ARTS IMPACT LESSON PLAN

Visual Arts and Math Infused Lesson

Lesson Two: *Balancing Shapes: Parts and Wholes*

Author: Meredith Essex Grade Level: First

Enduring Understanding

Shapes can be divided into equal fractions, recombined into new shapes, and arranged in balance within artistic compositions.

Lesson Description **(Use for family communication and displaying student art)**

Students combine pattern blocks to make larger composite shapes. Students look for equal parts and talk about balance in artworks, and then arrange and glue equal paper quarters to make a composite square for a collage background. Students select colorful pre-cut circles and squares and divide them into equal halves and quarters through folding and cutting techniques. Students then make composite shapes out of those fractional parts and within each quarter of their composition. Students reflect by identifying halves and fourths in each other's work and talking about balance.

Learning Targets and Assessment Criteria

Target: Combines four quarters to show a whole.
Criteria: Places and glues colored papers adjacent to each other to show four equal parts of a square.

Target: Divides shapes into equal, smaller parts.
Criteria: Folds vertically, horizontally, and/or diagonally, matches edges, and cuts collage shapes into 1/2s and 1/4s.

Target: Balances composite shapes in composition.
Criteria: Combines fraction shapes into new shapes and arranges one in each quarter.

Target: Uses craftsmanship in collage.
Criteria: Glues securely.

Vocabulary

Arts Infused:
Shape
Circle
Square
Rectangle

Math:
Composite shape
Fourth
Fraction
Half
Quarter

Arts:
Balance
Collage
Composition
Craftsmanship

Materials

Museum Artworks or Performance:

Seattle, WA
Seattle Art Museum

Tacoma, WA
Children's Museum of Tacoma
Tacoma Art Museum

Materials
Math manipulatives: Pattern blocks; White cardstock: 12x12"; Fadeless art paper: cut into 6x6" squares & smaller squares, circles, and rectangles of different sizes-up to 5x5"; Scissors; Glue sticks; Recycled magazines: glue mats; Arts Impact sketchbooks; Class Assessment Worksheet

continued

Learning Standards

WA Arts State Grade Level Expectations
For the full description of each WA State Arts Grade Level Expectation, see: http://www.k12.wa.us/Arts/Standards
1.1.2 Elements: Shape
1.1.7 Principles of Design: Balance
1.2.1 Skills and Techniques: Collage
2.1.1 Creative Process
2.3.1 Responding Process
4.2.1 Connection between Visual Arts and Math

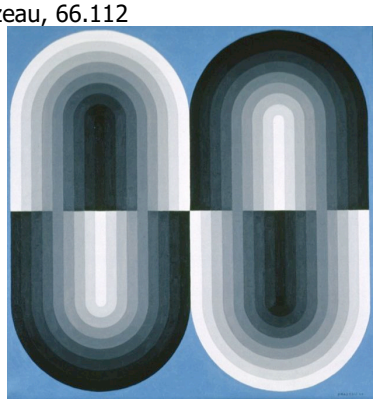
Early Learning Guidelines (Pre-K – Grade 3)
For a full description of Washington State Early Learning and Child Development Guidelines see: http://www.del.wa.gov/development/guidelines/
(1st grade) 6. Learning about my world: Math: Make composite shapes by joining shapes together; divide circles and rectangles into halves or fourths to develop understanding of part/whole. Arts: Create and respond to arts.

continued

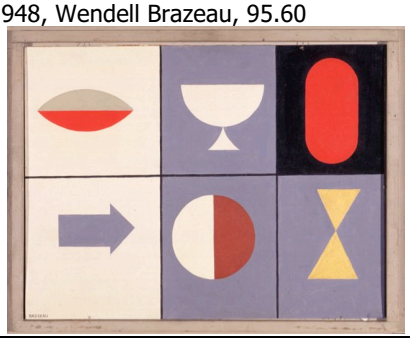
Connections

Everyday Mathematics
8.6 – Equal Shares
8.7 – Fractions
9.6 – Fractional Parts of the Whole

Seattle Art Museum images:
Cool, Cool Water, 1966, Wendell Brazeau, 66.112



Composition (Kappa-Cold Treatment), 1948, Wendell Brazeau, 95.60



Common Core State Standards (CCSS) in Math

For a full description of CCSS Standards by grade level see: *http://www.k12.wa.us/CoreStandards/Mathstandards/*
1.G.2. Compose two-dimensional shapes to create a composite shape.
1.G.3. Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand that decomposing into more equal shares creates smaller shares.

