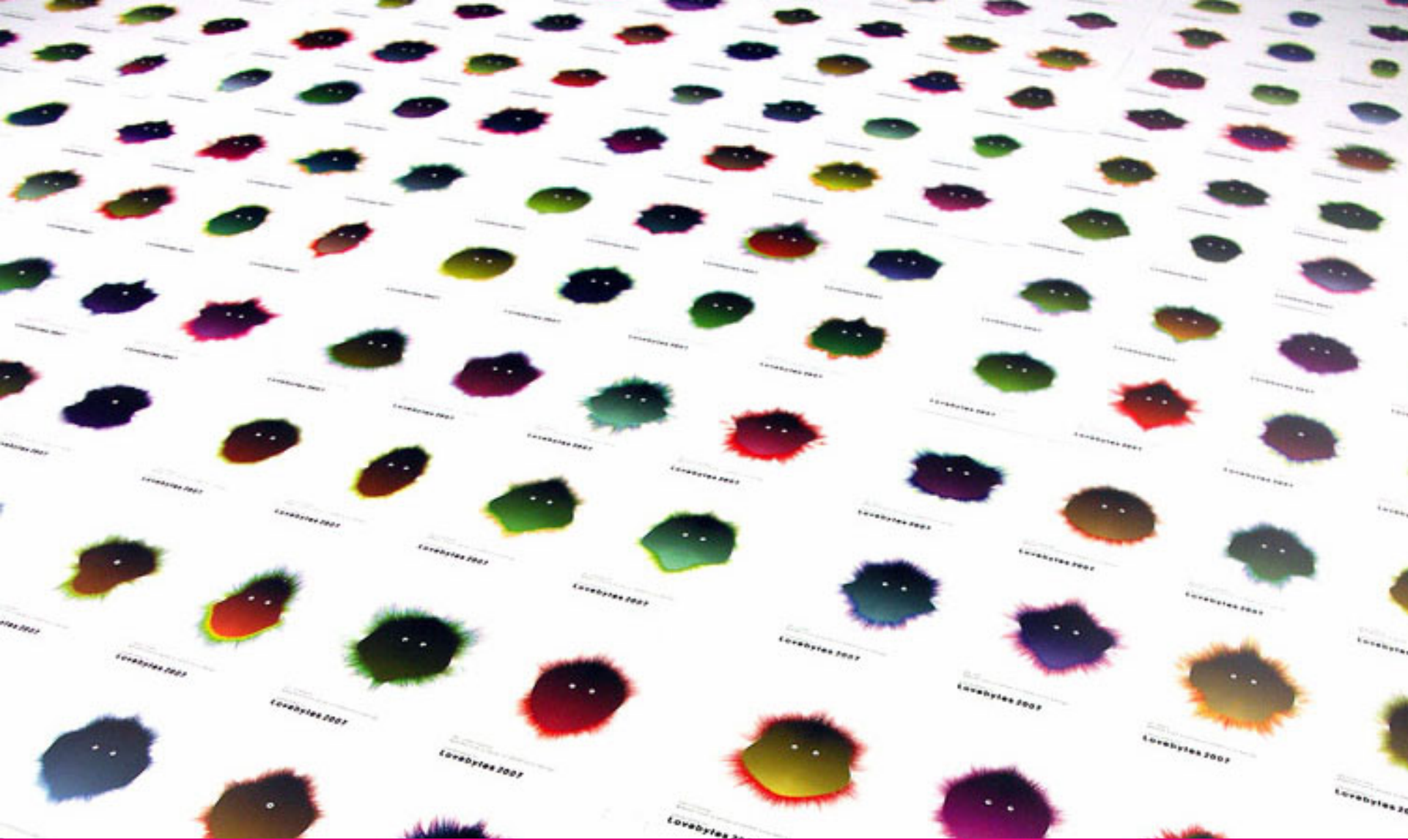


Processing Workshop

Till Nagel, IUAV, 10/2008





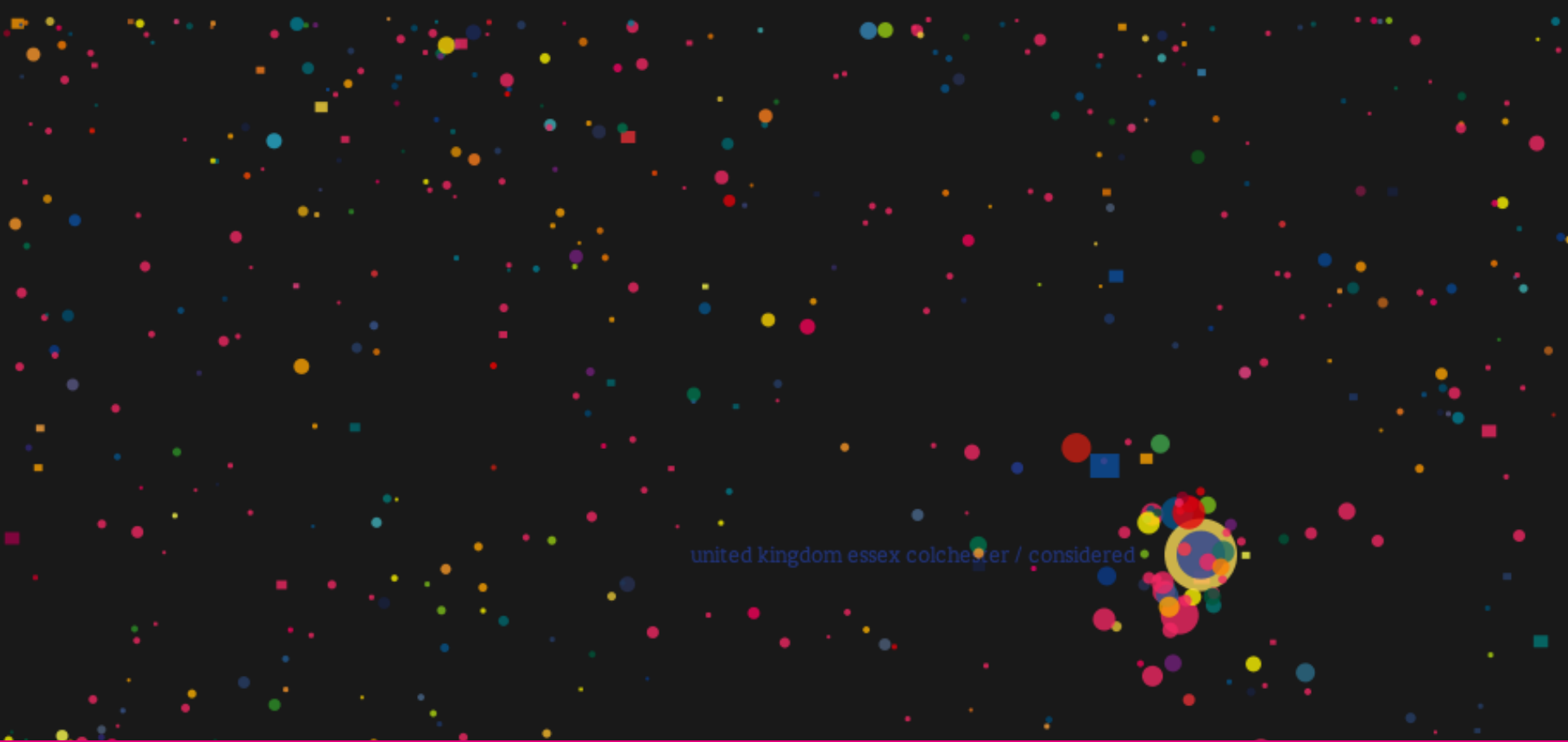
Lovebytes

Matt Pyke, Karsten Schmidt



i can feel things changing about me

7 days ago / from someone in united kingdom



We Feel Fine

Jonathan Harris and Sepandar Kamvar

Translator II, Grower

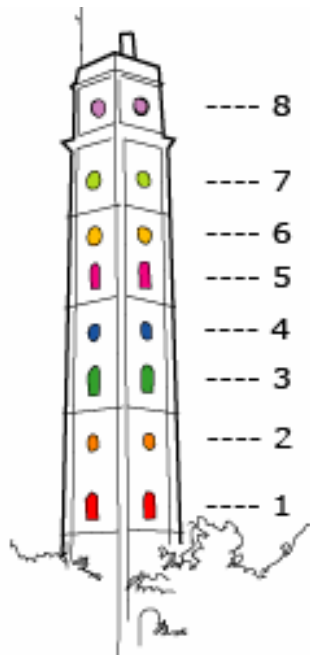
Sabrina Raaf





Colour by Numbers

Loove Broms, Milo Lavén, Erik Krikortz



Less red	1	2	3	More red
Less green	4	5	6	More green
Less blue	7	8	9	More blue
	*	0	#	

