

Introduction to Processing

Formatting shapes

Produced
by:

Department of Computing and Mathematics



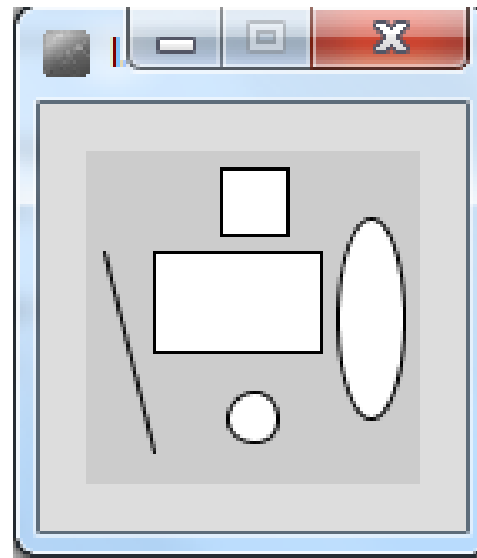
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Topics list

- Formatting the display window.
- Filling shapes with colour.
- Formatting the shape outline.

Formatting the display window

- Our display window is looking fairly cramped.
- The default size of your display window is 100x100 pixels, which is quite small.



Formatting the display window

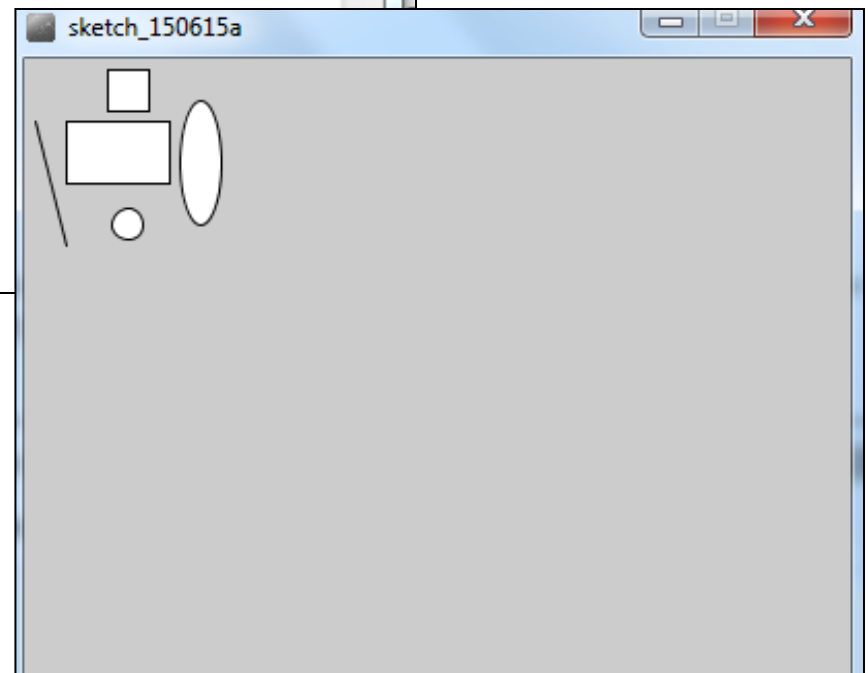
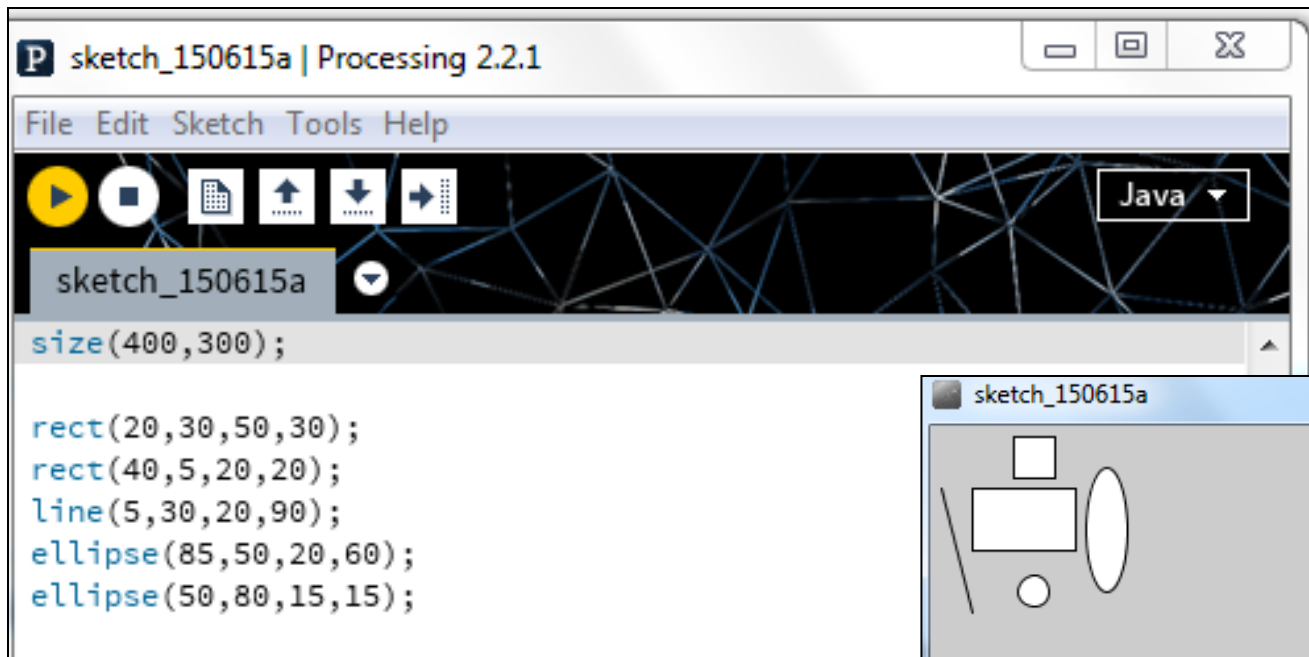
- We can change the size of the display window by calling the **size** function.
- When you use the size function in static drawings, it has to be the first line of code in your sketchbook.

```
size(w, h)
```

