

## **PERFORMANCE TASK: Quadrilateral Hierarchy Diagram**

*Adapted from K-5 Math Teaching Resources*

The students will create a Hierarchy Diagram using the terms: quadrilaterals, parallelogram, non parallelograms, rectangle, square, rhombus, trapezoid, kite, and other

### **STANDARDS FOR MATHEMATICAL CONTENT**

**MCC5.G.3** Understanding that attributes belonging to a category of two-dimensional figures also belong to all subcategories.

**MCC5.G.4** Classify two-dimensional figures in a hierarchy based on properties.

### **STANDARDS FOR MATHEMATICAL PRACTICE**

SMP 1. Make sense of problems and persevere in solving them.

SMP 2. Reason abstractly and quantitatively.

SMP 3. Construct viable arguments and critique the reasoning of others.

SMP 5. Use appropriate tools strategically.

SMP 6. Attend to precision.

SMP 7. Look for and make use of structure.

### **BACKGROUND KNOWLEDGE**

The students will use the knowledge that they have gained throughout this unit to perform this task.

### **COMMON MISCONCEPTIONS**

Students think that when describing geometric shapes and placing them in subcategories, the last category is the only classification that can be used.

### **ESSENTIAL QUESTIONS**

- How can plane figures be categorized and classified?
- How can you classify different types of shapes into a hierarchy?
- How can angle and side measures help us to create and classify shapes?

### **MATERIALS**

- Construction paper 9 X 11 or larger for hierarchy
- Glue sticks
- Markers
- Scissors
- One set of shapes per student

### **GROUPING**

Individual Task

### **TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION**

1. The students will create a Hierarchy Diagram using the terms: quadrilaterals, parallelogram, non parallelograms, rectangle, square, rhombus, trapezoid, kite, and other. (Labels are provided for the students)
2. Cut out the quadrilaterals and place each figure in the appropriate place on the diagram and glue it down.
3. List the properties specific to each quadrilaterals.

### **FORMATIVE ASSESSMENT QUESTIONS**

- How do you know this quadrilateral is a \_\_\_\_\_ (square, rectangle, parallelogram, trapezoid, or rhombus)?
- What is meant by the term “opposite sides”?
- What does “parallel” mean? How can you show that those sides parallel?
- What does “perpendicular” mean? How can you show that those sides are perpendicular?
- How can you show that 2 sides are equal?
- What are some ways we can show an angle is a right angle?

### **DIFFERENTIATION**

#### **Extension**

- Allow the students to draw and/or add their own quadrilaterals to the diagram.
- Allow the students to present their mathematical reasoning as part of the task.

#### **Intervention**

- Allow students to work in pairs.
- Allow students to use their notes or the internet.

### **TECHNOLOGY CONNECTION**

- [http://teams.lacoe.edu/documentation/classrooms/amy/geometry/6-8/activities/quad\\_quest/quad\\_quest.html](http://teams.lacoe.edu/documentation/classrooms/amy/geometry/6-8/activities/quad_quest/quad_quest.html) Quadrilateral Quest
- [http://real.doe.k12.ga.us/content/math/destination\\_math/msc3/msc3/msc3/MSC3/MSC3/Module5/Unit1/Session2/Tutorial.html](http://real.doe.k12.ga.us/content/math/destination_math/msc3/msc3/msc3/MSC3/MSC3/Module5/Unit1/Session2/Tutorial.html) This tutorial video discusses examining the properties of a rectangle and square; defining perpendicular and parallel lines; calculating the perimeters of rectangles and squares; and exploring the relationship between the perimeters and areas of rectangles and squares.
- [http://real.doe.k12.ga.us/content/math/destination\\_math/msc3/msc3/msc3/MSC3/MSC3/Module5/Unit1/Session4/Tutorial.html](http://real.doe.k12.ga.us/content/math/destination_math/msc3/msc3/msc3/MSC3/MSC3/Module5/Unit1/Session4/Tutorial.html) This tutorial video discusses exploring the properties of a parallelogram and exploring the properties of a trapezoid.

Quadrilaterals	Parallelograms	Square
Rhombus	Non Parallelograms	Rectangle
Trapezoid	Kite	Other
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Rhombus	Non Parallelograms	Rectangle
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