$$1 + 2 + 3 + 4 + 5 = ?$$

$$1 + 2 + 3 + 4 + 5 = ?$$

$$1 + 2 =$$

3

$$1 + 2 + 3 + 4 + 5 = ?$$

$$1 + 2$$

$$3 + 3 =$$

6

$$1 + 2 + 3 + 4 + 5 = ?$$

$$1 + 2$$

$$3 + 3$$

$$6 + 4 =$$

10

$$1 + 2 + 3 + 4 + 5 = ?$$

$$1 + 2$$

$$3 + 3$$

$$6 + 4$$

$$10 + 5 = 15$$

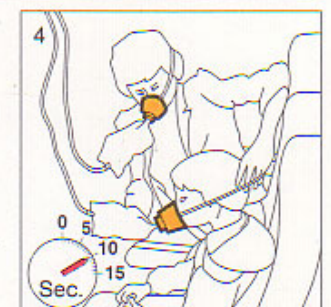
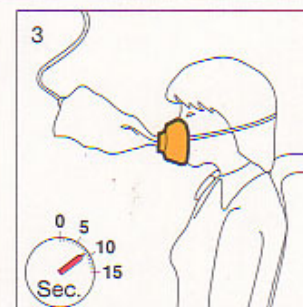
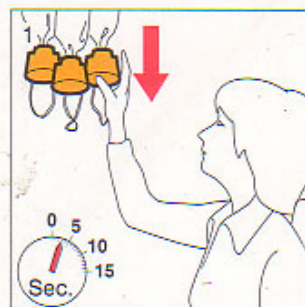
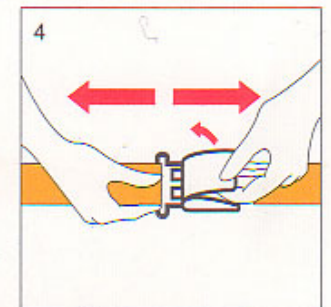
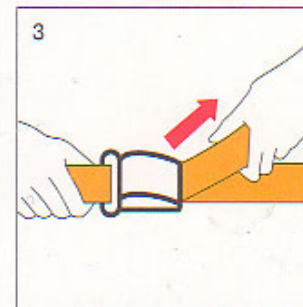
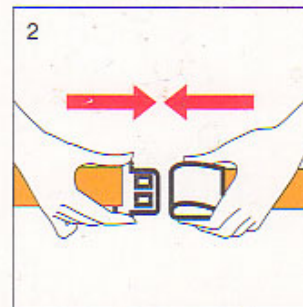
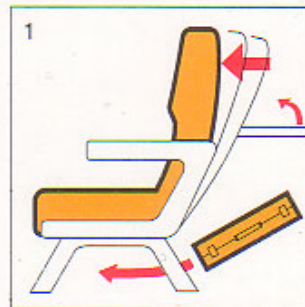
Algorithm