w = width of the display window

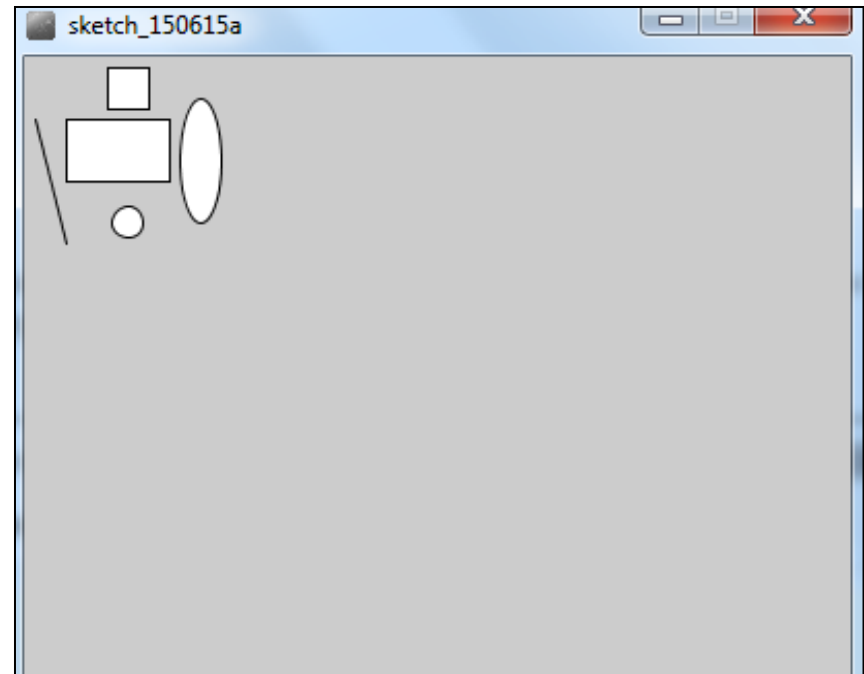
h = height of the display window

size()

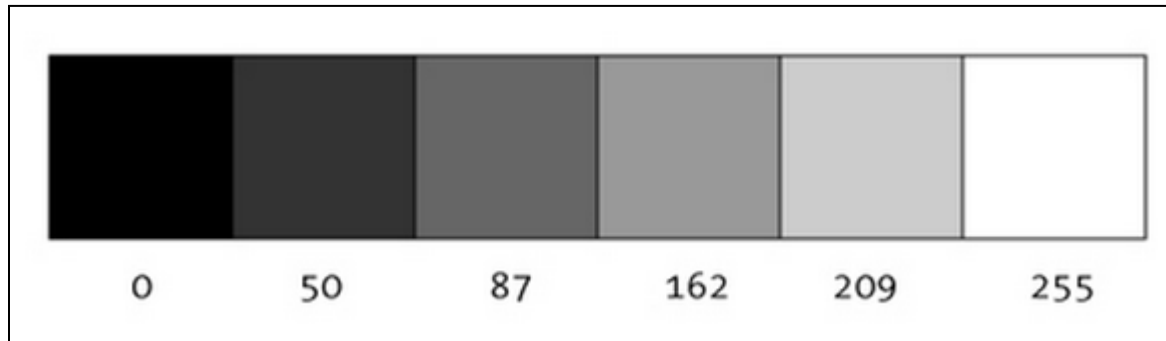


Formatting the display window

- Our display window looks less cramped now.
- But the default gray colour is not very appealing.
- We could use the **background** function to set the colour to something nicer.

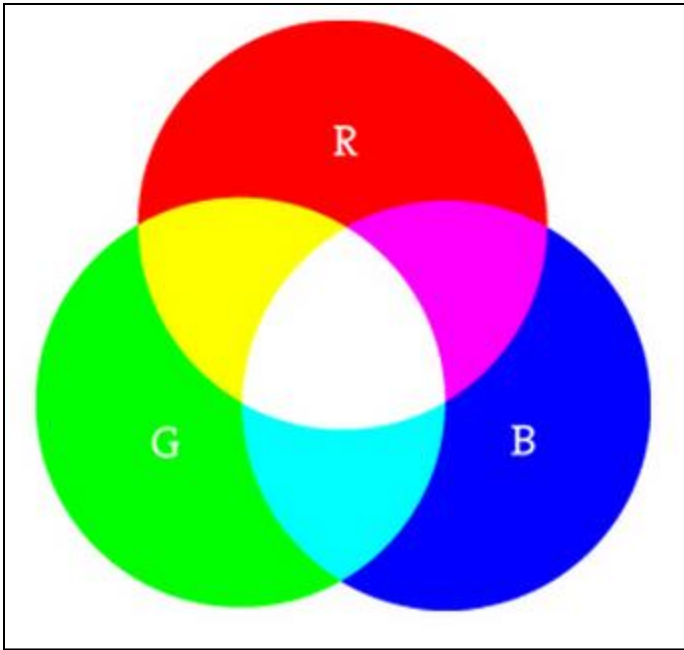


A note on colour first...Grayscale



“0 means black, 255 means white. In between, every other number - 50, 87, 162, 209, and so on - is a shade of gray ranging from black to white.”

A note on colour first...RGB



“As with grayscale, the individual color elements are expressed as ranges from 0 (none of that color) to 255 (as much as possible), and they are listed in the order R, G, and B.”

