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## Printed Repeat Pattern Development for Textiles: Design Theory and Process

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Printed Repeat Pattern Development for Textiles:  
Design Theory and Process

An Undergraduate Honors Thesis  
Submitted in Partial Fulfillment of  
University Honors Program Requirements  
University of Nebraska-Lincoln

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College of Education and Human Sciences

March 15, 2021

Faculty Mentor:  
Michael Burton, MFA

## Abstract

I created a collection of fifteen printed repeat patterns accompanied by a written description of the research and development process as a creative project to fulfill the requirements of a Senior Honors Project. Looking at this project from a traditional research standpoint, I sought out to answer several questions that would help me to develop as a textile artist. How do you find current, up-to-date, relevant trends, both ideological (macro) and material (micro)? How do you take these trends and communicate them visually, in an original fashion? How do you produce a collection of designs that is both diverse and cohesive? What is the specific, step-by-step process of creating a printed repeat pattern? Fashion and textile brands work through this process of identifying trends, establishing color stories, and developing new prints with every season. Through this creative project, I have been able to build on my years of coursework in the Textiles, Merchandising, and Fashion Design department and develop knowledge and marketable skills that will directly translate to a career in the fashion industry. In this accompanying written element, I discuss market and trend research, color story development, planning for diversity and cohesion and design, step-by-step process instruction, and display the resulting collection of patterns.

Key Terms: Printed Repeat Patterns, Fabric Design, Macro and Micro Trends, Color Story, Adobe Photoshop, Motif, Texture, Offset, Textiles

## Appreciation

I'd like to thank my faculty mentor Michael Burton for introducing me to new ways to put my art out into the world and for his guidance in this project. I'd also like to thank the University of Nebraska-Lincoln Writing Center for helping me find my confidence and style as a writer.

## Introduction

*The Modern Feminine* is a collection of printed repeat patterns designed for textiles, specifically for use in women's apparel. The collection, consisting of eight print designs and several alternative colorways, incorporates 2021 print trends and is inspired by the colors produced in sustainable textile dyeing by food byproducts.

I began this project with a goal of creating a line of 5-8 repeat patterns for textiles to be used in my senior collection. Starting out, the concept was to make a statement through the use of text, the color palette, and the overall theme of the line. However, as I began designing, this project became much more about design theory and the process of taking art and setting it into repeat. I shifted from a conceptual approach to a formal approach, as I thought less about conveying a message and more about the general aesthetic.

Through researching contemporary surface illustrators, I noticed that it's important to have a distinct style, and that creating a distinct style involved three things: color story, proportions, and the subject of the print's motif or texture. After choosing a color story, I experimented with drawing a variety of subjects, ranging from realistic to abstract, and developed my own sense of proportion and drawing style to use in these designs. Using Procreate for iPad and Photoshop and Illustrator for Mac, I designed the final eight repeat patterns and seven duplicates in alternative colorways.

## Market and Trend Research

I wanted to create a product that would be relevant in the current market by taking trends and competitor analysis into consideration. I used Instagram as my primary source for research into recent trends and popular brands. Apparel companies use Instagram as a home for their

brand as well as a resource for directed advertising, so it allowed me to see trends in real-time, rather than waiting for formal articles and analyses to be published.

I started by searching for popular womenswear brands like Reformation and Urban Outfitters in order to trigger Instagram’s algorithm to show targeted ads and suggested posts for similar women’s clothing brands. Dozens of brands started showing up in my Instagram feed, and over time, I narrowed my inspirations for the collection down to three brands: Sezane, Lisa Says Gah, and Lucy and Yak.

Sezane stood out because of the brand’s sophistication and its ability to produce modern pieces with the classic aesthetic of French fashion. Lisa Says Gah, a brand made popular by its influential Instagram presence and distinctive prints, repeatedly appeared in my suggested posts. I came across Lucy and Yak through a collaboration with one of the illustrators I followed for both design and career inspiration. Lucy and Yak often does collaborations with textile designers to source unique repeat prints for its items.

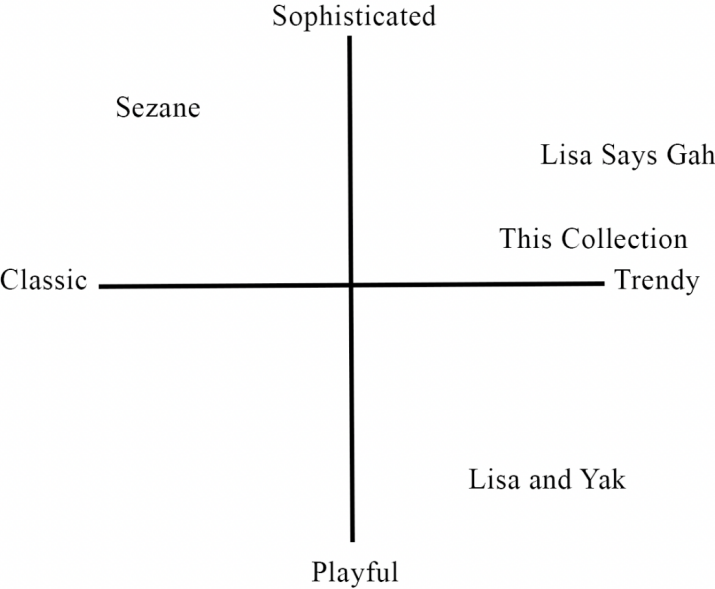


Figure 1: Brand Comparison

These brands were using large singular motifs, which I incorporated into *Sunglasses*; large scale prints, which I used for most of my designs as a personal design preference; lifestyle items, which I incorporated in *Cards*; and super-saturated colors.

Along with micro trends like scale and color, many brands are capitalizing on macro trends like sustainability, which has grown from a trend to a movement within fashion. Incorporating larger, ideological trends into a collection or a brand helps customers connect to a brand. As a nod to the trend toward sustainable fashion, I chose colors that are produced in natural textile dyeing.

I also followed several textile designers and surface illustrators to research successful repeat designs. This research followed a similar trajectory to the research I did on clothing brands, in that I followed a few accounts and allowed Instagram's algorithm to guide me to similar accounts. Eventually, I found several accounts with successful design careers and large followings and was able to observe both consciously and subconsciously the design aspects that made their work successful.

People are currently a popular subject for repeat patterns, and while some designers like to depict gadgets or lifestyles as novelty prints, others stick to abstractions or geometrics. There are several classic print styles that persist over time, such as stripes, florals, ditsies and dots, and textural designs. Floral is ubiquitous and present in every designer's portfolio, and there are distinct styles of floral patterns that range from realistic depictions to abstractions to color-blocked forms. I found several designers that work almost exclusively in designing florals: Alison Janssen, Elizabeth Rachael, Olivia Victoria, Michelle Parascandolo, and the Australian fabric brand The Strawberry Thief. I browsed through their work and noted design aspects like arrangement, spacing, use of color, movement, outlining, and size.

Along with florals, I found some accounts that worked in more abstract shapes to create designs, but ultimately decided that would not be at the forefront of my collection. However, I did draw inspiration from some designers who use distinctive motifs to create tossed patterns. Specifically, Allison Cole, Alenka Karabanova, and Rafaela Perasinic used motifs like people, animals, and lifestyle gadgets to create unique, modern fabric designs. After doing some research into popular accessories by browsing the Accessories category on websites like Urban Outfitters and ASOS, I chose to use sunglasses and playing cards to use as motifs.

Using Instagram as the primary resource for my research provides various limitations. Allowing the Instagram algorithm to determine which brands and artists I was exposed to likely excluded many other brands or accounts I could have used as inspiration, especially ones that cannot afford to buy targeted ads on the platform. However, every Instagram user is subject to the Instagram algorithm, so the brands I found through this method are more likely to show up in the feed of my target market given they follow popular women's clothing brands I initially searched. If consumers' Instagram feeds are saturated with these brands, these brands are more likely to influence buying patterns and design trends. Therefore, I found it useful to find the brands which target consumers are most exposed to in order to produce a competitive, viable product.

## Color Story

Having a cohesive color story is integral to creating strong designs that work together in a convincing line. With the principles of color theory in mind, I wanted to use mainly warm colors with similar values and levels of saturation. In my trend research, I found that saturated colors are a popular trend in print design, and that bright reds and royal blues are commonly being used



by brands like Lisa Says Gah and Lucy and Yak. Because I had the goal of working with trends in this line, I incorporated a few saturated colors in the overall color story. However, I felt limiting the use of bright, statement colors and filling the rest of the color story with softer colors would produce a more balanced, consumable product.

Most of the colors used in this line are directly inspired by the colors achieved in natural dyeing. I personally value sustainability, and I found that sustainability is one of the macro trends most influencing fashion today. One of the ways I practice sustainability as a textile artist is by using food byproducts to dye fabrics naturally. I wanted to dye fabrics to function as complimentary solids for this collection, so it was important to me to use colors that closely resemble what is achievable in natural dyeing.



*Figure 2: Solids dyed to compliment this line. Brown dyed with coffee and tea. Pink dyed with avocado pits.*

Through research into dyeing recipes, I found that coffee, tea, and acorns produce brown; avocado pits and onions produce pink; turmeric produces orange; spinach produces green; and black beans produce blue. Natural dyeing does not typically produce heavily saturated colors, so

I chose to use a softer pink, orange, green, and brown, along with the more saturated brown and coral that aligned with color trends. This variety allowed me to create some visual balance within the color story.



*Figure 3: Final color story*

## Planning for Diversity and Cohesion in Design

I included a variety of motif types in order to create interest within this collection while maintaining a sense of cohesion through a consistent color story. The variety in motifs and texture produces distinct fabrics, while the consistent use of color allows these fabrics to be used together in practice as complementary textiles. I used only colors from the palette I established, experimenting with different variations to create cohesive alternative colorways.

I created diversity and differentiation between designs by varying the scale and nature of the motifs I used. *Sunglasses* features a singular motif that appears in the same orientation throughout the repeat. *Roses* features several abstract roses that work to blend together, creating texture. *Cards* takes multiple cartoon-like drawings and pieces them together like bricks to create a grid-like pattern whose repeat is not immediately noticeable. *Sunglasses* features a large-scale repeat, whereas *Organic Plaid* creates squares in a much smaller-scale repeat.

## Process

I used a few tools to create this collection, including an iPad Pro provided by the department of Textiles, Merchandising, and Fashion Design, my personal Macbook Air