Für Ihre Sicherheit
For your safety

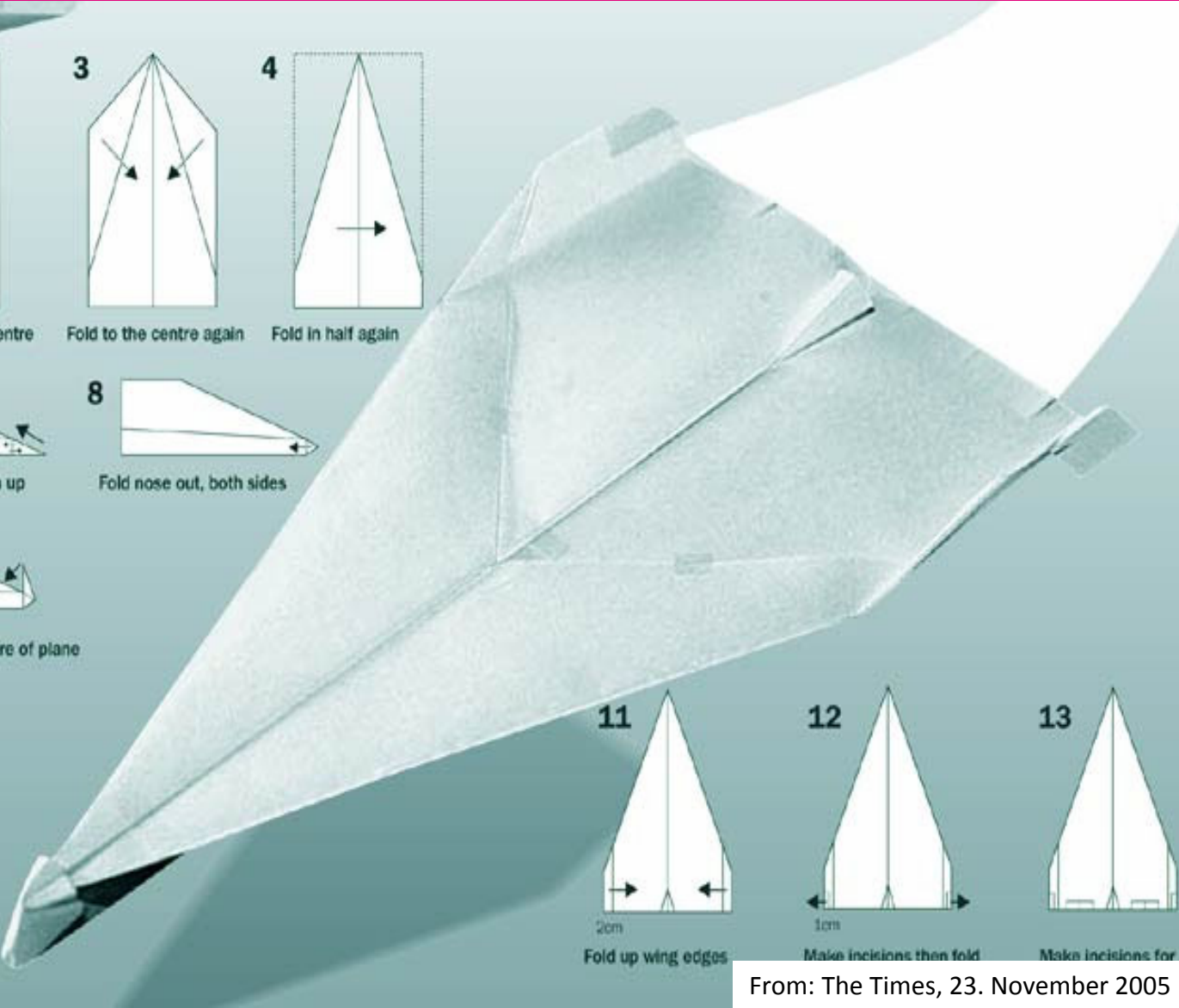
A320-200





Lufthansa





Algorithm





- 


1 Fold A4 in half along the length
- 


2 Fold corners to the centre
- 


3 Fold to the centre again
- 


4 Fold in half again
- 


5 Fold wings out, on both sides
- 


6 Fold nose both ways, then up
- 


7 Push top section into centre of plane
- 

8 Fold nose out, both sides
- 

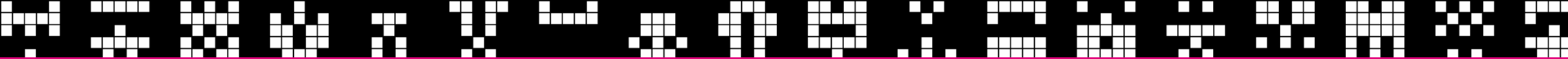
9 Fold rear both ways, then push up between wings till it sticks out of the top
- 

10 Push on top to spread tail slightly
- 

11 Fold up wing edges
- 

12 Make incisions then fold
- 

13 Make incisions for



Algorithm



Algorithm

A language understood by both sides
(sender and recipient)

Specific, simple instructions. Split up a problem into
smaller ones.

