

Family Literacy Guided Lesson

For

Color Zoo

NY State Learning Standards

Learning Standards

2 for Mathematics, Science, and

Technology:

Students will access, generate, process, and transfer information using appropriate technologies.

Learning Standards

3 for Mathematics, Science, and

Technology:

Students will understand mathematics by communicating and reasoning mathematically, by applying mathematics in real-world settings, by integrated study of geometry.

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About the Book

Color Zoo

Lois Ehlert, Author

Color Zoo is a vibrant mixture of colors and shapes. This square “board” book is ideally suited for the hands of young children. It is a wonderful mix of identifying colors and geometric shapes and cleverly transforming them into various animals. Cutouts are ingeniously layered so that each time a page is turned another animal is revealed. The book provides children with a useful way to learn about, make sense of, and be successful in the three-dimensional world in which we all live.

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The Language/Literacy Connection

Literacy and Geometry

Have you ever thought about how important math is in our daily lives? From the time we shut off our alarm clock in the morning until we prepare dinner at night, math is an important part of our lives. Some of the first things infants learn are how to recognize basic shapes, colors, and sounds. Preschoolers love to explore geometric and spatial aspects of the world around them. This type of spatial exploration helps children visualize what a shape will look like when it has been transformed in some way. It is a first step in becoming a mathematical thinker. Children need to develop a spatial vocabulary that includes such words as: over, under, top, bottom, above, below, next to, and beside. Sharing math books like *Color Zoo* with children helps to bring math ideas to life and make it more “user friendly” and understandable.

Early Childhood Education-Infant/Toddler Level

A World of Circles

PLS-4 Skills

Auditory

Comprehension

31. Understands simple descriptive concepts

Expressive

Language

37. Names a variety of pictured objects

Prepare Lesson Props

♦ Follow the directions to make a mobile.

Before the Visit

Gather Needed Materials

- ♦ 2 sheets of clear acetate or plastic
- ♦ 1 roll each of black and red electrical tape
- ♦ Coat hanger
- ♦ 3 short lengths of yarn
- ♦ Shoe box
- ♦ 3 or 4 plastic jar lids that are 2" or larger in diameter

During the Visit

♦ With the parent and child sitting together, look at the shapes in *Color Zoo*. Beginning with the circle, wiggle two or three fingers through the cutout shape to attract the child's attention. Say: *Child's Name*), *Look at the circle. Can you put your fingers through the circle and gently*

pull the child's hand through. Holding his/her hand, trace around the circle's inside edge. Talk about the circle. Say: *It's a round circle. Look at this black circle. Looking at and talking about just one or two shapes may be plenty for infants and toddlers.*

Fingerplay Grandma's Circles by Patricia Ward

Here are Grandma's glasses:

Form two circles with index fingers and thumbs. Hold up to eyes to represent glasses.

Here is Grandma's ring:

Form a circle with the index finger and thumb of one hand. Slip a finger from the other hand through the circle.

Here is Grandma's cup for tea:

Form one large circle by placing index fingers and thumb of opposite hands together.

It's such a lovely thing:

Fold hands and place in lap.

Jar Lids

- ♦ Give the plastic jar lids to the child to investigate. Model short sentences that help the child learn the word circle and that aid in his/her investigation. *Look at these circles. Here is a blue circle. Here is a red circle. This is a big circle. Can you stack the circles?*
- ♦ Say to the parent: *There are special ways of talking that help babies learn new words.*
 - (1) Talk slowly and clearly.
 - (2) Use short sentences.
 - (3) Put the new word at the end of the sentence.

Circle Mobile

♦ From the clear acetate, cut three circles of different sizes. Put either black or red electrical tape around the outside edge of each circle. Using tape of the opposite color, create a simple pattern on the surface of each circle. Loop

yarn over the bottom a coat hanger and tie in a simple knot to keep the yarn from slipping. Each piece of yarn should have two ends of equal length hanging from the knot. Tape the circles horizontally to the yarn ends. Hang the mobile where it can be viewed by the infant. For older infants, those who have begun to grasp things, hang the circles on a nearby wall or window.

Shoe Box Puzzle

- ♦ Trace a circle on the lid of a shoebox and cut it out. Give the child several circular objects, such as the jar lids above, to insert into a circle.

