

Name: \_\_\_\_\_

## Creating Variables

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Today we are going to continue working with basic animations. We have been working with a few different shapes this year, but right now we are going to focus on ellipses. Let's fill in what the four values of an ellipse represent:

`ellipse( _____, _____, _____, _____ );`

Which two numbers tell 'where' the ellipse is? \_\_\_\_\_

Which two numbers tell 'what' the ellipse looks like? \_\_\_\_\_

What if we were able to have the computer draw an ellipse over and over again, but we changed the first number each time? What would that look like? In order to have the computer draw these ellipses, we will need to create a variable. A variable is \_\_\_\_\_. A line of code that can create a variable looks like this: `float variable name;` Since we are going to have the 'x' value change, let's name the variable 'px' to stand for 'position of x'.

```
float px;
```

← Creating our variable

```
void setup () {  
  size (1000,400);  
  px = 0;  
}
```

← Giving our variable a starting value.

```
void draw () {  
  ellipse (px, 200, 70, 35);  
  px = px + 1 ;  
}
```

← We put the variable in as the 'x' value in our ellipse. The draw line of code will repeat everything inside of the {} over and over. Each time the ellipse is drawn, px will \_\_\_\_\_.

What did you see when you ran the program?

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Where did the ellipse start? On the right side of the screen, or on the left side of the screen? Why?

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What change could you make to have the ellipse go faster? Try out your idea. Write down the new line of code that was successful.

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Your next challenge is to change the program so that:

- 1) the ellipse starts in the center of the screen
- 2) instead of traveling to the right, make the ellipse grow wider and wider

hint: You no longer want the 'x' of the ellipse to change. Instead, you want the width of the ellipse to change. What is it about the code that can change in value?

Write in the line of code you wrote for the ellipse :

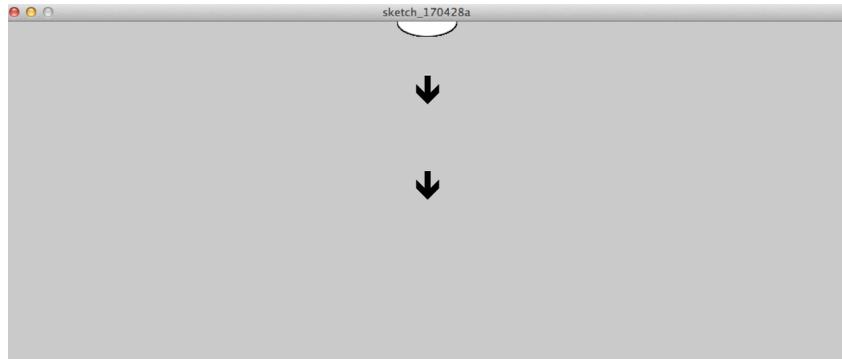
```
ellipse( _____, _____, _____, _____);
```

Now, make the ellipse start of the far right of the screen and travel to the left.

Complete the code that would make that happen.

```
float px ;  
void setup() {  
  size (1000, 400)  
  px = _____;  
}  
  
void draw() {  
  ellipse ( _____, _____, _____, _____);  
  px = px _____ 1;  
}
```

So far we have focused on changing the ellipses 'x' coordinate, which makes the ellipse appear to move from left to right (or right to left) across the screen. How could we change the code to make the ellipse appear in the top, middle of the screen and travel downwards ?



Complete the code that would make that happen.

```
float py ;  
void setup() {  
  size (1000, 400);  
  py = _____;  
}  
  
void draw() {  
  ellipse ( _____, _____, _____, _____);  
  py = _____ ;  
}
```

Challenges: change the size of the screen to 1000, 1000

Make a tiny circle that appears in the exact center of the screen and grows.

Make a giant circle that appears in the exact center of the screen and shrinks.

Make the ellipse travel from the upper right corner to the lower left corner.