Exercise

Create two 10×10 cm squares. Draw an image in the left one in a way nobody else can see what you are drawing.

Find a partner. When both of you are finished, one should explain his drawing to the other one, so he can create a copy of it. This should be done solely by describing the image.

Let's start coding ...

Processing

Menu

Toolbar

Text editor

Messages

Console



```
SimpleCirclesRandom | Processing 0133 Beta
File Edit Sketch Tools Help

SimpleCirclesRandom CircleThingy

}

void draw() {
  background(255);

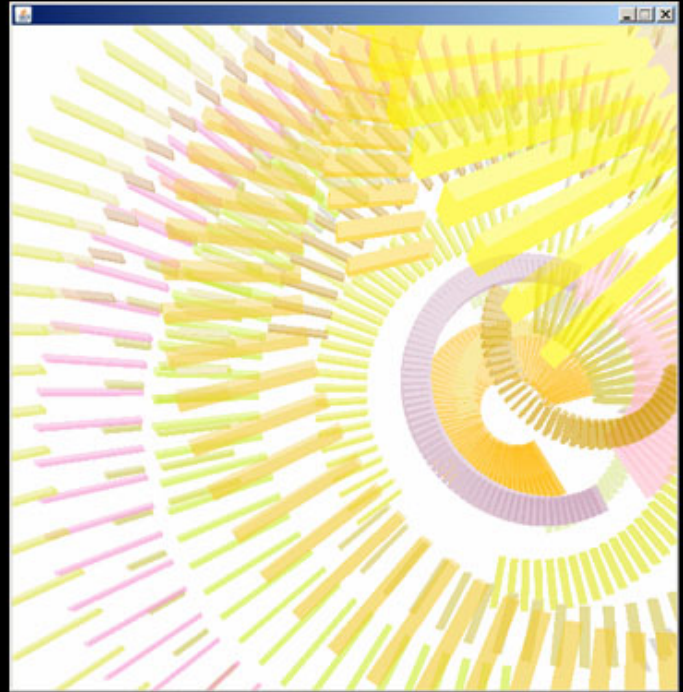
  translate(width/2, height/2);
  rotateX((float) (mouseY - height/2) / height * 4);
  rotateY((float) ((width - mouseX) - width/2) / width * 4);

  s += 0.002;

  if (mousePressed) {
    if (mouseButton == LEFT) {
      s += 0.04;
    }
    else {
      s -= 0.04;
    }
  }
  scale(s, s, s);

  for (int i = 0; i < ctNumber; i++) {
    circles[i].draw();
  }
}

Done Saving.
47
```



Functions

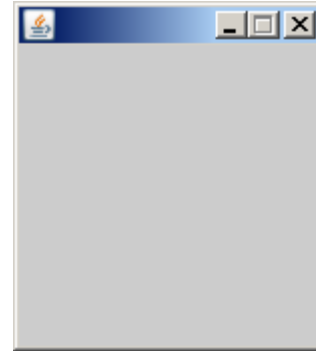
```
doThis();
```

```
doThat();
```

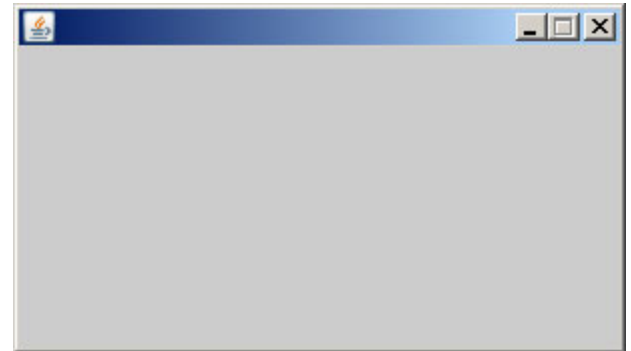
```
makeBeautifulGraphics();
```

`size(width, height);`

`size(100, 100);`

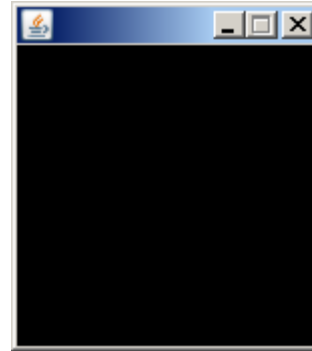


`size(300, 100);`

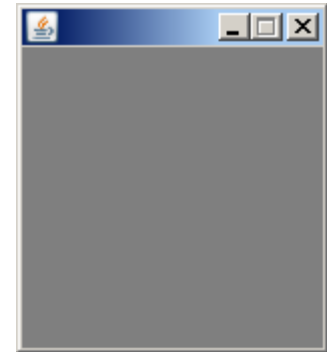


background(value);

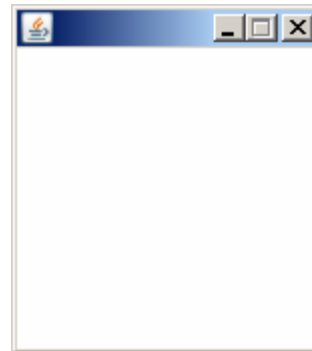
background(0);



background(127);



background(255);

