Agenda 9/15

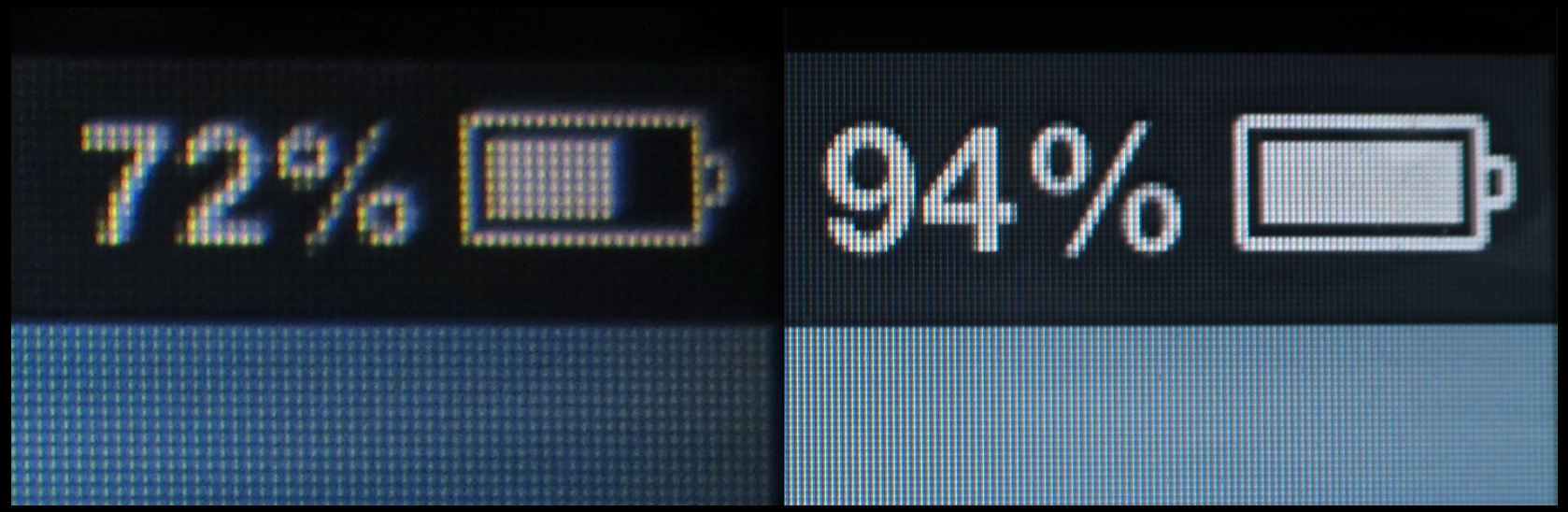
- Questions?
- Project 1 Update
- Pixels and Inches
- How to Save your canvas for Printing
- Functions for creating motifs
- In-class Exercise #4 (Due 9/15)

Project 1 Timeline Update

- **Post your 3 Patterns & Link to Code**
  - Large Screenshots
- **Due:** W 9/29 (Before Class)
- **Updated Schedule**
  - W 9/15 – Functions
    - In-class Exercise #4
  - M 9/20 – Studio Time* **(NO MEETING)**
    - In-class Exercise #5
  - W 9/22 – Studio Time **(NO MEETING)**
  - M 9/27 – Studio Time **(In person)**