Digital colours are made by mixing the three primary colours of light (red, green, and blue).

A note on colour first...RGB

The screenshot shows the ColorSchemer Online v2 website. The browser's address bar displays www.colorschemer.com/online.html. The page title is "COLOR SCHEMER ONLINE v2". Below the title, it says "Enter an RGB or HEX value, or click on the Color Palette below".

On the left side, there is a "Current Color" section with a large blue square. Below it, the RGB values are displayed: R: 51, G: 102, B: 255. The corresponding HEX value is #3366FF. There are buttons for "Set RGB", "Set HEX", "Lighten Scheme", and "Darken Scheme".

The main area of the page displays a 4x4 grid of 16 color swatches, each with its RGB and HEX values:

Color 1	Color 2	Color 3	Color 4
51.102.255 #3366FF	102.51.255 #6633FF	204.51.255 #CC33FF	255.51.204 #FF33CC
51.204.255 #33CCFF	0.61.245 #003DF5	0.46.184 #002EB8	255.51.102 #FF3366
51.255.204 #33FFCC	184.138.0 #B88A00	245.184.0 #F5B800	255.102.51 #FF6633
51.255.102 #33FF66	102.255.51 #66FF33	204.255.51 #CCFF33	255.204.51 #FFCC33

At the bottom of the page, there is a large color palette consisting of a grid of many small color swatches, ranging from dark colors to light colors.

<http://www.colorschemer.com/online.html>

background() - syntax

background(grayscale)

grayscale = grayscale colour (a number between 0 [black] and 255 [white] inclusive)

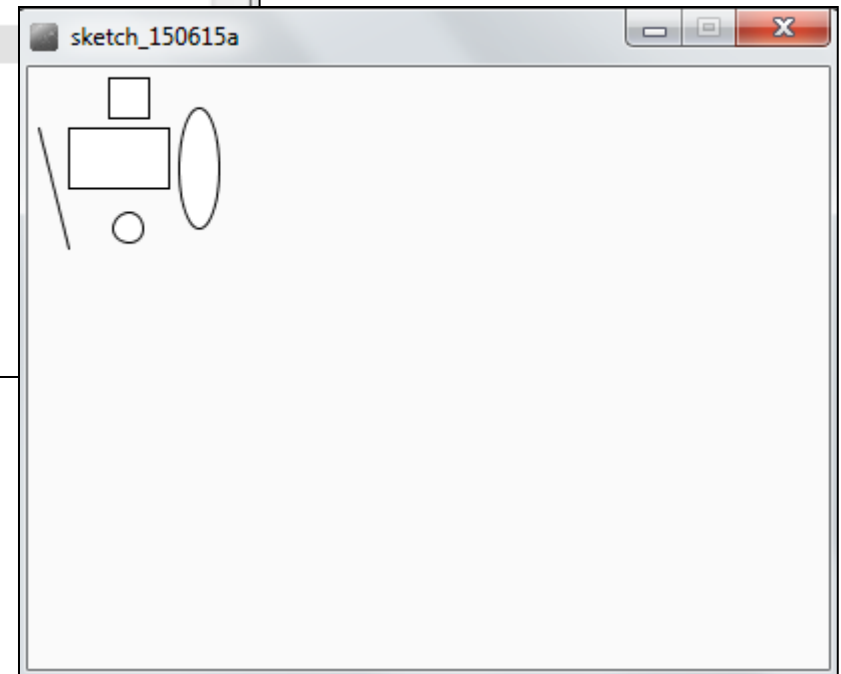
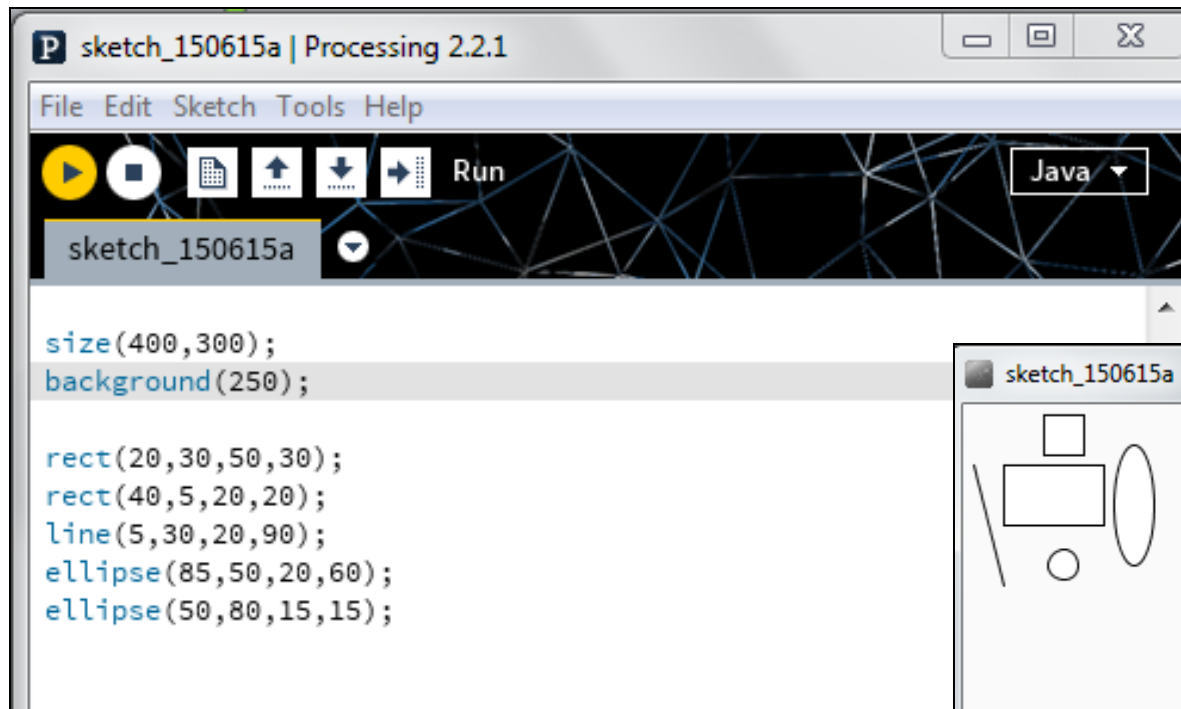
background(r, g, b)

r = red colour (a number between 0 and 255 inclusive)

