

**ARTS IMPACT LESSON PLAN**

**Visual Arts and Math Infused Lesson**

**Lesson One: *Counting in Composition: Groups of 10***

Author: Meredith Essex      Grade Level: Kindergarten



**Enduring Understanding**

Equal numbers can be represented in different ways within an artistic composition.

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

*Students sort different small objects into groups of ten and arrange them in lines, shapes, and arrays. Next, students describe how shapes are arranged in different ways within artistic compositions. Students organize and paint a composition that shows tens grouped in different ways using daubers. Last, students reflect by counting their shapes (and shapes in other student compositions) by tens and noticing how groups of ten are placed relative to one another in composition.*

**Learning Targets and Assessment Criteria**

**Target:** Organizes groups of ten in different ways.

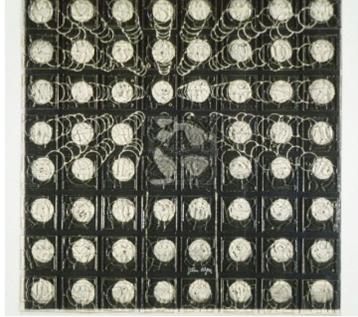
**Criteria:** Creates, lines, shapes, and arrays/rows using ten objects.

**Target:** Represents groups of ten in one painting composition.

**Criteria:** Arranges and paints distinct groups of ten using lines, shapes, and arrays/rows, then counts by tens and shares total.

Vocabulary	Materials	Learning Standards
<p><u>Arts Infused:</u> Circle Line Shape Space Triangle</p> <p><u>Math:</u> Array Counting Group Sorting</p> <p><u>Arts:</u> Composition</p>	<p><b>Museum Artworks or Performance:</b></p> <p><b>Seattle, WA</b> Seattle Art Museum</p> <p><b>Tacoma, WA</b> Children’s Museum of Tacoma Tacoma Art Museum</p> <p><b>Materials</b> <u>Math manipulatives:</u> buckets of 3-6 types of small objects for each table group that can be counted into groups of ten; Daubers: ¼ or ½” diameter; White tempera paint; Trays for paint, or use fillable daubers; Paper towels; Black construction paper: 6x6” (practice) &amp; 12x18” (final composition); Arts Impact <u>sketchbooks</u>; Blue painter’s tape; Art mats; Class Assessment Worksheet</p> <p><b>Connections</b> <i>Everyday Mathematics</i> 1.14 – Finger Count Fun 2.13 – Estimation Jars 3.13 – Train Games 4.4 – The Addition Symbol</p> <p align="center"><i>continued</i></p>	<p><b>WA Arts State Grade Level Expectations</b> <i>For the full description of each WA State Arts Grade Level Expectation, see: <a href="http://www.k12.wa.us/Arts/Standards">http://www.k12.wa.us/Arts/Standards</a></i></p> <p>1.1.1 Elements: Line 1.1.2 Elements: Shape 1.1.5 Elements: Space 1.2.1 Skills and Techniques: Painting 2.1.1 Creative Process 2.3.1 Responding Process 4.2.1 Connection between Visual Arts and Math</p> <p><b>Early Learning Guidelines (Pre-K – Grade 3)</b> <i>For a full description of Washington State Early Learning and Child Development Guidelines see: <a href="http://www.del.wa.gov/development/guidelines/">http://www.del.wa.gov/development/guidelines/</a></i> (Age 4-5) 6. Learning about my world: Math: Count out 10 items; Count and group things by number; Compare groups of up to 10 objects. Follow simple directions for position (beside, next to, between.) (Age 5 and K) 6. Learning about my world: Math: Recognize by sight and name the number of items in a group, up to five; add and subtract numbers up to 10 using objects or drawings; correctly use position words (such as beside, inside, under, etc.) to describe objects. Arts: Learn ways to create artworks; share ideas and explain own artwork to others; talk about what was done and why.</p> <p align="center"><i>continued</i></p>

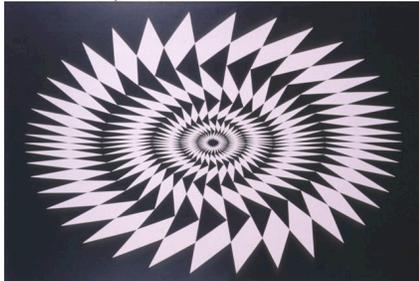
Seattle Art Museum images:  
*Kinetics of Squares and Circles*, 1968,  
Glen E. Alps, 69.84



*Vertical Forms*, 1960, Wendell Brazeau,  
62.190



*Elliptical Phalanx*, 1966, Francis  
Celentano, 67.137



### **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/>

K.MD.3 Classify objects and count the number in each category.

K.CC.1. Count to 100 by ones and by tens.

K.CC.5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

K.G.1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.