CCSS Mathematical Practices

MP 2. Reason abstractly and quantitatively.
MP 4. Model with mathematics.
MP 6. Attend to precision.
MP 7. Look for and make use of structure.

ICON KEY:

= Indicates note or reminder for teacher

☑ = Embedded assessment points in the lesson

Pre-Teach

Sketchbook Activity: Search for and draw examples of shapes that are divided in 1/2 or 1/4. Note windows, doors, cupboards, drawers, shelves, ceiling tiles… Draw shapes and divide them into halves and quarters.

Instructional Strategies Outline

1. Warm-Up: Guide students in combining pattern blocks to show equal halves and quarters composing larger shapes.

2. Show *Cool, Cool Water* by Wendell Brazeau from the Seattle Art Museum collection. Introduce the idea of balance and composite shapes in composition. Show *Composition (Kappa-Cold Treatment)* by Wendell Brazeau from the Seattle Art Museum collection.

3. Demonstrate and guide students in selecting four (6x6") equal squares of colored paper and arranging and gluing them to show four equal parts that make one larger 12x12" square. Introduce craftsmanship.

☑ Criteria-based teacher checklist: Places and glues colored papers adjacent to each other to show four equal parts of a square.

4. Demonstrate and guide students in choosing, folding, and cutting two circles and two squares into equal shapes.

☑ Criteria-based teacher checklist: Folds vertically, horizontally, and/or diagonally, matches edges and cuts collage shapes into 1/2s and 1/4s.

5. Demonstrate arranging and balancing collage composition by placing shapes next to each other to make new shapes in each quarter.

☑ Criteria-based teacher checklist: Combines fraction shapes into new shapes and arranges one in each quarter.

6. Emphasize craftsmanship in collage gluing techniques.

☑ Criteria-based teacher checklist: Glues securely.

7. Lead criteria-based group reflection. Guide students in peer/self-assessment of their work.

☑ Criteria-based self and peer assessment: Folds vertically, horizontally, and/or diagonally, matches edges, and cuts collage shapes into 1/2s and 1/4s. Combines fraction shapes into new shapes and arranges one in each quarter. Glues securely.

LESSON STEPS

1. Warm-Up: Guide students in combining pattern blocks to show equal halves and quarters composing larger shapes.

- *We are practicing combining smaller equal parts to make a whole. What happens when we combine 4 squares? How can we make a bigger square?*
- *Which other shapes can you combine to make a whole?*

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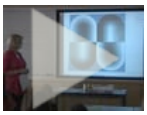
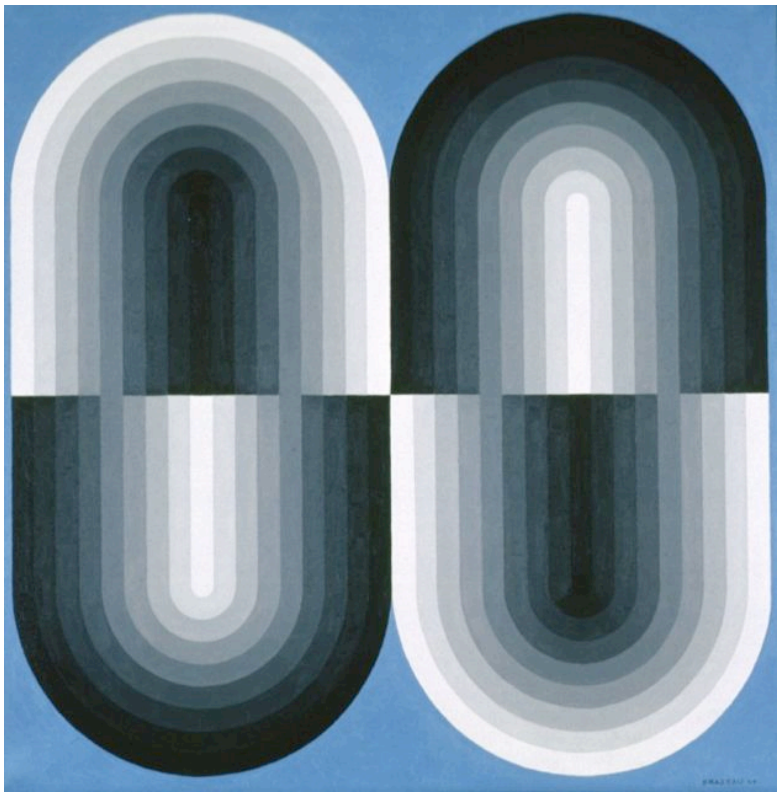
2. Guide art analysis of *Cool, Cool Water* by Wendell Brazeau from the Seattle Art Museum collection. Introduce the idea of balance and composite shapes in composition.



