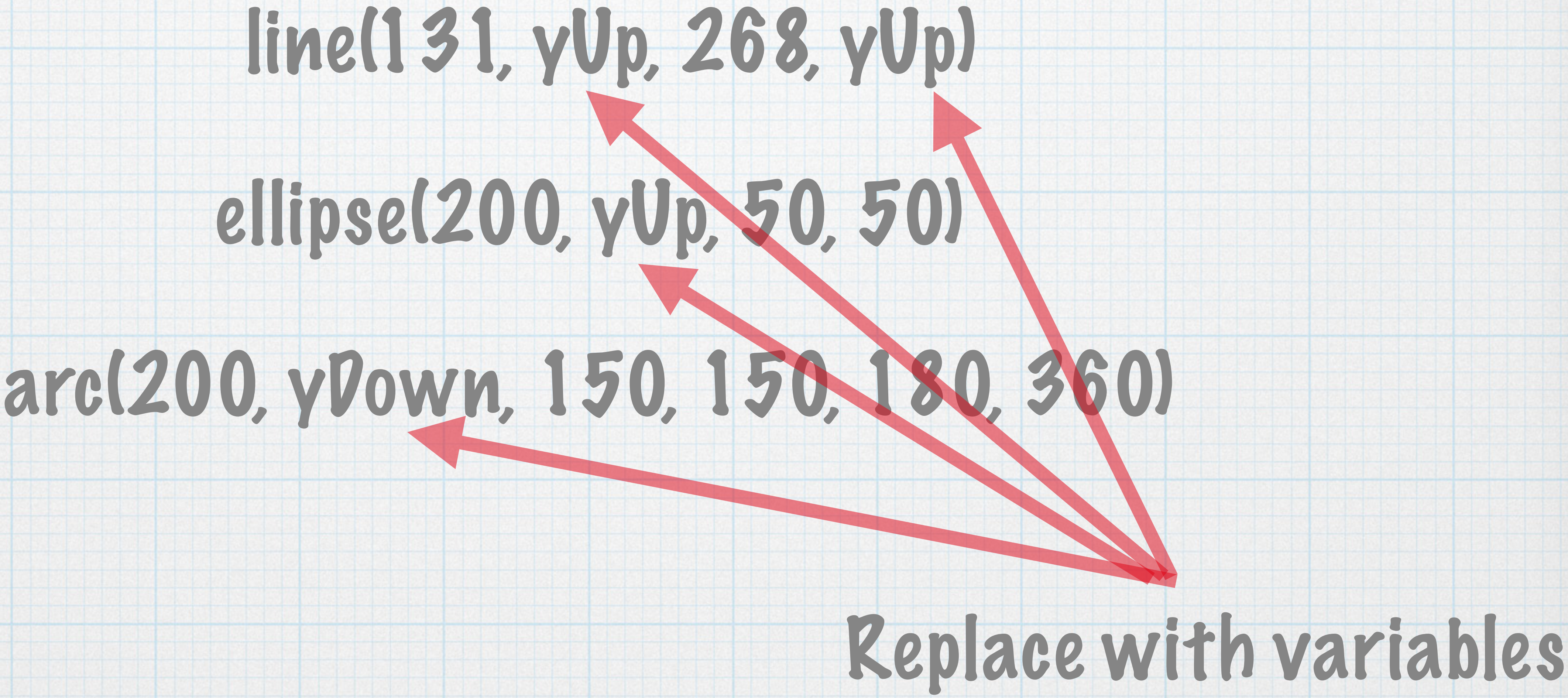


```
line(131, 200, 268, 200)

ellipse(200, 200, 50, 50)

arc(200, 200, 150, 150, 180, 360)
```

Replace with variables

A variable is a value we can modify in code

Animating shapes with ProcessingJS



```
line(131, yUp, 268, yUp)

ellipse(200, yUp, 50, 50)

arc(200, yDown, 150, 150, 180, 360)
```

Replace with variables

We are going to replace y values we want to move up with yUp and values we want to move down with yDown

Animating shapes with ProcessingJS

draw = function() {}

Outside of the draw function we will initialize (set the starting value) of yUp and yDown

Each time through the draw function we want are going to modify yUp and yDown just a little bit (by adding or subtracting 1)

To prevent it from just animating off the screen we will reverse the animation at certain points

Let's Go Animate!

