**No-Sew Ratio Quilting**

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| Big Idea | |  |
| * There are ratios all around us in the colors we see and the way shapes compare to each other in art and design. Learning how relevant ratios are in our lives helps motivate us learn about them in math. | | |
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| Essential Questions | |  |
| * Why do different ratios produce different outcomes? | | |
| * How can we demonstrate these outcomes through color mixing, art history appreciation, and designing our own pieces of art? | | |
| * How can we articulate our design plan? | | |
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| Studio Habits of Mind | Operation in lesson | |
| * Envision | * Envision how to create a piece of artwork with colors representing a given ratio | |
| * Develop Craft | * Learn to create a mod podge quilt | |
| * Stretch & Explore | * Consider multiple ways to represent the same ratio and decide on the most impactful option | |
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| Math Common Core: |  | |
| * RP.6.1: Understand the concept of a radio and use ration language to describe a ratio relationship between two quantities * RP.6.1: Use ratio and rate reasoning to solve real-world and mathematical problems. | | |
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| National Arts Standards |  | |
| * VA:Cr.1.8a: Demonstrate willingness to experiment, innovate and take risks to pursue ideas, forms and meanings that emerge in the process of art making and designing. | | |

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| **Session 1: Color Mixing** | | |
| Learning Goal | | Assessment |
| * I understand how a “color recipe” is one type of ratio | |  |
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| Materials | Preparation | |
| * Small pieces of thick paper * Primary paint colors (yellow, red, blue) in small containers *(leftover cafeteria paper boats or small paper cups work well)* * Paint brushes/ cotton swabs * Pencils for naming colors * Color wheel (an online photo is fine) | * Write out and make copies of color recipes (1 per student) * Pour primary paint colors into small containers and add a cotton swab to each * Make example swatches of primary and mixed colors | |
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| Vocabulary |  | |
| * Color swatch | * Envision | |
| * Color wheel (with gradations) |  | |
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| Procedures |  | |
| * Teacher holds up a multicolored objects or points to one in room. Students name the colors they see on given object. * Teacher introduces the color wheel and the concept of primary and secondary colors. Students name the colors again, using the terms primary and secondary. * Teacher discusses how all secondary colors are a ratio of two primary colors. What is a ratio? * Teacher makes two versions of green, the most common secondary color. On one swatch, teacher uses twice the blue they do yellow. On another swatch, teacher uses twice the yellow they do blue. Write the ratios for each on the board. * Hand out one or two ratios to each student and two colors. Student must mix colors in those given ratios. Teacher may choose to hand out only specific colors with specific ratios to add more clarity. * Students use cotton swabs to mix and paint their new color on a thick paper swatch. * When finished, students should name each color swatch with a creative name and set to dry. * Five minutes before clean up, students should do a gallery walk and note what they find to be the most interesting color ratios. | | |

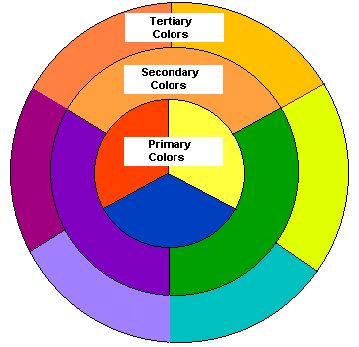
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| **Session 2: De Stijl Art** | | |
| Learning Goal | | Assessment |
| * I can find the ratio of one color to another color in a piece of modern art. * I can envision and sketch a plan for my own art, a quilt, in a given ratio. | |  |
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| Materials | Preparation | |
| * Examples of modern art printed (to cut up in class) * PPT (attached) of De Stijl artists * Draft paper for shape drafting * Pencils/erasers * Scissors | * Load PPT * Make copies of modern art for students to work with (one per student, can be reused if laminated) * Rulers and or/transparent graph paper for calculating perimeter and ratio of shapes in artwork | |
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| Vocabulary |  | |
| * De Stijl Art |  | |
| * Perimeter * Area |  | |
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| Procedures |  | |
| * Teacher gives brief overview of De Stijl artwork (Mondrian, Klee and van Doesburg)- see PPT * Discuss why work is or is not interesting, what is characteristic of it, what shapes and colors are most prevalent, and if anyone has seen logos similar to it. (Ikea, Chase Bank, etc.) * Choose a piece of artwork by Mondrian. As a class demonstration, find the perimeter and area of one shape and compare it to another shape in the piece. * Students choose an artwork of their choice, along with a ruler or transparent graph paper. * Students must find the ratio and perimeter of one shape in the artwork. Beginning students may choose squares or rectangles while more advanced students may challenge themselves with triangles, parallelograms or circles. * After students record the area and perimeter of the shape, students must make 2 new shapes: (It may be helpful to demonstrate this before doing) * 1 shape with the same area, but different perimeter * 1 shape with the same perimeter but different area | | |
| * For students who finish all the above, the next step is to begin planning out a ratio quilt (or painting). Students will use their two new shapes and a given ratio to create a quilt (or painting) pattern of their choice. More information will be given on this in the following session (A and B). | | |

\***NOTE**: There are two options for the final project for this module. Please choose one of the options below or give students a choice between the two.