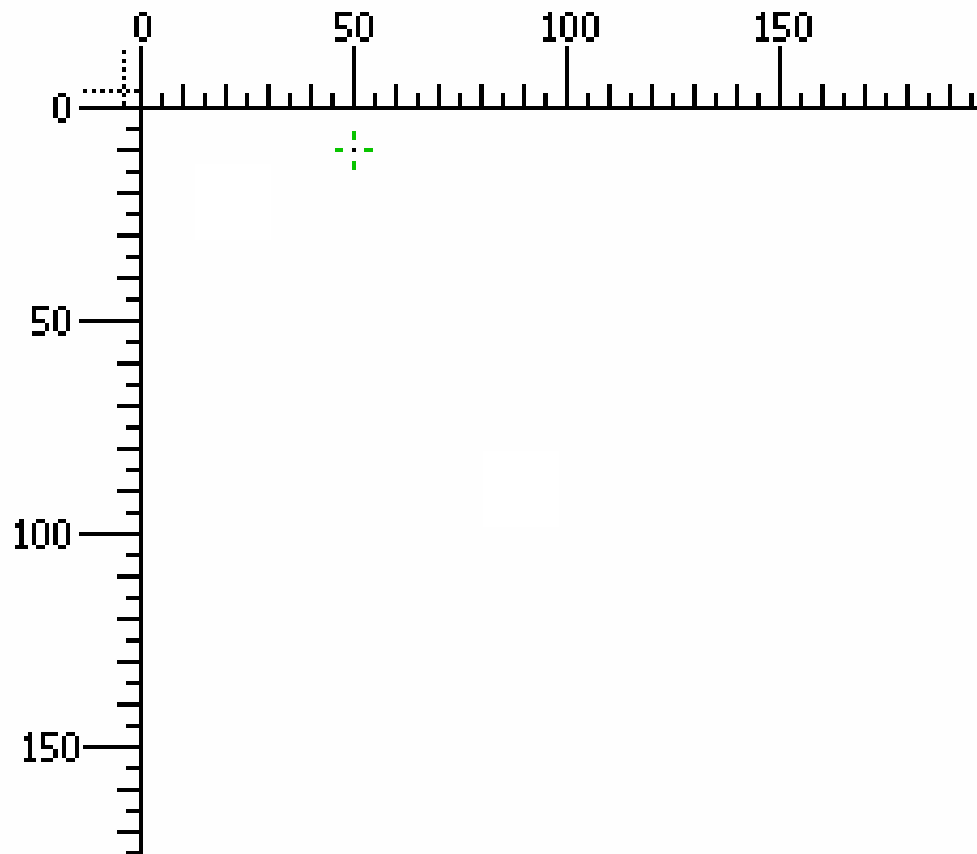


Coordinate system and positions

```
point(50, 10);
```

```
point(90, 90);
```

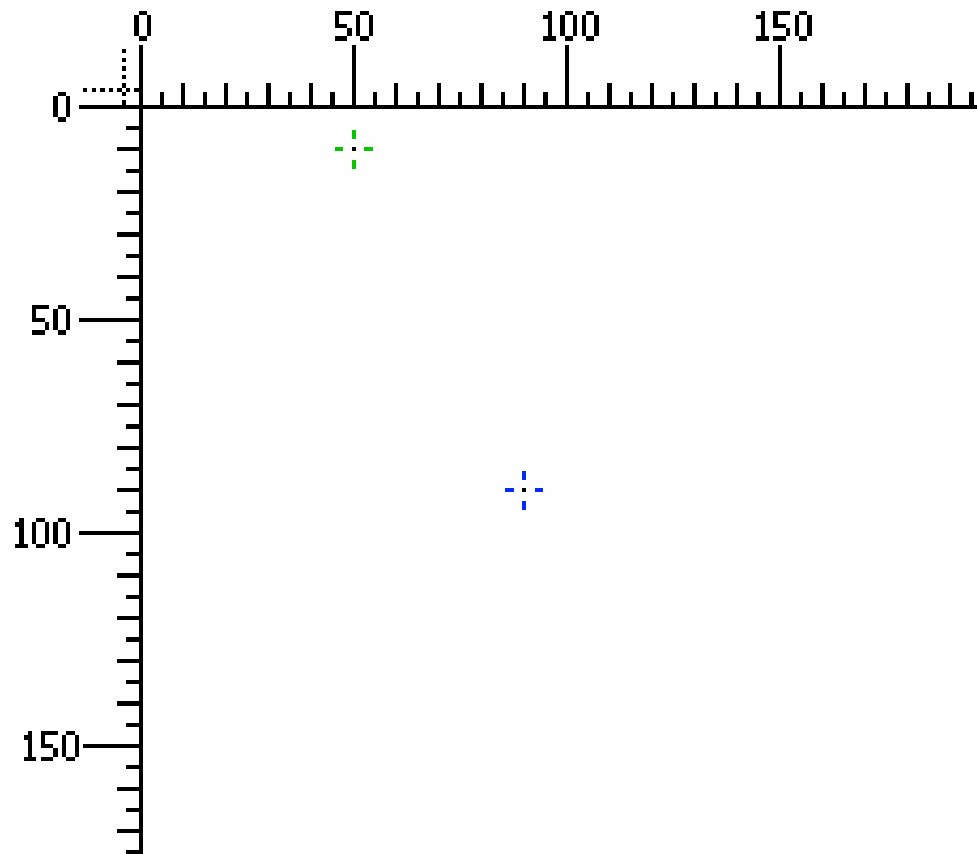
```
point(20, 20);
```




```
point(50, 10);
```

```
point(90, 90);
```