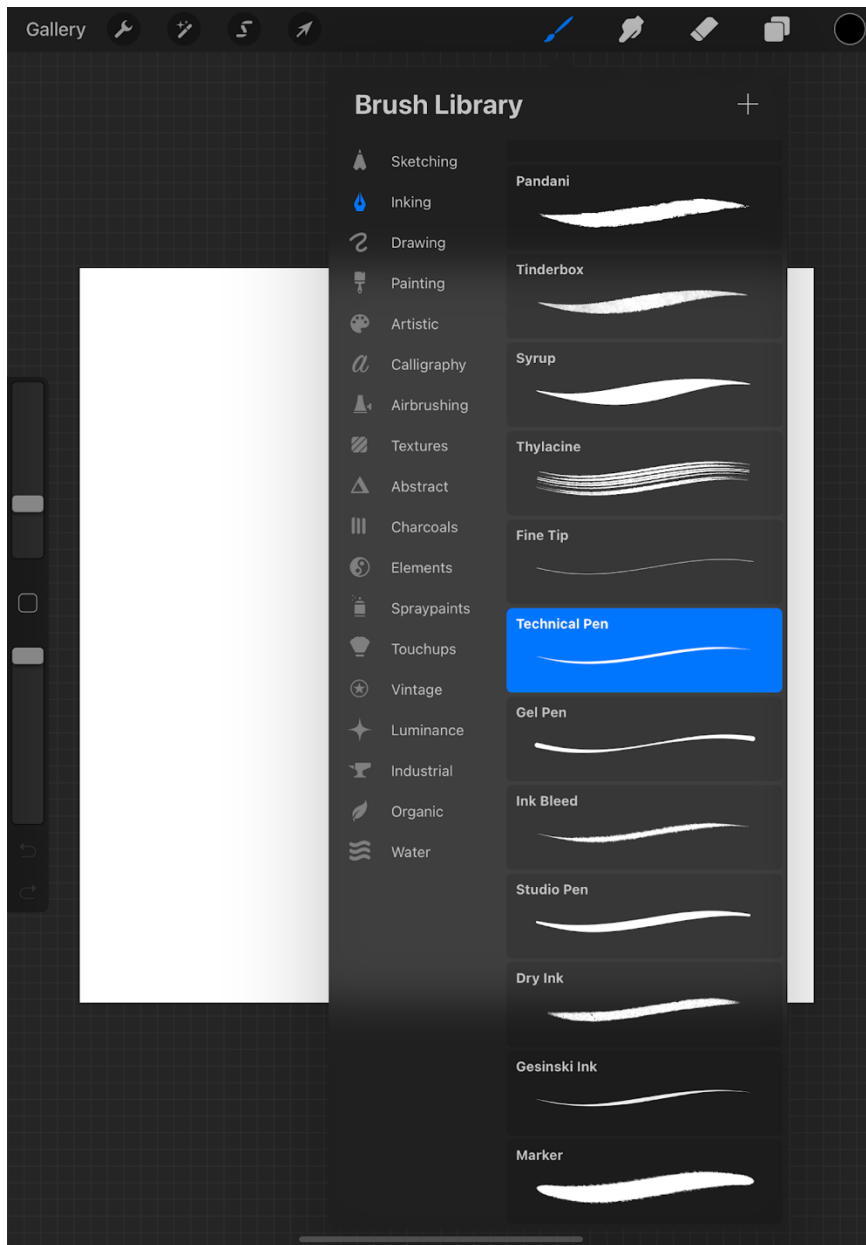
computer, Adobe apps provided by the University of Nebraska-Lincoln, and an Apple Pencil. I quickly learned that I needed an Apple Pencil to achieve the level of detail I was looking for, so I purchased one and immediately noticed the sophistication it provided in my work.

I tested several drawing apps including Adobe Sketch, Illustrator for iPad, Spark Page, and Procreate to find a platform that would allow me to create the initial digital art with ease. I judged these apps by a few criteria: range of functions, ease of undo/redo function, brush variety, color variety, and overall use experience. Procreate offered the best user experience as well as the widest variety of brushes, settings, and functions.

Drawing apps for iPad are effective for creating digital art, but I found that the best way to transfer motifs or textures into repeat and explore different colorways was to move them to Photoshop and Illustrator for Mac. There, I was able to use all of the functions offered by the Adobe apps.



*Figure 4: Procreate logo*



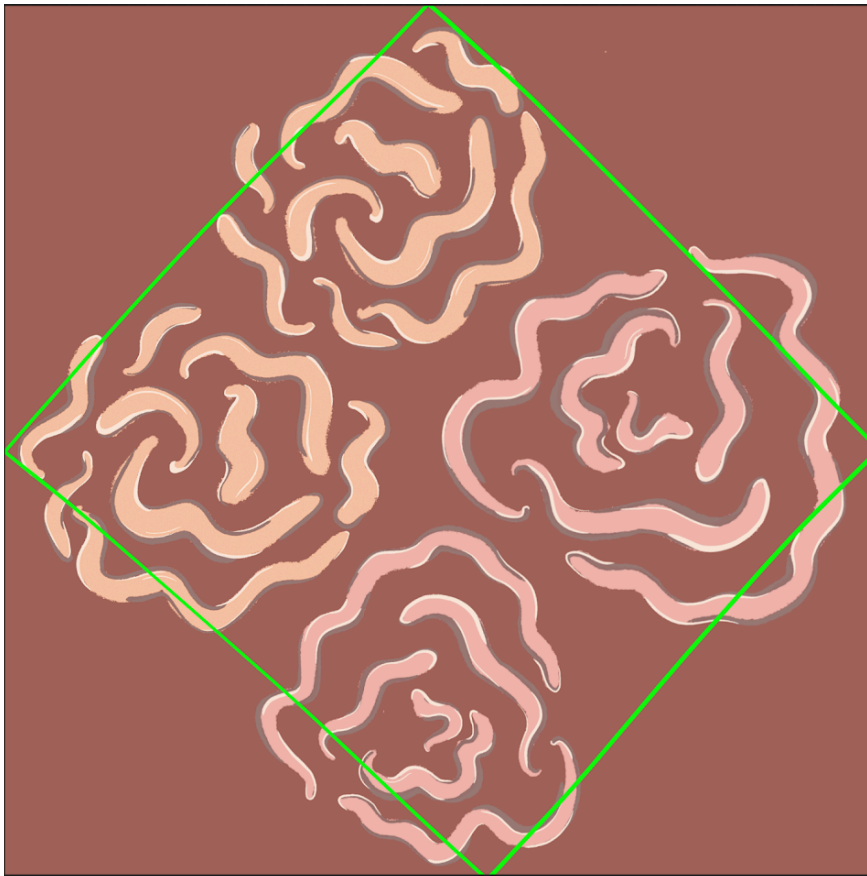
*Figure 5: Blank procreate document with brush options*

Repeat patterns vary in shape, scale, movement, and several other design factors. Some patterns use a single motif, often either arranged in an orderly, consistent manner, or tossed in an unpredictable pattern. Other patterns use several motifs that blend together to hide their repetitive nature, creating texture. In an effort to create some diversity among my designs, I used several different arrangements and motifs that varied in level of effort to hide their repeat.

There are several methods of creating a seamless repeat pattern that hides its repeating motifs. These methods include creating a tile, whether square, rectangular, or diamond, and arranging motifs to align if that tile were to be copied and pasted around itself infinitely.

I chose to use a square to format my repeating tiles so that I could arrange the tiles together neatly to be presented as a collection. Designing any shape tile follows a multi-step process:

First, draw a temporary diamond shape within your square as a guide for the initial motif(s). Draw your design, taking care not to stray too far outside the lines of the diamond guide. Depending on the nature of your design, you may need to make an effort to fill in the entire diamond, especially its corners.



*Figure 6: Initial motif inside diamond*

Next, offset the design. Offsetting a design allows you to create a tessellation out of the tile that will repeat seamlessly. The process involves inverting the diamond-shaped design, placing it on the edges of the tile. There are a few ways to offset a design, but I found it is easiest to convert your design to a square Photoshop file to start. Once in the Photoshop app, there is a specific offset function that you can take advantage of by selecting your design and clicking Filter > Other > Offset, which will prompt you to enter how many pixels down and to the right you want to move your design. To perfectly invert your square, divide the side length of the square file in half and enter that in both the Horizontal and Vertical Offset prompts.

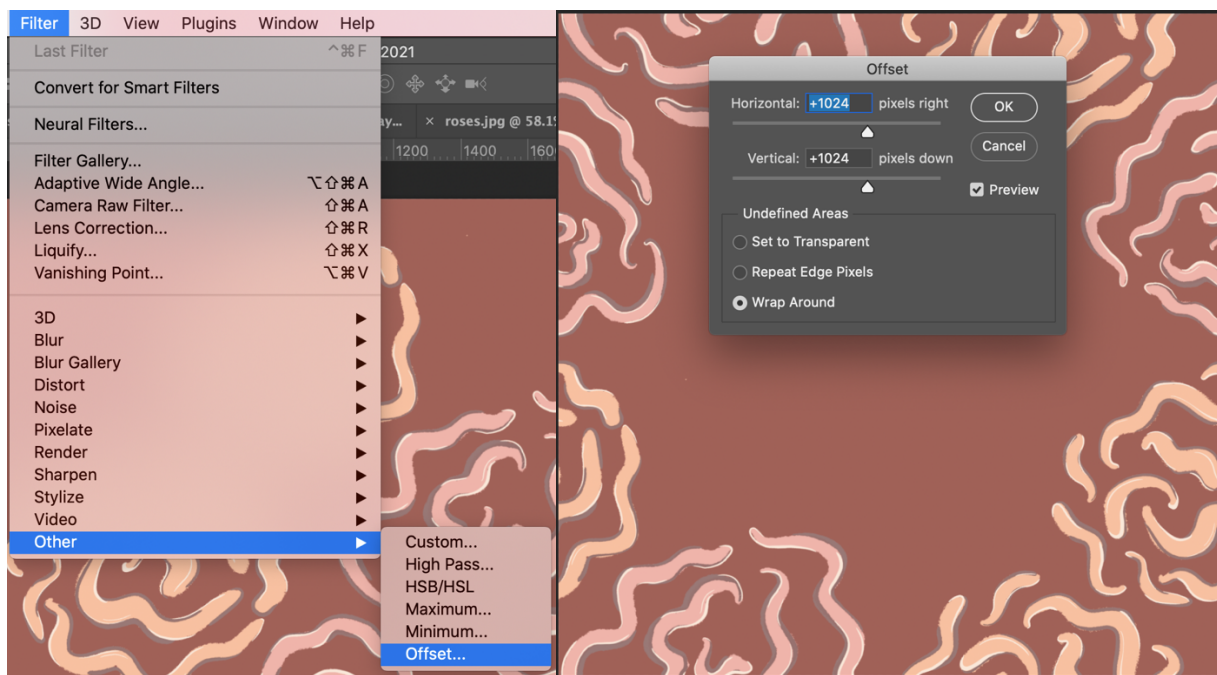


Figure 7: Offset function

If you want to manually offset your design, drag guides to the exact midpoint both horizontally and vertically on your file. Make sure that the snap function is on by clicking View > Snap and ensuring if there is a check mark next to “Snap.” This will allow you to cut your file to the exact quarter measurements needed to perform this function.

