Scavenger Hunt

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In Pennsylvania, we follow the Pennsylvania Department of Education's Standards Aligned System (2019). One of the areas of focus for third grade math is geometry. The Assessment Anchor is identified as: CC.2.3.3.A.1 Identify, compare, and classify shapes and their attributes. An Art Standard that would relate to this lesson is VA:Cr.2.1.3a Create personally satisfying artwork using a variety of artistic processes and materials (National Core Arts Standards, 2014). We use the Go Math! Curriculum and I have identified lesson *12.5 Classify Quadrilaterals* as a possible arts integration lesson (Houghton Mifflin Harcourt Publishing, 2015).

Lesson Plan for *12.5 Classify Quadrilaterals*

Engage	**Essential Question** How can you use sides and angles to help you describe quadrilaterals? **Making Connections** Invite students to tell you what they know about figures. What figures do you remember learning about? Triangle, square, circle, etc. What do squares, rectangles, rhombuses, and trapezoids have in common? They have 4 sides and 4 angles. **Learning Activity** What is the problem the students are trying to solve? Connect the story to the problem. • What do you know about the shape of the sign? It has 4 sides and 4 angles. • What are other characteristics about the figure that you notice? Answers may vary. **Literacy and Mathematics** Choose one or more of the following activities. • Have students use dot paper to draw 5 to 10 four-sided figures. Have them write about the characteristics that they notice about their figures. • Have students draw as many road signs as they can. Have students describe the characteristics of each sign.
Explore	**MP6 Attend to precision**. Have students make

	connections to what they already know about quadrilaterals. • What is true about all quadrilaterals? They all have four sides and four angles. • How might quadrilaterals be different? Possible answer: they might have different kinds of angles, and not every quadrilateral will have the same number of sides of equal length. Have students look at each quadrilateral. • Which quadrilaterals can have two pairs of opposite sides that are parallel? square, rectangle, trapezoid, and rhombus • Are all quadrilaterals also rectangles? Explain. No; possible explanation: a trapezoid is a quadrilateral, but it may not a rectangle. • Are all rectangles also trapezoids? Explain. Yes; possible explanation: trapezoids have at least 1 pair of opposite sides that are parallel and rectangles have 2 pairs of opposite sides that are parallel. **Math Talk** Use Math Talk to focus on students' understanding of why a square is a special type of rectangle and rhombus.
Explain	**Share and Show** The first three problems connect to the learning model. Have students use the MathBoard to explain their thinking. Use the checked exercises for Quick Check. **Math Talk** Use Math Talk to focus on comparing properties of quadrilaterals to classify them. Suggest students use a ruler to determine if sides are or are not equal in length. Students may also use the corner of a piece of paper to help decide if an angle is a right angle. **On Your Own** When students have finished Exercises 7–9, ask:

	• How can you prove that the quadrilateral in Exercise 7 is NOT a rhombus or a square? All 4 sides are not equal in length. • How can you prove that the shape in Exercise 8 is a trapezoid? It has at least one pair of parallel sides.
Elaborate	Explain to students that in Exercises 10–12, they should write the letter names of the quadrilaterals that answer each question. Point out that each exercise has more than one answer. MP6 Attend to precision. Discuss the definition of quadrilaterals with students. Help students understand that a quadrilateral has 4 sides and 4 angles. Guide students to count the number of sides and angles in each shape. Then, ask: • If the shape in Exercise 19 is not a quadrilateral, what shape is it? It is a pentagon. • Can a trapezoid have exactly two right angles? Explain. Yes; it can have exactly two right angles and still have one pair of opposite sides that are parallel. For example, quadrilateral A is a trapezoid with two right angles. SMARTER Exercise 20 requires students to visualize a polygon that is drawn based on the properties of quadrilaterals.
Evaluate	**Essential Question** Using the Language Objective Reflect Have students demonstrate and explain to a partner to answer the Essential Question. How can you use sides and angles to help you describe quadrilaterals? All quadrilaterals have 4 sides and have special names if the sides are parallel or perpendicular, or equal in length.

I think learning how to classify quadrilaterals is an excellent lesson to integrate with visual arts. At this grade, many students are aware of squares and rectangles, but have not learned about quadrilaterals and the various types of quadrilaterals in depth. Many of the shapes share similar attributes and this can be a confusing concept for students. By developing a visual arts integrated lesson, my hope is that students are able to access multiple means of understanding and grapple with the various quadrilaterals in order to understand what makes them similar and different from each other. I want students to be able to have hands-on experience with these shapes and by creating and manipulating these shapes through art, it is my belief that]students will develop a deeper comprehension of the math standard.

References

Commonwealth of Pennsylvania. (2019). Pennsylvania Department of Education Standards Aligned System (PDESAS). Retrieved from: https://www.pdesas.org/Standard/Search

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