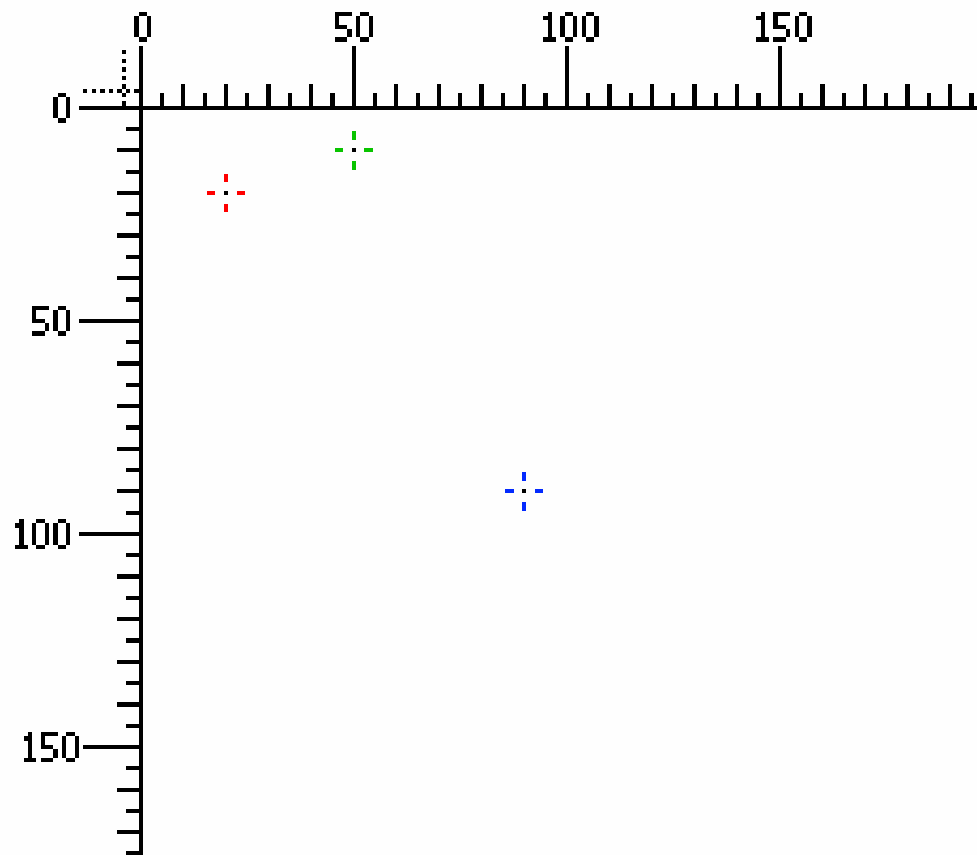
```
point(20, 20);
```



```
point(50, 10);
```

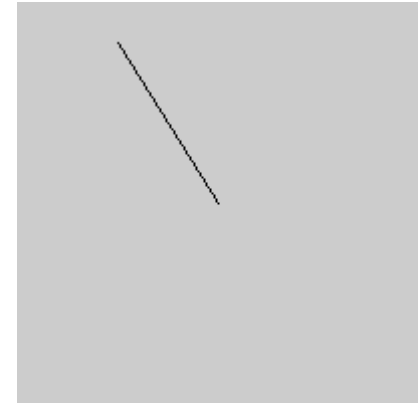
```
point(90, 90);
```

```
point(20, 20);
```

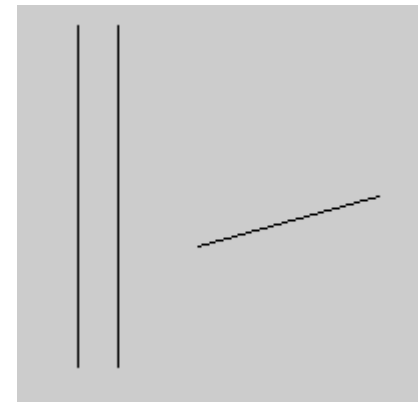


`line(x1, y1, x2, y2);`

```
line(50, 20, 100, 100);
```

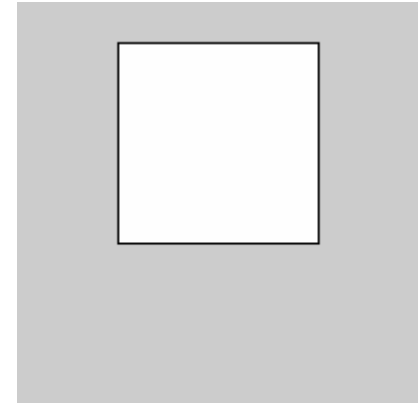


```
line(30, 10, 30, 180);  
line(50, 10, 50, 180);  
line(90, 120, 180, 95);
```