### **CCSS Mathematical Practices**

MP 2. Reason abstractly and quantitatively.

MP 4. Model with mathematics.

MP 7. Look for and make use of structure.

MP 8. Look for and express regularity in repeated reasoning.

## ICON KEY:

 = Indicates note or reminder for teacher

 = Embedded assessment points in the lesson

### Pre-Teach

Sort objects into groups based on similarity of shape and color.

- *As a team, find all of the different kinds of objects in your container.*
- *Group the same kind of objects together into piles/groups at your table.*
- *Count ten of each kind of object and group together. Place the extra objects back in the container.*

### Lesson Steps Outline

**1.** Introduce and guide math analysis and discussion of *Kinetics of Squares and Circles* by Glen E. Alps, *Vertical Forms* by Wendell Brazeau, and *Elliptical Phalanx* by Francis Celentano from the Seattle Art Museum. Guide students in arranging groups of 10 objects in circles, along directional lines, and in arrays/rows using each artwork as a guide. Guide students in analyzing how their 10 objects are grouped and the space around groups.

 Criteria-based teacher checklist: Creates shapes, lines, and arrays/rows using ten objects.

**2.** Demonstrate using small circular stencil sponges to paint circle shapes on small black practice paper. Guide practice making an identifiable grouping.

 Criteria-based process assessment, room scan: Practices painting.

**3.** Demonstrate and guide visualizing and mapping out a composition using chalk then painting groups of ten in lines, arrays/rows, and shapes. Emphasize clearly showing groups of ten as well as the space around them.

 Criteria-based teacher checklist and student self-assessment: Arranges and paints distinct groups of ten using lines, shapes, and arrays/rows, then counts by tens and shares total.

**4.** Lead self-assessment and gallery walk.

 Criteria-based student self-assessment: Arranges and paints distinct groups of ten using lines, shapes, and arrays/rows, then counts by tens and shares total.

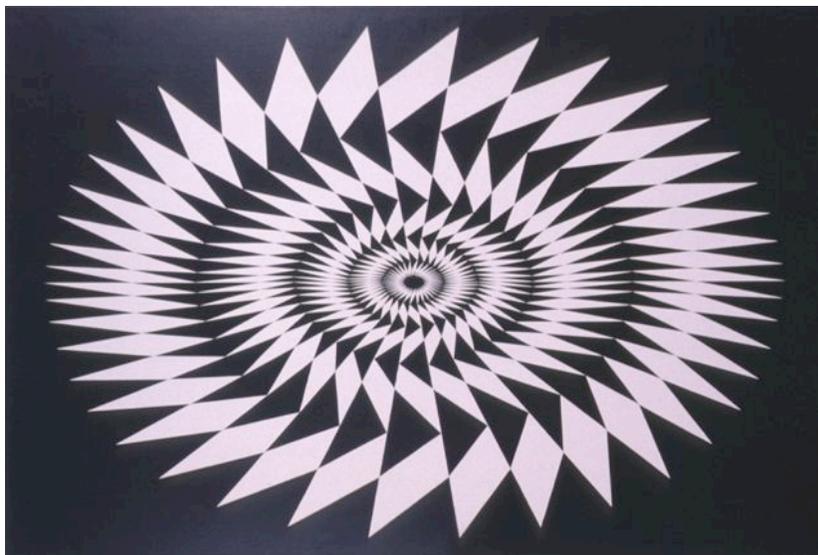
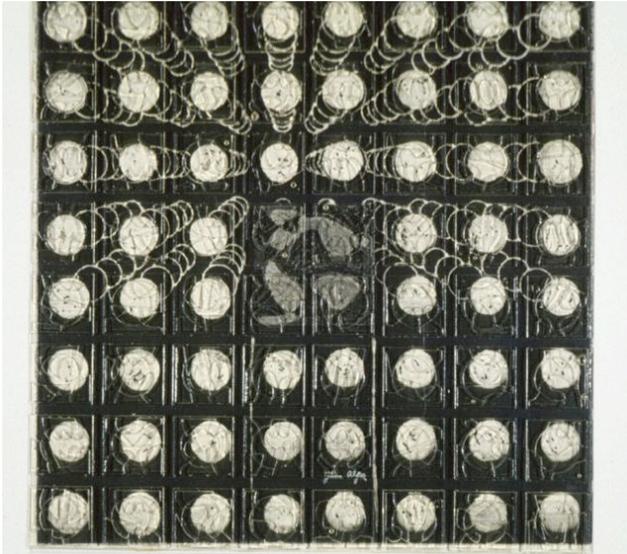
## LESSON STEPS

**1. Introduce and guide math analysis and discussion of *Kinetics of Squares and Circles* by Glen E. Alps, *Vertical Forms* by Wendell Brazeau, and *Elliptical Phalanx* by Francis Celentano from the Seattle Art Museum. Guide students in arranging groups of 10 objects in circles, along directional lines, and in arrays/rows using each artwork as a guide. Guide students in analyzing how their 10 objects are grouped and the space around groups.**



Responding to Art in the Classroom

▣ Project each artwork one image at a time. Make sure that all students have ten of the same object by having students sort and count 10 in preparation for this activity.



