

ARTS IMPACT—ARTS-INFUSED INSTITUTE LESSON PLAN (YR2-AEMDD)

LESSON TITLE: Polygons: Attributes and Congruence—Shape Choreography
Dance and Math Lesson

Artist-Mentor - Debbie Gilbert

Grade Level: Third Grade

Examples:



Enduring Understanding

Number and type of angles, and number and length of sides can describe and identify shapes. Congruent polygons show the same shape and size.

Target: Choreographs a three-part dance study using specific congruent shapes, movement, and a prop.

Criteria: 1) Selects a polygon (a parallelogram, rectangle, square, or a triangle); uses a stretchy band to make the shape; makes the shape matching with other dancers; 2) chooses and performs a locomotor or non-locomotor movement; 3) selects, and makes a different matching polygon (a parallelogram, rectangle, square, or a triangle) with other dancers with the stretchy band.

Target: Draws and identifies polygons and movements made by the dancers.

Criteria: Sketches and labels two different shapes and determines if movement is locomotor or non-locomotor.

Teaching and Learning Strategies

Introduction to Arts-Infused Concepts through Classroom Activities:

Arts-Infused Concepts: Attributes of Polygons; Congruence

Do the BrainDance.

If time is available, explore concepts in everyday life:

Draw the shapes of rectangles and parallelograms in the air with your chin.

Draw the shapes of squares, and triangles in the air with your elbows.

Make the shapes of polygons with your hands.

1. **Leads students in *BrainDance* warm-up.** (Originally developed by Anne Green Gilbert, reference: *Brain-Compatible Dance Education*, video: *BrainDance, Variations for Infants through Seniors*). Music: "Geometry BrainDance (3rd grade)" #1, *Geometry Dances*. Prompts: *The BrainDance is designed to warm up your body and make your brain work better at the same time. We'll use a few examples of our dance and math word "shape" as we do the BrainDance.* **Demonstrates the dance using the following sequence of movement patterns:**

Breath: Inhales and exhales. Repeats. Prompts: *Your muscles and your brain need oxygen, so inhale through your nose and exhale through your mouth.*

Tactile: Rubs hands. Taps body lightly from head to toe. Stomps feet.

Core-Distal: Gradually increases the size of the body, growing from the center of the body into a large **square shape** and then shrinking back into a small square shape. Repeats. Prompts:

Make a big square shape. Shrink into a small square shape. Grow into a big square shape. Shrink into a small square shape.

Head-Tail: Stretches into a large **rectangle shape**. Curls the body forward from head to tailbone. Returns to the same rectangle shape. Curls it backwards. Returns to the same rectangle shape. Repeats. *Prompts: Make a giant rectangle. Curve it forwards. Go back to the same rectangle shape – a **congruent** shape. Curl it backwards. Return to a congruent rectangle shape.* Curves from side-to-side several times.

Upper Half and Lower Half: Stabilizes the lower half of the body and only the top half dances, drawing shapes with different body parts. *Prompts: The top half of your body is in motion, while the lower half is frozen. Draw **triangles** in the air with your hands, then with your elbows. Draw **parallelograms** with your shoulders, then with your nose.* Stabilizes the upper half of the body. Only the lower half dances, staying in one spot. Draws shapes with the lower half of the body. *Prompts: The lower half of your body is in motion, while the upper half is frozen. Draw **triangles** on the ground with your feet, then in the air with your knees. Draw **parallelograms** on the ground with your feet, then in the air with your knees.*

Body-Half Right and Left: Stabilizes the left side of the body and only the right side dances, drawing **shapes** in the air. Repeats on the opposite side. *Prompts: Your left side is frozen and only the right side dances. Draw shapes in the air with only the right side of your body. Now the right side is frozen and the left half dances. Draw shapes in the air with only the left side of your body.*

Cross-Lateral: Reaches across the body with one hand and then the other. Crosses the center of the body to reach to vertices of a **rectangle**. Repeats several times. *Prompts: Use your hands to draw lines crossing in front of your body. Reach across to a high left diagonal, then a high right diagonal, then a low left diagonal, then a low right diagonal. You are reaching each vertex of a rectangle.*

Spin/Vestibular: Turns clockwise. Stops and freezes in a shape. Turns counterclockwise. Stops and freezes in a shape. Repeats. *Prompts: Glue your arms to your sides. Turn. Freeze in a **square** shape. Turn. Freeze in a **rectangle** shape. Turn. Freeze in a **parallelogram** shape. Turn. Freeze in a **triangle** shape. Inhale. Exhale.*

Prompts: What shapes did you do in the BrainDance?

Student: Participates in warm-up according to teacher prompts.

2. Reviews attributes of polygons with the Polygon Chant. Music: "Polygon Chant" #2, *Geometry Dances*. Asks them to chant along with the CD, then do a "hand dance" to illustrate the shapes in the chant during the instrumental sections. Displays the Polygon Chant Chart. Hint: The chart makes it easier for the students to follow along with the chant. *Prompts: This is a chant about the attributes of some polygons. It will help you remember the unique features of each one. After you chant about each shape, you do a hand dance. Dancing is another way to help you remember. The leader will chant the words and you will chant along. During the instrumental part, use your hands to draw the shapes in the air.*

The Polygon Chant

*Parallelogram: four sides, four angles, two pairs of parallel sides
(parallelogram hand dance)*

*Rectangle: four sides, four right angles
(rectangle hand dance)*

*Square: four equal sides, four right angles
(square hand dance)*

*Triangle: three sides
(triangle hand dance)*

Student: Says the Polygon Chant, and represents the shapes with hand movements.

