

ARTS IMPACT LESSON PLAN

Dance and Math Infused Lesson

Lesson Three: *Identifying, Describing, and Dancing Shapes*

Author: Debbie Gilbert Grade Level: Kindergarten



Enduring Understanding

Drawing or dancing the number of sides and corners can model geometric shapes.

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

In this math and dance lesson, students discuss the properties of these shapes: triangles, squares, rectangles, and trapezoids. With stretchy fabric, students make gigantic shapes and create a Geometric Shape Dance with five shapes. They perform the dance for each other and respond by describing and comparing the shapes.

Learning Targets and Assessment Criteria

Target: Creates a dance using a sequence of shapes.

Criteria: Uses body shapes and a prop to represent a series of five shapes: triangle, square, rectangle, trapezoid, and a shape of own choice.

Target: Identifies properties of shapes.

Criteria: Shows numbers of sides in each of the following shapes: triangle, square, rectangle, and trapezoid.

Vocabulary	Materials	Learning Standards
<p>Arts Infused: Shape</p> <p>Math: Triangle Square Rectangle Trapezoid</p> <p>Arts: Space Bubble</p>	<p>Museum Artworks or Performance:</p> <p>Seattle, WA Pacific Northwest Ballet UW World Series of Dance</p> <p>Tacoma, WA Broadway Center for the Performing Arts</p> <p>Materials Stretchies; Geometric shape manipulatives; <i>Math Dances</i> CD by Debbie Gilbert; CD player; White board or chart paper & markers; Drum/percussion instrument; Class Assessment Worksheet</p>	<p>Arts State Grade Level Expectations <i>For the full description of each WA State Arts Grade Level Expectation, see: http://www.k12.wa.us/Arts/Standards</i></p> <p>1.1.1 Elements: Shape 1.4.1 Audience Skills 2.1.1 Creative Process 2.2.1 Performance Process 2.3.1 Responding Process 4.2.1 Connection between Dance and Math</p>
		<p>Early Learning Guidelines (Pre-K – Grade 3) <i>For a full description of Washington State Early Learning and Child Development Guidelines see: http://www.del.wa.gov/development/guidelines/</i></p> <p>(Age 4-5) 3. Touching, seeing, hearing and moving around: Using the large muscles (gross motor skills): show balance and coordination. (Age 5 and K) 3. Touching, seeing, hearing and moving around: Using the large muscles (gross motor skills): show continuous growth in movement skills; play safely in group and individual movement settings. (Age 4-5) 6. Learning about my world: Math: match and sort simple shapes. Arts: show creativity and imagination. (Age 5 and K) 6. Learning about my world: Math: name shapes. Arts: develop skills for movement.</p>
		<p>Common Core State Standards (CCSS) in Math <i>For a full description of CCSS Standards by grade level see: http://www.k12.wa.us/CoreStandards/Mathematics/default.aspx</i></p> <p>K.G. Identify and describe shapes. K.G.1. Describe objects in the environment using names of shapes. K.G.4. Analyze and compare two & three-dimensional shapes.</p>

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Pacific Northwest Ballet images:
Carla Korbes in Ronald Hynd's *The Sleeping Beauty*



Dancers in Annabelle Lopez Ochoa's
Cylindrical Shadows



Mara Vinson in George Balanchine's
Agon; Choreography © The George
Balanchine Trust



Seth Orza and Carla Korbes in David
Dawson's *A Million Kisses to My Skin*



©Angela Sterling

CCSS Mathematical Practices

- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- 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

Practice the *Math BrainDance*, see lesson step 3. Use manipulatives to explore these shapes: triangle, square, rectangle, and trapezoid. Discuss their properties.

Lesson Steps Outline

DAY ONE

1. Review properties of triangles, squares, rectangles, and trapezoids.

2. Remind students about agreements for appropriate dance behavior.

3. Lead students in *Math BrainDance* warm-up.

Music: "Math BrainDance (Kindergarten)" #1, *Math Dances* by Debbie Gilbert

4. Introduce the props for dancing shapes: stretchies. Discuss how to move safely and appropriately with them.

5. Lead exploration of triangles, squares, rectangles, and trapezoids with stretchies. Hand a stretchy to each student.

 Criteria-based process assessment, self-assessment: Makes four shapes with a prop: triangle, square, rectangle, and trapezoid.

6. Guide choreography of the Geometric Shape Dance. Direct students to make a triangle shape, a square shape, a rectangle shape, a trapezoid shape, and their own choice of movement and shape. Practice the shapes in a sequence with music.

