CONSTRUCTING TASK: PATTERN BLOCK PICTURES

Approximately 2-3 days

STANDARDS FOR MATHEMATICAL PRACTICE

MCC.K.G.2. Correctly name shapes regardless of their orientations or overall size.

MCC.K.G.3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

MCC.K.G.4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

MCC.K.G.6. Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*

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.

BACKGROUND KNOWLEDGE

Although this task may seem like play, it provides for a great deal of exploration and assessment opportunities. Students begin to connect shapes to real life as thy create replicas of what they have seen from real world experiences. Teachers may also begin to assess their students' ability as it relates to counting and cardinality.

ESSENTIAL QUESTIONS

- How can a shape be described?
- How do shapes fit together and come apart?
- What makes shapes different from each other?

MATERIALS

- Pattern blocks (in bags for each student)
- Construction paper or die cuts of pattern blocks (1 bag per student with enough to create picture)
- Construction paper
- Pattern Block Picture recording sheet
- Writing Paper
- Glue sticks (1 for each student)

(The bags should contain enough shapes so that students can easily make a picture with 12 shapes.)

GROUPING

Small Group or Partner

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Comment:
Formal discussions about a trapezoid have not necessarily occurred in kindergarten; therefore the red piece may not be familiar to your students. It is okay to introduce the more specific name for these shapes, but Kindergartener's do not have to master identification of these shapes. Keep in mind a Kindergartener does not have to be able to identify a shape as a trapezoid, but should be able to classify it as a quadrilateral through exposure in previous tasks.

Part I
Distribute zippered plastics bags that contain the pattern blocks. Have students explore and identify what smaller pattern blocks can be combined to compose a larger shapes. (Example: 2 small triangles make rhombus.) Ask the students if any of them can compose a square from smaller shapes. Students may share shapes with one another if they choose to. This should not be teacher directed and the decision to combine/share shapes should be solely that of the students. As students discover new relationships between shapes the teacher records them on chart paper.

Part II
Have students create a picture using at least a dozen of the pattern block shapes. Encourage students to combine multiple pieces together so that the picture is made up of pattern block shapes touching. After students have created a picture using the pattern blocks have them share their picture and using the Pattern Block Recording Sheet, have students place a tally mark to record the number of each shape used to create their picture. Repeat these steps until each student has created and recorded the shapes for at least 5 pictures.

Part III
After students have created five pictures and recorded their shapes using the *Pattern Block Picture* recording sheet, have them trace and cut out shapes used in their 5th picture on construction paper. (example: if a student made a flower with 4 squares and a hexagon they would cut those shapes out of construction paper.) Once students have cut out the shapes that match the ones used in their picture they recreate the picture and glue it down to construction paper.

Part IV
After the *Pattern Block Picture* recording sheet and picture are complete, have the student create questions about their own shape chart and create a graph about their picture. "Which shape did you have more/fewer of? How many more/fewer?"
Students can use the data collected from their 5 pictures or they can come together in small groups and combine the recording sheets to create a graph.

Part V
As a class, have students/groups share their pictures and graphs. As part of the sharing time, have each group identify what shape they used the most of/least of.

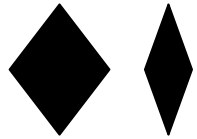
FORMATIVE ASSESSMENT QUESTIONS

- Which shape did you use the most of? Least of?
- What are you noticing about these shapes? What do they have in common? How are they different?
- Did any of your shapes combine to form other shapes?
- Which shapes are easy to combine? Why do you think this? Are any hard to combine? Why? What else did you discover?

DIFFERENTIATION

Extension
- Give students an exact amount of specific shapes that need to be used to create their picture.

Intervention
- If tracing is too time consuming for some students, skip this part and give them the precut shapes. Ask the student to identify the name of the shape and the number of sides it has verbally.
- Students can use numerals for the number of shapes used to create their picture as opposed to tally marks.

					
Picture 1					
Picture 2					
Picture 3					
Picture 4					
Picture 5					

Pattern Block Picture