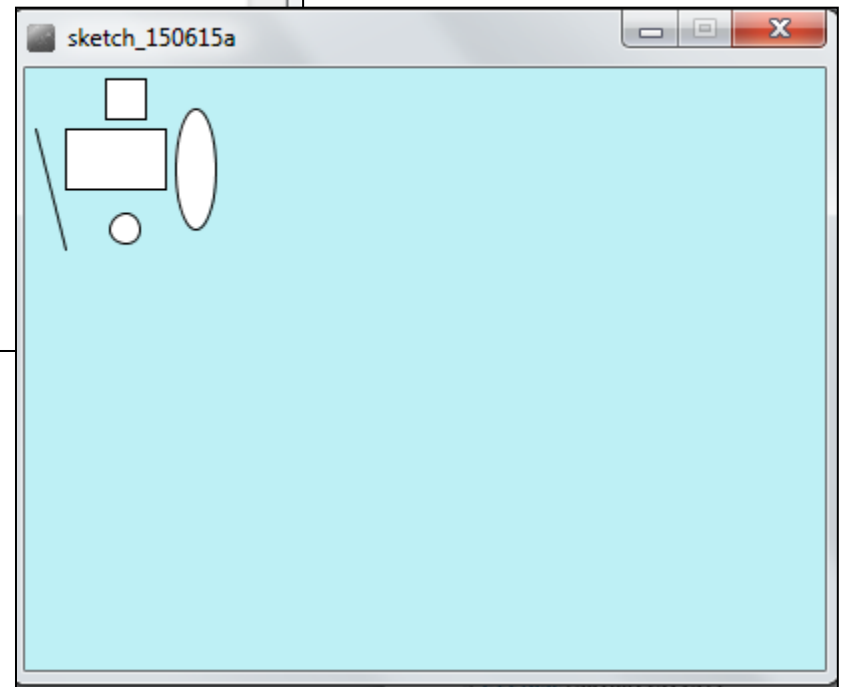
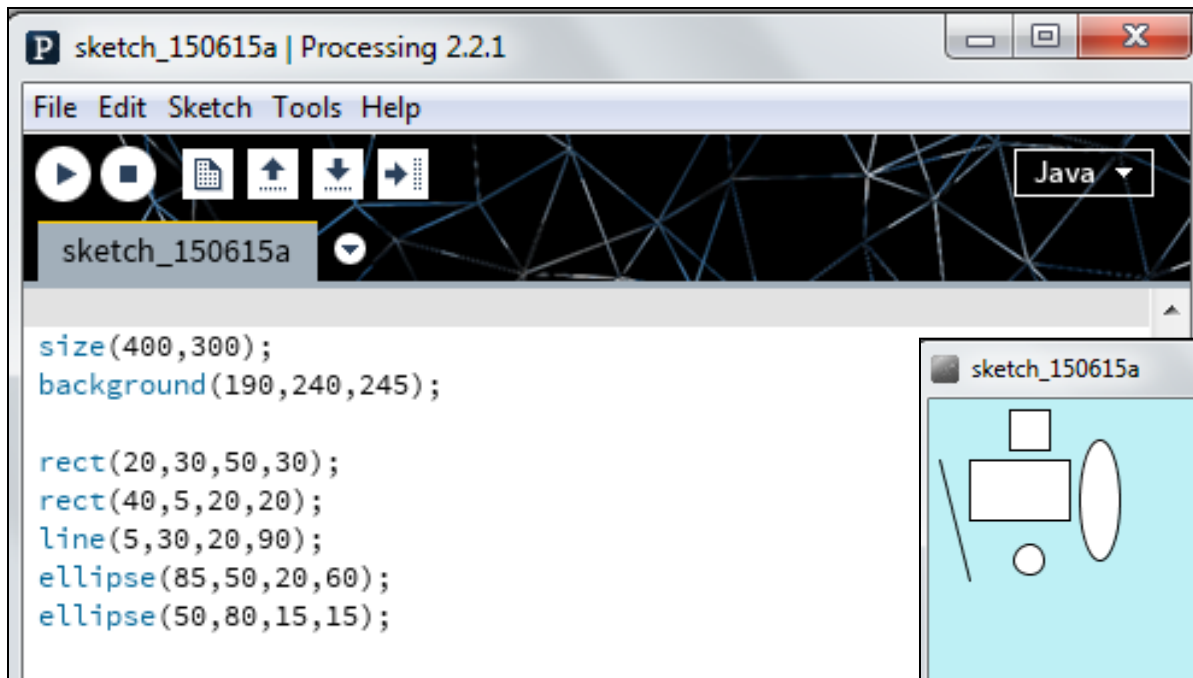
g = green colour (a number between 0 and 255 inclusive)

b = blue colour (a number between 0 and 255 inclusive)

background()



background()



Topics list

- Formatting the display window.
- Filling shapes with colour.
- Formatting the shape outline.