Early Childhood Education-Preschool and School Age Levels

Geometric Graphing

PLS-4 Skills

Auditory

Comprehension

- 43. Understands qualitative concepts (shapes)
- 60. Adds and subtracts numbers to five

Expressive

Language

- 38. Understands quantity concepts

Before the Visit

Gather Needed

Materials

- ♦ Attribute blocks (blocks of different colors, shapes, and thickness)

Prepare Lesson

Props

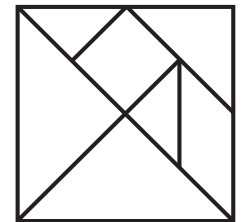
None

Shapes and Animals

- ♦ tiger – *tigre*
- ♦ circle – *círculo*
- ♦ mouse – *ratón*
- ♦ square – *cuadrado*
- ♦ fox – *zorro*
- ♦ triangle – *triángulo*
- ♦ ox – *buey*
- ♦ rectangle - *rectángulo*
- ♦ monkey – *mono*
- ♦ oval – *óvalo*
- ♦ deer – *venado*
- ♦ heart - *corazón*

Terrific Tangrams

- ♦ Make tangram puzzle pieces by cutting a paper or cardboard square into seven pieces: 2 pairs of congruent triangles, 1 middle sized triangle, 1 small square and 1 parallelogram.
- ♦ Have parents and children examine and count the tangram pieces.
- ♦ Discuss concepts such as larger and smaller.
- ♦ Count the number of sides for each tangram piece.
- ♦ Explore how some shapes fit into others. Rearrange the tangrams and make pictures with them.
- ♦ Have the older children trace the square tangram and place the 7 pieces on the square correctly.
- ♦ Create your own tangram puzzle using the tangram pieces. After all the tangrams are in place in your puzzle design, trace around the design. Remove the tangram pieces and challenge others in the family to solve the puzzle by replacing the pieces.
- ♦ Talk about the activity with your child. What did they enjoy? What did he/she find difficult?



During the Visit

- ♦ With parent and child sitting together, read *Color Zoo*. Ask the child to identify the various shapes and animals. When identified, point to the corresponding word. Use the Spanish word list above for shape/animal identification throughout the story.
- ♦ After the story, put the attribute blocks on the table and give the child a few minutes to handle them. Ask: *What blocks do you see that are the same? How are they the same?* (They are all yellow, or they are all triangles.) Have the child group the blocks according to the attribute identified. Continue sorting the blocks with the child discussing the following concepts: colors, shapes, number of sides, sizes.
- ♦ Model making a bar graph by putting like shapes in individual rows on the workspace. You might, for example, have 3 circles in the first row, 4 squares in the second and so on. Count the blocks with the child as you place them on the table. Have the child repeat the process with the remaining blocks.
- ♦ Ask: *How many yellow triangles are there?* Have the parent count the triangles with the child. Encourage the parent/child to touch each block as it is counted. Depending upon the age of the child, you may also ask questions like: *Which row has more? Which has less?, etc.*

According to research, knowledge is stored in two forms: linguistic and visual. The more practice children have in both forms, the more opportunity they have to achieve.

Linking Literacy and Geometry to the Real World

Geometric patterns and spatial sense are a part of every child's world. Thinking about these matters helps children make sense of their world. Using attribute blocks is a concrete way to help children visualize parts and their relationship to a whole. For example, most children will soon discover that two equal triangles can be put together to form a square. This ability to mentally dissect an object into its parts and put it back together again is an early step in the development of critical thinking and problem-solving skills.

Perimeter Patterns

Using attribute blocks can be a fun way to help people of all ages better understand how to calculate perimeter. The length of each side is considered 1 unit. To find the perimeter of the block, simply add all the sides. For instance, a triangle has a perimeter of 3 units. If blocks are put together to form 1 shape, only count the exterior sides.

- ◆ Show the parent each different block shape and identify the shape name (triangle, square, rectangle, circle and hexagon).
- ◆ After explaining the concept of perimeter, ask the parent to trace and label each shape and write the perimeter in units for each shape.
- ◆ Ask the parent to put two squares together and find the perimeter. *(Remember only count exterior sides. Therefore, though 2 squares would have a perimeter of 8 units, when they are put together their perimeter would be 6 units. The inner sides in the middle are not included and the longer sides now have a value of 2 units).*
- ◆ Now have the parent put other blocks together and calculate their perimeter.
- ◆ After the activity, give the parent a small notebook to use as a *Learning Journal*. Together set up a title page. Turn to page 1 and label it "Perimeter Patterns." Have the parent

complete the following sentence stems:

The best part of this activity was _____

The hardest part for me was _____

I learned _____

- ◆ *Say, Journals are a good learning tool. Share your learning journal with your children and encourage them to maintain one, too. If they are beginning writers they can dictate their entries.*

Springy Frogs

You need 1 paper plate, 1 foam ball, and 4 strips of green construction paper (about 2" wide and 5" long), crayons and glue.

- ◆ Color the plate green.
- ◆ Cut the paper plate and foam ball in half.
- ◆ Glue the curved edge of one plate half under the straight edge of the other plate half.
- ◆ Glue foam eyes to the curved top and use a black marker to fill in black circle irises.
- ◆ Draw a mouth onto the top plate.
- ◆ Accordion-fold the green strips and glue them to the bottom plate to make the frog's legs.

Perimeter is the distance around the outside of a shape.