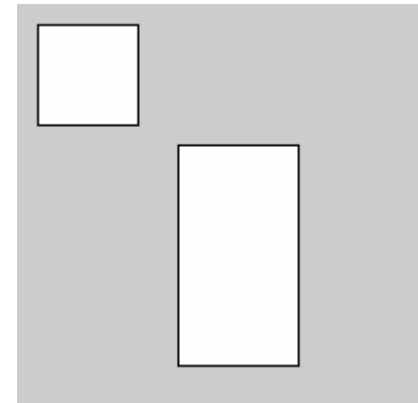
`rect(x, y, width, height);`

`rect(50, 20, 100, 100);`



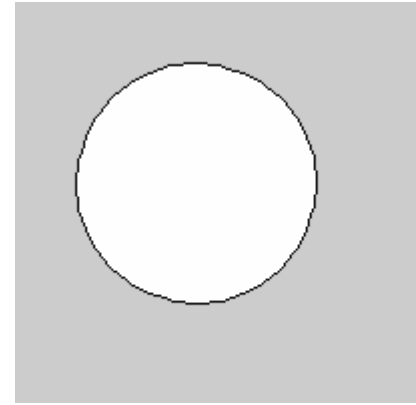
`rect(10, 10, 50, 50);`

`rect(80, 70, 60, 110);`



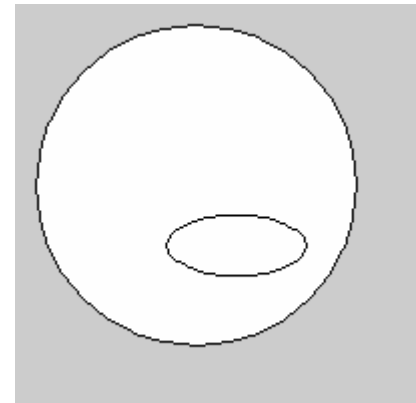
ellipse(x, y, width, height);

```
ellipse(90, 90, 100, 100);
```



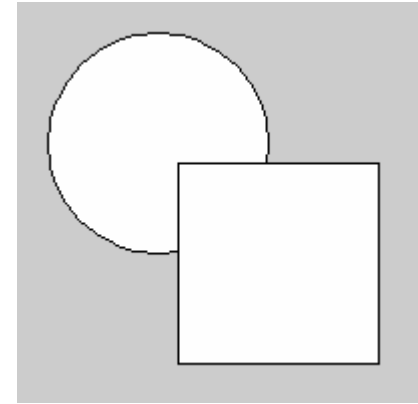
```
ellipse(90, 90, 160, 160);
```

```
ellipse(110, 120, 70, 30);
```

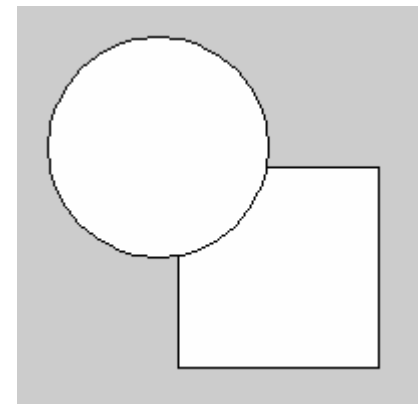


Order of function calls

```
ellipse(70, 70, 110, 110);  
rect(80, 80, 100, 100);
```



```
rect(80, 80, 100, 100);  
ellipse(70, 70, 110, 110);
```



Other drawing functions

```
triangle(x1, y1, x2, y2, x3, y3);
```

```
quad(x1, y1, x2, y2, x3, y3, x4, y4);
```

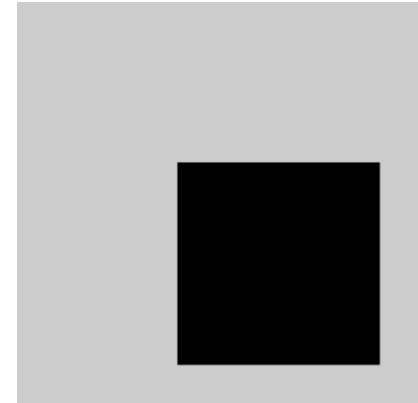
```
curve(x1, y1, x2, y2, x3, y3, x4, y4);
```

```
arc(x, y, width, height, start, stop);
```

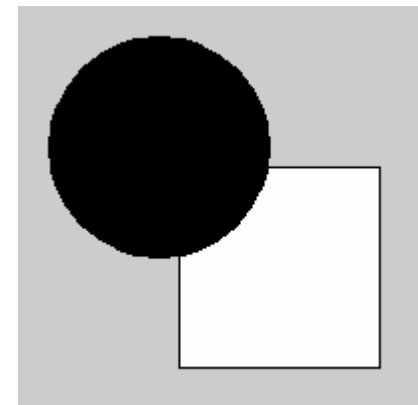
...

Colours: fill(value);

```
fill(0);  
rect(80, 80, 100, 100);
```

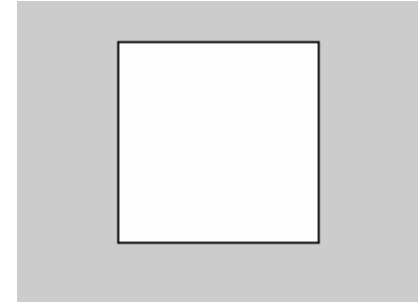


```
fill(255);  
rect(80, 80, 100, 100);  
fill(0);  
ellipse(70, 70, 110, 110);
```



Colours: stroke(value);

```
stroke(0);  
rect(50, 20, 100, 100);
```



```
stroke(255);  
rect(50, 20, 100, 100);
```

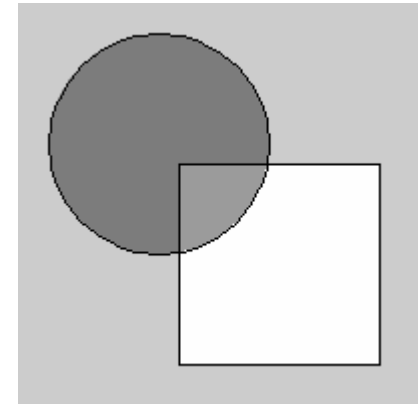


```
stroke(255);  
fill(0);  
rect(50, 20, 100, 100);
```