*** - I will be available online over MS Teams/Zoom**

Pixels & Inches



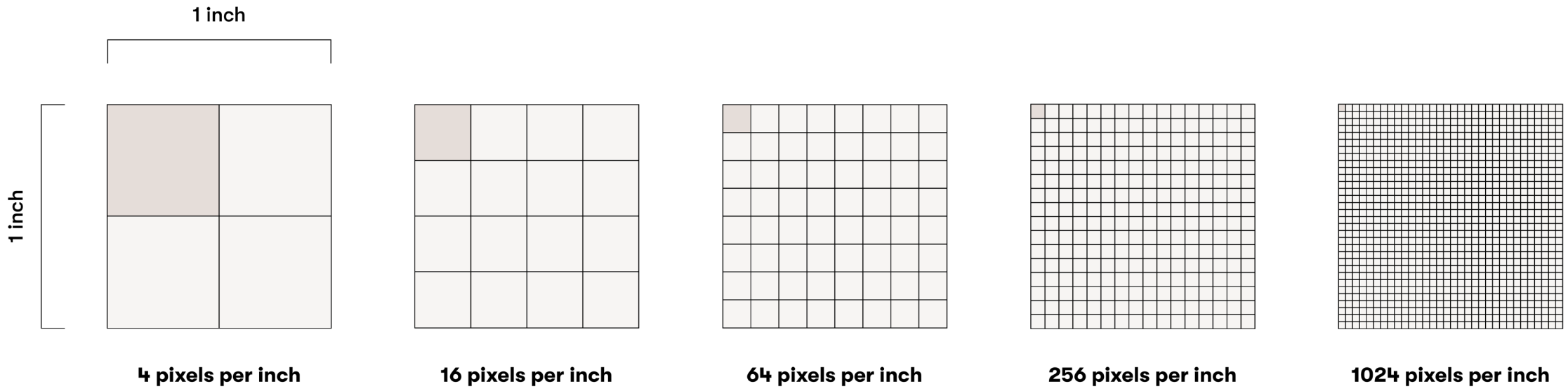
pixels = inches * PPI

PPI (DPI)= pixels/dots per inch
High Resolution Image ~ 300 PPI

Pixels & Inches

pixels = inches * PPI

PPI (DPI)= pixels/dots per inch



Saving to File

Add this function to the end of your code:

```
function keyPressed() {

    save('myPattern.png') -> You can change this filename

}
```

Every time you press a key while on your canvas, your browser will save the file as an PNG image

Pixels & Inches

By default, when saving images from p5.js is DPI = 72

To get a **17 X 24** inch printout, what will be your canvas size?