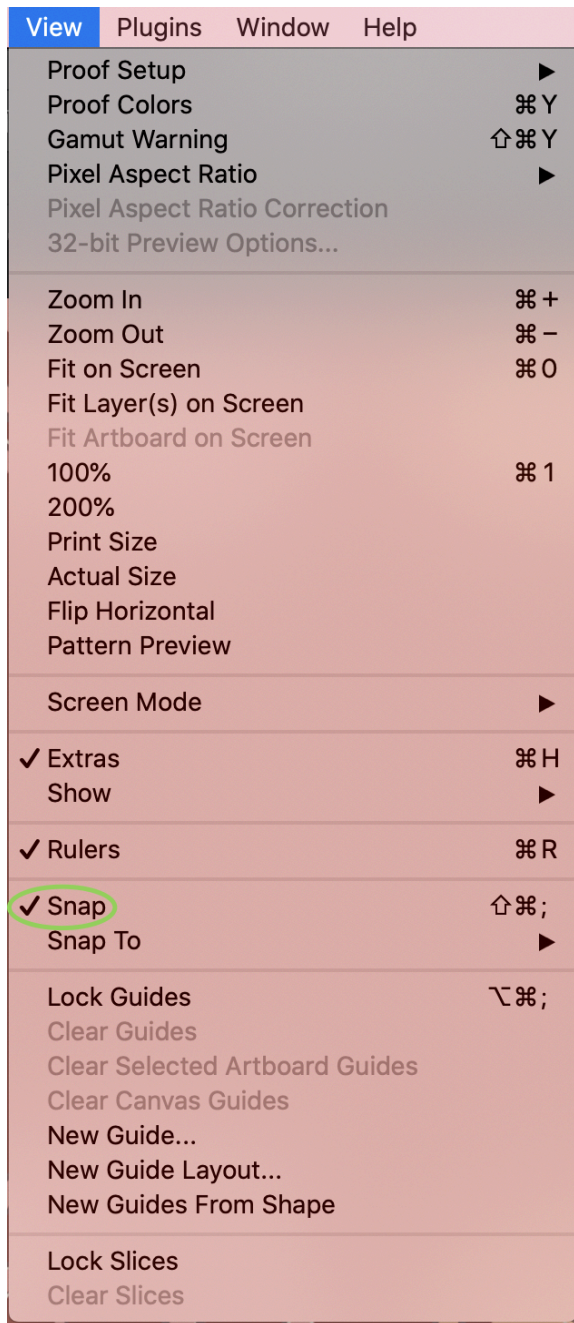
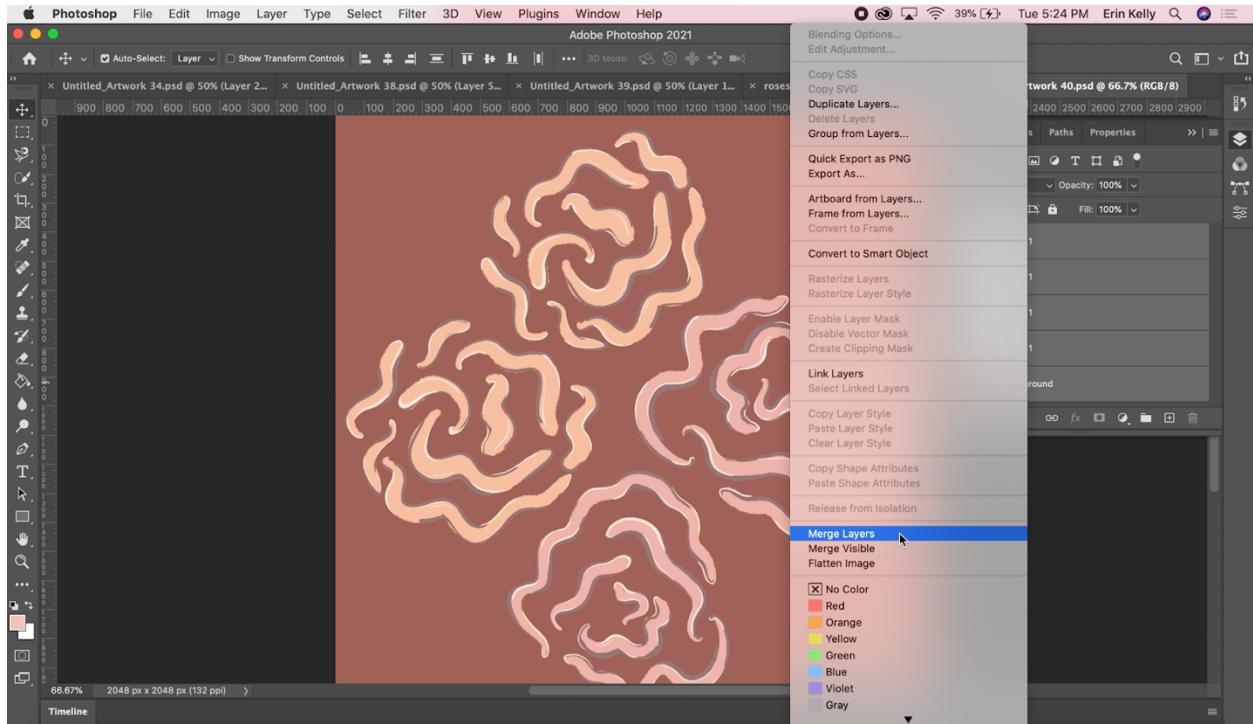


Figure 8: Snap function



*Figure 9: Select all Layers > Merge Layers*

Then, create four new layers. Use the Rectangular Marquee tool in the left-hand toolbar to cut and paste each quarter of the design into its own new layer. Turn off the visibility on the original layer with the design in the diamond guide.



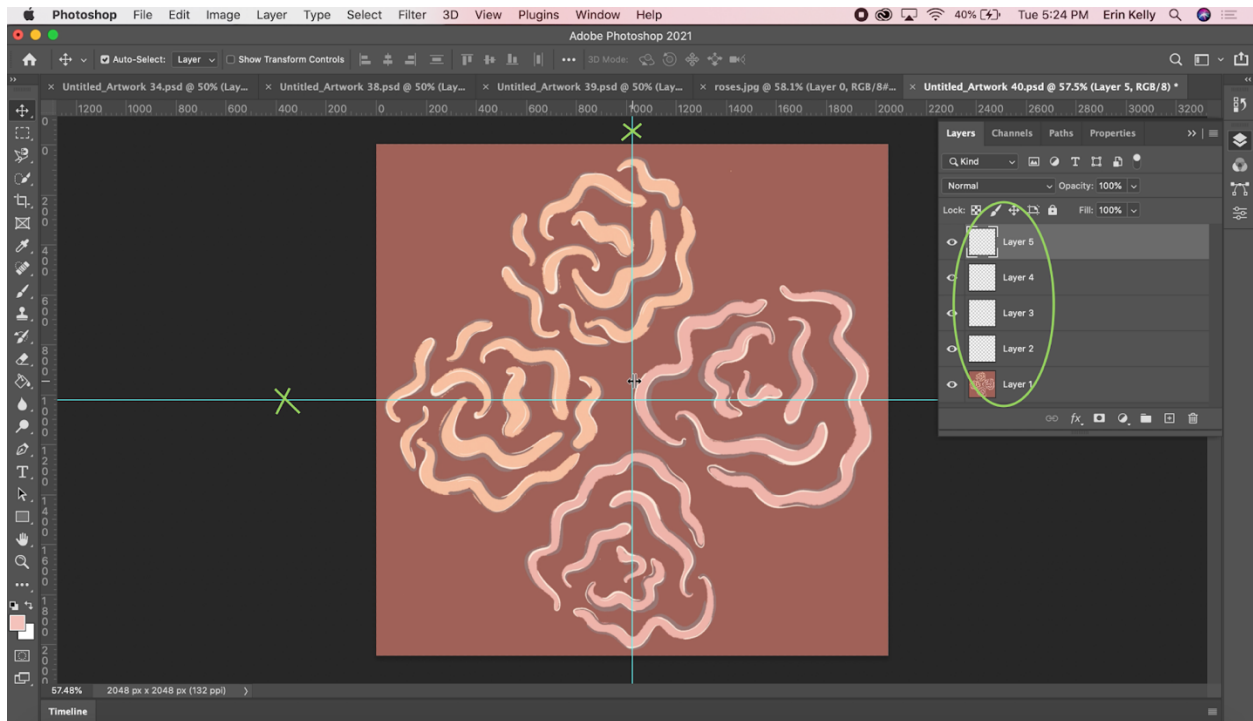


Figure 10: Create four new layers and drag guidelines to horizontal and vertical center points

