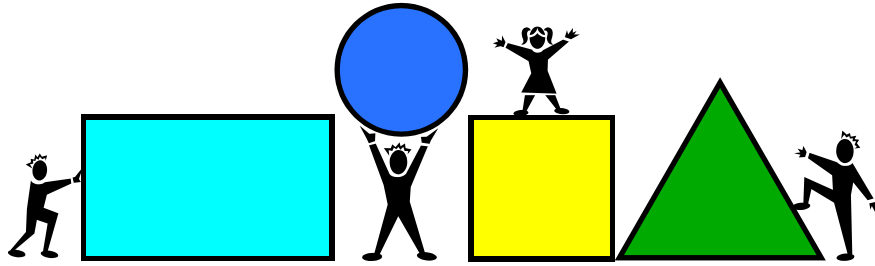


How Many Sides Can We Count?



Suggested Group Size

Small Group (Day One); Whole Group (Day Two)

Objective

The children will identify the number of sides that two-dimensional shapes have. Children will sort shapes by the number of sides and graph the results.

Activity

Children will use their bodies and their classmates' bodies to make shapes and then count the sides of various shapes. Children will also sort shapes by number of sides and graph the results.

Targeted Florida Early Learning and Developmental Standards for Four-Year-Olds

- **V. Cognitive Development and General Knowledge**
 - **A. Mathematical Thinking**
 - **A.d. Geometry**
 - **A.d.1.** Understands various two-dimensional shapes, including circle, triangle, square, rectangle, oval, and other less common shapes (e.g., trapezoid, rhombus)
 - **A.d.1.a.** Child categorizes (sorts) examples of two-dimensional shapes.
 - **A.d.1.b.** Child names two-dimensional shapes.
 - **A.d.1.c.** Child constructs examples of two-dimensional shapes.
 - **A.d.1.d.** Child identifies the number of sides of two-dimensional shapes.
 - **A.f. Measurement**
 - **A.f.3.** Represents and analyzes data
 - **A.f.3.a.** Child assists with collecting and sorting materials to be graphed.
 - **A.f.3.b.** Child works with teacher and small groups to represent mathematical relations in charts and graphs.
 - **A.f.3.c.** Child analyzes, with teacher and small groups, the relationship between items/objects represented by charts and graphs.

Materials

- Two-dimensional shape cut outs in different sizes
- Construction paper
- Container (to hold two-dimensional shape cut outs)
- Glue stick or tape
- Gallon size, plastic bags with zipper-top (nine)
- Marker
- Scissors
- Chart/butcher paper

Procedures

Before You Begin the Lesson

1. Use the *Florida Early Learning and Developmental Standards for Four-Year-Olds* to review the Targeted and Related Standards for Four-Year-Olds included in this lesson.
2. Review the following vocabulary terms or concepts:
 - Review the examples of various shapes (common and uncommon) on the last page of this lesson plan, and decide which shapes will be used for this lesson.
 - For more examples of geometric shapes and definitions of shapes with up to ten sides, see the following link:
<http://www.mathleague.com/help/geometry/polygons.htm#>
3. Review the activities for day one and day two.
4. Prepare for day one.
5. Use construction paper to create two-dimensional shapes in different sizes. See **Brief Descriptions and Examples of Various Shapes** at the end of lesson plan for ideas.
6. Use marker to label each plastic bags with a number of sides (e.g., no sides, three sides, four sides, five sides, six sides, seven sides, eight sides).
7. Prepare for day two.
8. Create a “How many sides does each shape have?” graph on chart/butcher paper. See the **Sample Graph** at the end of lesson plan for ideas.

Day One (Small Group)

1. Sitting on the floor in a large area, review the names of two-dimensional shapes that the children have previously learned.
2. Explain that most shapes have sides, and usually we know the name of the shape by the number of sides it has.
3. Show the children a triangle. Count the number of sides, while pointing to each side.
4. Have the children to count the number of sides with you.
5. Choose three children to create a life-size triangle. Ask the children to lie down in the shape of a triangle and assist them as needed.
6. Explain that each child makes up one side of the triangle. Since it took three children to make a triangle, it is clear that there are three sides in a triangle.
7. Repeat steps three through six with other shapes (e.g., square, rectangle, octagon).

Procedures (continued)

Day One (Small Group)

8. Next, provide the children with two-dimensional construction paper shapes to sort.
9. Ask the children (working individually or small groups) to find all the shapes with the same number of sides and sort them into piles (e.g., Begin by finding shapes with three sides, then find all the shapes with four sides).
10. Put each pile in the plastic bag that is labeled with the matching number of sides.

