

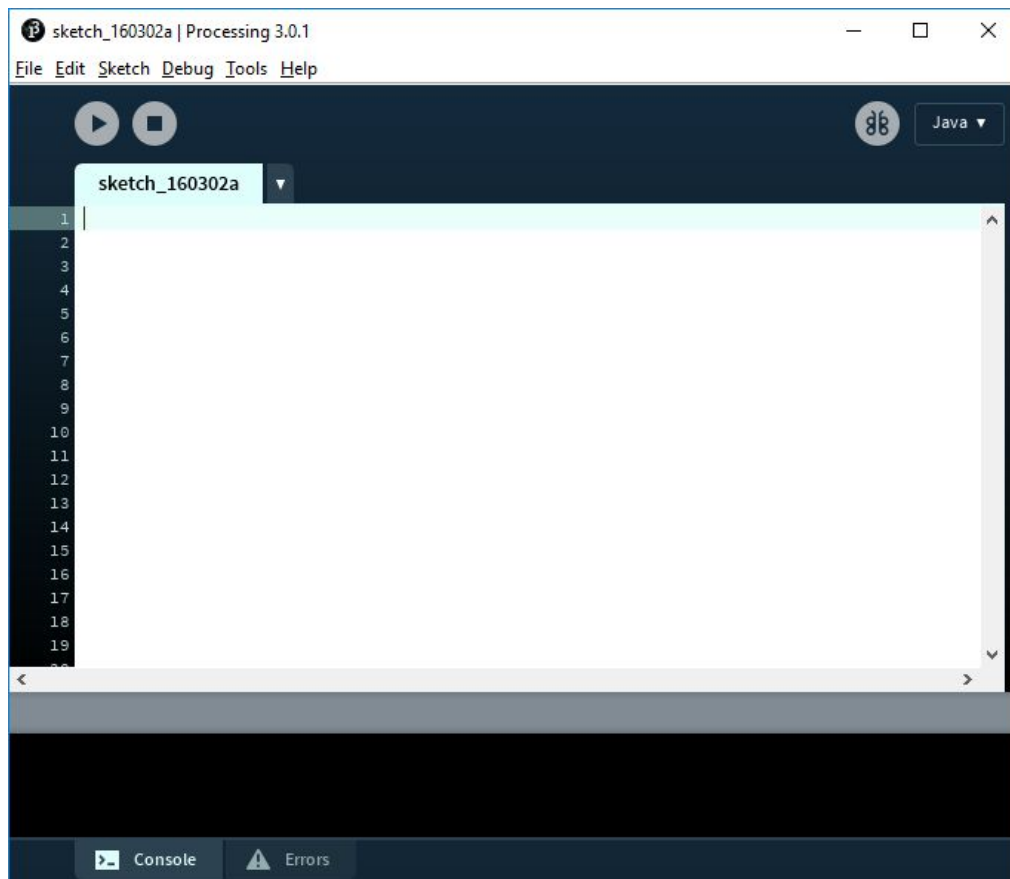
Lesson 1: Drawing Circles

First step - open Processing



Open Processing by clicking on the Processing icon (that's the white "P" on the blue background - your teacher will tell you where to look for it)

You should now see the Processing app, shown below:



The most important icons we need to know are:



- this runs the code you've written




- this stops the code you have running

Drawing a Circle

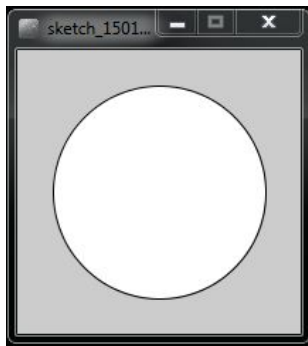
Type the text below into the processing app:

NOTE: *we show code examples in boxes like the one below*

```
size(200,200);  
ellipse(100,100,150,150);
```

And press the run button ().

You should see a circle like this pop up in the Display Window:



Congratulations! You have written your first program.