fill() - syntax

`fill (r, g, b)`

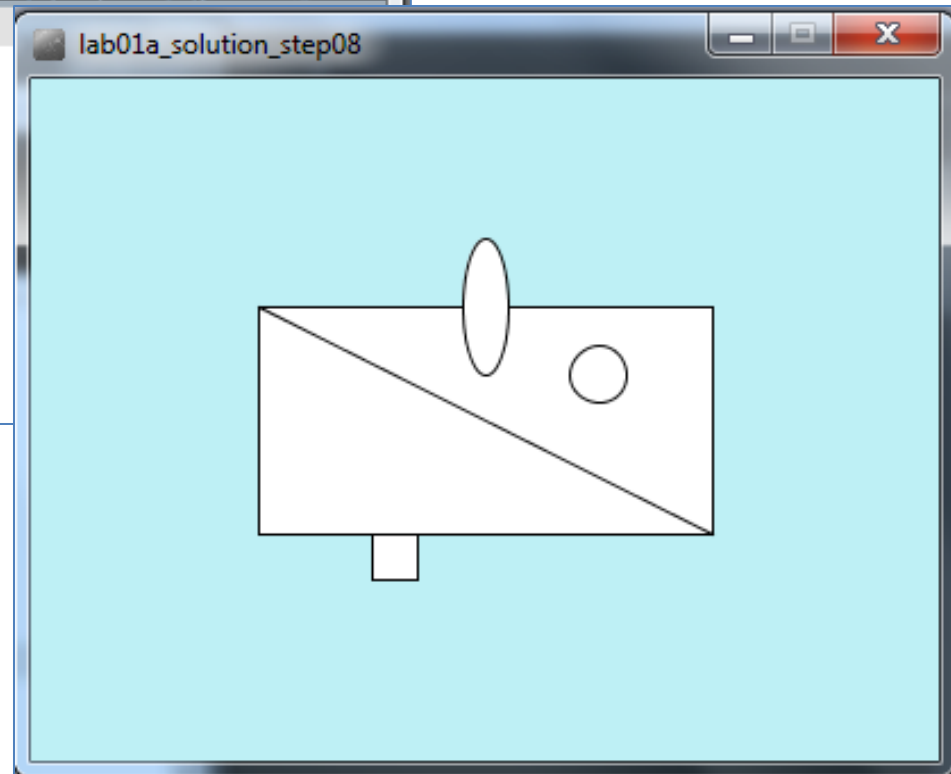
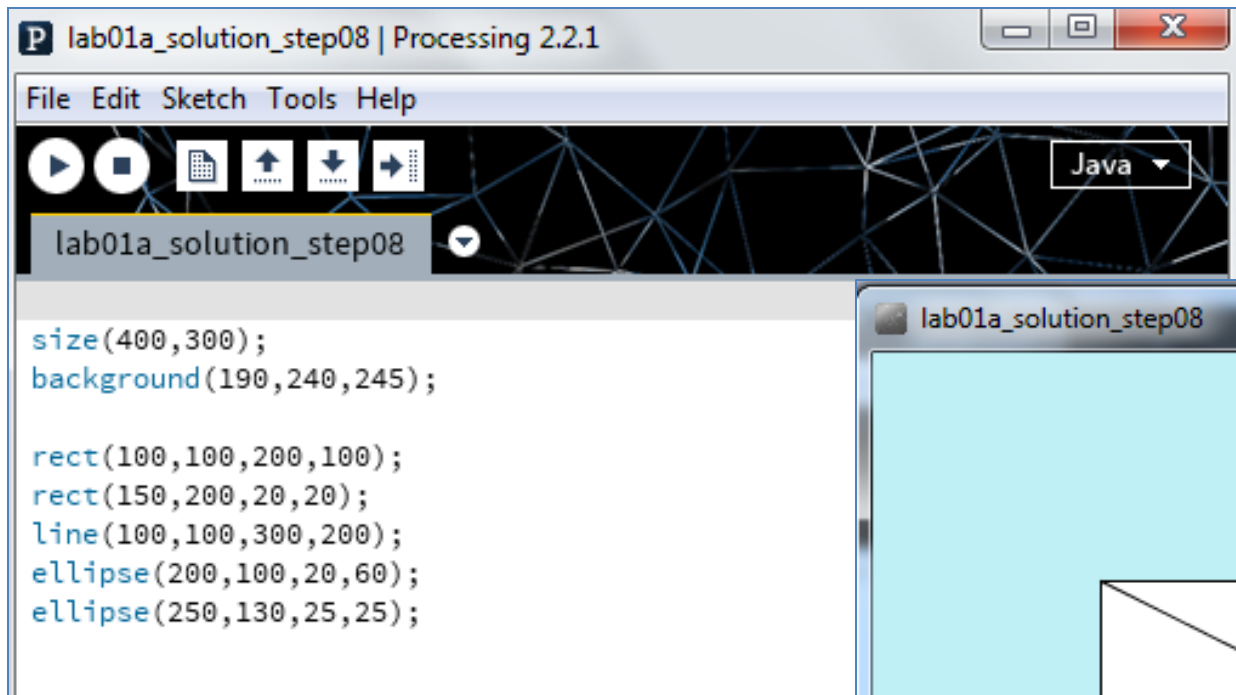
`r` = red colour (a number between 0 and 255 inclusive)

`g` = green colour (a number between 0 and 255 inclusive)

`b` = blue colour (a number between 0 and 255 inclusive)

- fills shapes with a chosen colour.
- can use the RGB colours to select a colour.
- all shapes drawn after the **fill** function is called, will be filled with the chosen colour.

