



HABITAT HOME

Overview

Book: *The One and Only Ivan* by Katherine Applegate

Grades 4-6

With this math PBL lesson, the students will design a habitat using a set of geometry concepts.

Standards

4 G.1	Draw points, lines, line segments, rays, angles, (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional designs.
4.MD.3	Apply the area and perimeter formulas for rectangles in real world mathematical problems.
4.MD.5 5.MD.3	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.
4.MD.6	Measure angles in whole number degrees using a protractor. Sketch angles of specified measure.
6.G.1 (6 th grade only)	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real world and mathematical problems.

Objectives

- Students will draw a habitat with a set of geometry concepts.
- Students will identify and correctly label the various geometric concepts.
- Students will measure angles.
- Students will calculate the perimeter of the habitat, using a scale of 1 inch equals 10 feet.
- Students will calculate the area of the habitat. (6th grade)

Materials Required

- Paper
- Pencils
- Rulers
- Protractors
- Samples of simple blueprints

Procedure

1. Review the three types of angles- right, acute, and obtuse.
2. Review the formula for calculating perimeter.
3. Show students a variety of simple blueprints. Point out the perimeter of the structure.
4. Teach the students how to calculate a distance using the scale of 1 inch = 10 feet.
5. Tell students that they are going to design a habitat for either Ivan or Ruby.
6. The habitat will have the scale of 1 inch = 10 feet. The habitat perimeter must include *at least* the following:
 - Two right angles
 - One obtuse angle
 - One acute angle
 - One set of parallel lines
7. Once the design is created students should label and measure each angle. Label the parallel lines.

8. Students will then calculate the perimeter using a scale of 1 inch = 10 feet. Have students first measure the perimeter in inches, then multiply by 10 to find the perimeter in feet.
9. Ask students if this perimeter is adequate or realistic for their animal. If not, allow time to make adjustments.
10. For sixth grade students – have them determine the area of the structure. This is done by dividing the structure into rectangles and/or triangles to find the area of individual sections and then adding the areas to determine the final sum.

Extensions

1. Show students examples of landscape design. Print off images used for landscape design that depict trees, shrubs, hardscape, flowers, ponds, etc. (Note: search for images of landscape design icons). Have students add these to the habitats. Ask students to explain their choices in relation to the animal that will be inhabiting the habitat.
2. Writing: Students write a story about the first time Ivan or Ruby enter the habitat. What did they see? Hear? Smell? Feel? How did they spend their first day? How did they feel about the habitat after a month?

Rubric

RUBRIC	Exceeds (3)	Meets (2)	Partially Meets (1)	Does Not Meet (0)
ACCURACY OF LABELS	Labels of both angles and parallel lines are correct.	Labels of parallel lines and some angles are correct	Only one or two labels are correct	No labels are correct.
ACCURACY OF MEASUREMENTS	All measurements of both angles and perimeter are correct.	Measure of perimeter and some angles are correct	Only one or two measurements are correct	No measurements are correct.
REQUIREMENTS	Meets all of the requirements for the project.	Meets most of the requirements for the project.	Meets some of the requirements for the project.	Does not meet the requirements for the project.
DEMONSTRATION OF KNOWLEDGE	Does a great job showing an	Does an okay job with showing an	Tries but has a difficult time	Does not show an understanding of

OF CONTENT IN DISCUSSIONS AND ACTIVITIES	understanding of the content covered in class.	understanding of the content covered in class.	showing an understanding of the content covered in class.	the content covered in class.
Total N/12				

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