Facilitation Guide

5-7 Min Routine

Digital Guide

ARTS EVERY DAY IN BALTIMORE CITY PUBLIC SCHOOLS

Polygon Beats

Explore Brain Science | EMBODIED COGNITION | VISUAL THINKING | ARTFUL REPETITION

ROUTINE OVERVIEW

In this entry point to the lesson, students will learn about the two most basic time signatures in music, 3/4 ("three four"), also known as "3 beat," and 4/4 ("four four"), also referred to as "4 beat." Students will then apply their knowledge of 3-sided and 4-sided polygons, including triangles and squares, by drawing the shapes that match the time signatures they hear in a provided playlist of song snippets.

Maryland Standards

MARYLAND STATE MATH STANDARDS

- **3.GR.B.5** - Explain that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category of shapes (e.g., quadrilaterals).

MARYLAND ARTS STANDARDS

- **MU.AS1.I:3-5:1** - Conceptualize and generate musical ideas for an artistic purpose and context, using appropriate technology as available.

Not in MD? View National Standards in the Digital Guide

Getting Ready

REVEAL MATH: **3rd Grade: 13-2**

ARTS INTEGRATED LEARNING OBJECTIVE:
SWBAT connect the idea of three and four sided shapes to the three and four beats in the music, identifying the time signatures in different types of songs in order to draw 3 and 4 sided polygons.

MATH DOMAIN:

Geometric Reasoning & Measurement	Reason with Shapes and their Attributes	Describing the attributes of Quadrilaterals

MATERIALS

- Slides (with song links)
- Polygon Pop Worksheet
- Personal White Boards or Paper
- Dry Erase Markers or Pencils

WHAT'S BEFORE: Polygons as 2-D closed shapes; identifying polygons such as triangles, quadrilaterals, pentagons, hexagons or octagons

WHAT'S NEXT: Classifying and drawing quadrilaterals; defining attributes of a square, rectangle, rhombus

MATH SKILL: Describe quadrilaterals based on number of sides, vertices, angles, side lengths.

ART SKILL: Identify the time signature of a piece and whether the song is in 3/4 or 4/4.

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TEACH

Facilitation Steps

Connecting Music to Geometry:

- Tell students: Beats in music appear in many different ways. Just like polygons come in many different types.
- Draw a picture of a triangle
- Ask: "What shape do you see, and how many sides does it have?"

Model Counting 3 and 4 beats:

- Tell students: A three beat song feels like a waltz (an old fashioned partner dance) where the first beat is emphasized. **1**, 2, 3… Or STRONG - weak - weak, STRONG - weak - weak.
- Tell students: count with me to 3. **1**, 2, 3, **1**, 2, 3, **1**, 2, 3, **1**, 2, 3,.
- Ask: What do the 3 beats and the triangle have in common?

Note: One important noticing is how each side of this triangle is the same length, similar to how each beat is the same length in the song.

- Ask: "What is a steady beat?" (it's the invisible marker of time in music, a repeated pattern)
- Tell students: "Another way to arrange music is in beats of 4."
- Tell students: Clap a steady beat and count to 4 with the emphasis on the first clap. **1**, 2, 3, 4, **1**, 2, 3, 4, **1**, 2, 3, 4……etc
- Invite students to join you in clapping and counting aloud to the steady beat.
- Ask: What do the 4 beats and the square have in common? What do we call 4-sided shapes? (Answer: Quadrilaterals)

Listening for the Beat: Triangles and the 3 Beat

- Play the first track on slide 2. It's a 3-beat pattern.
- Invite students to join you in the counting. Find that flow and rhythm.
- While you continue to count with the students, draw a triangle on the board for students to see. Each line should be drawn on the beat. Students can practice air drawing the triangle while you demonstrate on the whiteboard.

Guided Practice: Triangles and the 3 Beat

- Give the shapes printout to students, then play the second song on slide 3.
- Count the 3 beats together to establish the pattern and have students trace the **first row of triangles** on their sheet (this will be all of the triangles in **section 1**) while counting as they listen to the song. 1, 2, 3 = 1 complete triangle. Adding a 3-beat rest between triangles will help anchor students in this activity.
- When students have successfully completed the first line of the worksheet, have them wait with pencils down for further instruction.
- Play the third song on slide 4 and have students independently draw triangles freehand in **section 2**.



SLIDES



VIDEO PLAYLIST



MATERIALS
GOOGLE FOLDER

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Facilitation Steps

Listening for the Beat: Quadrilaterals and the 4 Beat

- Play the fourth song on slide 5. It's a 4-beat song.
- Invite students to join you in the counting. Find that flow and rhythm.
- While you continue to count with the students, draw a square on the board for students to see. Each line should be drawn on the beat. Students can practice air drawing the square while you demonstrate on the whiteboard.

Guided Practice: Quadrilaterals and the 4 Beat

- Direct student attention to the row of **dotted line squares** on their handout (**section 3**).
- Play the fifth song on slide 6 for students to listen for the beat.
- Count the 4 beats together to establish the pattern and have students trace the **first row of squares** on their sheet while counting as they listen to the song. 1, 2, 3, 4 = 1 complete square. Once again, we suggest resting for 4 beats between squares.
- When students have completed section 3, have them wait with pencils down for further instruction.
- Play the sixth song on slide 7 and have students independently draw squares freehand as they listen to the song in **section 4** of their worksheet.
- In the final step of this activity, ask students to draw quadrilaterals other than squares - you can model examples such as a rectangle, rhombus, trapezoid, or parallelogram on the board to give students options- while listening to the last 4 beat snippet, which is the seventh and final song on slide 8.
- Play the last 4-beat song for students as they draw these quadrilaterals freehand in the final blank space provided on their handout in **section 5.**

Closing with The Math

- Now that students have a collection of different types of quadrilaterals modeled on the board and on their papers, you can begin a conversation about what attributes they see in these shapes.
- Possible Discussion Questions:
  - How many vertices does each shape have?
  - How many angles does each shape have?
  - Do all quadrilaterals have equal sides all the way around?
  - What about side lengths?
  - What kinds of angles do these shapes have?
  - What do you notice that all of these quadrilaterals have in common?
  - What are the differences between some of them?
  - How can you compare these quadrilaterals based on what you know about polygons?

HANDOUT

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Assessment & Reflection

Formative:

- Observe students as they draw polygons (triangles and quadrilaterals) to go along with the musical beats in each song. Provide corrections and affirmations.
- Observe types of quadrilaterals students draw.
- Discussion: Make note of student noticings and observations of polygons and quadrilateral attributes to assess prior knowledge.

Differentiation

2.GR.B.5
Identify and draw shapes (triangles, quadrilaterals, pentagons, hexagons, and cubes) having specific attributes, such as a given number of angles or a given number of equal faces.

2nd Grade Alignment Opportunity:
As this is a review based activity meant to provide an arts integrated entrypoint into a lesson about quadrilateral attributes, this can also be used as a launch for lessons in second grade that relate to concepts about identifying triangles and quadrilaterals based on their angles, vertices and number of sides.

Reveal Lesson Opportunities:
Grade 2: Lessons 12-1, 12-2