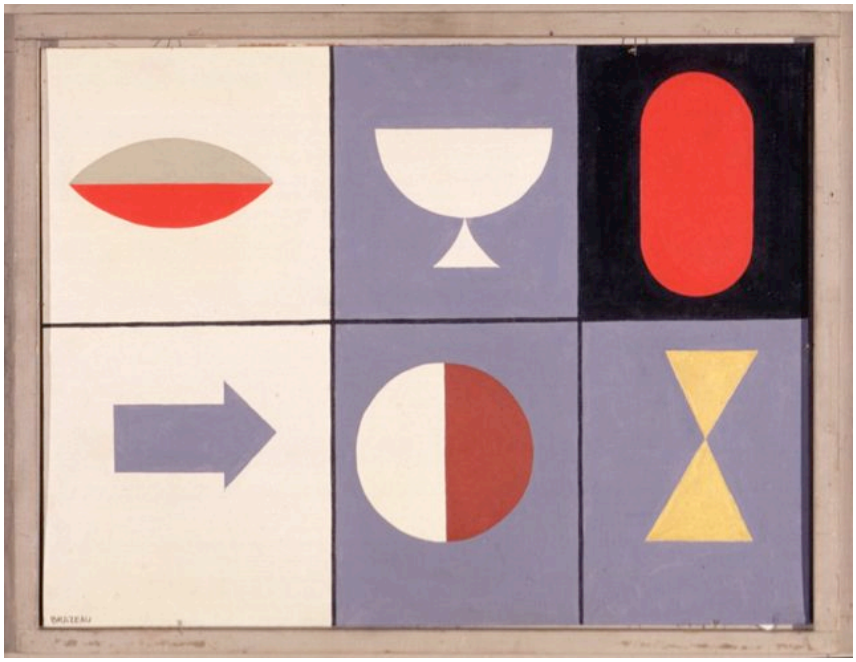
Responding to Art in the Classroom



The Seattle Art Museum's collection is available on-line at: http://www.seattleartmuseum.org/emuseum/code/collection.asp. To find the images in this lesson, enter the accession number for the work of art in the search box on the collections page of SAM's website. Accession numbers for these works of art are listed in the materials box at the beginning of the lesson.

- *Is this picture a square? How many equal parts is this picture divided into? How can you tell?*
- *Why do you think the artist placed a shape in each quarter of the picture? What would the picture seem like if one quarter was empty? What happens when I cover one quarter up? How does that change the balance?*

Show *Composition (Kappa-Cold Treatment)* by Wendell Brazeau from the Seattle Art Museum collection.



- *Where do we see shapes made out of a combination or parts of other shapes? How can you tell?*
- *Do we see any shapes that are made of halves or quarters? Where?*

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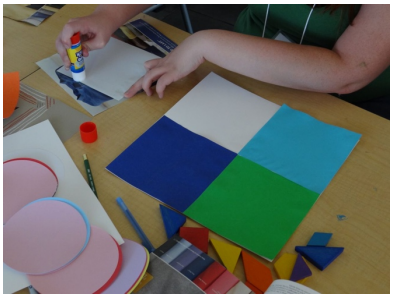
3. Demonstrate and guide students in selecting four (6x6") equal squares of colored paper and arranging and gluing them to show four equal parts that make one larger 12x12" square. Introduce craftsmanship.

- *Choose four colors of paper you like and place them on your big background square. Arrange them so that they line up with the edges and show four equal parts of the big square.*
- *Turn each square over on your glue mat and run a glue stick all the way around the edge. Carefully line up a corner of the small square with a corner of the big square.*
- *Rub the paper around the edges so that the paper sticks to glue and stays where you want it. Taking care in making art that is beautiful <u>and</u> sturdy is called craftsmanship.*



☑ Criteria-based teacher checklist: Places and glues colored papers adjacent to each other to show four equal parts of a square.

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4. Demonstrate and guide students in choosing, folding, and cutting two circles and two squares into equal shapes.


