Constructing Task: Is This the Right Angle?

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.

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

Students should know what a right angle is and have learned the terms right, acute, and obtuse angles and be able to locate some examples of each.

ESSENTIAL QUESTIONS

- What makes an angle a right angle?
- How can you use only a right angle to classify all angles?

MATERIALS

- One piece of irregularly shaped paper per student
- Is This the Right Angle? Task Sheet

GROUPING

Large Group, Individual
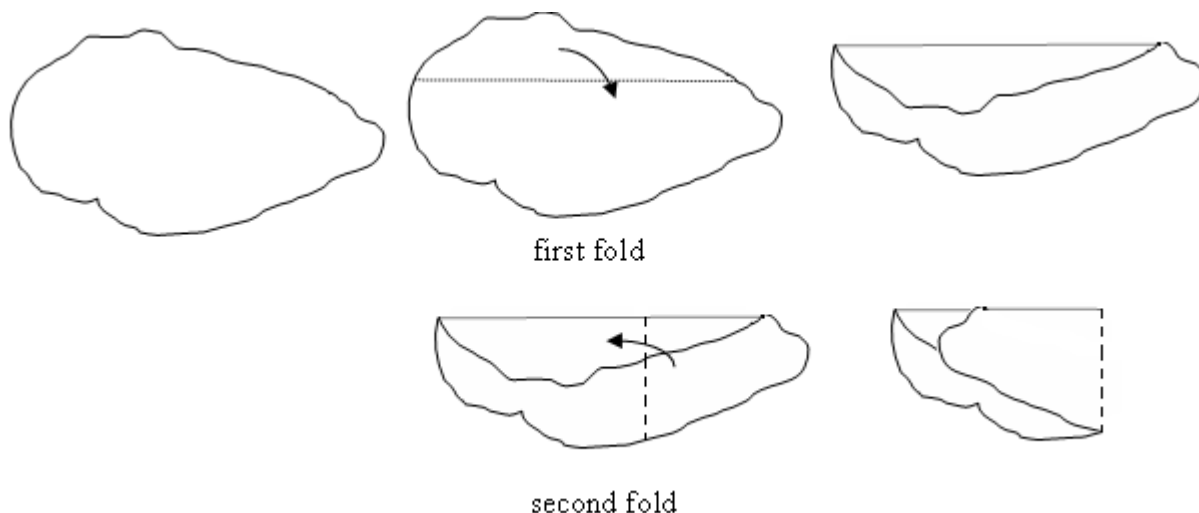
TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Comments
In this task, students will explore one way to make a right angle and to use that angle to classify other angles around them. This task gives students a chance to use previous knowledge. Square

corners are easily found in the classroom and in the school. An important element of this task is for students to use a square corner to measure the angles in their world.

Task Directions
Give each student a piece of irregularly shaped paper. Have them work to determine how to fold it to create a square corner. The students can create a square corner by making any two perpendicular folds. The figures show one way of folding the square corner:

first fold

second fold

Once students have folded their square corners, they can use this to find right, acute, and obtuse angles in the classroom (or take a right angle field trip throughout the school with cameras and record them on the chart.) If a student is having difficulty, encourage group members to help. When the students compare their angles to their group members' angles, they should notice all the right angles are the same size. The groups can present the angles they found to their classmates to make sure they agree on the comparative sizes of the angles. Let students discuss the angle that was easiest to find. Ask them to tell why they think this angle is so common. Generally, students will have the easiest time finding right angles.

FORMATIVE ASSESSMENT QUESTIONS

- Can you make a right angle using anything? How?
- Which angle is the easiest to find? Why?
- Why is a right angle an important angle to know?
- How can you use the right angle to help you determine whether other angles are acute or obtuse?
- Were students able to construct the right angle from the paper?
- Can students accurately determine whether an angle is right, acute, or obtuse?

DIFFERENTIATION

Extension
- Using a digital camera, have students go on a scavenger hunt and take pictures of different angles. Use the pictures to create a slide show of angles.

Intervention
- Pair students to work together and compare answers. Give students a hand-made angle (two strips of paper and a brad) to use when searching for angles.

Name_____ Date _____

Is This the Right Angle?

Directions: Find right, acute, and obtuse angles in the classroom
(or take a right angle field trip throughout the school with
cameras and record them on the chart.)

Angles that are right angles	Angles that are smaller than right angles	Angles that larger than right angles