Day Two (Whole Group)

1. Display the “How many sides does each shape have?” graph.
2. As you hold up the plastic bags, remind the children of the shapes they sorted by the number of sides on the previous day.
3. Pass out a shape to each child. Ask the children to count the sides on their shape.
4. As you hold up the appropriate shape(s), ask the following questions:
 - a. Who has a shape with no sides (e.g., circle, oval)?
 - b. Who has a shape with three sides (e.g., triangle)?
 - c. Who has a shape with four sides (e.g., square, rectangle)?
 - d. Who has a shape with five sides (e.g., pentagon)?
 - e. Who has a shape with six sides (e.g., hexagon)?
 - f. Who has a shape with even sides (e.g., heptagon)?
 - g. Who has a shape with eight sides (e.g., octagon)?
5. Assist the children with gluing/taping the shapes on the appropriate row on the graph See the **Sample Graph** at the end of lesson plan for ideas.
6. When the class has finished graphing the shapes, talk about:
 - a. Which row has the most shapes in it?
 - b. Which row has the fewest?
 - c. Do any rows have the same numbers of shapes represented?
 - d. Which shapes are three-sided, have no sides, etc.?
 - e. Which row has more than one kind of shape in it (e.g., no sides – oval, circle; four sides – square, rectangle).

Adaptations

- Go on a shape walk around the school or in the neighborhood to see if you can find shapes with a certain number of sides. Take pictures of the shapes you find on your walk and use them when graphing or creating a display in the classroom.
- Take digital pictures as the children use their bodies to create different shapes (e.g., circle, triangle, square, rectangle, oval, trapezoid) on the floor. This will help the children recall the activity later as they review the pictures of the shapes they have made.

Extensions

- Add related materials to classroom centers:
 - **Art:** At the easel, provide easel paper that is precut to a certain shape for children to paint on. You might say, “We have different shapes of paper today. We have triangles with three sides, trapezoids with four sides, and octagons with eight sides.” Then ask the children, “How many sides would you like on your paper?”
 - **Sand Table:** Provide cookie cutters in various shapes. Encourage the children to use the cookie cutters to make various shapes in the sand. Then count the sides on each shape and write the numeral (that represents the number of sides) in the sand next to the shape.
 - **Manipulatives:** Add straws, tongue depressors, or similar stick-like objects that the children can use to create shapes. Have a variety of shapes drawn on index cards, so children can replicate a shape and talk about the number of sides it has.

Checking for Understanding

Children will demonstrate their understanding of the lesson by:

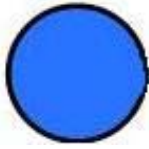
- counting the number of sides that two-dimensional shapes have
- sorting shapes by the number of sides and graphing the results.

Related Standards for Four-Year-Olds

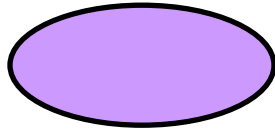
- **I. Physical Development**
 - **A. Health and Wellness**
 - **A.2.** Shows visual abilities to facilitate learning and healthy growth and development
 - **A.7.** Shows basic physical needs are met
- **II. Approaches to Learning**
 - **A. Eagerness and Curiosity**
 - **A.1.** Shows curiosity and is eager to learn new things and have new experiences
- **V. Cognitive Development and General Knowledge**
 - **A. Mathematical Thinking**
 - **A.a. Number Sense**
 - **A.a.4.** Assigns and relates numerical representations among numerals (written), sets of objects, and number names (spoken) from zero to 10

Brief Descriptions and Examples of Various Shapes

Some shapes have no sides, such as these:

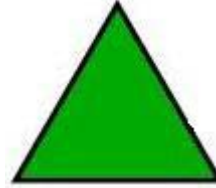


circle



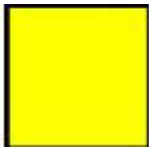
oval

Triangles have three sides:



triangle

Many shapes have four sides. Here are just a few examples:



square



rectangle



trapezoid



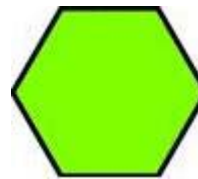
parallelogram

A pentagon has five sides:



pentagon

A hexagon has six sides:



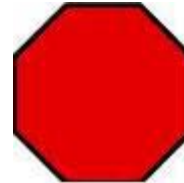
hexagon

A heptagon has seven sides:




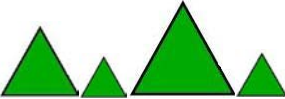
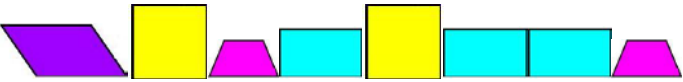

heptagon

An octagon has eight sides:



octagon

Sample Graph

How many sides does each shape have?	
Number of Sides	
No sides (0)	
Three sides (3)	
Four sides (4)	
Five sides (5)	
Six sides (6)	
Seven sides (7)	
Eight sides (8)	