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Classifying 2Dimensional Figures

**Objectives:** Students will be able to classify two dimensional figures in a hierarchy based on properties.

Common Core Standards Addressed:

5.G.3 Understand that attributes belonging to a category of two-dimensional figures also

belong to all subcategories of that category.

5.G.4 Classifying 2D figures in a hierarchy based on properties.

Practices:

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

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

5. Use appropriate tools strategically.

6. Attend to precision.

**Materials:** Cut out figures, math journals, pencils, protractors, 3 posters or easel paper, markers, tangram worksheets, tangram shapes, and computers for IXL.

**Procedures:** As students arrive they will begin working independently on a problem that is on the smart board.

Tatami mats help define standard sizes of Japanese rooms. Floors are completely covered by these mats which are about 3feet by 6feet. In how many different ways can the mats be arranged to cover a 6foot by 15foot floor?

After all students have a few minutes to work on the problem they can then work with their table mates for about 5 minutes. Then bring students together for the schedule and directions for math workshop. There will be three groups based on the pre-assessment. The groups will rotate so that each group goes to each station. Directions for workshop will include what to bring to each station.

Station 1-Teacher time with Mrs. Jackowick:

Bring math journal, pencil, and protractor. Students will be given a stack of figures to sort independently. They can sort them in whatever way makes sense to them. Mrs. J will challenge the students to further sort their piles. Students will then write in their math journals using mathematical language to describe how and why they sorted their shapes. Students will then report to the group their reasoning for the way that they sorted. They will discuss as a group which way makes the most sense. Mrs. J will highlight the piles that are sorted in a geometric hierarchy and guide the group towards creating a larger hierarchy on the poster board. Mrs. J will use the following vocabulary: quadrilateral, parallelogram, rectangle, square, rhombus, trapezoid, kite, triangle, equilateral triangle, scalene triangle, isosceles triangle, and polygon.

Station 2- Computers:

Students will work on IXL on Level E R.2, R.20, R.21, R.22, Level F P.2 or P.6

Station 3- Games:

Students will work with a partner to create tangrams using shape tiles and worksheets.

Closing: Class will come together to look at the agreed upon hierarchy of two dimensional figures. Class will also revisit the opening problem to discuss possible answers and reasoning for the answers that students came up with.

**Assessment:** Teacher will note discussion of hierarchies made by students. Teacher will also read student responses in their journals to check for understanding or clarification needed. Check for precise use of vocabulary in journals and discussion. Note any common misconceptions to address in the following lesson.

**Differentiation:** All students will have the option to draw in their math journal instead of write as long as their reasoning is clear. The amount of figures to be sorted may vary depending on need or ability as will the number of classifications made. For instance, some students may only be able to classify triangles and quadrilaterals while others may be ready to further divide those groups based on angle measure and parallel sides. Students could be challenged to reclassify their hierarchies based on a different attribute and then compare the hierarchies. Students will also have a choice in which IXL topics they attempt. For students that struggled to make a hierarchy, they should begin in Level E. Students who demonstrated understanding on the pretest could start with Level F.

**Integration Activities:** Students will be asked to write (preferable) or draw in their math journals, clearly stating their justification for classification.

**Lesson Justification:** In this lesson students will learn how to classify two dimensional objects based on properties. As students actively sort the figures they will consider defining properties of geometric figures. Students will likely notice that there is more than one correct way to sort the figures and that there are further divisions among each group.

This is a good way for students to construct knowledge of geometric figures and attributes because it requires problem solving, reasoning and proof, communication/argumentation, and precision.