Music: "Geometric Shape Dance" #8, *Math Dances*

 Criteria-based teacher checklist, self-assessment: Uses body shapes and a prop to represent a series of five shapes: triangle, square, rectangle, trapezoid, and a shape of own choice.

7. Lead a reflection about making the connection between shapes in dance and math.

 Criteria-based reflection: Connects dance and math.

DAY TWO

1. Display photos of professional dancers making shapes. Ask students to identify the shapes observed.

2. Remind students about agreements for appropriate dance behavior.

3. Lead students in *Math BrainDance* warm-up.

Music: "Math BrainDance (Kindergarten)" #1, *Math Dances* by Debbie Gilbert

4. Review triangles, squares, rectangles, and trapezoids with stretchies. Hand a stretchy to each student.

Criteria-based process assessment, self-assessment: Makes four shapes with a prop: triangle, square, rectangle, and trapezoid.

5. Lead a rehearsal of the Geometric Shape Dance. Direct students to practice the sequence: a triangle shape, a square shape, a rectangle shape, a trapezoid shape, and their own choice of movement and shape.

Music: "Geometric Shape Dance" #8, *Math Dances*

Criteria-based teacher checklist: Uses body shapes and a prop to represent a series of five shapes: triangle, square, rectangle, trapezoid, and a shape of own choice.

6. Facilitate performance of the Geometric Shape Dance followed by a responding process. Ask half the class to perform the Shape Dance and half to be the audience, and then they will switch roles. Discuss performer and audience behavior.

Criteria-based teacher checklist, peer assessment: Uses body shapes and a prop to represent a series of five shapes: triangle, square, rectangle, trapezoid, and a shape of own choice.

7. Lead a reflection connecting shapes in dance and math. Ask students to identify the number of sides in each shape and to draw them in the air.

Criteria-based teacher checklist, and reflection: Shows numbers of sides in each of the following shapes: triangle, square, rectangle, and trapezoid.

LESSON STEPS

Day One

- ▣ Prepare the classroom for dance.



Moving Desks/Set-up

1. Review properties of triangles, squares, rectangles, and trapezoids.

- *Today we are doing dance and math at the same time. We'll be describing, making, and dancing shapes with stretchies. In this lesson, we will be dancing triangles, squares, rectangles, and trapezoids.*
- *I'll draw and label each one of the shapes on the board. Dancing Mathematicians, tell me what you see that helps you to name each of these shapes. How are they alike? How are they different? How many sides do they have? How many corners do they have?*

2. Remind students about agreements for appropriate dance behavior.

- *Remind me, how can you be creative and safe at the same time?*



Movement Safety

3. Lead students in *Math BrainDance* warm-up. (BrainDance originally developed by Anne Green Gilbert, www.creativedance.org, reference: *Brain-Compatible Dance Education*, video: *BrainDance, Variations for Infants through Seniors*.)
Music: "Math BrainDance (Kindergarten)" #1, *Math Dances* by Debbie Gilbert



BrainDance by Artist Mentor

- *The BrainDance is designed to warm up your body and make your brain work better at the same time. Notice when we make shapes in the BrainDance.*

Breath

- *Dancing Mathematicians, breathe quietly.*



BrainDance by Students

Tactile

- *Tap from the top of your head all the way to your toes. We'll count by ones to twenty: 1, 2, 3 ... 20.*

Core-Distal

- *Grow into a big square shape and shrink into a small square shape.*

Head-Tail

- *Curl your backbone forwards and backwards and from side to side. We'll count by tens to one hundred: 10, 20, 30 ... 100.*

Upper Half

- *The top half of your body will move and the lower half will freeze. Draw circles in the air with your arms, your shoulders, and your head.*

Lower Half

- *The lower half of your body will move and the upper half will freeze. Draw rectangles with your feet, your knees, and your legs.*

Body-Half Right

- *Move the right side of your body while the left side is frozen. We'll count backwards from 10: 10, 9, 8 ... 1.*

Body-Half Left

- *Move the left side of your body while the right side is frozen. We'll count backwards from 10: 10, 9, 8 ... 1.*

Eye-Tracking

- *Focus on your right thumb. Move it from one side to the other and up and down. Watch your left thumb moving from side to side and up and down.*

Cross-Lateral

- *Reach across your body up high, up high, down low, down low. We'll count by tens to one hundred sixty: 10, 20, 30... 160.*

Vestibular

- *Turn, then freeze in a triangle shape. Turn, then freeze in a square shape. Turn, then freeze in a rectangle shape. Turn, then freeze in a trapezoid shape.*

Breath

- *Breathe quietly, Dancing Mathematicians.*
-

4. Introduce the props for dancing shapes: stretchies. Discuss how to move safely and appropriately with them.

▣ The stretchies are strips of 4-way stretch fabric about 3 inches wide and 4-6 feet long tied tightly together to make a loop.