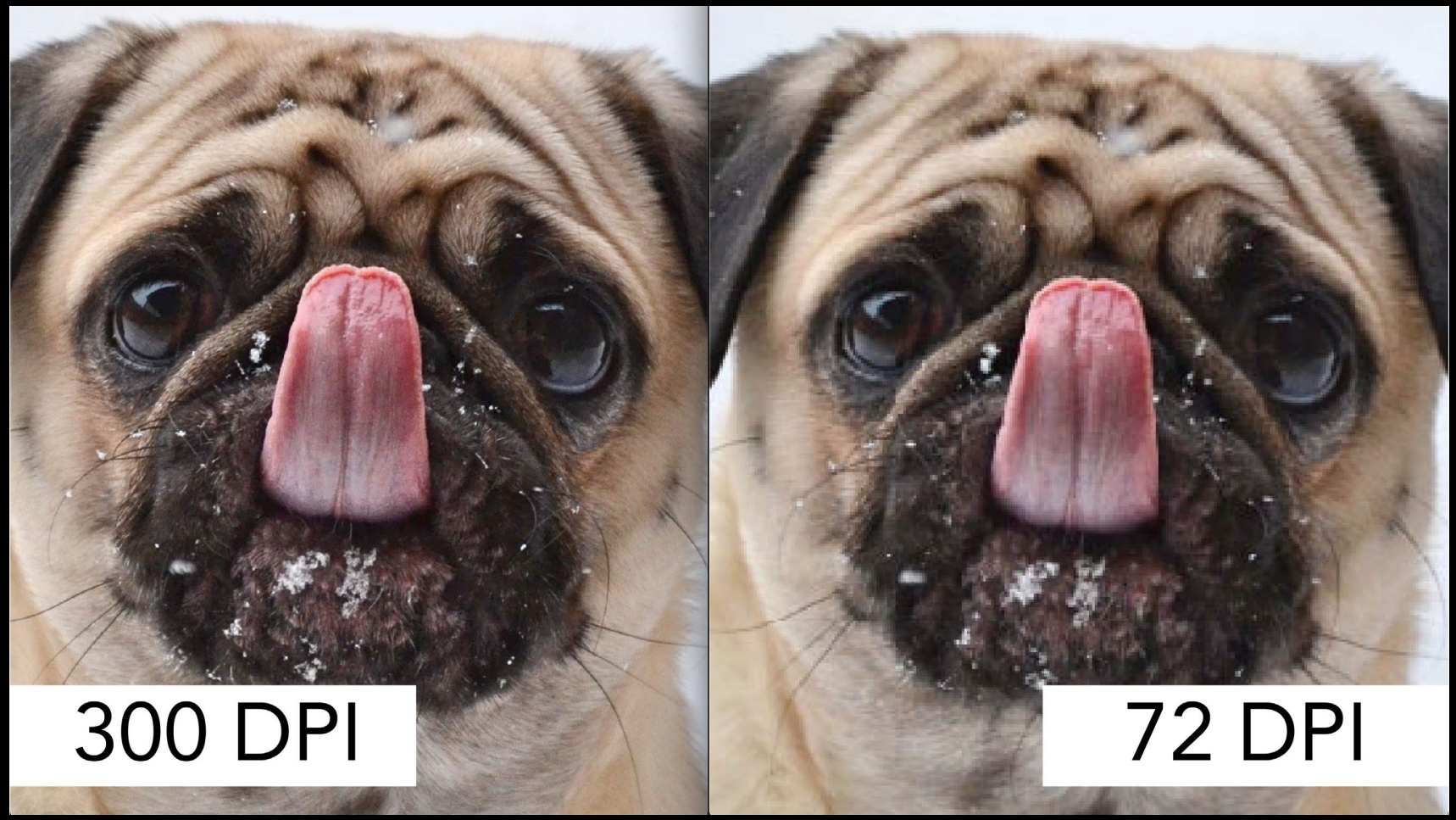
OR

What will be the parameters for **createCanvas(X,Y)** ?

pixels = inches * PPI

Helpful calculator: https://www.omnicalculator.com/conversion/pixels-to-inches

Pixels & Inches



The issue with 72 DPI

How to get a High Res image ?

pixelDensity(VAL)
This function will enable you to add more pixels to your sketches
By default, this is set to ~ 1

pixelDensity(2) Will double the number of pixels (144 DPI)
pixelDensity(3) Will triple the number of pixels (216 DPI)

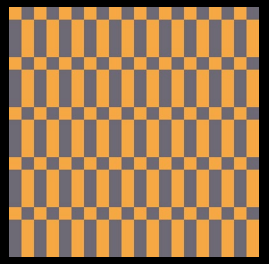
Remember p5.js will only save images in 72 DPI

Screen vs Saving/Printing

Remember p5.js will always save in 72 DPI

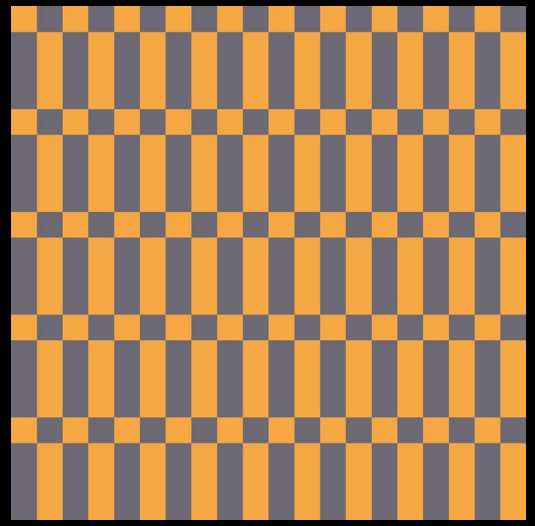
pixelDensity(2) Will double the number of pixels (144 DPI), on the screen. But when saving it will double the size. The output image will still have 72 DPI

pixelDensity(3) Will triple the number of pixels (216 DPI), on the screen. But when saving it will triple the size. The output image will still have 72 DPI