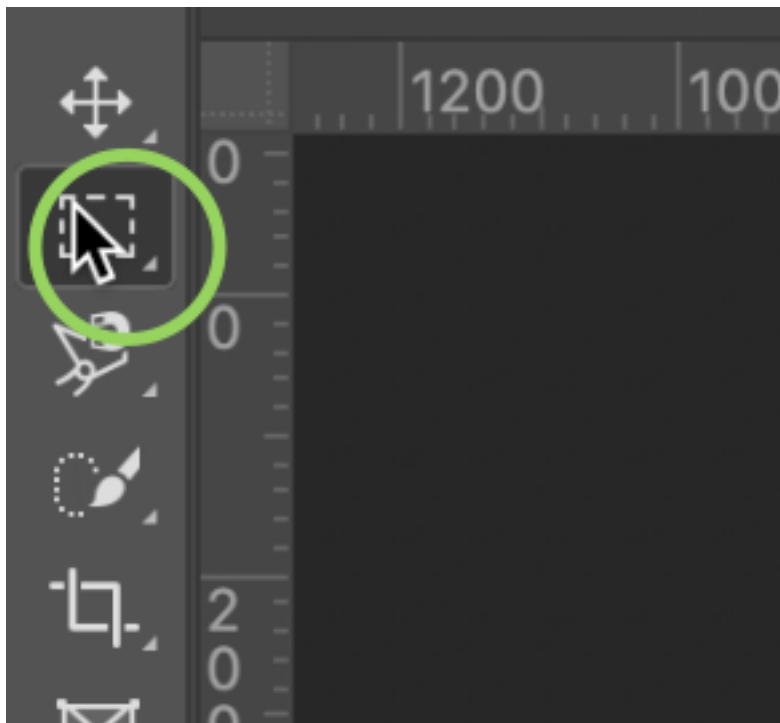


Figure 11: Rectangular Marquee Tool

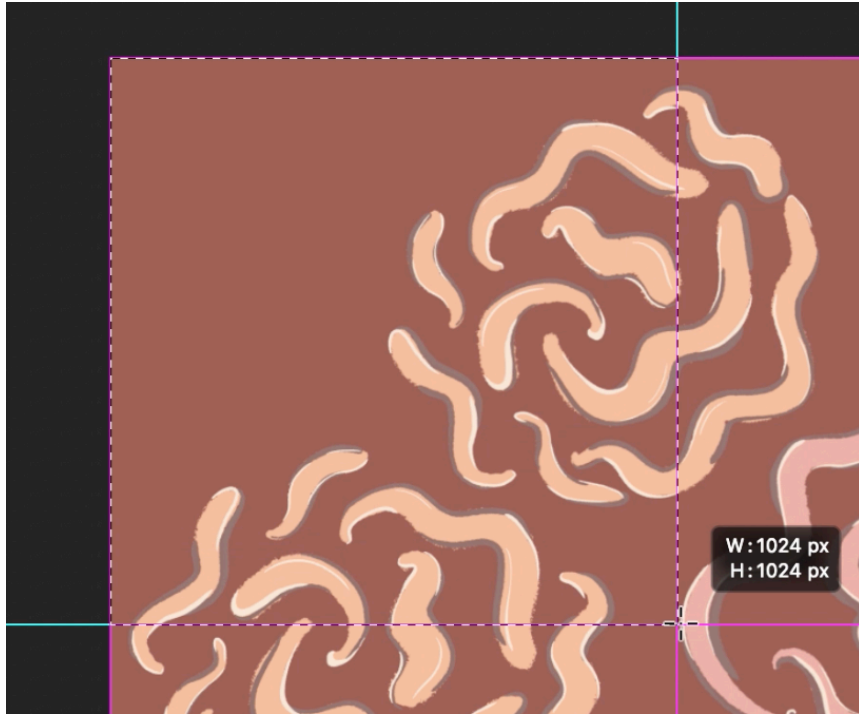


Figure 12: Select each quarter individually

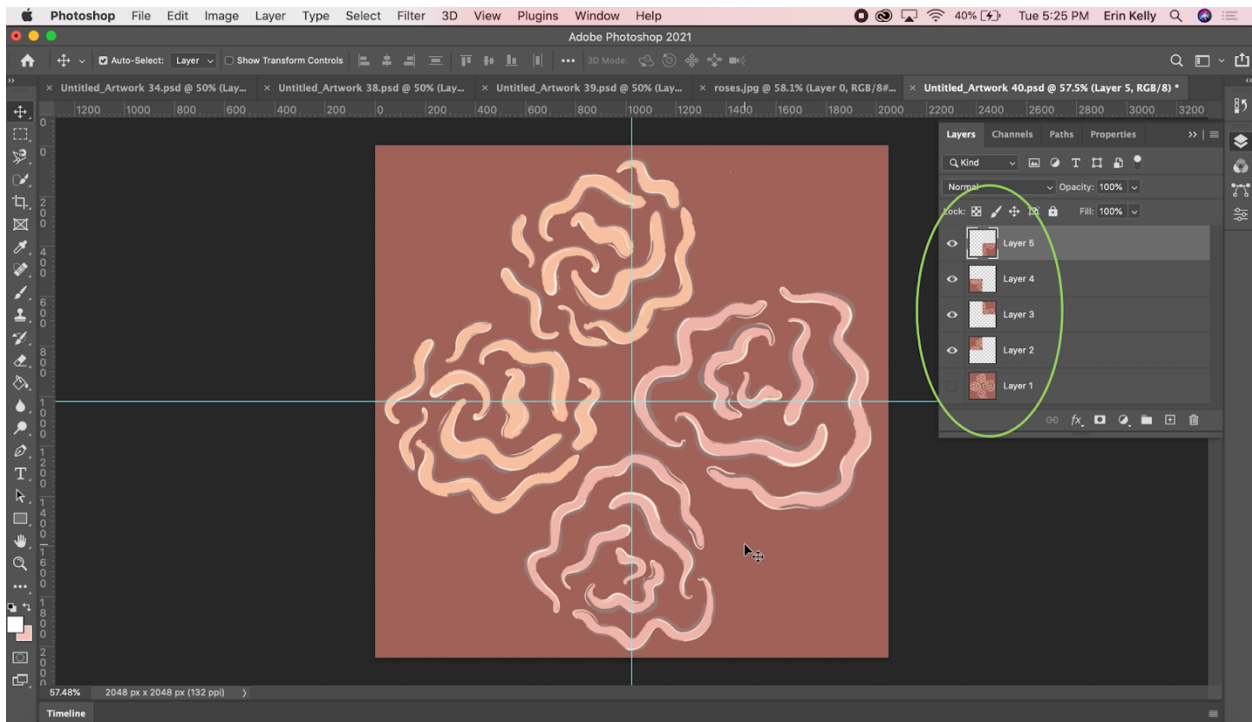
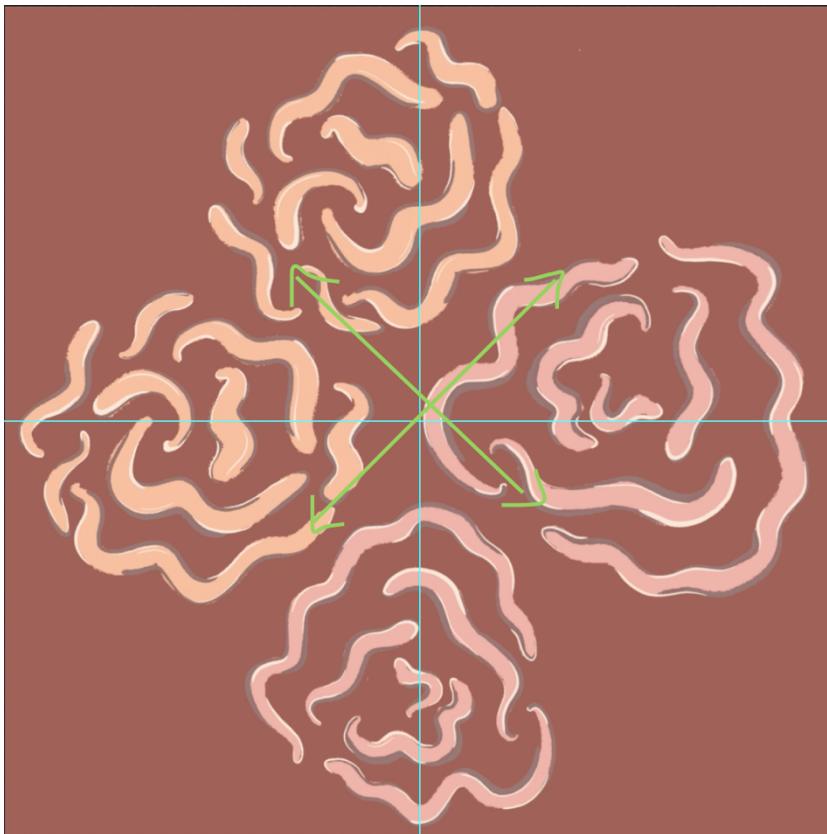
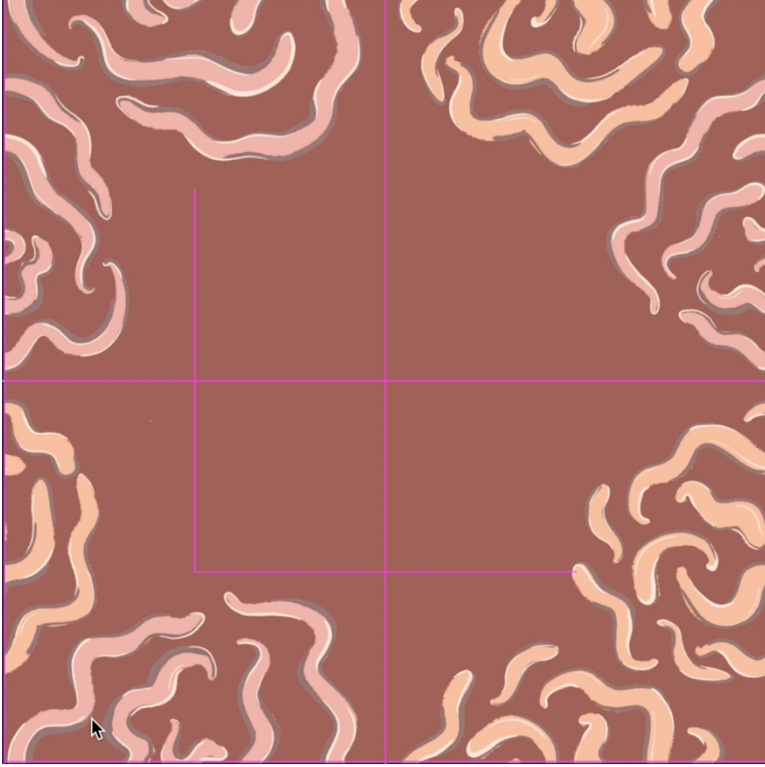


Figure 13: Paste each quarter into a new layer

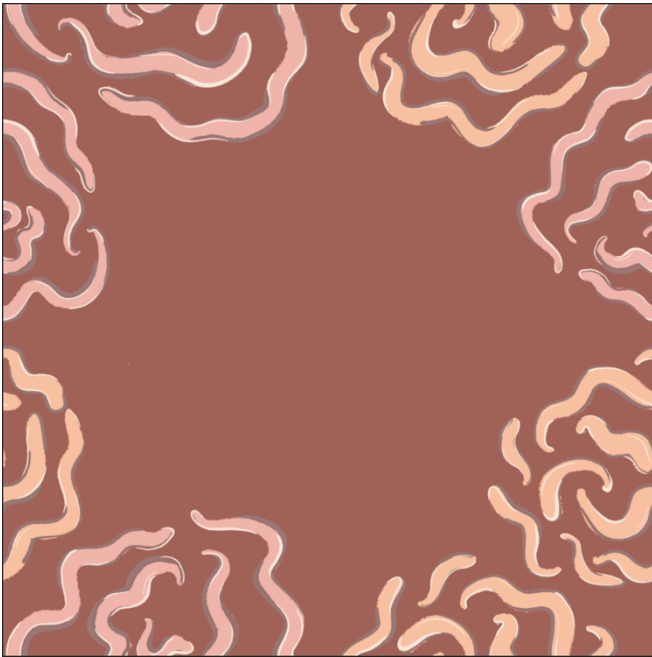
Drag the quarter in the upper-left corner into the lower-right corner. Drag the quarter in the lower-left corner into the upper-right corner. Drag the quarter in the upper-right corner into the lower-left corner. Drag the quarter in the lower-right corner into the upper-left corner. Select all four of the layers containing these quarter-pieces and select Merge Layers. The original diamond design should then be divided and appear on the corners of the square artboard, leaving an empty diamond in the center.



*Figure 14: Rearrange pieces*

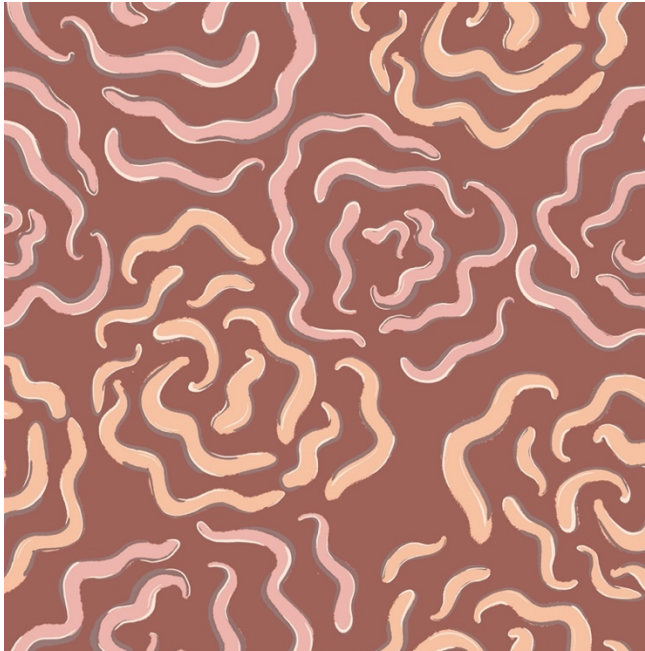


*Figure 15: Align quarters to fit perfectly in original square size*



*Figure 16: Completed offset function*

Then, complete your design by either drawing new content in this new, empty diamond, or copy and paste the original motif, depending on the nature of your design.



*Figure 17: Full tile*

Next, test how your design works as a repeat. Click Image > Canvas Size and enter 300% into both the Width and Height boxes. Then, hold down the alt or option button, depending on your computer, which should duplicate your design in a new layer. Drag this new layer next to your original tile, lining them up exactly. Repeat this until you have a total of eight new layers, all surrounding your original tile.

