Unit 6 Culminating Task

Performance Task: Geometry Town

STANDARDS FOR MATHEMATICAL CONTENT

MCC. 4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

MCC.4.G.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

MCC.4.G.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

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

As a culminating task, students will need to utilize the understanding and skills developed during this unit. Grade level teachers can create the rubric, or students can participate in the creation of the assessment tool.

ESSENTIAL QUESTIONS

- Where is geometry found in your everyday world?
- How can shapes be classified by their angles and lines?
- How can you determine the lines of symmetry in a figure?

MATERIALS

- "Geometry Town" student sheet.
- Poster paper or chart paper with 1 inch grid
- Notebook or copy paper
- 1" x 24" Strips of black or brown construction paper for streets, avenues, and roads (approximately 12 strips per city model)
- Markers, crayons, and/or colored pencils
- Protractors, rulers, yardsticks

GROUPING

Individual/Partner Task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Students create a plan for a city using geometric figures. Also, students represent the features of the town graphically.

Comments

A review of vocabulary would be an effective way of leading into this culminating task. One of the most important aspects of this task is for the children to demonstrate the mastery of the meaning of each term and show how to use and recognize these terms in their everyday lives.

Students may need extra time getting started on this task because it requires planning and cooperation. This task does take a considerable amount of time to complete; therefore, teachers should allow students the time required to discuss their project as they plan and create their model.

It may be helpful to create a rubric that can be used to assess the city model students will develop and describe in this task.

Task Directions

Students will follow the directions below from the "Geometry Town" student sheet.

> In your role as city planner, you have been asked to plan a new part of your city. Create a model of your plan, including 2-D models of the buildings, to present to the committee. You are required to meet the following specifications.
>
> - ☐ 4 streets that are parallel to each other
> - ☐ 1 road that is perpendicular to the 4 parallel streets
> - ☐ 1 avenue that intersects at least 2 streets but is not perpendicular to them
> - ☐ 8 buildings that are the shape of any polygons and color coded by the following requirements
>   - 2 different shaped red buildings that have at least one right angle and at least one set of parallel sides

- 2 different shaped green buildings that have at least one obtuse angle
- 2 different shaped blue buildings with no parallel or perpendicular sides
- 2 different shaped yellow buildings that are right triangles

☐ 1 park shaped like a right triangle with the following features:
- ☐ A swimming pool in the shape of a figure that has only acute angles
- ☐ A right triangular sandbox
- ☐ A triangular shaped sandbox with an obtuse angle

☐ 1 park that has at least 4 different geometric figures inside of it but has a symmetrical design (a line of symmetry could be drawn through the park)

☐ Name the park and the streets, the road, and the avenue.

Plan your city on a sheet of paper first. Once your plan is complete, create your model. Build your model on 1" grid chart paper. Use paper strips to create the streets, road, and avenue, and draw your buildings. Add the required features to the park by creating the appropriate 2-D shapes for your park.

FORMATIVE ASSESSMENT QUESTIONS

- How do you know that your color-coded building match the requirements?
- How do you know that the angles in your figures are acute, obtuse, or right?
- How do you know the line segments are perpendicular? Parallel? Intersecting?
- Which students accurately completed all parts of the task?
- Which student demonstrated an understanding of:
  - ~ Parallel, perpendicular
  - ~ Describing properties of figures
  - ~ Acute, obtuse, and right angles
  - ~ Symmetry

DIFFERENTIATION

Extension
- Students may add a new part to the city using their own rules for things to add to the map.
- Invite an architect to the classroom to talk about planning and the models they build in their work.
- Encourage students to prepare a presentation to the committee regarding their city plan. Students should try to persuade city planning committee members to choose their plan.

Intervention
- Pre-made 2-D shapes could be made available to students.
- Offer each requirement of the town one step at a time. Have students add the parts as they go.

Name _____ Date _____

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