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Identifying Attributes of Shapes

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**Math
Grades K-2**

Learning Objectives

- The learner will be able to distinguish between defining attributes (e.g., number of sides and vertices) and non-defining attributes (e.g., color, size of shapes).

- The learner will be able to build and/or draw shapes according to the defining attributes given to them.

Materials Needed

- *The Shape of Things* by Dayle Ann Dodds (If you don't have this book, there is a good online read aloud)

- blank paper

- crayons, pencils, or markers for each student

- coffee straws (8-10 for each student, cut in two different lengths)

- construction paper shapes: 2 triangles, 2 squares, 2 rectangles, 2 diamonds/parallelograms (every shape should be a different size and color)

Introduction

Begin by asking students to name some shapes. As they do, write the names of the shapes on the board. When you have a list of names of shapes, ask students to tell you how to draw each of them (pretending that you don't know what any of the shapes are). They will most likely have some trouble telling you exactly how to draw each shape. Then, since your shapes will most likely turn out looking very odd, tell students that we need to learn what the attributes of each shape are. Introduce the meaning of the word "attributes".

Then, have students gather to listen to a read aloud of the book, *The Shape of Things* by Dayle Ann Dodds. Allow students to listen and identify the shapes they see on each page. Then, describe the shapes together, pointing out that each shape has sides and corners. You can also discuss the size and color of the shapes.

Then define together what an attribute is:

"In math, an attribute is something that you can say a shape has."

Procedure

1. So now that you have defined attributes with students, discuss the difference in defining and non-defining attributes.
   For example, ***"All shapes with three sides and three vertices are triangles, but not all red shapes are***

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triangles. A triangle can be red, but that is not a defining attribute."
Decide together what makes a triangle a triangle, a square a square, a rectangle a rectangle, etc.

2. Give each student a set of straws.
"Today, we will be using these straws to make shapes. Take a few minutes to play with these straws, flat on your desk, and see what you can make."

3. As students do this, walk around and monitor their work. This is not a time for directions, and there are no right or wrong ways to do this at this time. Interact with students to see what they are thinking as they work.

4. After students have had time to explore with their straws, ask them to put the straws down and place their hands in their laps.
Then, tell students, *"I am going to name some shapes that we saw today in our book that we read. When I name the shape, you will make the shape on your desk with the straws."*

5. As you name the shapes, guide students by discussing the defining attributes with them as they build. Walk around and help students make the shapes correctly, helping as needed.

6. Then, gather students back together with the construction paper shapes that you've made. Hold up each shape and let students identify the shape. Then ask them the defining attributes and the non-defining attributes. For example, the small red triangle and the big green triangle have the same defining attributes but different non-defining attributes. Discuss each of the construction paper shapes, and allow students to make observations and comments as they work through the set of shapes together.

Evaluation

This is a formative assessment designed to be quick and informative, so you can easily see who needs further instruction before the next lesson.

Exit Ticket – Number a half sheet of paper 1-4.

Give students directions as follows:

1. **Write the number of sides that a square has.**

2. **Write the number of vertices that a triangle has.**

3. **Draw a shape with three sides.**

4. **Draw a shape with four equal sides.**