- *We'll use the stretchies to make shapes. They are math tools and not toys. How can we dance safely with the stretchies?*
 - *When you start moving, remember to keep empty space around you. Put a space bubble around you and your stretchy. Do not wrap the stretchy around your neck.*
 - *What should we do with our props when we are listening to directions (e.g. place them on the floor in front of you, or sit criss-cross and make the stretchy disappear)?*
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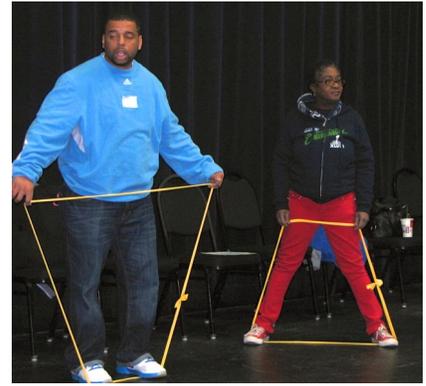
5. Lead exploration of triangles, squares, rectangles, and trapezoids with stretchies. Hand a stretchy to each student.

- *Show me a triangle with your stretchy. How do you know that is a triangle? How is this triangle different from that triangle? How are they the same?*



Prompting for Creativity

▣ Repeat the process with squares, rectangles, and trapezoids. Encourage the students to find multiple ways of making each shape.



Criteria-based process assessment, self-assessment: Makes four shapes with a prop: triangle, square, rectangle, and trapezoid.

6. Guide choreography of the Geometric Shape Dance. Direct students to make a triangle shape, a square shape, a rectangle shape, a trapezoid shape, and their own choice of movement and shape. Practice the shapes in a sequence with music.

Music: "Geometric Shape Dance" #8, *Math Dances*

▣ You could choose to do all your assessments on the checklist on Day Two of the lessons. During Day One, observe how individual students are progressing at achieving the criteria. It will help guide your instruction on Day Two.

- *We are going to create a dance with our shapes by putting them together in a sequence.*
- *First, make a triangle shape and hold it for four counts.*
- *Second, make a square shape and hold it for four counts.*
- *Third, make a rectangle shape and hold it for four counts.*
- *Fourth, make a trapezoid shape and hold it for four counts.*
- *Finally, do your own dance for four counts and freeze in your own shape. It can be any shape. It doesn't have to be a geometric shape.*



Geometric Shape Dance

Criteria-based teacher checklist, self-assessment: Uses body shapes and a prop to represent a series of five shapes: triangle, square, rectangle, trapezoid, and a shape of own choice.

7. Lead a reflection about making the connection between shapes in dance and math.

- *Dancing Mathematicians, how did you know the triangle shape in our dance was the same as a triangle in math? Turn and talk with a partner.*

▣ Repeat with square, rectangle, and trapezoid.

- *The next time in math that you need to identify a shape, remember how you made shapes with stretchies and your body in dance.*

Criteria-based reflection: Connects dance and math.

Day Two

1. Display photos of professional dancers making shapes. Ask students to identify the shapes observed.

- *Today we are doing dance and math at the same time. Dancing Mathematicians, we'll practice and perform our dance about triangles, squares, rectangles, and trapezoids.*

▣ You may use these photos: Pacific Northwest Ballet: Carla Korbes in Ronald Hynd's *The Sleeping Beauty*, Dancers in Annabelle Lopez Ochoa's *Cylindrical Shadows*, Mara Vinson in George Balanchine's *Agon*; Choreography © The George Balanchine Trust, Seth Orza and Carla Korbes in David Dawson's *A Million Kisses to My Skin*. You could also choose to find your own dance photos that represent a variety of styles and cultures. You could review, for example, The UW World Dance Series, <http://uwworldseries.org/world-dance>.



- *Look at these pictures of dancers making shapes. What shapes do you see?*
- *We'll be making shapes again today with our stretchies.*

2. Remind students about agreements for appropriate dance behavior.

- *Remind me, how can you be creative and safe at the same time?*
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3. Lead students in *Math BrainDance* warm-up from Day One.

4. Review triangles, squares, rectangles, and trapezoids with stretchies. Hand a stretchy to each student.

- *Remind me, how do we move safely and creatively with the stretchies?*
- *Let's review. Show me a triangle with your stretchy. How do you know that is a triangle? How is this triangle different from that triangle? How are they the same?*
- *Try making a different triangle.*

▣ Repeat the process with squares, rectangles, and trapezoids.