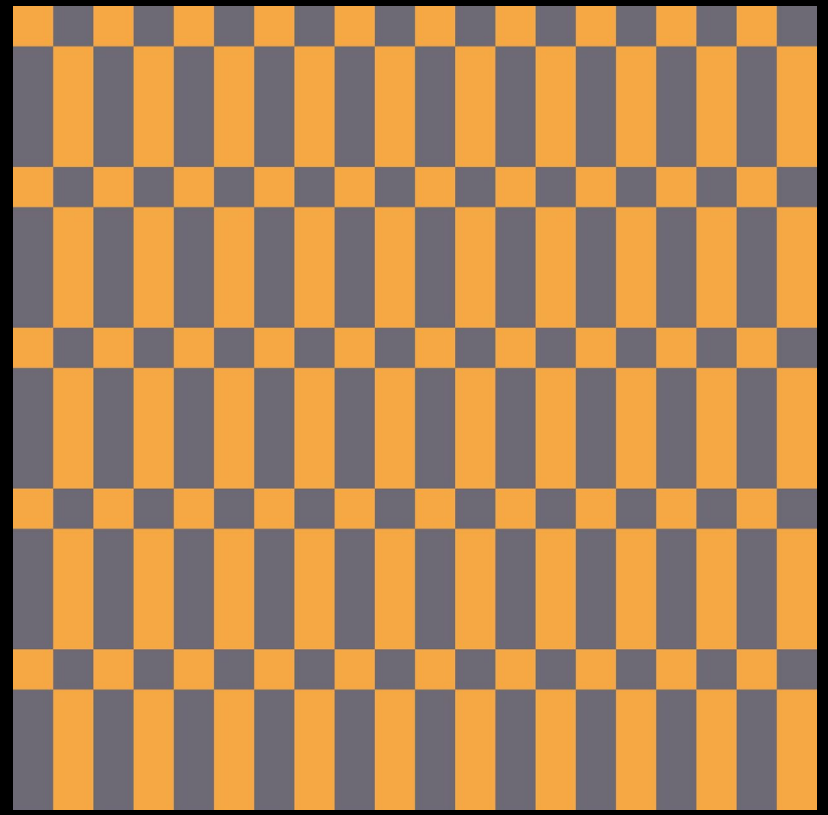
pixelDensity(1)
Screen DPI 72
Screen Size 1200,1700

Print DPI 72
Print Size 17 X 24 inches



pixelDensity(2)
Screen DPI 144
Screen Size 1200,1700

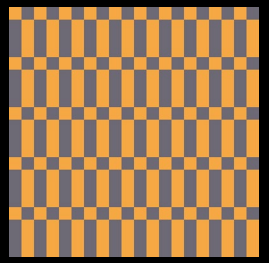
Print DPI 72
Print Size 34 X 48 inches



pixelDensity(3)
Screen DPI 216
Screen Size 1200,1700

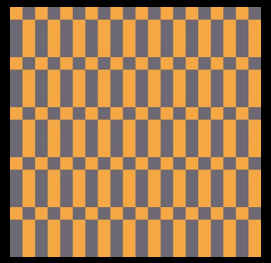
Print DPI 72
Print Size 51 X 72 inches

Scale down the larges image to 17 X 24 inches to increase the resolution



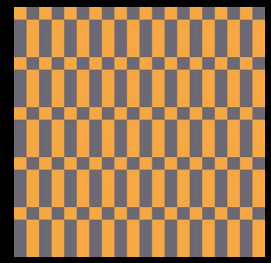
pixelDensity(1)
Screen DPI 72
Screen Size 1200,1700

Print DPI 72
Print Size 17 X 24 inches



pixelDensity(2)
Screen DPI 144
Screen Size 1200,1700

~~**Print DPI** 72~~
~~**Print Size** 34 X 48 inches~~
Scale Down by 2
Print DPI 144
Print Size 17 X 24 inches



pixelDensity(3)
Screen DPI 216
Screen Size 1200,1700

~~**Print DPI** 72~~
~~**Print Size** 51 X 72 inches~~
Scale Down by 3
Print DPI 216
Print Size 12 X 24 inches