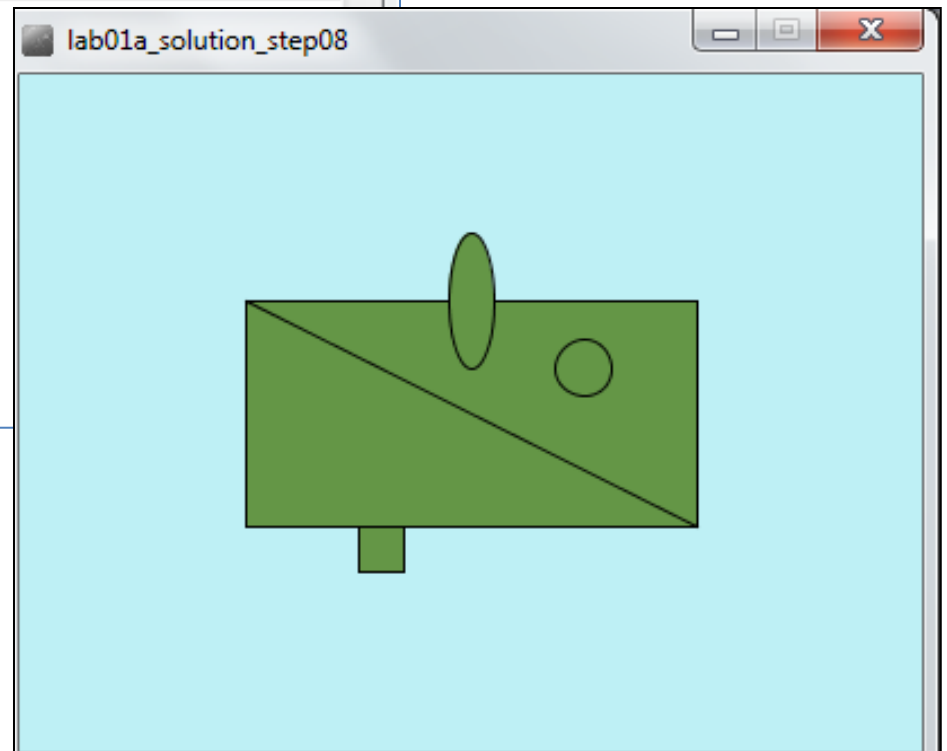
fill()



Starting code...

fill()

```
lab01a_solution_step08 | Processing 2.2.1
File Edit Sketch Tools Help
[Icons] Java
lab01a_solution_step08
size(400,300);
background(190,240,245);
fill(100,150,70);
rect(100,100,200,100);
rect(150,200,20,20);
line(100,100,300,200);
ellipse(200,100,20,60);
ellipse(250,130,25,25);
```



All shapes filled with
dark green...

fill()

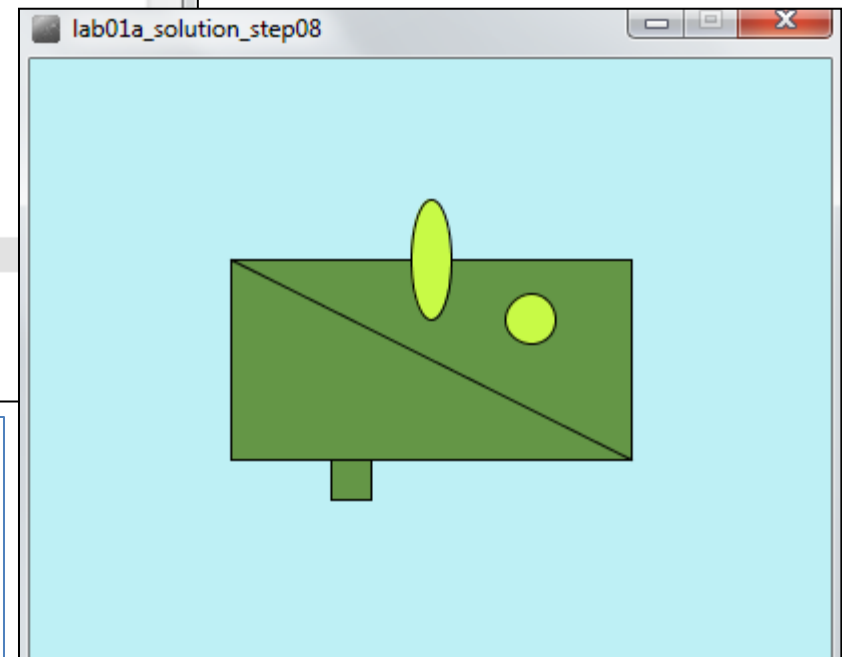
```
lab01a_solution_step08 | Processing 2.2.1
File Edit Sketch Tools Help
[Icons] Java
lab01a_solution_step08
size(400,300);
background(190,240,245);

fill(100,150,70);

rect(100,100,200,100);
rect(150,200,20,20);
line(100,100,300,200);

fill(200,250,70);

ellipse(200,100,20,60);
ellipse(250,130,25,25);
```



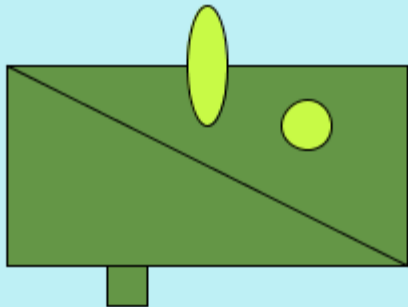
Rectangles filled with dark green...
Ellipses filled with light green...
Order of statements matter!!!

Topics list

- Formatting the display window.
- Filling shapes with colour.
- Formatting the shape outline.

Changing the outline (i.e. stroke)

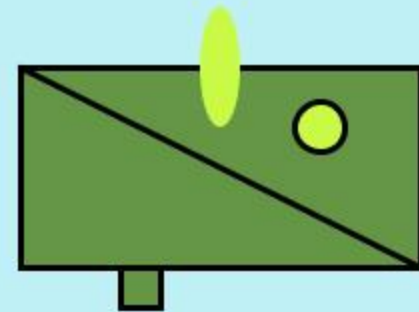
Before



After (changes):

- The oval has no border; all other shapes do.
- The outline is heavier.

