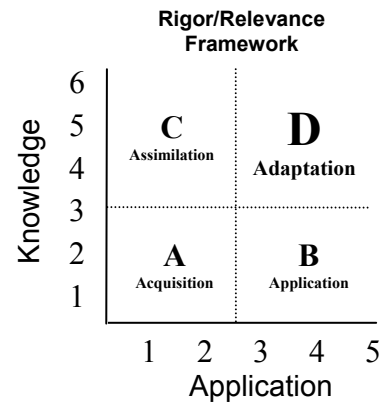




Gold Seal Lesson

A HOME FOR THE BIRDS



Subject

MATHEMATICS

Grades 5-8

Instructional Focus

Number Operation and Concepts: Students use numbers, number sense, and number relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Geometry: Students apply geometric concepts, properties, and relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Measurement: Students use a variety of tools and techniques of measurement in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Writing: Students write for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.

Performance Task

This lesson uses students' natural curiosity about birds for an exercise in designing a birdhouse using a variety of math skills.

Tell the students that Rita's mother is a very avid bird watcher. She loves to have different birds live and feed in her backyard. Rita decided that she would make a birdhouse to give to her mother for her birthday. Tell the students that their task is to design and make a three-dimensional model of a bird-house for Rita. Ask them to write out a set of directions for Rita to follow when making the birdhouse and include a list of materials needed to build it. Let them add any decorations to the birdhouse they wish.

Part I: Instruct the students that their design should include a scale drawing of the floor, the front and back of the birdhouse, the two sides, and one or two roof panels. Any angle measurements should be included. The design should be made to an appropriate scale that each student decides.

Part II: The students are to make a three-dimensional model of their birdhouse using cardboard, heavy-stock paper, or any other material that you have approved. Ask them to indicate the scale used for their model. It may be different than the scale used for the scale drawings that were made in Part I.

Performance Task

continued

Part III: Instruct students to write out a clear set of instructions that Rita can use to make the actual birdhouse including the materials she will need to construct it.

Indicate that they will be graded on the quality of their product and on effort, interest, and their management of time.

Teacher Note: There are many bird activities that you can do in conjunction with this activity. You may want to do this activity as part of a science unit on nature. You might also take a bird walk to see what birds are in the school's neighborhood. If a student wishes, they might actually build the birdhouse. In that case, you might want to have the students do a cost analysis of the actual building of the birdhouse.

Scoring Guide

Score each part on a 4 to 0 basis, where:

- 4 = Meets or exceeds expectations
- 3 = High quality but some expectations are not met
- 2 = Satisfactory but falls slightly short of meeting all expectations
- 1 = Minimum acceptable performance but is far below expectations
- 0 = Does not complete the task or does not meet minimum expectations

SCORE

Part I

The student prepares a scale drawing of all faces of the birdhouse that:

- uses an appropriate scale and indicates the scale used
- demonstrates accurate measurements
- shows all measurements including angles on the scale drawing
- is neat and drawn with a ruler and pencil

Part II

The student prepares a model that:

- is complete and accurately made
- is attractive and looks like the actual birdhouse
- indicates the scale used

Part III

The student prepares a set of written directions that:

- are clear and sequential
- indicates the materials needed to construct the actual birdhouse

Additional Criteria – The student:

- puts effort into assignment
- shows interest in the assignment
- manages time well

Essential Skills

- Perform operations with signed (positive and negative) numbers, including decimals, ratios, percents, and fractions. (m1)
- Understand the characteristics and terminology of angles, e.g., degree measure, classification of angles by measure (acute, right, obtuse, and straight), supplementary and complementary angles, and vertical angles. (m4)
- Use the Pythagorean theorem to compute side lengths of right triangles. (m21)
- Understand the properties and classification of polygons (e.g., triangle, quadrilaterals, pentagon, hexagon, etc.) as well as knowledge of geometric shapes. (m26)
- Use the technique of dimensional analysis to convert units of measure (e.g., convert km/hr to m/min) including drawing to scale and applying ratios. Understand and use various techniques for estimating, making and converting measure; and using these to perform dimensional analysis. (m33)
- Understand the nature of informational and/or technical texts. (ela71)

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