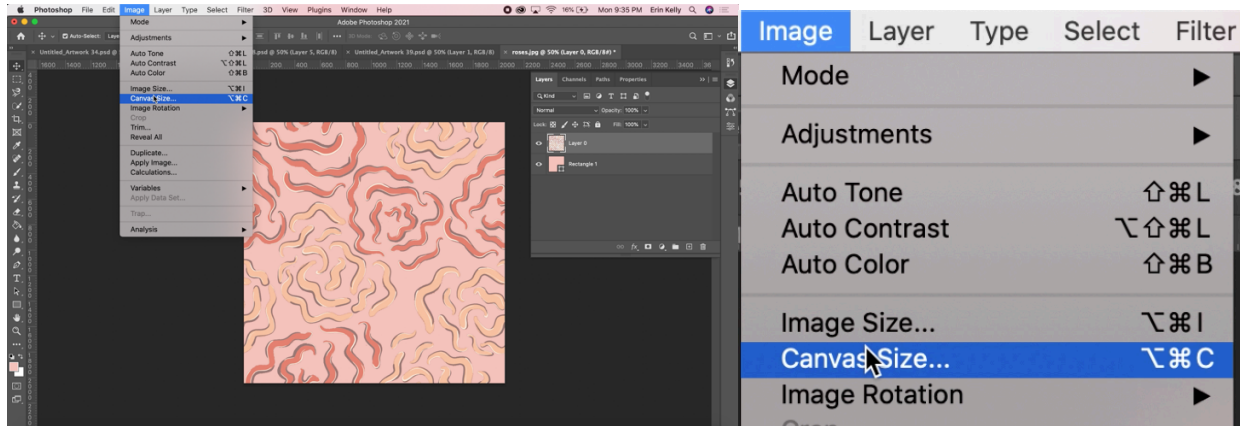


Figure 18: Select Image > Canvas Size

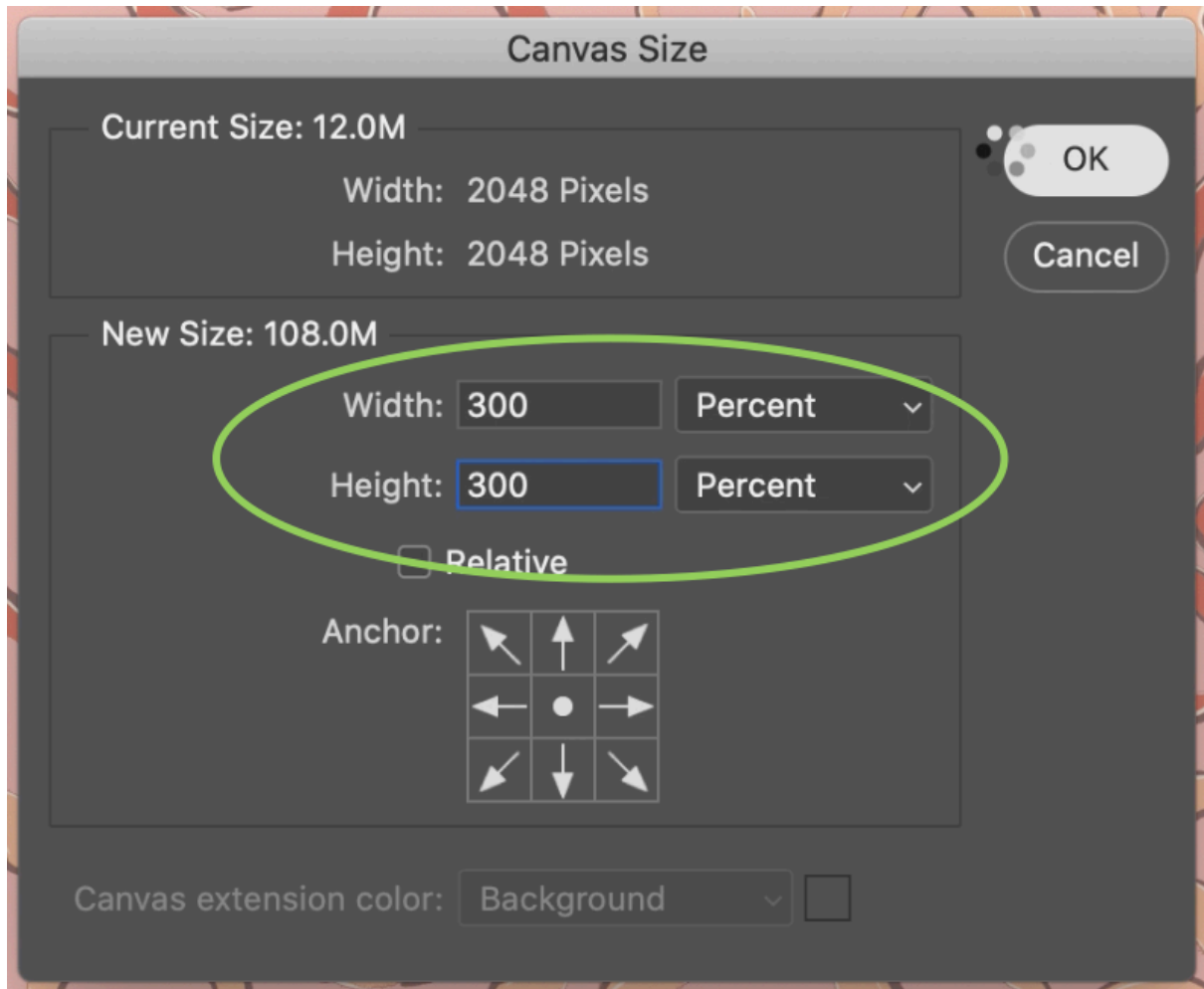


Figure 19: Set canvas size to 300% for both Width and Height

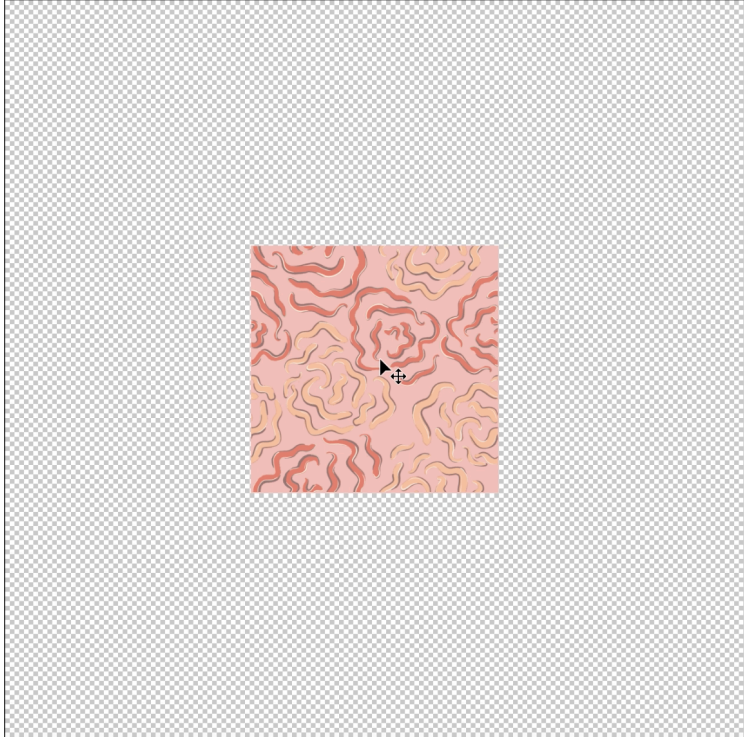


Figure 20: New Canvas Size

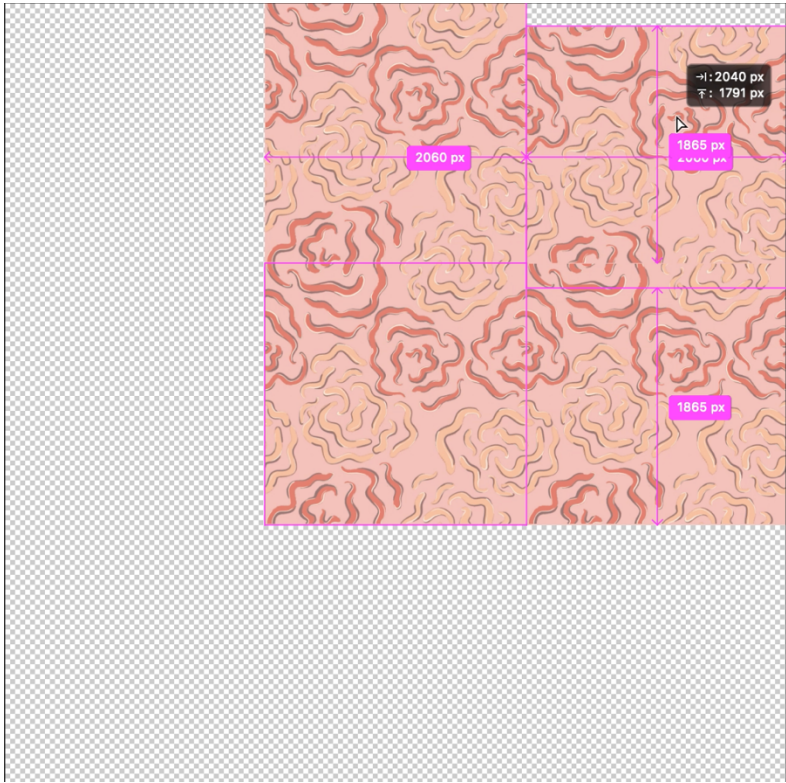


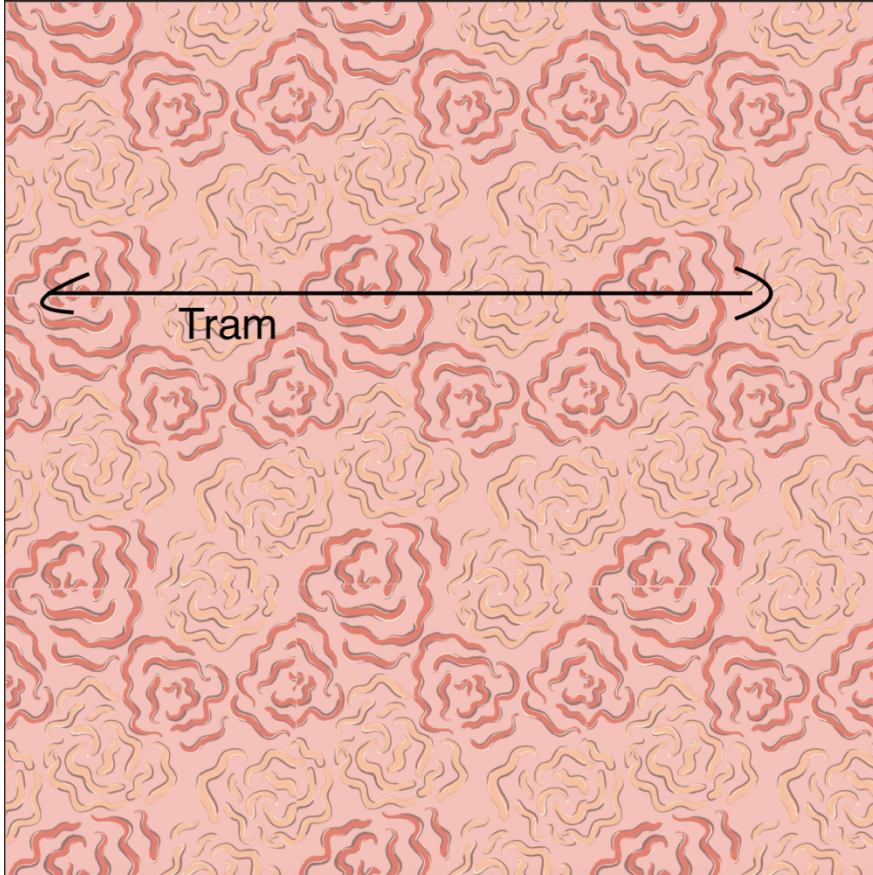
Figure 21: Hold Alt/Option key and drag new tiles to surround the original tile



*Figure 22: Tile in repeat*

Placing the tile into repeat allows you to evaluate the accuracy of the repeat and the movement within the design. If you notice an area where a motif does not line up at a seam, you will have to alter the original tile so that the design appears seamless. Depending on the nature of your design, if your motif is too obvious in its repeat, you may need to reevaluate the use of color and proportion within the design. Look for trams, which are lines created by the repeat of a motif that can affect the sophistication of a design.





*Figure 23: Tram*

Trams are often created by a motif that differs from the others in proportion or color. In the pattern above, the large, coral flower reveals the repeat of the pattern by creating a tram. If the flower was altered to be the same size as the rest, it would become more difficult to see the repeat, but you could still see the stripe-like pattern created by the two colors of flower motifs present. If all of the flower motifs were one color, it would become even more difficult to distinguish the repeat. However, depending on the nature and intention of the design, an obvious repeat may not be a concern. In this pattern, I wanted to create a stripe-like, chevron-type pattern using this flower motif, so the repetitive nature helps to create that sense of movement within the design.

Photoshop and Illustrator have an entire library of tools that can help modify a design if it needs altering to align at the seams, exchange one color for another, or resize motifs. The Organic Plaid was the most challenging design to transform into a repeating tile because the stripes I drew did not match up exactly at the seams. I used the Puppet Warp tool, Clone Stamp tool, Color Select tool, and the Paintbrush tool to alter the stripes to meet perfectly at each seam. The Puppet Warp tool allows for distorting an image or motif, the Clone Stamp tool takes content from one area and pastes it in another area, and the Color Select and Paintbrush tools perform color alteration. These tools allowed me to distort the curvature and color of the stripes and make the stripes match at the seams.



*Figure 24: Organic Plaid*

For *Sunglasses*, I needed to copy and paste the motif so that it could appear twice in the repeat. Using the Quick Selection tool, I selected the sunglasses motif, pressed copy, and pasted that motif onto the new layer after performing the offset function.

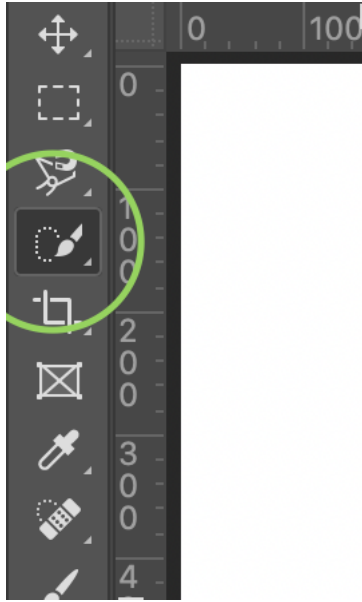


Figure 25: Quick Selection Tool

After creating each of the designs in their original colorways, I wanted to create depth in the collection by experimenting with alternative colorways. With my color palette in my swatches panel, I clicked **Select > Color Range** and used the Eyedropper to select the color I wanted to replace within the design. This function selects all of the area within the artboard that is currently that color. To change the color, click the Paint Bucket tool, select the new color from your swatches, and click in all of the selected areas.