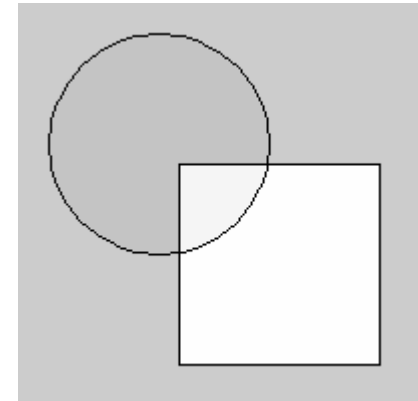


Transparency

```
fill(255);  
rect(80, 80, 100, 100);  
fill(0, 100);  
ellipse(70, 70, 110, 110);
```



```
fill(255);  
rect(80, 80, 100, 100);  
fill(0, 10);  
ellipse(70, 70, 110, 110);
```



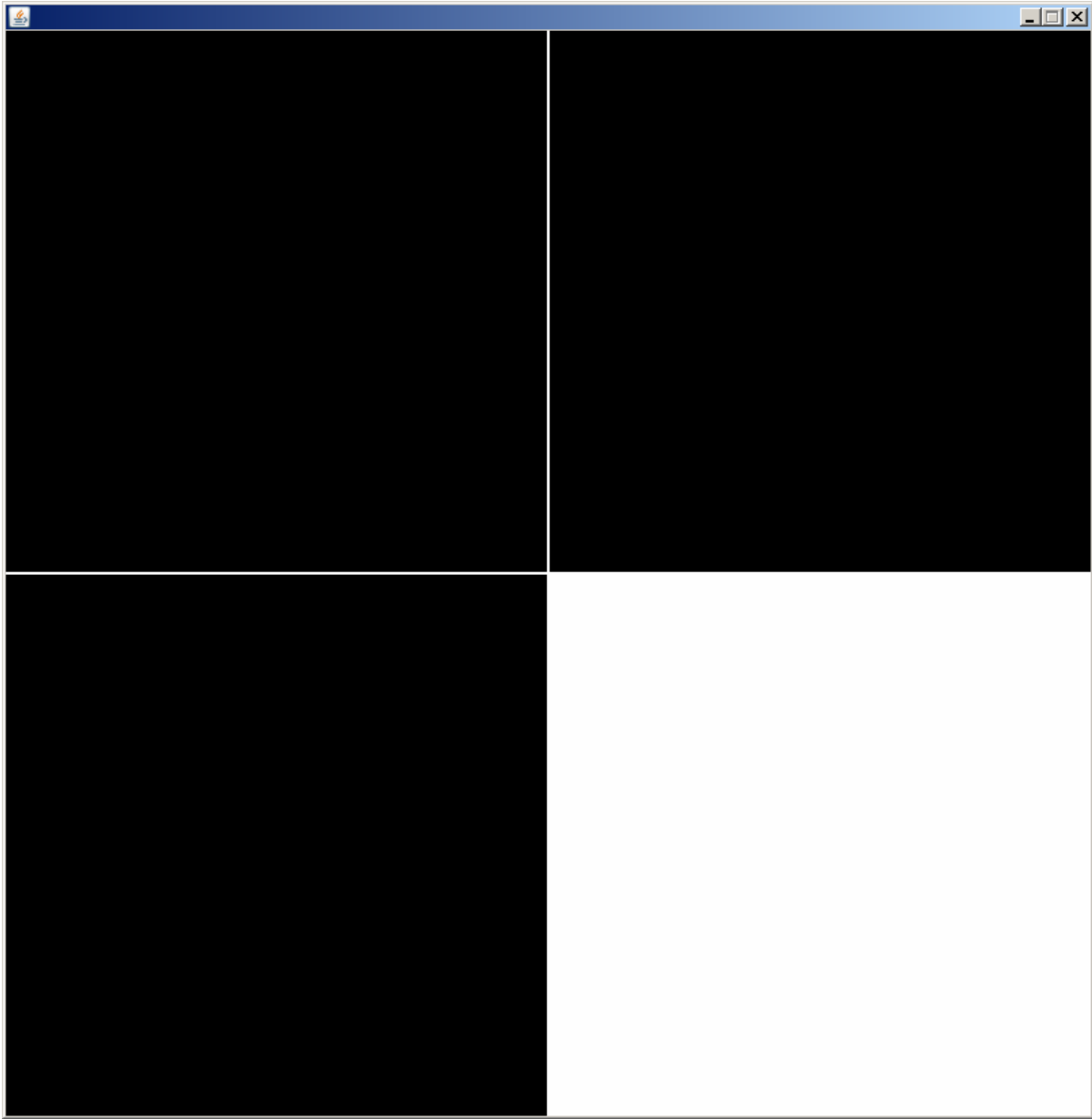
Other colour functions

```
noStroke();
```

```
noFill();
```

```
strokeWeight(weight);
```

```
...
```



Exercises

E1: Write your first Processing sketch. Download and install Processing from <http://processing.org/download>
Sketch a composition out of two intersecting lines and one rectangle on paper, then re-create it in Processing.

E2: Draw a face. Use only the following functions: `size()`, `background()`, `stroke()`, `noStroke()`, `fill()`, `noFill()`, `ellipse()`

E3: Read the tutorial and reference about colours.
Create a coloured 2D filling pattern with simple shapes.

Homework

H1: Find some pattern in the real world. Take the original or make a photo and bring it in, tomorrow.

H2: Read the interview with Jared Tarbell (Processing book, p. 157 or handout). Try to understand the algorithms and think about how to implement those in Processing.