Folding and Cutting Congruent Shapes/Fractions, Cutting through Multiple Layers

- *Choose two circles and two squares in different colors than your background.*
- *Fold two of your shapes in half by lining up the edges or corners and creasing. What equal shapes have you created? Flatten your shape back out and carefully, with thumb up and scissors opening wide, cut along the fold.*
- *Fold two of your shapes into quarters by folding in half and folding in half again to make four equal parts. Cut apart carefully.*

☑ Criteria-based teacher checklist: Fold vertically, horizontally, and/or diagonally, matches edges and cuts collage shapes into 1/2s and 1/4s.

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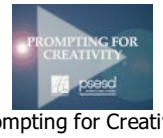
5. Demonstrate arranging and balancing collage composition by placing shapes next to each other to make new shapes in each quarter.



Prompting for Creativity

- *In collage, we can move our shapes around until our combination of shapes is just right.*
- *Combine and arrange your shapes in each quarter. You can combine any shapes in any way, but they must touch but not overlap <u>and</u> fit in each quarter.*

☑ Criteria-based teacher checklist: Combines fraction shapes into new shapes and arranges one in each quarter.

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6. Emphasize craftsmanship in collage gluing techniques.


Craft of Gluing with Glue Stickes/O'Glue

- *Make sure your composition is balanced by having a combination of shapes in each quarter.*
- *Turn shapes upside down on your glue mat and run the glue stick around the whole edge, then place your shape and rub it all over so that paper sticks to paper. Remember that craftsmanship means art is sturdy and does not fall apart.*

☑ Criteria-based teacher checklist: Glues securely.

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7. Lead criteria-based group reflection. Guide students in peer/self-assessment of their work.


Guiding Reflecting on Student Art

- *Switch collages with a partner. Find halves and quarters in their work. Share how you knew that a shape was a half or a quarter.*
- *Point to a place where your partner combined shapes to make a larger shape. Check their work for balance: shapes in all quarters.*
- *Show where you see and used good craftsmanship in gluing.*

☑ Criteria-based student self and peer-assessment: Folds vertically, horizontally, and/or diagonally, matches edges, and cuts collage shapes into 1/2s and 1/4s. Combines fraction shapes into new shapes and arranges one in each quarter. Glues securely.

***Everyday Mathematics* Extensions:**
9.7 – Comparing Fractions

ARTS IMPACT LESSON PLAN Visual Arts and Math Infusion

First Grade Lesson Two: *Balancing Shapes: Parts and Wholes*

CLASS ASSESSMENT WORKSHEET

Disciplines	**VISUAL ARTS AND MATH**			**VISUAL ARTS**	Total 4
Concept	**Fractional Shapes**			**Craftsmanship**	
Criteria Students	Places and glues colored papers adjacent to each other to show four equal parts of a square	Folds vertically, horizontally, and/or diagonally, matches edges and cuts collage shapes into 1/2s and 1/4s	Combines fraction shapes into new shapes and arranges one in each quarter	Glues securely	
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Total					
Percentage					

What was effective in the lesson? Why?

What do I want to consider for the next time I teach this lesson?

What were the strongest connections between visual arts and math?

Teacher: _____ Date: _____

ARTS IMPACT FAMILY LETTER

VISUAL ARTS AND MATH LESSON: ***Balancing Shapes: Parts and Wholes***

Dear Family:

Today your child participated in an **Arts and Math** lesson. We talked about how artists use math to divide shapes into equal parts and combine them to make new shapes in their art. We looked at paintings by an artist who used geometric shapes and fractions again and again in his work.

- We experimented with combining pattern block shapes to make larger shapes.
- We looked for equal parts of shapes in art and talked about creating balance in artworks.
- We arranged and glued small equal squares (paper quarters) to make a composite bigger square for a collage background.
- We selected colorful pre-cut circles and squares and divided them into equal halves and quarters using folding and cutting techniques.
- We made new composite shapes out of the quarters and halves that we cut out and glued them within each quarter of our large background square.
- We reflected on our work by finding halves and fourths in each other's work and talking about balance.

At home, you could encourage your child to notice halves and quarters of circles, rectangles, and squares in buildings, food, tools or toys. Together, you could focus on fractions and composite shapes through cooking, serving, or drawing pictures of food (cake, pizza, sandwiches…)

Enduring Understanding

Shapes can be divided into equal fractions, recombined into new shapes, and arranged in balance within artistic compositions.