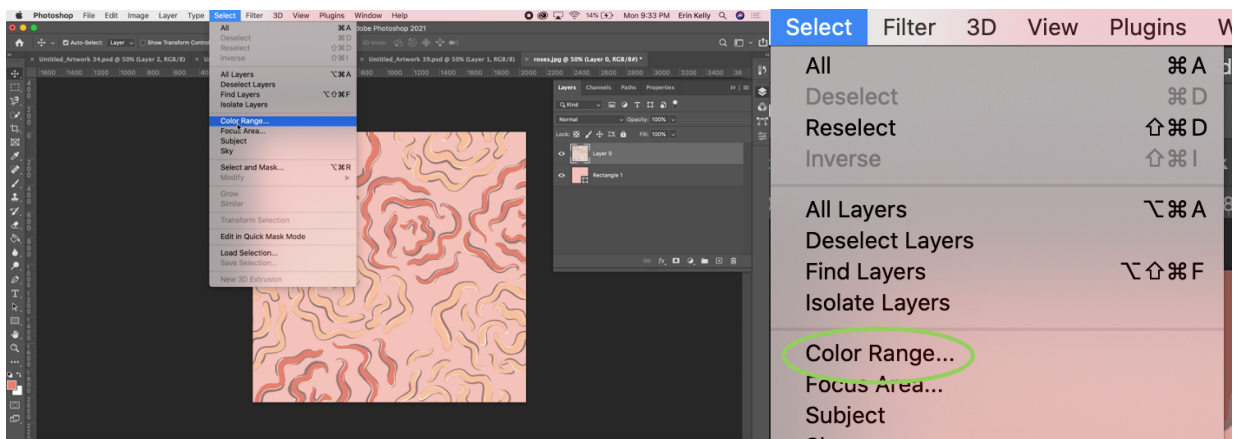


Figure 26: Select > Color Range

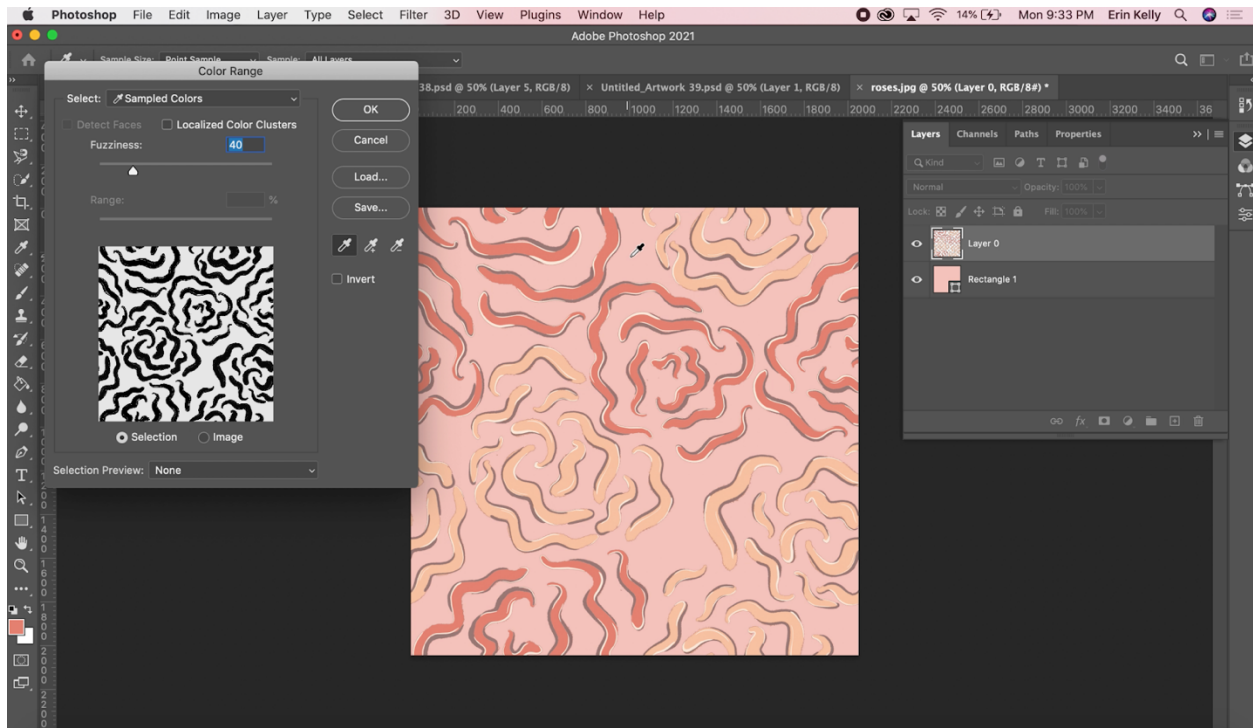


Figure 27: Use Eyedropper tool to select color range

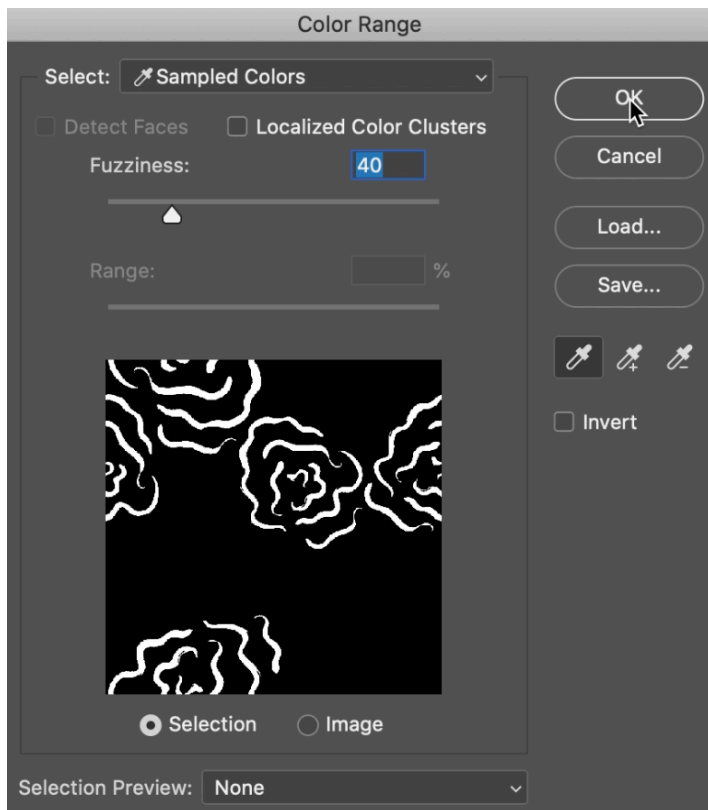
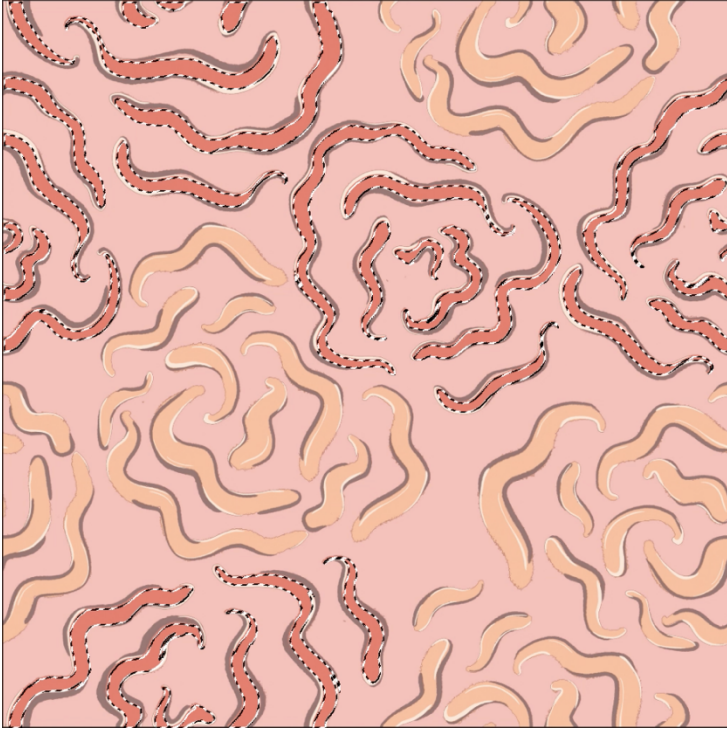


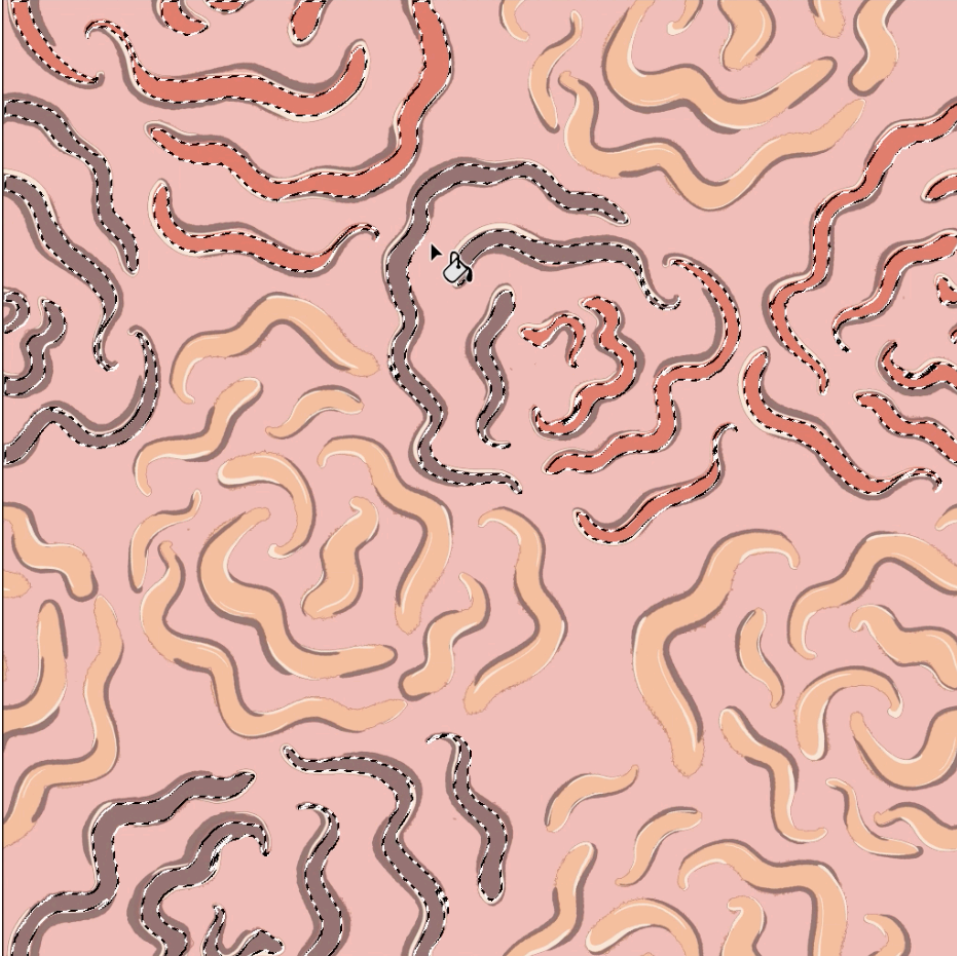
Figure 28: Select "OK" once color range is selected



