

Task and Student Work Analysis

(Distribute task only)

The purpose of this task is to elaborate the thinking involved in developing coherent mathematical understanding.

Individually solve the task. Put yourself in the position of the student and concentrate on the mathematical thinking involved. (Refer to PowerPoint for the discussion questions to analyze the student work. Each question can be obtained with a click to allow time for discussion. The first three questions are used before the student work packet is distributed. Give 5-10 minutes for participants to jot their thinking down. Discuss and chart their responses to the first three questions.)

1. What are the key mathematical understandings?
2. What previous learning is a foundation for these understandings?
3. What should students do to develop these understandings?

(If necessary, prompt to “Avoid focusing on the task format and the appropriateness of the grade level.”)

(Distribute student work packet)

Now we are going to analyze actual student work on this task.

Look at the student work. Avoid focusing on the assigned score for each section or the scoring marks. Instead think of the strategies that will be needed for instruction. Visualize climbing a ladder of developmental steps with the top step as the goal.

4. What misunderstandings might lead to errors?
5. What experiences would lead students to success?

(Give 5-10 minutes for participants to jot their thinking down. Discuss and chart their responses to the first last two questions. Allow additional comments to be added to any of the lists. Return to PowerPoint)

(Listed with the questions are examples of participants' expected responses to each of the questions given to you as a guide.)

1. What are the key mathematical understandings?
 - a. Two-dimensional shapes and their properties
 - b. Sorting shapes based on properties
 - c. Lines of symmetry
 - d. Types of angles
 - e. Right angles
 - f. Classifying triangles by their angles and side lengths
2. What previous learning is a foundation for these understandings?
 - a. Families of types of shapes
 - b. Orientation of shapes
 - c. Names of quadrilaterals using mathematical terms
 - d. Names of polygons using mathematical terms
 - e. Recognition of right angles in shapes
3. What should students do to develop these understandings?
 - a. Completing tasks requiring spatial relationships
 - b. Cutting out shapes and folding to determine lines of symmetry
 - c. Experience with recognizing and drawing shapes in different orientations
 - d. Continuous vocabulary support with teacher using correct mathematical language
 - e. Using strategies such as the Frayer Model to develop concepts about 2-dimensional shapes or a K-W-L Chart for what they already know, what they want to know and what they have learned about a mathematical concept
4. What misunderstandings might lead to errors?
 - a. Thinking the parallelogram has a diagonal or vertical line of symmetry.
 - b. Not knowing the names of triangles based on the angles or lengths of sides of the triangles.
 - c. Only thinking of symmetry in one orientation: vertical or horizontal
5. What experiences would lead students to success?
 - a. Knowing names of the shapes
 - b. Working with different shapes and drawing lines of symmetry
 - c. Knowing location of right angles in the shapes