We will now make those changes



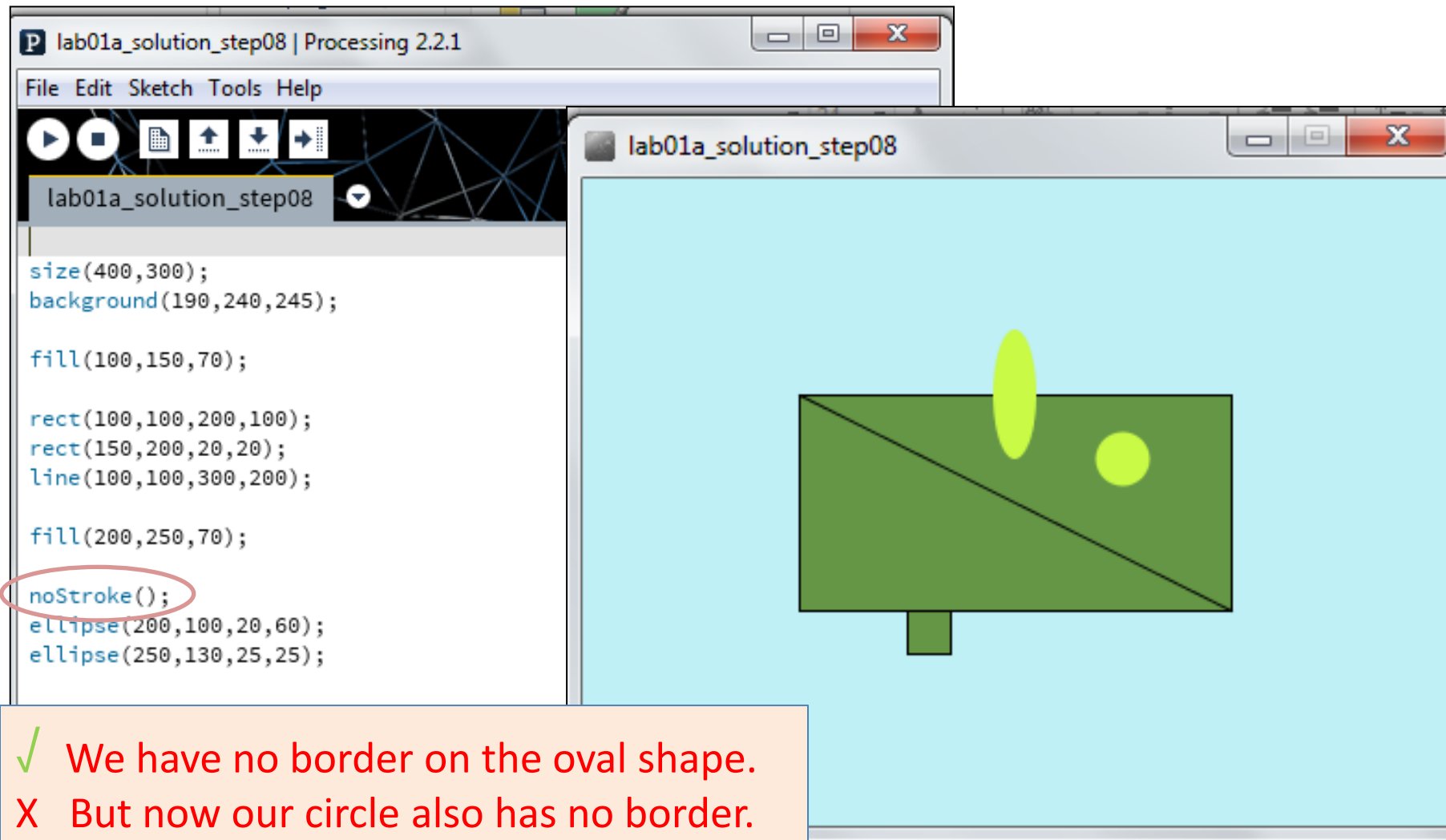
noStroke() - syntax

```
noStroke();
```

```
//no parameters defined for this function.
```

- A **stroke** is the outline of a shape.
- The noStroke() function disables the outline on shapes that are drawn after the function is called.
- All shapes drawn after the **noStroke** function is called, will have no outline.

noStroke()



```
size(400,300);
background(190,240,245);

fill(100,150,70);

rect(100,100,200,100);
rect(150,200,20,20);
line(100,100,300,200);

fill(200,250,70);

noStroke();
ellipse(200,100,20,60);
ellipse(250,130,25,25);
```

✓ We have no border on the oval shape.
X But now our circle also has no border.

stroke() - syntax

stroke (**r**, **g**, **b**)

r = red colour (a number between 0 and 255 inclusive)

g = green colour (a number between 0 and 255 inclusive)

b = blue colour (a number between 0 and 255 inclusive)

- The stroke() function enables the outline on all shapes that are drawn after the function is called.
- When you call stroke(), you need to specify a colour.