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| **Session 3: Option A**  **Quilting Patterns and Plans** | | |
| Learning Goal | | Assessment |
| * I can begin drafting a mod podge quilt with shapes I created and with a pattern that fits a given ratio | |  |
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| Materials | Preparation | |
| * De Stijl artwork examples for inspiration * Draft paper * Pencils/erasers * Mod podge (or glue and water) * Foam brushes * Cardboard for quilting on * Donated fabric scraps * Scissors * Markers for drafting | * Pre-assign a ratio to each student * Cut down sheets of cardboard to appx 8 x 10 size (as needed) * Make a limited supply of mod podge if mixing glue and water * Accumulate donated fabric scraps from families, local craft stores or recycle centers * Make an example ratio mod podge quilt | |
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| Vocabulary |  | |
| * Quilting | * Pattern | |
| * Mod Podge |  | |
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| Procedures |  | |
| * As students finish making new shapes from last session, they will begin creating their own art with reference artwork as inspiration. * There are two options to move forward at this point: students may choose to make a mod podge “no sew quilt” or a De Stijl ration painting. The following procedures outline option A, the no sew quilt. See the next option for painting directions. * Students will begin their quilt with the two new shapes they created last session. First, however, teachers must assign one ratio to each student. * For example, teachers might assign a ratio of 3:4. Students would take draft paper, a pencil, and the two shapes they created last session to begin drafting out how they will create a quilt composition that represents a ratio of 3:4. It is helpful to use a pattern of some type in the drafting process. Perhaps the student uses all squares and decides that in their quilt for every 3 blue shapes, there will be 4 yellow shapes. * Students continue drafting. Teacher checks off drafts for accuracy before students may move on to mod podge quilting. * To start their mod podge quilts, students will gather a precut piece of cardboard, scissors, fabric scraps in colors of their choice, and a cup of mod podge with a foam brush. * Following their draft plan, students will cut fabric scraps into desired shapes. They may choose to copy their draft plan onto their cardboard with pencil. * A thin layer of mod podge should be painted onto the cardboard before applying the fabric. Once dry, another layer of mod podge should be painted over the fabric. * Students should continue working until the end of the session. | | |

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| **Session 3: Option B:**  **De Stijl ratio painting** | | |
| Learning Goal | | Assessment |
| * I can creatively draft a De Stijl ratio painting. | |  |
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| Materials | Preparation | |
| * Canvas, canvas paper, tagboard or cardboard * Pencils and erasers * Primary paints * Paintbrushes * Water cups * Draft paper * Blue painter’s tape (optional) * Tracing paper (optional) | * Precut canvas paper or cardboard as necessary * Pre-pour primary paint into cups * Make an example painting | |
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| Vocabulary |  | |
| * De stijl painting |  | |
| * Ratio |  | |
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| Procedures |  | |
| * As students finish making new shapes from last session, they will begin creating their own art with reference artwork as inspiration. * Students will begin their painting with the two new shapes they created last session. First, however, teachers must assign one ratio to each student. * For example, teachers might assign a ratio of 3:4. Students would take draft paper, a pencil, and the two shapes they created last session to begin drafting out how they will create a *De-stilj-esqe* composition that represents a ratio of 3:4. It is often helpful to use a pattern of some type in the drafting process. Perhaps the student uses all squares and decides that in their quilt for every 3 blue shapes, there will be 4 yellow shapes. Primary colors only are acceptable for De Stijl art, though there is still plenty of room for creativity. * Students continue drafting. Teacher checks off drafts for accuracy before students may move on to their paintings. * To start their paintings, students will trace or redraw out their draft onto a sheet of canvas, board or cardboard. Students may choose to use blue painters tape to make sure edges are sharp and clean. * Students should use various sizes of paintbrushes to carefully begin painting. It may be wise to paint all shapes of one color before moving onto another. This is helpful for accuracy and for consistent color hue. * Students should clean brushes well before leaving class. | | |

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| **Session 4: Both Quilting and Painting** | | |
| Learning Goal | | Assessment |
| * I can creatively make my own mod podge quilt or painting in accordance with my given ratio * I can explain in writing how I envisioned and created my design | |  |
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| Materials | Preparation | |
| * Mod podge (or glue and water) * Cardboard pieces * Foam brushes * Donated fabric * Scissors * Primary paint colors * Water cups * Paintbrushes * Canvas/canvas paper or tagboard * Notebook paper for writing directions | * Set out projects and materials for continued work | |
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| Vocabulary |  | |
| * Develop Craft |  | |
| * Reflect |  | |
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| Procedures |  | |
| * Students continue work on mod podge quilts or paintings * Note: It helps at this stage to have students share out struggles and successes and types of patterns they are using to spur inspiration * Teacher checks in with each student to ensure their designs are staying within a given ratio * As students finish up, encourage them to look at their final product and clean it up, trim edges, add white paint to cover up mistakes, etc. to finish it to the best of their ability. * Once finished with their quilts or paintings, students should practice their reflective skills by writing out a list of directions for how to make what they just made. In other words, they should imagine that one of their friends outside the class wants to make the exact quilt or painting they just made. Their directions should be specific and thorough. * A gallery walk should conclude the module. | | |



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