3. **Describes and demonstrates the process for Shape Choreography.** *Prompts: We are going to use our math knowledge of polygons to make a dance. When dancers create a dance, it is called choreography. Your choreography will have three parts: 1) a shape, 2) a locomotor or a non-locomotor movement and 3) a different shape.* With two students and stretchies, demonstrates how to choreograph a shape dance. Music: "Shape Choreography #3, Geometry Dances.

- a. **Selects a shape** (parallelogram, rectangle, square, or triangle). Decides how to use the stretchies to make the shape. Make your shape congruent with your partners. *Prompts: How will we show the correct number of angles and sides? Do we need to have parallel sides for the shape? Are any sides equal in length? How can we make our shapes congruent?*
- b. **Chooses a locomotor or non-locomotor movement.** *Prompts: The second part of the dance is a movement. It can be a locomotor movement, which is a movement that travels like jump, hop, skip, and walk, or it could be or a non-locomotor movement, which is a movement that stays in one spot, like bend, stretch, shake, and reach. Which movement should we choose?*
- c. **Selects a different shape** (parallelogram, rectangle, square, or triangle). *Prompts: How will we show the correct number of angles and sides? Do we need to have parallel sides for the shape? Are any sides equal in length? How can we make our shapes congruent with our partners?*
- d. **Notates the dance on the Shape Choreography Worksheet.**
- e. **Practices with music.** (Hint: Each of the three parts is 8 counts long.)

Student: Observes or participates in demonstration.

4. **Guides small group Shape Choreography.** Divides students into small groups of 3-5, for a total of 6 groups, and distributes the stretchies. Posts Shape Choreography process chart and reminds students of each step in the process of making the dance. Plays the music while students practice.

*Prompts: **First, choose a shape** (parallelogram, rectangle, square, or triangle) and decide how to show the number of angles and sides and any other important attributes of the shape. The stretchy shapes of each group member should be congruent. So make sure that you make a shape with your stretchy that is the same shape and size as your other group members.*

***Second, decide on a locomotor or a non-locomotor movement.** How will you do the movement with your stretchy? Will you hold it in two hands as you move? Will you hold it with one hand and one foot or another way?*

***Third, choose a different shape to make.** After you make your choices, write them down on the Shape Choreography Worksheet to help you remember. Then practice, practice, practice. When I play the music for your rehearsal, you'll hold your first shape for 8 counts, move for 8 counts, and make your last shape for 8 counts.*

Student: With a small group, selects a shape, a non-locomotor or locomotor movement, and another shape. Notates the dance. Practices.

Embedded Assessment: Criteria-based teacher checklist; criteria-based room scan; criteria-based self-assessment

5. **Leads students through a performance of the Shape Choreography followed by a responding process.** Reminds students of appropriate behavior for performers and audience members. Guides one group to perform at a time. After each performance, asks audience to use the Audience Response Form to draw and identify the dancers' shapes, and note if the movement was locomotor or non-locomotor. (It might be helpful to have each group perform the dance two times: one for the audience to observe and once for them to draw and write.) *Prompts: Draw and label the shapes you saw. How did you know which shapes the dancers were showing? Were the shapes congruent? How did you know they were or were not congruent? Note whether the movement was locomotor or non-locomotor. How could you tell if the movement was locomotor or non-locomotor?* Hint: Before performances begin, collect stretchies from all students and place enough stretchies for one group of dancers in the performing area.

Optional: Collect worksheets and then ask students to describe the shapes and movements they observed.

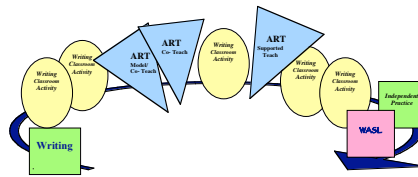
Student: Performs and responds by drawing and writing.

Embedded Assessment: Criteria-based teacher checklist; criteria-based room scan; criteria-based self-assessment; criteria-based peer assessment Hint: As students perform, do a Master Audience Response form, noting who is in each group and what their shapes and movements are. That will help you fill out the assessment worksheet later.

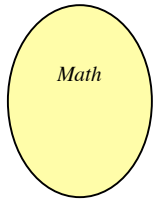
6. Conducts a discussion of shape in dance and math. Prompts: *How is a shape thought about or used differently by a dancer or a mathematician? How are they the same? How can you use what you learned by dancing polygons to help you remember the names and attributes of the different polygons?*

Student: Considers shape in math and dancing and responds.