*Figure 29: Selected color range*



*Figure 30: Paint Bucket tool*



*Figure 31: Recoloring using Paint Bucket tool*

## Results



*Figure 32: Cards in green*



*Figure 33: Floral Winds in cream*



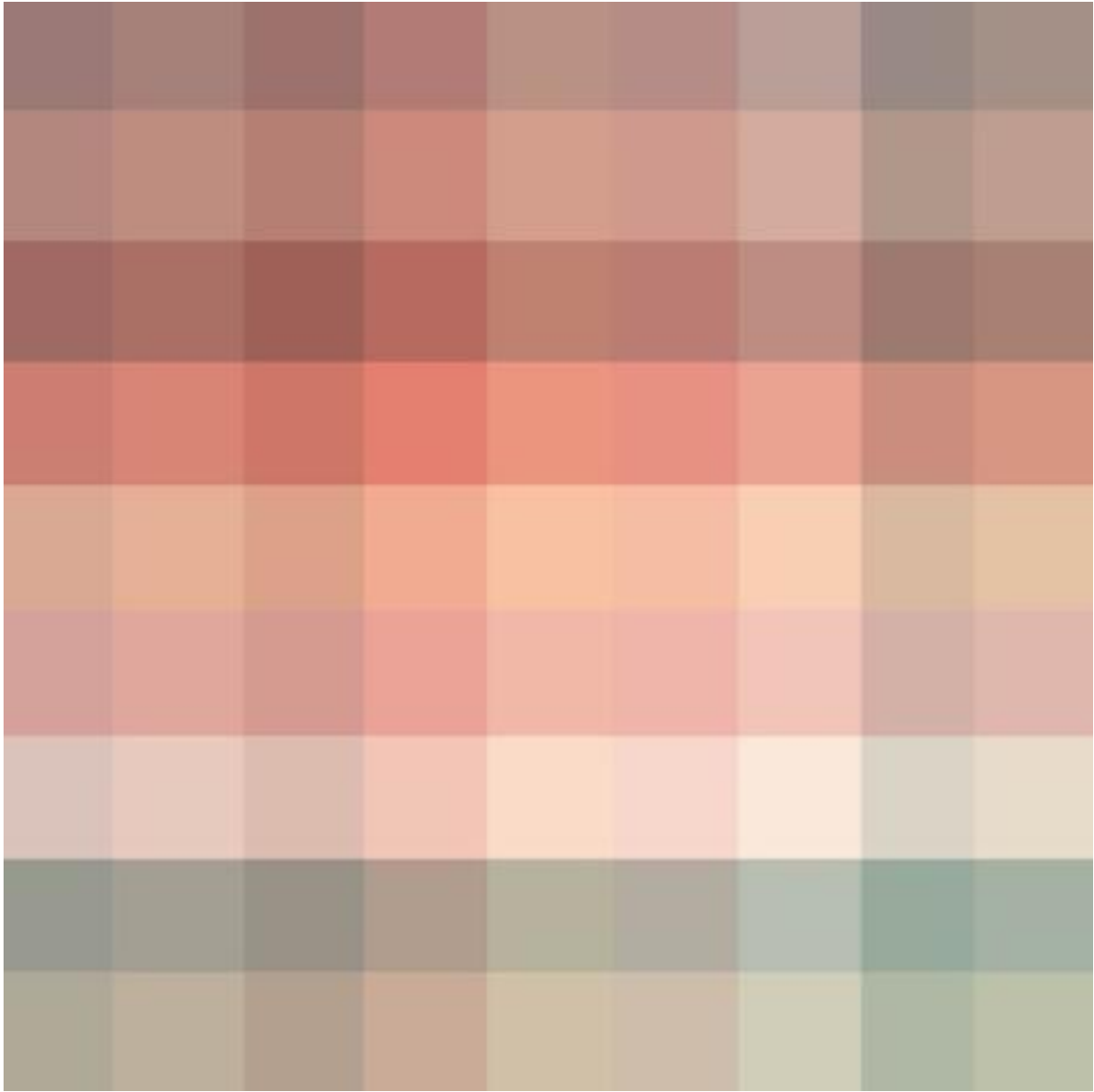
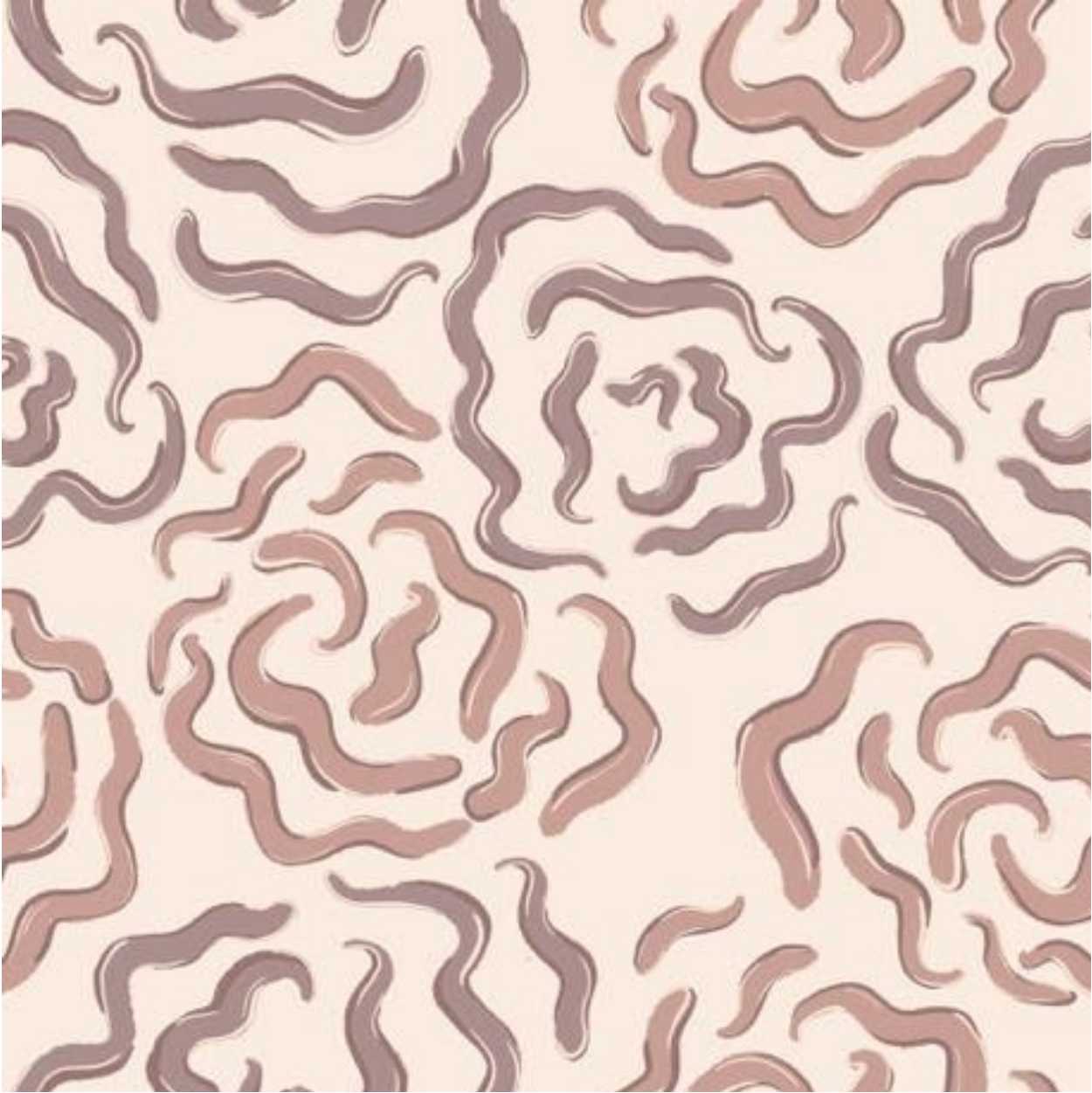
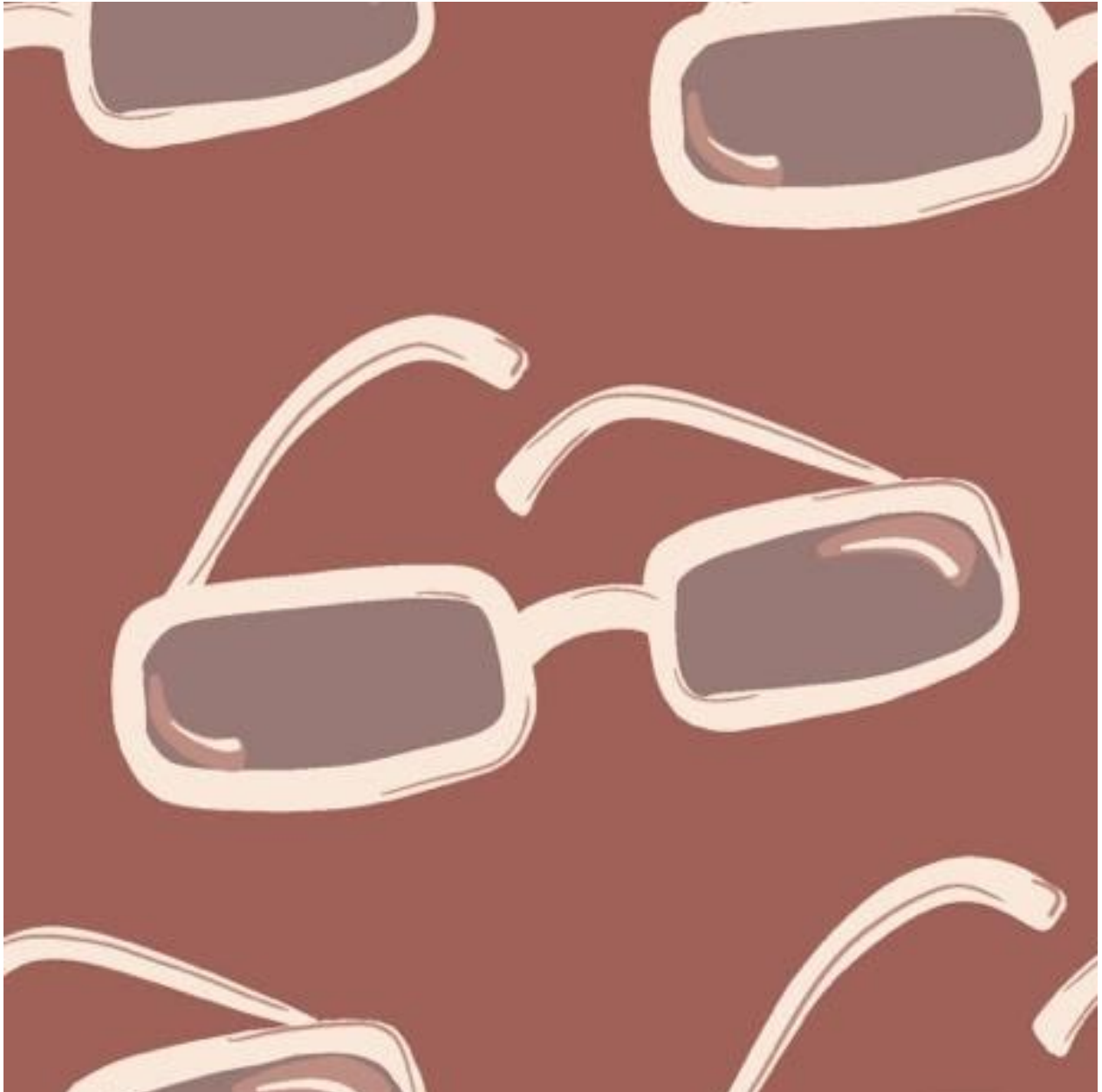