- Save this program, (file→ save as) start the file name “**Lesson1**”

Some Common Mistakes

- Every line must end with a semicolon (for now, at least - there are exceptions we’ll see later in the course)
- You need to be **very careful** with spellings. Look out especially for capital letters. Remember, the computer will only do *exactly* what you tell it to. “ellipse” and “Ellipse” are **not** the same thing!
- Each *function* (another word for command or instruction) takes a specific number of *parameters* (the name for the numbers between the brackets). “size” always takes two numbers, separated by a comma. “ellipse” always takes four numbers, separated by commas. If you get an error this is one of the first things to check for

Next we will learn a little more about what we’ve written.

Understanding Our Circle

There are **six parameters** in the program we just wrote. Each one makes a big difference to what we see on the screen.



```
size (200, 200) ;  
ellipse (100, 100, 150, 150) ;
```

Q: How do we find out what the numbers do?

A: Change **only one** number and **re-run** the program, then see what happens!

For example: to see what the first number does we will change it from 200 to 400. See our new program below:

```
size (400, 200) ;  
ellipse (100, 100, 150, 150) ;
```

- Make this change and, stop the program () then then re run it ()
 - What changed?
- Now change the number from 400 to 100.
 - What changed? What does that number do?

Some Common Mistakes

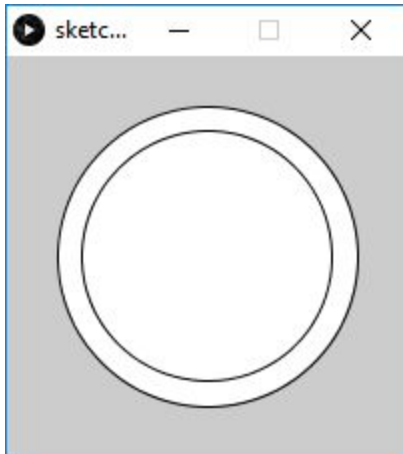
- If the change you make to the code is too small it might be difficult to see what has changed in the output. On the other hand...
- ...if the change you make is too big, it might be impossible to see what has changed! You will quickly learn what kind of numbers make sense.
- Don't forget semicolons (";") - if you delete one by mistake it will probably prevent the program from running
- Be careful of the number of parameters for each function. If you have too many or too few the program might not work - or it might work, but strange things may happen!

Drawing More Circles

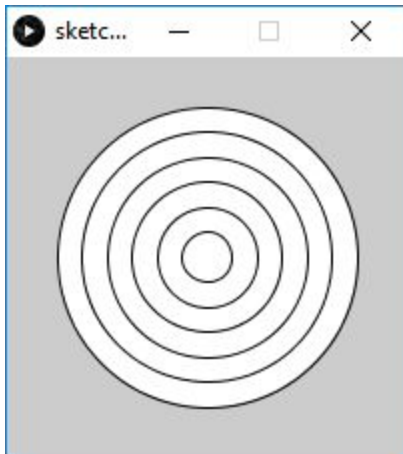
We can add an extra circle by adding another line with the “ellipse” command:

```
size(200,200);  
ellipse(100,100,150,150);  
ellipse(100,100,125,125);
```

This gives us a shape that looks like this:



Can you make it look like this?



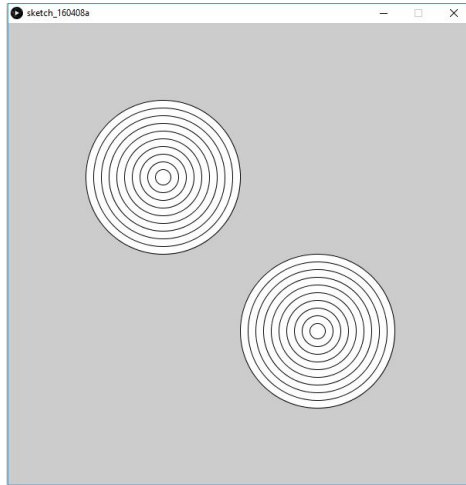
Try changing the order of the ellipse commands. Does it make a difference to what is drawn on screen? Why? Can you add a second target to the screen?

REMEMBER - In the ellipse function

- The first number is **Distance Across** (to the right)
- The second number is **Distance Down** (from the top)
- The third number is **Width**
- The fourth number is **Height**

One more thing...

If you have completed all of the above, add a second target to your screen like this:



Managed that? Then try this next one - you use “rect” instead of “ellipse” to draw the rectangles. Be careful! Rectangles are positioned from the corner, not the centre, so this one’s a lot trickier!