Steps to Print

1. Set **pixelDensity(1)** : This will set the canvas to 72 DPI
2. Determine the pixels for the canvas:
   - For E.g. 17 X 24 in = createCanvas(1200,1700)
3. Complete your drawing
4. When ready to save/print, set **pixelDensity(3)**
5. Save your file to PNG
   - **NOTE:** Your file will be 3 times the original size
6. Scale the Image down to 17 X 22 either in Photoshop or online tool (https://convert-dpi.com/)
7. Work with Alex/VLR Lab to print your pattern

P5.js functions

We have been using functions all this while....
draw(), circle(), rect()
These are commands to tell the computer to take specific pre-defined actions.

In p5.sj we can create our functions to help us *organize our code into smaller chunks and treat complicated tasks as a single step.*

P5.js functions

This is the name of your function, and you can call it anything

```
function myFunction(){

        //Do Something
}
```

You can create functions that take it parameters

```
function myFunction(x,y){

        //Do Something
}
```

Learn More: https://happycoding.io/tutorials/p5js/creating-functions

P5.js functions

Let’s make a function that will create....
...a red square with a circle

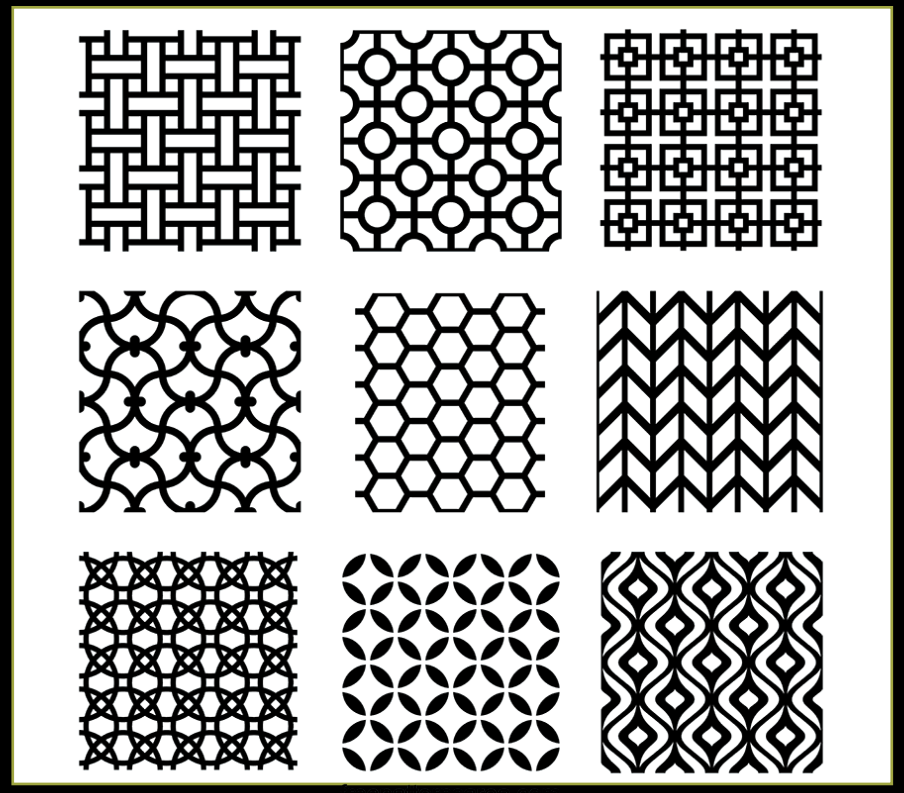
Answer: https://editor.p5js.org/scotchANDsolder/collections/mAmAcn6Su

NOTE: I will be saving in class code examples. You can access them using the link above. I have also put this on the homepage of the class website for easy access/