Starter https://bit.ly/2D2FpG7

Solution https://bit.ly/2AlAfmS

In Review

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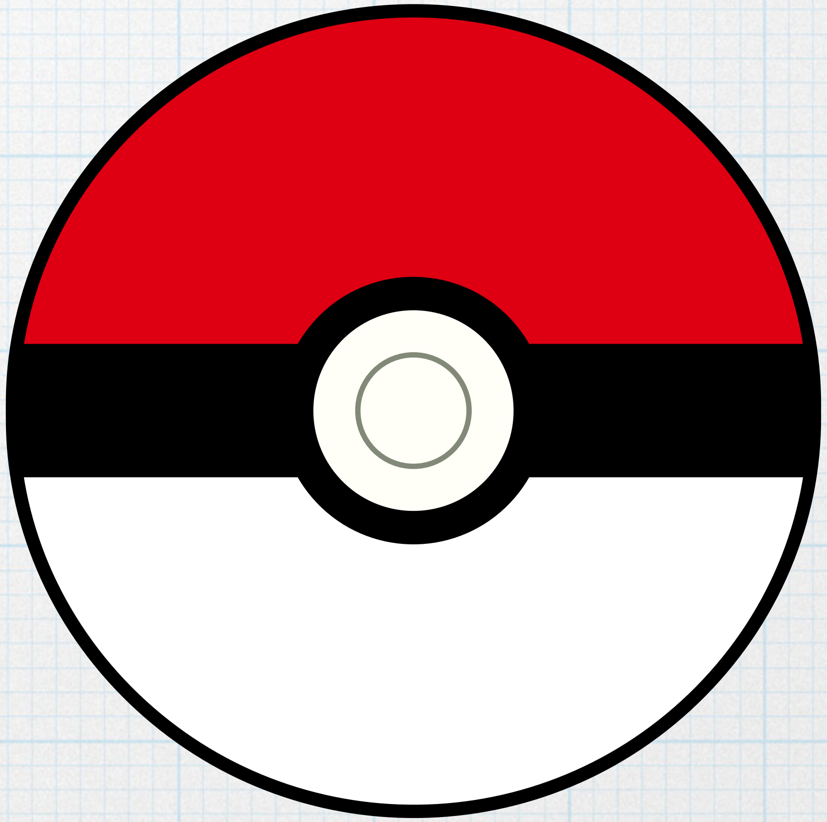
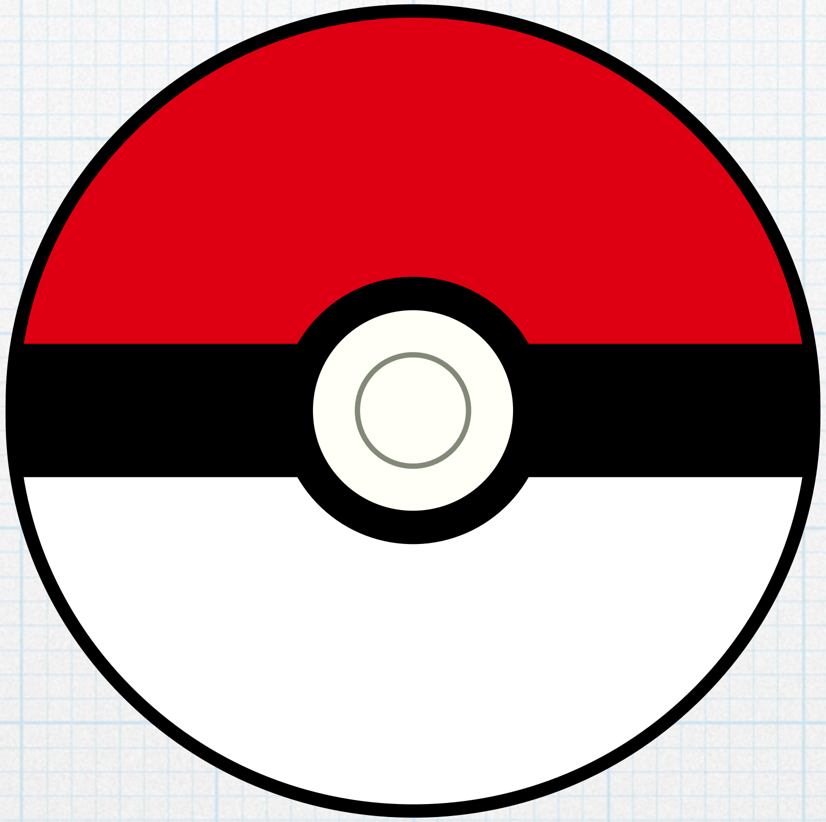


Thank You!



Questions?

Resources

- Khan Academy: https://www.khanacademy.org
- ProcessingJS: http://processingjs.org
- Pikachu Image: https://www.freeiconspng.com/img/32599
- Static Poke Ball: https://www.khanacademy.org/computer-programming/poke-ball/6180155792195584
- Animated Poke Ball: https://www.khanacademy.org/computer-programming/animated-poke-ball/6057692480438272