Figure 34: Geo Plaid



*Figure 35: Roses in brown and cream*



*Figure 36: Sunglasses in coffee*



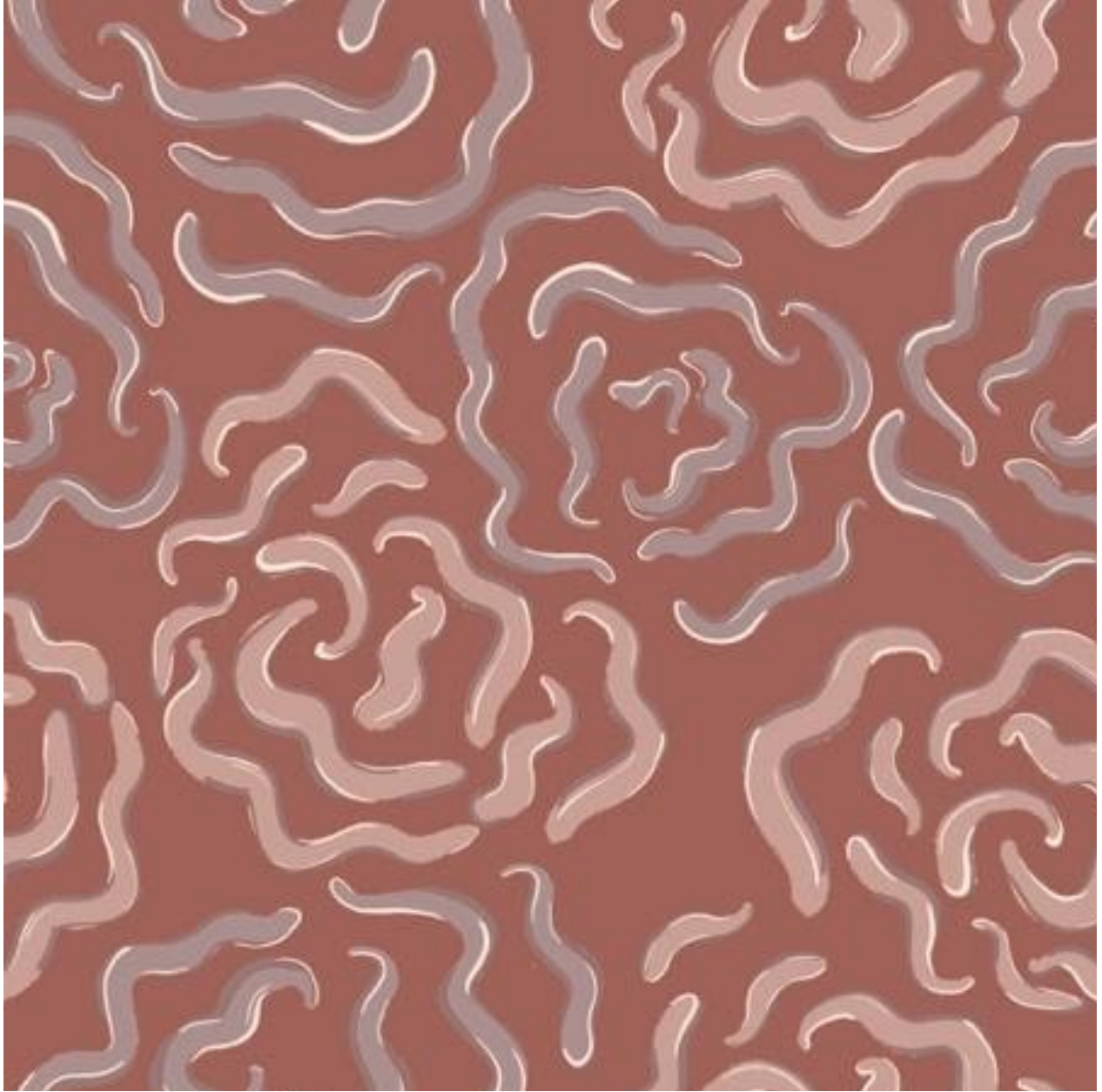
*Figure 37: Organic Plaid*



*Figure 38: Sunglasses in mint*



Figure 39: Cards in brown

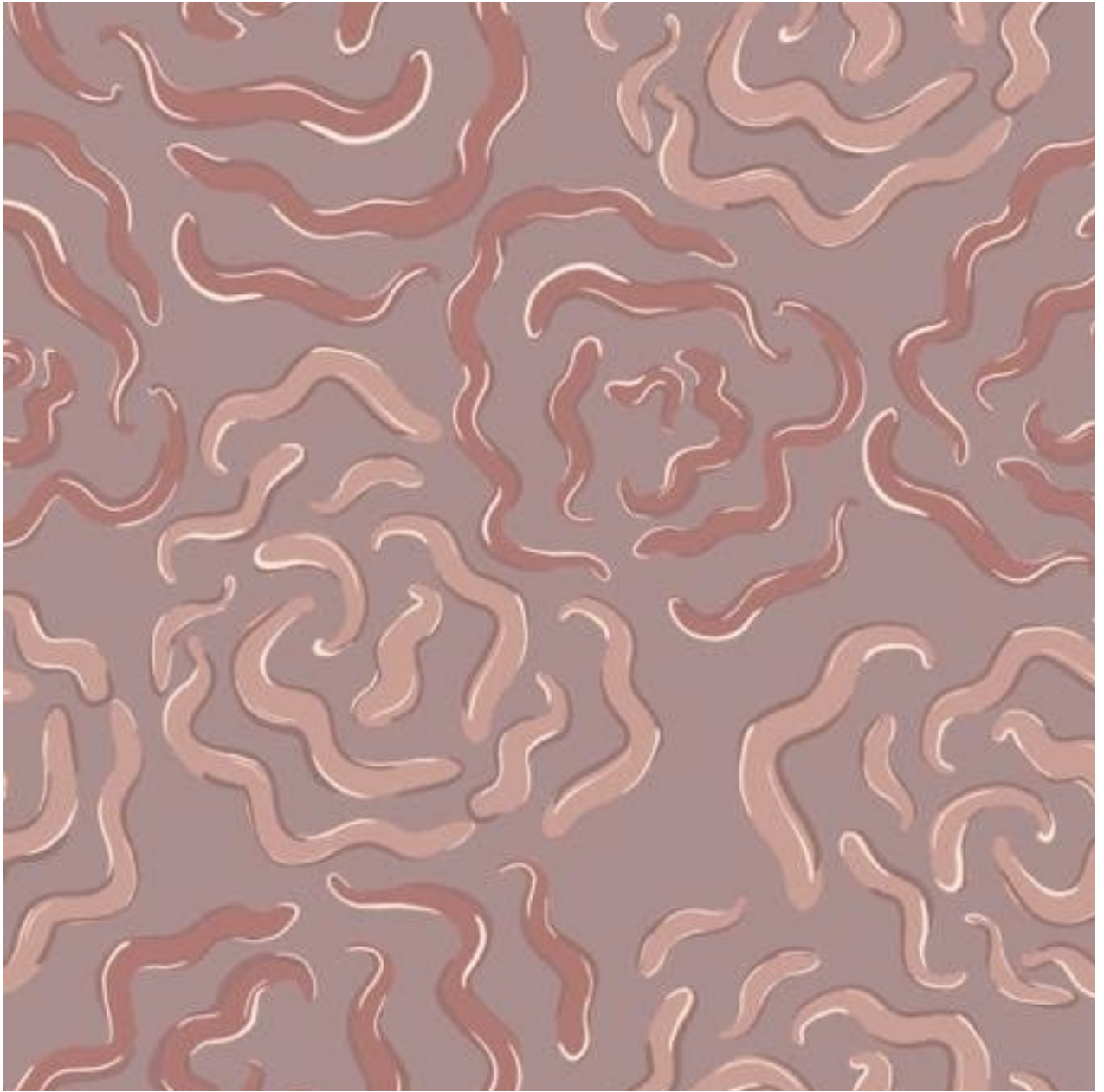


*Figure 40: Roses in coffee*



Figure 41: Cards in coffee





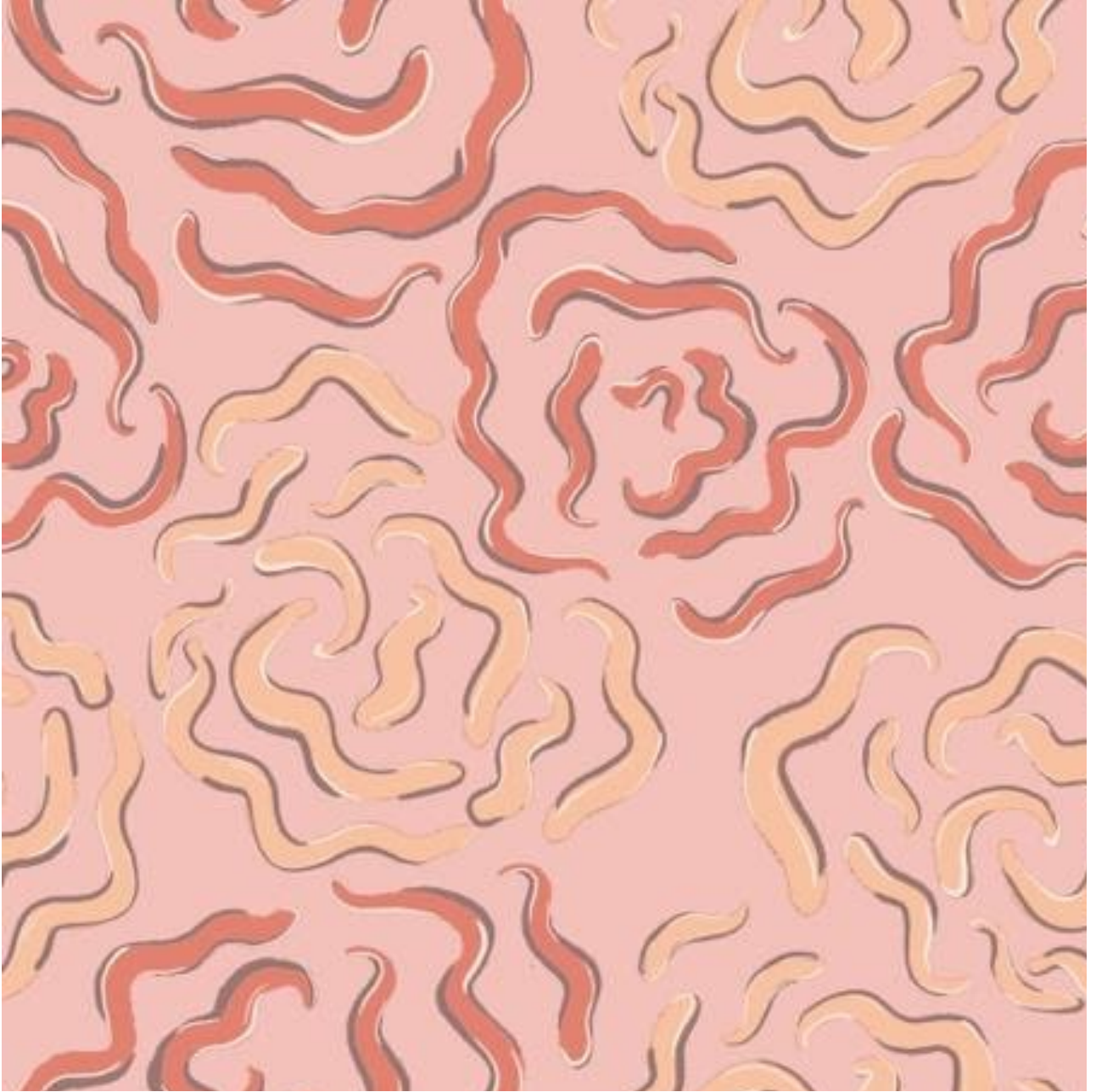
*Figure 42: Roses in brown*



*Figure 43: Cards in strawberry*



*Figure 44: Eucalyptus*



*Figure 45: Roses in strawberry*



*Figure 46: Daisies in coffee*

## Conclusion

*The Modern Feminine* consists of eight original repeat patterns and seven alternative colorways for a total of fifteen prints. The collection features digitally created motifs and textures that were set into repeat using Photoshop for Mac. The color story, motifs, and style are inspired by several 2021 macro and micro trends: sustainability, saturation, novelty items, and large-scale prints.

The shift from a conceptual approach to a formal approach allowed me to focus on honing my artistic skills and style, become proficient in Adobe Photoshop, and produce a body of work to feature in my portfolio. I was able to combine knowledge and skills I gained in my coursework throughout my academic career, especially Color Theory, Coloration, and Advanced Design for Printed Textiles. Through focusing on the process, I was able to develop skills that will be useful in a position in the textile industry. With this experience, I will be able to enter my career with a specific skillset that will directly correlate with a common and relevant process within the fashion industry. With the end product, I will be able to display my design capabilities, construct designs in my senior collection using original prints, and possibly sell or license the collection.