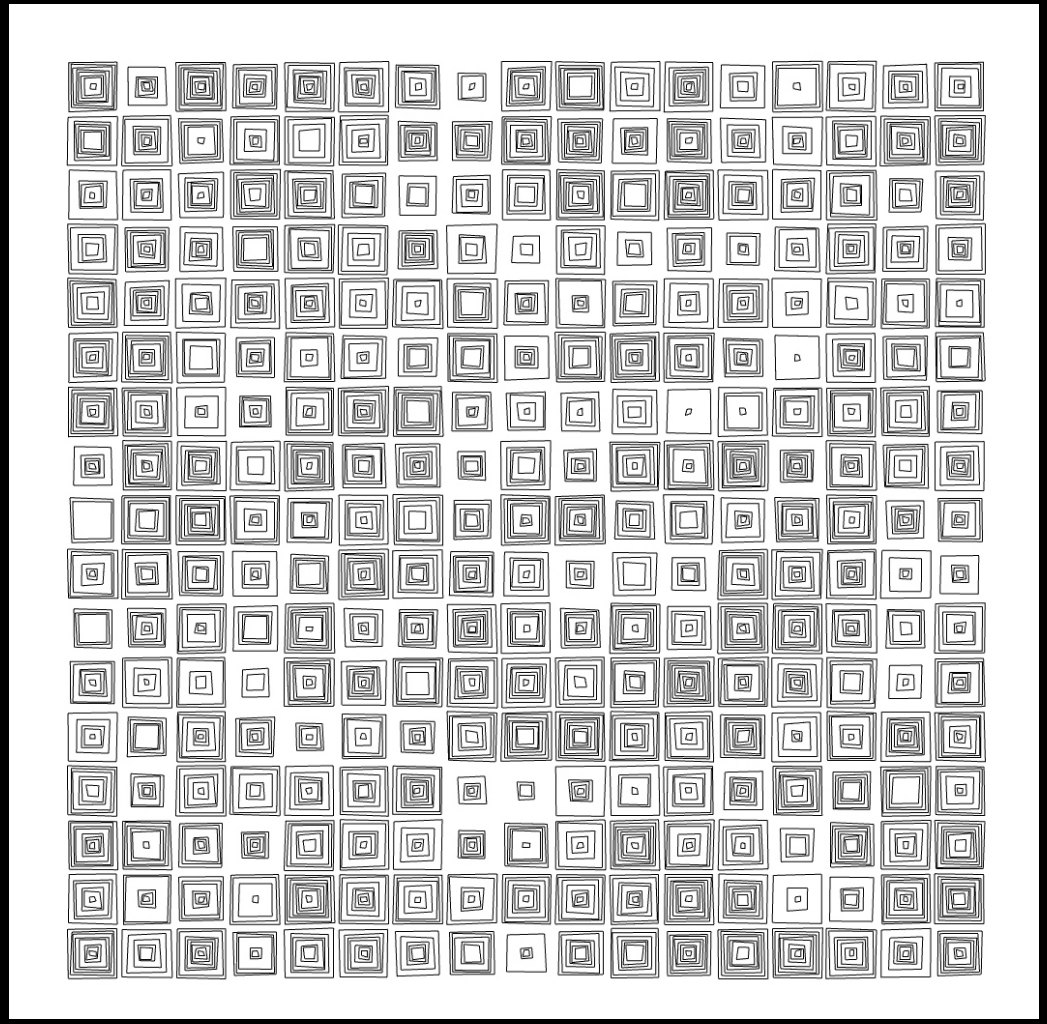
Pattern Forms

Motif: The starting point of any pattern is the single element that will be repeated. Use functions for this!

Tessellation: Process of tiling of a flat surface using or more geometric shapes (motifs)



P5.js functions



What is the motif here?

Let’s recreate this Vera Molnar drawing using functions

Notes & Tips

- Randomness Spectrum
  - At one is complete chaos and the other end is complete structure. Find a balance!
- Use functions to create motifs
- Use nested loops to tile your pattern
- Start with the motifs first, sometimes doing it all at the same time can be challenging.
- Draw on Paper!
- Do not forget Colors &Transparency