- *What other shapes can we make?*

Criteria-based process assessment, self-assessment: Makes four shapes with a prop: triangle, square, rectangle, trapezoid.

5. Lead a rehearsal of the Geometric Shape Dance. Direct students to practice the sequence: a triangle shape, a square shape, a rectangle shape, a trapezoid shape, and their own choice of movement and shape.

Music: "Geometric Shape Dance" #8, *Math Dances*.

▣ As you use the assessment checklist, you can choose to assess students as you observe and coach small groups during the rehearsal as well as during the performance. A reverse checklist works well with this lesson.

- *Let's practice the dance we created in our last lesson.*
- *First, make a triangle shape and hold it for four counts.*
- *Second, make a square shape and hold it for four counts.*
- *Third, make a rectangle shape and hold it for four counts.*
- *Fourth, make a trapezoid shape and hold it for four counts.*
- *Finally, do your own dance for four counts and freeze in your own shape. It can be any shape. It doesn't have to be a geometric shape.*

Criteria-based teacher checklist: Uses body shapes and a prop to represent a series of five shapes: triangle, square, rectangle, trapezoid, and a shape of own choice.

6. Facilitate performance of the Geometric Shape Dance followed by a responding process. Ask half the class to perform the Geometric Shape Dance and half to be the audience, then they will switch roles. Discuss performer and audience behavior.

▣ After each group performs, collect the stretchies.

- *Performers what do you want from your audience? Audience what do you want from your performers?*



Performer and Audience Expectations

▣ After each half of the class performs the dance, ask the following questions:

- *How did you know the first shape was a triangle? Describe some of the triangles you saw. How were they different? How were they the same?*

▣ Repeat the questions with other shapes.

☑ Criteria-based teacher checklist, peer assessment: Uses body shapes and a prop to represent a series of five shapes: triangle, square, rectangle, trapezoid, and a shape of own choice.

7. Lead a reflection connecting shapes in dance and math. Ask students to identify the number of sides in each shape and to draw them in the air.

- *You just danced triangles, squares, rectangles, and trapezoids. I think that by dancing them you will remember how many sides each shape has. Let's find out if I'm right. You can show me how many sides by holding up that number of fingers.*
- *Show me how many sides a triangle has. Now draw a triangle in the air: one, two, three.*
- *Show me how many sides a square has. Now draw a square in the air: one, two, three, four.*
- *Show me how many sides a rectangle has. Now draw a rectangle in the air: one, two, three, four.*
- *Show me how many sides a trapezoid has. Now draw a trapezoid in the air: one, two, three, four.*
- *The next time in math that you need to identify a shape, remember how you made shapes with stretchies and it will help you in math.*

☑ Criteria-based teacher checklist, and reflection: Shows numbers of sides in each of the following shapes: triangle, square, rectangle, trapezoid.

ARTS IMPACT LESSON PLAN Dance and Math Infusion

Kindergarten Lesson Three: *Identifying, Describing, and Dancing Shapes*

CLASS ASSESSMENT WORKSHEET

Disciplines	DANCE/MATH					MATH				Total 9
Concept	Shape					Shape				
Criteria	Uses body shapes and a prop to represent a series of five shapes: triangle, square, rectangle, trapezoid, and a shape of own choice.					Shows numbers of sides in each of the following shapes: triangle, square, rectangle, trapezoid.				
Students	triangle	square	rectangle	trapezoid	own choice	triangle	square	rectangle	trapezoid	
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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 dance and math?

Teacher: _____ Date: _____

DANCE AND MATH LESSON: *Identifying, Describing, and Dancing Shapes*

Dear Family:

Today your child participated in an **Arts and Math** lesson. We talked about how both mathematicians and dancers can identify and make shapes.

- We did the Math BrainDance to warm up our brains and bodies.
- We discussed the properties of these shapes: triangles, squares, rectangles, and trapezoids.
- We used stretchy fabric to make gigantic shapes and create a Geometric Shape Dance with circles, triangles, squares, rectangles, trapezoids, and our own shapes.
- We performed for each other described and compared the shapes that we saw.
- We identified the number of sides in our shapes and drew them in the air.
- We thought about how making shapes with stretchies will help us make shapes in math.

At home, you could look for triangles, squares, rectangles, and trapezoids. Ask your child to show you how to use your body to make a giant shape.

Enduring Understanding

Drawing or dancing the number of sides and corners can model geometric shapes.