

PRACTICE TASK: QUADRILATERAL RIDDLES

Adapted from Pennsylvania DOE activity Attributes of Two-Dimensional Shapes

STANDARDS FOR MATHEMATICAL CONTENT

MCC3.G.1. Understand 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 (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

STANDARDS FOR MATHEMATICAL PRACTICES

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

Students have had some opportunities to look at quadrilaterals and begin to understand the categories that the shapes fit in based on the properties of the shapes. Additional time in studying the shapes may be needed based on the van Hiele levels of Geometric Thinking. Additional information about the levels may be found in the Van de Walle Resource book on pages 206-208

ESSENTIAL QUESTIONS

- How can we use two- dimensional shapes to solve problems?
- How do attributes help us describe shapes?
- Why is it important to know what quadrilaterals are and the differences between them?

MATERIALS

- Display the Riddle sheet using a document reader/ overhead projector or write the sentences on the board for students to copy.
- Varied of quadrilaterals for visuals

GROUPING

Independent or Partner Task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

In this task, students will use the mathematical vocabulary developed through this unit to describe the attributes of quadrilaterals. Students will use 2 quadrilaterals to fill out the riddle. The riddle follows the pattern:

If I were a _____

_____, I would
have _____

_____. I would
have _____

_____. But I
would not have _____
_____ because
that would be _____

_____.

The first three blanks refer to one quadrilateral; the last two blanks refer to the other quadrilateral.

Example: If I were a square, I would have 4 sides. I would have 4 corners. But I would not have only one set of parallel lines (or lines that run in the same direction) because that would be a trapezoid.

Throughout this unit, students should begin to identify and describe the attributes of various quadrilaterals beyond the common characteristic. What makes a square a rectangle but a rectangle can't be a square?

FORMATIVE ASSESSMENT QUESTIONS/PROMPTS

- What part of the task was the hardest for you?
- How would you explain to your parents or guardians the difference between the quadrilaterals?
- Why should you know that different shapes can be in the same category?
- When would you use this information as an adult?

DIFFERENTIATION

Extension:

- Have students further investigate the difference between parallelograms and trapezoids. Then have them can write a riddle based on their findings.

Intervention:

- Allow students to use other shapes with the quadrilaterals.

TECHNOLOGY CONNECTIONS

- <http://illuminations.nctm.org/LessonDetail.aspx?id=L350> – Complete lesson on rectangles and parallelograms
- <http://illuminations.nctm.org/LessonDetail.aspx?id=L813> – Shape Up Lesson from Illumination

Name _____ Date _____

Quadrilateral Riddle

Choose two quadrilaterals that are similar but have at least one difference. The first three lines of the riddle refer to one quadrilateral and its attributes. The last two lines of the riddle refer to the second quadrilateral and its attribute(s) that make it different from the first quadrilateral. Use specific math vocabulary to describe the attributes.

If I were a _____

I would have _____.

I would have _____.

But I would not have _____

Because that would be _____.

Optional: try another riddle using two new quadrilaterals.

If I were a _____

I would have _____.

I would have _____.

But I would not have _____

Because that would be _____.