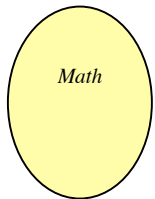
Embedded Assessment: Criteria-based group reflection



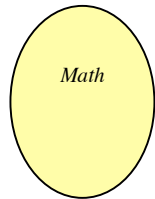
After DANCE lesson and before INDEPENDENT PRACTICE:



1. Repeat the BrainDance and/or the Polygon Chant frequently to reinforce the learning.



2. Explore the math concepts using your math curriculum.



If time is available, explore the concepts in other ways:

- Make congruent shapes on Geoboards or with math manipulatives.
- Repeat Shape Choreography with other shapes.

**Independent Practice: Hand Dance it! Draw it on paper!
Congruent – same size – same shape!**

Vocabulary	Materials and Community Resource	WA Essential Learnings & Frameworks
<p><u>Arts:</u> choreography locomotor movement non-locomotor movement shape</p> <p><u>Arts Infused:</u> shape polygon parallelogram rectangle square triangle congruent</p>	<p>Museum Artworks or Performance: Broadway Center for the Performing Arts, Tacoma, WA: <i>Do Jump, Peking Acrobats</i></p> <p>Art Materials or Performance Materials: CD player <i>Music for Creative Dance, Volume II</i> <i>Geometry Dances</i> drum stretchies BrainDance chart Polygon Chant chart locomotor and non-locomotor movement chart Shape Choreography Process chart assessment checklist student worksheets: shape choreography worksheet, and audience response form pencils</p>	<p><i>AEL 1.1 concepts:</i> shapes <i>AEL 1.1.2 principles of organization:</i> creates basic movement sequences <i>AEL 1.2 skills and techniques:</i> concentration and muscle control <i>AEL 1.4: audience skills</i> <i>AEL 2.1 applies creative process:</i> organizes shapes into a creative work <i>AEL 4.2: dance and math connection</i></p> <p><i>MEL 1.3.1 geometric sense:</i> draws congruent figures; indicates whether two figures are congruent and explains why or why not <i>MEL 1.3.2 geometric sense:</i> understands and applies attributes and properties to two-dimensional shapes and figures</p> <p>Math State Frameworks <i>Grade 3:</i> describes and compares congruent 2D figures; draws a shape that is congruent to a given 2D shape; uses attributes and properties to identify, name, draw two-dimensional shapes and figures; draws and labels two-dimensional figures given particular attributes; identifies, names, and describes the attributes and properties of polygons.</p>

Shape Choreography Student Worksheet

Your name: _____ Date: _____

1. Draw your first shape.

What is your first shape? _____

2. Describe your movement.

Is it locomotor or non-locomotor? _____

3. Draw your second shape.

What is your second shape? _____

Audience Response Form: Shape Choreography

Name: _____ Date: _____

	Draw shape one.	Is the movement locomotor or non-locomotor?	Draw shape two.
Group 1			
Group 2			
Group 3			
Group 4			
Group 5			
Group 6			

ARTS IMPACT—ARTS-INFUSED INSTITUTE LESSON PLAN (YR2-AEMDD)

LESSON TITLE: Polygons: Attributes and Congruence—Shape Choreography

ASSESSMENT WORKSHEET

Disciplines	DANCE AND MATH			DANCE AND MATH			Total 6
Concept	SHAPE CHOREOGRAPHY			RESPONDING TO SHAPE CHOREOGRAPHY			
Students	The Dance			Audience Response Form			
	Selects and makes a congruent polygon with other dancers	Chooses and performs a locomotor or non-locomotor movement	Selects, and makes a different congruent polygon with other dancers using stretchy band	Sketches and labels first shape	Determines if movement is locomotor or non-locomotor	Sketches and labels second shape	
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							
25.							
26.							
27.							
28.							
Total							
Percentage							

Criteria-based Reflection Questions: (Note examples of student reflections.)

Self-Reflection: *How can you use what you have learned by dancing the polygons to help you remember the names and attributes of the different polygons?*

Peer to Peer: *How did you know which shapes the dancers were showing?*

Thoughts about Learning:

Which prompts best communicated concepts? Which lesson dynamics helped or hindered learning?

Lesson Logistics:

Which classroom management techniques supported learning?

Teacher: _____ Date: _____

ARTS IMPACT—ARTS-INFUSED LEARNING FAMILY LETTER

DANCE AND MATH LESSON – Polygons: Attributes and Congruence—Shape Choreography

Dear Family:

Today your child participated in a **dance and math** lesson. We talked about creating dances from **shapes** and **movements**.

- We reviewed the attributes of these **polygons: parallelogram, rectangle, square, triangle**.
- We used stretchy bands to make dances in small groups that had three parts: a polygon congruent with our fellow dancers, a movement that traveled (**locomotor movement**) or a movement that stayed in one spot (**non-locomotor movement**), a different polygon congruent with our fellow dancers.
- We **notated** our dances and analyzed and drew shapes of other group's dances.
- We learned strategies for remembering the attributes of polygons and how to make congruent polygons.

You could look objects in the shapes of parallelograms, rectangles, squares, or triangles at home. Then you could describe how many sides or angles you observed. You could draw the shapes you see, or make them with your body.

Enduring Understanding

Number and type of angles, and number and length of sides can describe and identify shapes.
Congruent polygons show the same shape and size.