PRACTICE TASK: WHAT DO YOU SEE?

Adapted from the lesson Shapely Lines from http://nrich.maths.org/7009

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 will continue to develop their understanding of shapes through this art activity. It will help you understand if students see all four sided figures as quadrilaterals, all five sided figures as pentagons, etc. This understanding from the students will show if they are developing understanding of geometric figures and progressing through the Van Hiele Levels of Geometric Thinking.

ESSSENTIAL QUESTIONS

- What might a quadrilateral look like?
- How do you know if a shape is a _____ _____ quadrilateral (square, rectangle, rhombus, trapezoid, parallelogram etc.)?
- Does a _____ _____ _____ (include any shape) always look the same?
- What is the difference between a regular and irregular polygon?

MATERIALS

- Plain Paper
- Pencil
- Ruler

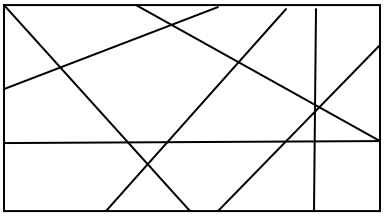
- Color Pencils
- Student Sheet

GROUPING

Individual Task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

In this task, students will use a plain sheet of paper and a ruler to draw lines in all directions across the page. For example: their paper may look like this:



Students will then use colored pencils or crayons and color each type of shape a different color. For instance, I might want all my triangles to be green, all quadrilaterals purple, all pentagons red, etc. Some students may even want to separate their quadrilaterals and color all squares one color, rectangles a different color, etc. After coloring, students will then answer the questions on the student sheet about the different shapes they made from their lines. Some students will struggle to remember that a quadrilateral is any 4 sided figure, a pentagon is any 5 sided figure, a hexagon is any 6 sided figure.

FORMATIVE ASSESSMENT QUESTIONS

- Did you notice any patterns with your shapes?
- Did you have more of one shape than the others? Why do you think that?
- Did you have any irregular shaped polygons?

DIFFERENTIATION

Extension

- Students that had a good understanding of quadrilaterals may want to color or design each type of quadrilateral with a different color/design.

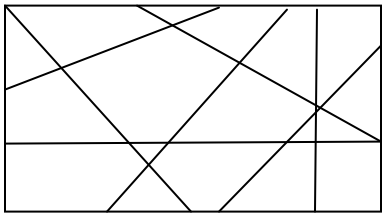
Intervention

- Students might need a demonstration of how to hold a ruler and draw a straight line. Others may need help holding the ruler as they draw straight lines. Students that are struggling to understand the differences in the types of shapes may need help to find all of the shapes that are alike.

Student Sheet

Name: _____Date: _____

Directions: On a plain sheet of paper, use your pencil and a ruler to draw straight lines on your piece of paper to make an interesting pattern. You may use as many lines as you want but remember you will have to color each shape. Here is my example:



Now, use you color pencils or crayons to decorate each type of shape. For example, color or use some type of design to decorate all of your triangles the same. Change your color and/or design for all of your quadrilaterals. Continue until you have colored all of your shapes a unique color or design. Make sure to include a key to show what color you used for each shape.

Answer the following questions about your design.

1. Do you have any triangles? If so, how many?_____

2. Do you have any quadrilaterals? If so, how many? _____

3. Do you have any pentagons? If so, how many? _____

4. Do you have any hexagons? If so, how many?_____

5. Did you have any other shapes? If so, list them: _____

What do you see in your own pattern? _____