The ability to identify the similarities and differences among various shapes allows children to extend their mathematical understandings. Talk with your child about the differences between, for example, a triangle and a square. Help your child to find or think of examples for each word or shape.

Learning About Geometry

Sandwich Math

Sandwiches provide an excellent opportunity to connect geometry to your child's world. Together fix a favorite sandwich. Then cut the sandwich in half on the diagonal. Point out that now there are 2 triangles and that each triangle is half a square. Put the two halves back together so that child can see that once again there is a square.

Have your child help "sort" the groceries by placing grocery items into groups. Discuss how the items are grouped. Point out shapes of food containers such as *cylinders*, *cubes*, *rectangular prisms*, etc.

Understanding geometry and building vocabulary begin with handling real shapes and objects. One geometric experience that is often new to young and old alike is the tangram puzzle. This ancient Chinese art form is one way of increasing vocabulary and building spatial understanding.

Tangram shapes can be rearranged to look like animals or things in nature.

Building with Boxes

Boxes are exciting tools for learning about geometry.

- ◆ Collect boxes of various sizes and shapes. (*Note: a square box is the shape of a cube in its 3 dimensional form and a rectangular box is a rectangular prism.*)
- ◆ Together examine the outside of the box. Count the sides.
- ◆ Talk about the shapes and sizes. Use comparing words like; bigger, smaller, longer, etc.
- ◆ Put your imagination inside the box. What kind of real or pretend creatures can you think of that would fit inside the box?
- ◆ Get a group of objects similar in shape and size like oranges. Estimate how many will fit inside the box. Write down your guess. Compare your guess with the number of items in the box.

Shape Riddles

Most of us love riddles. Content riddles provide a thought provoking and fun way to learn new information and review information students already know.

Geometric Riddles

Try your hand at writing riddles about geometric shapes. Share your riddles with your children!

- ◆ Read the model riddle “What am I?” Use the model to help you see how a riddle is structured. Notice the question is both at the beginning and the end and that each clue is a short simple sentence.
- ◆ Select a geometric shape.
- ◆ Carefully look at the shape you have selected.
- ◆ Print your riddle neatly on paper.
- ◆ Read the riddle to your child. See if he/she can solve it. Once he/she has figured out a few of your riddles, he/she probably will enjoy trying to “trick” you with one they write.

Shape Identification Cards

Trace and color tangram shapes onto index cards. Label the shapes in English and Spanish. Use the cards to teach your child different geometric shapes.

What am I?

I am round.

I am made of a single line.

I am shaped like a ring.

What am I?

Use this space to write your riddle:

Adult Literacy - GED Level

Activity Page

A File of Shapely Words

Notes:

Using the dictionary, find the meaning of the geometric related words listed at the right. Write the definitions on index cards. Arrange the index cards in alphabetical order. Keep the cards in a file box or sandwich size resealable bag. As you come across unfamiliar words in things that you read, add these to your personal word file. This is a good way to enlarge your own vocabulary and to prepare for the GED exam.

square
tangram
similarity
geometric
equal
calculate
triangle
spatial
two-dimensional
congruent triangle
trapezoid
exterior
perimeter
rhombus
attribute
pattern
three-dimensional
parallelogram
bar graph
difference

Square:
A shape
with four
equal sides
and four
right
angles.

Adult Literacy - ELL Lesson

Name that Shape

Help English language learners learn the English words for basic shapes.

Vocabulary

Circle
Square
Triangle
Rectangle

Before the Visit

- ♦ Cut the basic shapes from construction paper.
- ♦ Gather real objects that represent the basic shapes. For example, paper plates or jar lids for circles, books or cereal boxes for rectangles, half a slice of bread or an iron for triangles, computer disks or square picture frames for squares.
- ♦ Find magazine pictures of objects that represent the basic shapes.

Presentation of New Information

- ♦ Using the construction paper shapes, introduce the words circle, square, triangle, and rectangle. Lay each shape on the workspace. Point to the circle. Say, *This is a circle.* Trace your finger around the outside edge. Repeat for each shape.
- ♦ Beckon to the student to repeat your words.
- ♦ Repeat three times or until the learner has mastered the vocabulary.

Reinforcement

- ♦ Practice with the student using YES/NO questions. Point to a shape and say, *Is this a circle? Is this a rectangle?*, etc. Motion to the student to reply, *Yes, this is a circle.* Or, *No, this is a square.*
- ♦ Ask the student to point to the shapes you name. For example, say, *Point to a circle. Point to a triangle.*, etc.
- ♦ Point to a shape and ask: *What shape is this?*
- ♦ Introduce the real objects. Point to the paper plate. Say, *This has the shape of a circle.* Place the construction paper circle on the plate. Repeat for the other objects.
- ♦ Follow-up using magazine pictures. Place the magazine pictures on the workspace. Say: *Give me the circle. Give me the triangle.*, etc.