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Grade Level/Subject – Grade 2/Mathematics

Topic: Folding Shapes: Are the Sides the Same?

Objectives (P.A.S.S.): Standard 4.1.a -Determines figures that are symmetrical by folding.

Instructional Objectives:

The student will be able to:

1. Recall the shapes-circles, squares, triangles, ovals, diamonds, and rectangles in various orientations/positions.
2. Define symmetry.
3. Fold paper cutout shapes to find the line of symmetry for each shape.
4. Identify the letters of the alphabet as symmetrical or nonsymmetrical and put the letters in their appropriate boxes that are marked symmetrical and nonsymmetrical.

Materials Needed:

1. Cutout shapes -- circles, squares, triangles, ovals, diamonds, and rectangles -- for each student
2. Flash cards of shapes for students to identify
3. Two boxes (small) one labeled symmetrical, one labeled nonsymmetrical
4. Cutout capital letters of the alphabet

Instructional Process:

Introduction:

Do you remember all of the shapes we found in the classroom yesterday? What are some of those shapes? Some shapes can be folded in half to make both sides of the fold look the same. These shapes are called symmetrical shapes. The line that is left in the middle when you fold the shape is called the line of symmetry. Not all shapes have a line of symmetry. Some shapes have more than one line of symmetry. We are going to fold some shapes to find out if they are symmetrical.

Activities and Discussion:

Find the square in your stack of shapes. If we fold the square in half, we can see that it is symmetrical -- it is the same on both sides. Can you identify another line of symmetry on the square? Fold your paper to show another line of symmetry -- make sure that both sides are equal. How many more lines of symmetry can you find on the square?

Now find any lines of symmetry on the circle. Does the circle have more than one line of symmetry? Predict how many lines of symmetry the circle would have. Why does the circle have so many lines of symmetry?

Do the same with the rest of the shapes. When folding the triangle, ask: Why is there only one line of symmetry on the triangle? And when doing the diamond, ask: Compare the diamond's lines of symmetry to the square's lines of symmetry. And compare these to the rectangle's lines of symmetry.

Now divide the cutout letters of the alphabet between the students. Explain to the students that they will tell if their letter is symmetrical or nonsymmetrical. Show them the boxes and explain that they will put their letter in the correct box after they have decided if the letter is symmetrical or nonsymmetrical.

One at a time -- going through each letter of the alphabet (in order) -- have the students tell what letter they have (make sure they can recognize their turn in the order of the alphabet) and tell if it is symmetrical. Ask the students to explain why their letter is or is not symmetrical. Have the students place their letter into the appropriate symmetrical or nonsymmetrical box. (In what box does your letter belong?)

When they are done placing the letters, ask: Can you think of any other shapes/objects that are symmetrical? How are these shapes/objects symmetrical? If there is time, the students can stand up and tell if the human body is symmetrical. Each student can stand up, one at a time, and the other students can tell if that person is symmetrical and why or why not (If a student has a watch on one wrist but not on the other, that person is not symmetrical).

Closure:

What does the word "symmetrical" mean? What shapes did we decide were symmetrical? Are all shapes/objects symmetrical? Why? Do some shapes/objects have more than one line of symmetry? Why? What about this ball, is it symmetrical? Next time we are going to talk about some of our shapes that are 3-D, not flat like the ones we used today, and what these shapes are called.

Assessment:

I would have a test that would have pictures of shapes/letters on it that we discussed in class. The students would have to write yes or no as to whether or not the shape is symmetrical. Then they would draw the lines of symmetry on the shape if the shape has any lines of symmetry.

Modifications/Accommodations:

- Linguistic: The students identify and recognize the letters of the alphabet in the correct order.
- Mathematical-Logical: The students identify shapes and identify which shapes are symmetrical and nonsymmetrical.
- Bodily-Kinesthetic: The students fold shapes and they place letters into the correct box. If time permits, students tell if the human body is symmetrical.
- Spatial: The students pick the correct box to place their letter in.

Reflection: Students are able to get a picture in their mind when they actually fold the shapes and see if both sides are the same. This helps them establish the idea of symmetry for future reference on worksheets.