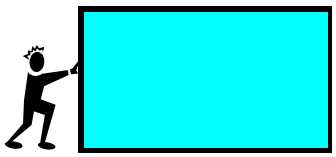
Practice Task: Angle Shape Sort



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 have had prior experiences and/or instruction with plane figures and angles. A common misconception that many students have is that wide angles with short sides may seem smaller than a narrow angle with long sides. Students can compare two angles by tracing one and placing it over another. Students will then realize that the length of the sides does not determine whether one angle is larger or smaller than another angle. The measure of the angle is not dependent on the lengths of the legs.

ESSENTIAL QUESTIONS

- How can we sort two-dimensional figures by their angles?

MATERIALS

- 3 bendable straws/Wikki Sticks/Pipe Cleaners per student
- Paper shape cutouts
- Angle sorting student task sheet

GROUPING

Partners

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Part I

Tell students that today you will learn about something called angles. Remind students that an angle is formed when two lines or sides share a vertex. Show students several angles on the board. Ask students to look for angles throughout the room. After students have found several angles, tell students that there are three types of angles that we will discuss this year: acute, obtuse, and right.

Show students how sometimes you can create angles through different parts of your body, like your arms or your ankles. Show students a 90^o angle with your ankle. Tell students that this is called a right angle. Next, show them an acute angle by pulling your toes up toward your shin. Last, show them an obtuse angle by pointing your toes and stretching them away from your shin. Allow the students to try showing the angles with their ankles as you say the words "right angle", acute angle", or "obtuse angle". You can also do this with your arms. Have them make a strong bicep "muscle" to demonstrate a right angle. Then draw your fist closer to your shoulder to create an acute angle and extend your forearm moving the fist away from the shoulder to create an obtuse angle. Ask the students if the length of their foot or leg changes the size of the angle. How about the length of the arm? Why or why not? Talk with the students about the fact that an angle represents the size of the opening between your foot and leg or your upper and lower arm.

Part II

Review the three types of angles with students. Give each student three bendable straws, Wikki-Sticks, or pipe cleaners. Have students use the material to form each type of angle (acute, obtuse, or right). Have them show their angles to a partner to check. Then give each set of partners a set of sticks (coffee stirrers etc.) and ask them to play "pick up" sticks. Students will gather a fist full of straws and then carefully drop them from a kneeling position. Once all sticks have dropped, they should locate angles. The teacher should circulate and ask students to identify angles they found. This game time should only last a few minutes.

Part III

Give each student a sorting sheet and shape handout. Have students cut out each of the shapes. Then, give each student two straws/Wikki-sticks/pipe cleaners. Students can measure one straw using the corner of their paper and tape it at a 90 degree angle. Students can then manipulate the other straw to match the angles of each shape. Another option is to use an index card to locate a right angle. Next, they can compare the manipulated straw to the right angle straw to determine if the angle is right, obtuse, or acute. After measuring, encourage students to draw the shape in the correct section of the chart.

While students are working, ask questions like:

- What shape are you working with? How did you know its name?
- How many angles does your shape have?
- What types of angles does your shape have? How did you figure that out?
- Where will you place your shape on the chart?

- Did you have to use the straws each time? If not, how did you determine what the angle was?

Part IV
Have students come together to share the placement of each of the shapes. The teacher should prepare larger versions of each shape and the sorting sheet. Allow partner groups to place the shapes in the correct sections. Students should justify the placement of each shape by explaining their strategies for determining the types of angles. Encourage the audience to ask questions and make comments about the placement of the shapes.

FORMATIVE ASSESSMENT QUESTIONS

- Could students distinguish between the three types of angles?
- Were students able to determine the types of angles in each shape?
- Could students explain and justify their thinking as they sorted the shapes by types of angles?

DIFFERENTIATION

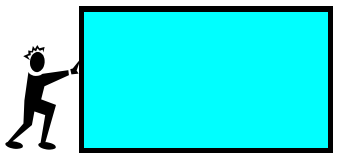
Extension
- Ask the students to write descriptors for a bingo style game using large student task sheet from this task.
- Students can take the angle hunt task sheet around school for a scavenger hunt. Challenge them to find various angles.

Intervention
- Play a bingo style game with different variations of task sheet.
- Partner students together for an Angle Hunt scavenger hunt around the school.

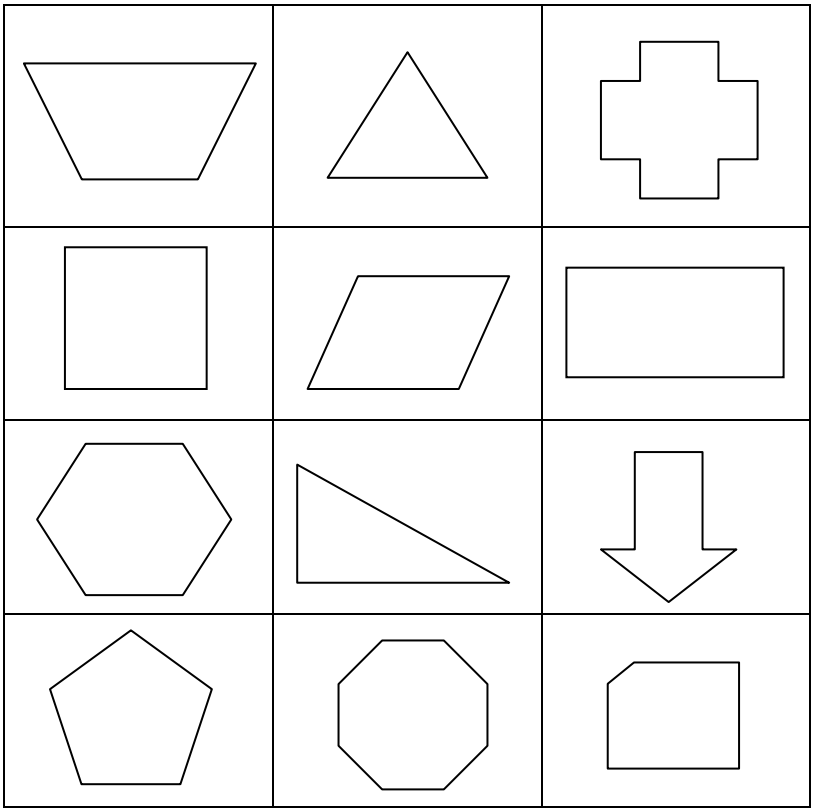
Name _____ **Date** _____

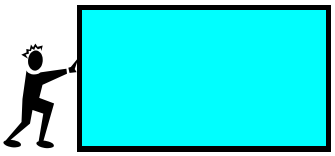
Angle Shape Sort

Only Right Angles	
Only Acute Angles	
Only Obtuse Angles	
Acute and Right Angles	
Acute and Obtuse Angles	
Right and Obtuse Angles	



Cut the shapes out to place on the Sorting Angles Task Sheet.





Determine the types of angles that make up each shape.