▣ 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.

- *A composition is the combination of shapes, lines, or colors that an artist chooses and arranges in their art. What shapes do you see? What shapes are in-between?*

- Notice how these artists used shapes in these compositions. Why would an artist need to use counting to plan their composition?
- Look at the artwork: Follow the shapes ... what larger shapes do they make? Practice making a circle with your ten objects.
- Look at the artwork: Follow the shapes... Do they move up and down and across, or do they seem more like lines that just go up and down?
- Look at the artwork: Follow the shapes ...Do they go across? Do they go up and down? Follow the shapes in both directions by drawing in the air.
- Look at the artwork: Practice making a line with your ten objects.



Criteria-based teacher checklist: Creates shapes, lines, and arrays/rows using ten objects.

## 2. Demonstrate using small circular stencil sponges to paint circle shapes on small black practice paper. Guide practice making an identifiable grouping.



Circle Sponge Painting

- The stencil sponge needs to be full of paint, but not drippy or blobby. You may need to dip it into paint and dab a little off on a paper towel.
- Practice sponge-painting circle shapes in an up and down motion. Notice the space in-between your circles. When we paint our groups of ten we want to make sure that we can tell that they are "together"—so stamp without too much space in-between when you are showing ten as a group.

Criteria-based process assessment, room scan: Practices painting.

## 3. Demonstrate and guide visualizing and mapping out a composition using chalk then painting groups of ten in lines, arrays/rows, and shapes. Emphasize clearly showing groups of ten and the space around them.



Prompting for Creativity

- We saw three different ways that artists arranged shapes in their compositions. In our compositions we are going to combine shapes in ways that are interesting and exciting also.
- Be sure to have a shape (it can be a circle or triangle) made of ten, a line of ten, and rows/array of ten.
- Artists use math to plan their compositions. Think about space in your composition: where and how you will group tens on your paper. Using chalk, make a dot for each circle that you will paint to make a group of ten. Your groups of ten will form lines, arrays (rows), and shapes (triangles or circles).
- In your art: Point to each line, shape or array of ten. Now point to the space between your groups of ten.
- Check your math by counting shapes in each group and counting total shapes by 10's in your composition.



Criteria-based teacher checklist and student self-assessment: Arranges and paints distinct groups of ten using lines, shapes, and arrays/rows, then counts by tens and shares total.

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#### 4. Lead self-assessment and gallery walk.

- *Point to an array/rows making ten, a line of ten, and a circle or triangle made of ten in your composition.*
- *Take a gallery walk and stop at another artist's composition.*
- *Did they count to ten accurately in each group of circles? Count by tens for a total number of circles.*
- *Notice how other artists used space in their composition: how did they arrange groups differently than you did?*



Guiding Reflecting on Student Art

Criteria-based student self-assessment: Arranges and paints distinct groups of ten using lines, shapes, and arrays/rows, then counts by tens and shares total.

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**ARTS IMPACT LESSON PLAN Visual Arts and Math Infusion**

Kindergarten Lesson One: *Counting in Composition: Groups of 10*

**CLASS ASSESSMENT WORKSHEET**

Disciplines	MATH	VISUAL ARTS AND MATH	MATH	Total
Concept	Grouping 10	Composition	Counting by 10s	3
Criteria	Creates, lines, shapes and arrays/rows using ten objects.	Arranges and paints distinct groups of ten using lines, shapes, and arrays/rows.	Counts shapes by tens and shares total.	
Students				
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26.				
27.				
28.				
29.				
30.				
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: \_\_\_\_\_

VISUAL ARTS AND MATH LESSON: *Counting in Composition: Groups of 10*

Dear Family:

Today your child participated in an **Arts and Math** lesson. We talked about how artists use math to create art. We looked at paintings by three artists who used counting and geometric shapes in different ways within their paintings.

- We counted small objects into groups of ten and arranged them in lines, circles, and arrays (rows or grids).
- We compared how shapes are arranged in different artistic compositions.
- We practiced painting circle shapes using a special tool: a dauber.
- We made a painting that shows tens grouped in different ways – shapes, rows, and arrays – using different sizes of stencil sponges.
- We reflected on our paintings (and other classmates') by counting shapes by tens and noticing how groups of ten were placed differently within each composition.

At home, you could encourage your child to sort objects or money into groups of 10 (or another quantity). You could also hunt for and count the number of shapes grouped in signs or ads, parts of buildings, or even fabric that clothing is made out of.

**Enduring Understanding**

Equal numbers can be represented in different ways within an artistic composition.