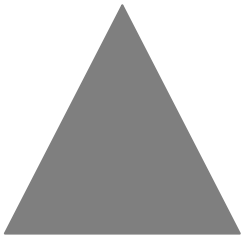

CONSTRUCTING TASK: What Shape is This?

Approximately 2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC.K.G.1 Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

MCC.K.G.1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind,* and *next to*.

STANDARDS FOR MATHEMATICAL PRACTICE

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

Teachers will need to allow for various ways to sort the shapes because this will be a way to build the student's understanding of the properties of shapes. Some students may have sorted only by sizes of big and little, others may have sorted by shapes. Pay special attention to any examples that show groups of shapes and more specifically, the sorting within a specific category of shape. Also notice if any examples have separated the squares/rectangles…remember squares are special rectangles… from the other four sided shapes. REMEMBER, we refer to all four sided shapes as quadrilaterals in Kindergarten AND we need to be mindful when talking about squares/rectangles, making sure to emphasis that squares are special kinds of rectangles that have all four sides the same length.

ESSENTIAL QUESTIONS

- How can we describe the location of a shape?
- How can we describe shapes in our everyday life?
- What makes shapes different from each other?
- How can you describe triangles?
- How are quadrilaterals and triangles different?
- How can shapes be sorted?

MATERIALS

- Circles, triangles (equilateral and right triangles), quadrilaterals (squares and rectangles of different sizes and colors), rhombus,
- One set of above mentioned shapes for each child – 4 of each shape
- Word cards labeled square, circle, rectangle, rhombus, and triangle.
- *When a Line Bends…A Shape Begins* by Rhonda Gowler Greene or similar book

GROUPING

Individual or Small Group

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I
Gather students together on carpet area. Pose this question, "What do you know about shapes? Let's brainstorm what we know about shapes." As students share their responses, record these on chart paper. (This group time is a chance to record all responses; we are simply gathering information at this point. A small discussion can begin, but you want to focus on gathering information for yourself as well. This is a great way to do an informal pre-assessment of the student's knowledge of shapes. We want to quickly chart this information; we will come back to these responses after parts II and III of this task.) Once you charted their shape ideas, say "Let's read a book to see what we can find out about shapes. This will give us information we can compare to our chart. Listen to see if you hear any of the same ideas we had in our chart or if you hear something new." After reading a book similar to, *When a Line Bends…A Shape Begins,* by Rhonda Gowler Greene, ask students to share the new or different information they heard about shapes compared to what was listed on the chart. Use a different colored marker to add new information or mark out information that we no longer agree with based upon the story. You will need to keep this chart for future conversations with students about shapes.

Part II:
Read a new book about shapes to springboard the second part of the learning task. Other examples of shape books include *Shapes, Shapes, Shapes* by Tana Hoban and *My First Book of Shapes* by Eric Carle. Give students a bag of precut shapes. You will find a student sheet below for this part of the task. Say to the students, "Group your shapes the way you think they should go together. You should be prepared to share your thinking with a partner." Once students have sorted their shapes for a few minutes, have them glue down their sorting. Then have students partner with their elbow buddy and compare their sorting. Encourage students to discuss their sorting methods. Next, pull students together for a class discussion. The class discussion should ensue from this part of the task about the various ways to sort the shapes.

Part 3

Begin this portion of task by reviewing the work completed yesterday. This should be a quick discussion including the charts that were made in Part I of the task. Display the same set of shapes of different sizes from Part II of the task. It is important to use these same shapes, so that students can focus on the various characteristics.

The teacher will model sorting the shapes by size, asking for students to assist in this process of determining where the shape was to be placed on the chart. After sorting the shapes by size, then say "We have sorted by size and now I am wondering what other information we can use to sort the shapes in a different way. I am going to give you a moment for think time to come up with an idea. When you have an idea, give me a thumbs-up sign." Once you have a number of students giving you the thumbs up sign, have them partner with an elbow buddy and share their idea. Have a partner pair come to the front and share their ideas.

This part of the task will be fueled by their thinking. You may have discussions such as this: "Sam has sorted his shapes by the number of sides. Did anyone else sort their shapes by the number of sides? I see that you sorted them into a group that has shapes with four sides. Those shapes fall into a special group called quadrilaterals. This is a new word for us. Let's practice saying that word together. It is special name for shapes. Who could help me group the quadrilaterals together? Wow, I see that there are different kinds of quadrilaterals. What are the names of these two types of quadrilaterals?" The answer to that is **NOT** rectangles and squares; it is rectangles and non rectangles! This is extremely important because **squares ARE rectangles** and need to be classified correctly as such early on in a child's thinking about shapes. There should be some discussion with students about the group of rectangles and how rectangles themselves can be separated into two groups…ones that are squares and ones that are not squares

As student discussions continue with the number of sides, prepare three charts for the students. The charts should be labeled triangles, circles, and quadrilaterals. Have students give you information about each of the shapes. Refer students back to the chart that was created at the beginning of the task entitled "What We Know about Shapes." Have students use some of the information from that chart to add more information to our more specific charts.

Part 4

Students will now practice using these clues to play a game with a partner. Have students spread their set of shapes out on their tables. Ask questions like, "Who can find a shape that is a quadrilateral? What about a shape that has three sides?" After modeling this for students a few times, allow students to play this game with a partner. Encourage students to identify the shapes based on the attributes of the shape by asking questions such as: "Which shape has three sides?" or "Show me the shape that has two long sides and two short sides. Show me an example of rectangles that has all sides the same length? Do we have a special name for this kind of rectangle?" To close this task, discuss the similarities and differences of the shapes. Are all **quadrilaterals** the same? Are all triangles the same? Why or Why not?

FORMATIVE ASSESSMENT QUESTIONS

- Where do you see shapes in everyday life?
- Can you show me the difference between a side and a corner?
- Can you tell me the difference between a side and a corner?
- Are all triangles the same?
- Are all four sided shapes the same?

DIFFERENTIATION

Extension

- Put out a set of blocks or pattern blocks during math centers for students to explore. Using the blocks/pattern blocks to build designs of their own is a good opportunity for them to become familiar with how the geometric shapes fit together.

Intervention

- As the students are exploring, check for understanding by having them name a shape you point to or ask them to hand you a particular shape. Students could also show how they identify a shape by counting the sides and corners.