stroke()

```
lab01a_solution_step08 | Processing 2.2.1
File Edit Sketch Tools Help
lab01a_solution_step08
size(400,300);
background(190,240,245);

fill(100,150,70);

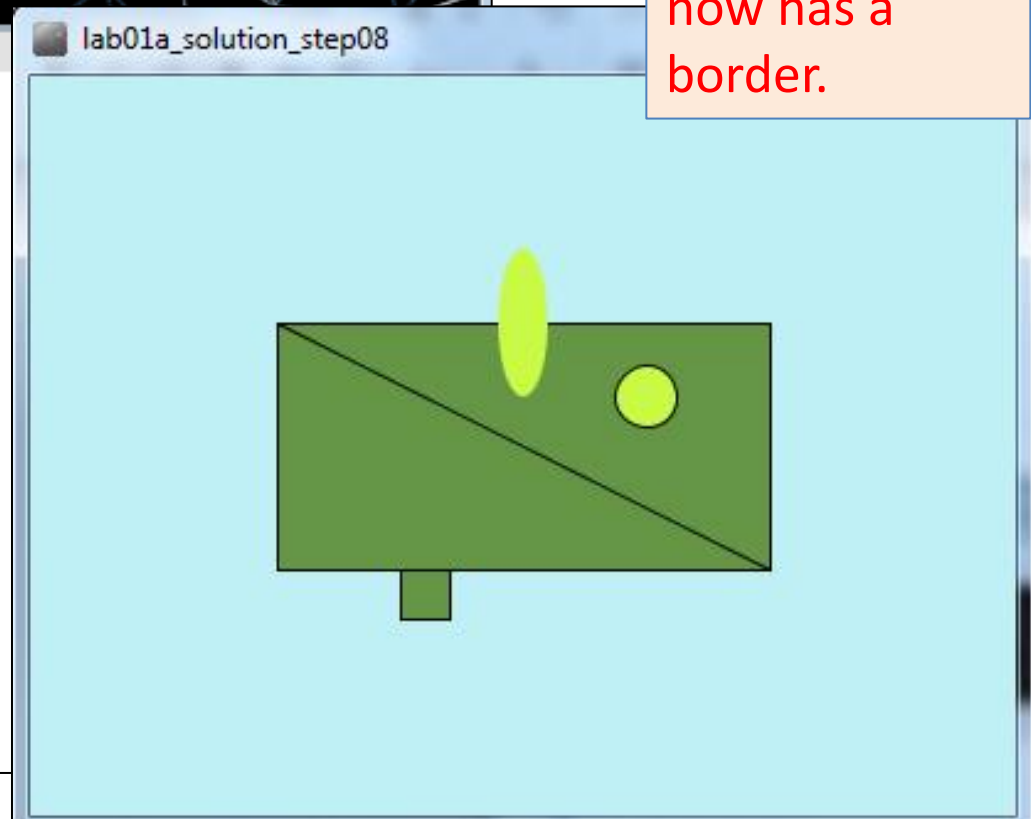
rect(100,100,200,100);
rect(150,200,20,20);
line(100,100,300,200);

fill(200,250,70);

noStroke();
ellipse(200,100,20,60);

stroke(0,0,0);
ellipse(250,130,25,25);
```

✓ Our circle now has a border.



strokeWeight() - syntax

strokeWeight (**pixels**)

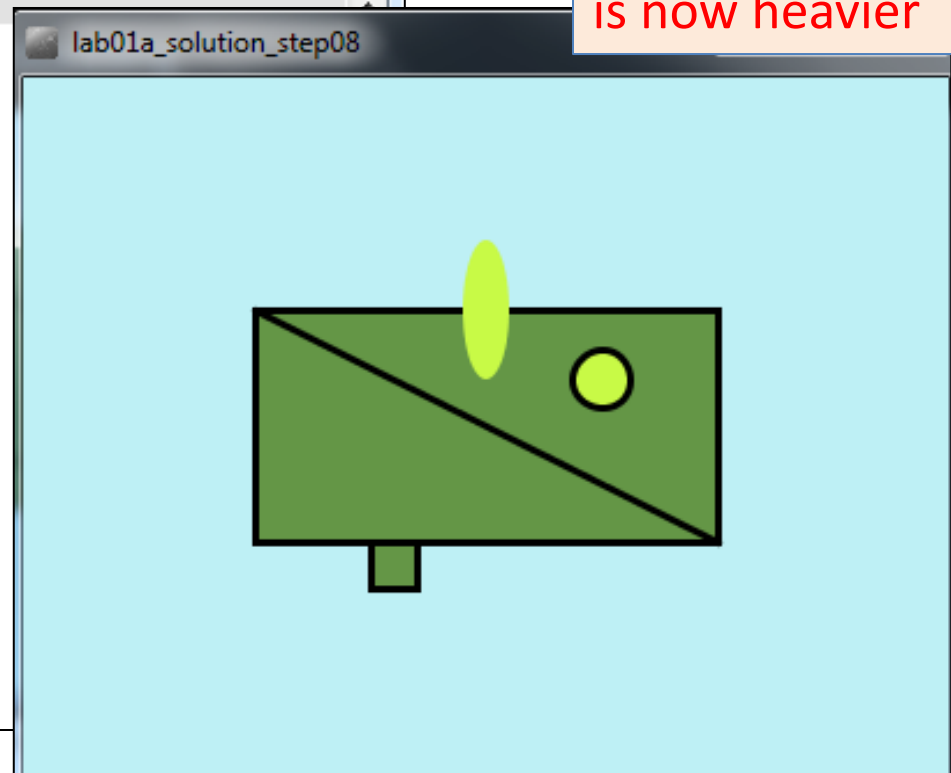
pixels = thickness of the outline measured in pixels.

- The strokeWeight() function allows you to choose the thickness of a line/outline on shapes.
- The chosen thickness will apply to all lines/shapes that are drawn after the function is called.
- The thickness is specified in pixels.
- The default thickness is 1 pixel.

strokeWeight()

```
lab01a_solution_step08 | Processing 2.2.1
File Edit Sketch Tools Help
[Icons] Stop Java
lab01a_solution_step08
size(400,300);
background(190,240,245);
strokeWeight(3);
fill(100,150,70);
rect(100,100,200,100);
rect(150,200,20,20);
line(100,100,300,200);
fill(200,250,70);
noStroke();
ellipse(200,100,20,60);
stroke(0,0,0);
ellipse(250,130,25,25);
```

✓ Our outline
is now heavier



Questions?





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