

Circle™ Time MAGAZINE



Move! Go over, under, and through geometric spaces!

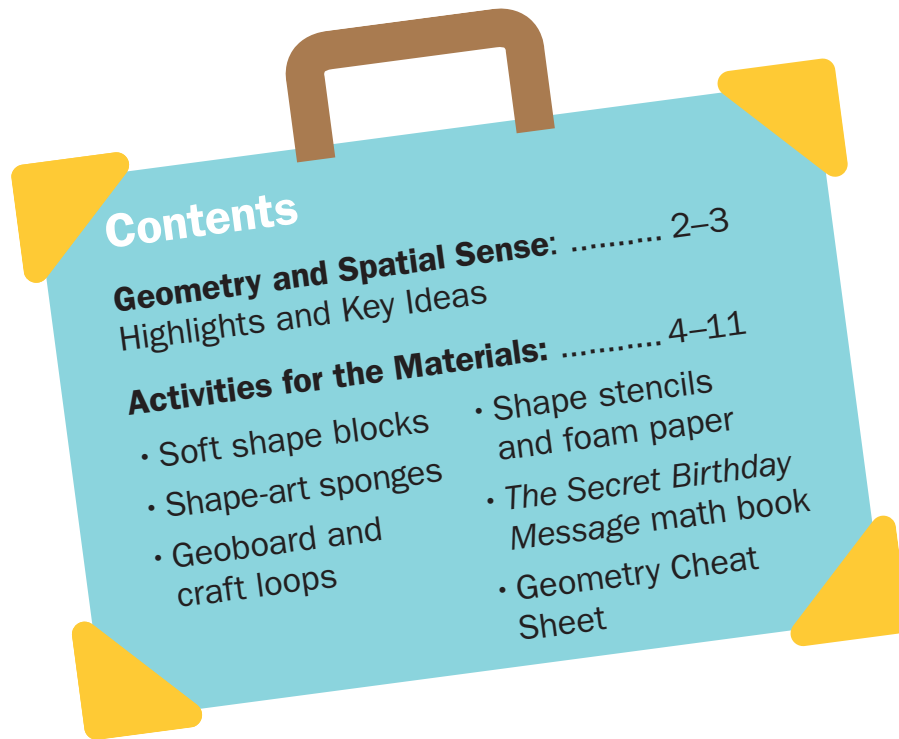


Talk about geometry! Describe shapes and their characteristics.



Create! Encourage children to build with, and transform a variety of, 2-D and 3-D shapes.





GEOMETRY:

Highlights and Key Ideas

Geometry describes the shapes of objects and their relative positions in the environment. In the early years, young children learn to understand shapes, their characteristics, and how objects relate to each other in space.

Young children learn about shapes as they explore objects in their environment.

Gross motor activities and block constructions help children learn spatial concepts about location (Where?), distance (How far?), and direction (Which way?).



Shapes!

Young children use many two- and three-dimensional objects during daily activities. They learn that the shape of an object remains the same even though it looks different when viewed from different perspectives.

Spatial sense!

Spatial sense is knowing how one's body moves in the environment and learning about the characteristics and relations of objects in space. Children use spatial concepts to describe shapes and location in space.

Mathematizing means bringing out the math in what children are doing. Focus on geometry concepts by making comments and asking questions as children explore everyday objects and move their bodies and objects in their environment. You mathematize as you:

- Talk about two- and three-dimensional shapes (e.g., a ball is a sphere) and their characteristics (e.g., a round cracker, a curved line, a sharp corner).
- Provide opportunities for children to manipulate shapes (e.g., shapes for an infant to feel).
- Use vocabulary words about position and movement (e.g., *up, down, in, out, next to, on top, over, under, forward, backward*).
- Engage in activities where children combine, fold, or cut 2-D shapes, or manipulate play dough to transform 3-D objects.
- Create simple maps for spatial sense using landmarks, toys, or drawings.
- Sing songs, play games, and read books about shapes and movement.

Supporting Dual Language Learners

- Describe shapes, directions, and positions using words in children’s home languages.
- Use gestures, movement, and pictures to define words.
- Sing songs that provide increased exposure to new spatial and shape vocabulary.

Individualize

- For more support, use nonskid mats as a surface for making designs with shapes.

- For more support, model and show children how to create shapes (e.g., how to make a triangle with sticks).
- For more challenge, encourage children to move and transform shapes by sliding, rotating, flipping, or folding.
- For more challenge, ask children to make predictions of what the transformed shape will look like.
- For more challenge, ask children to draw maps of the room, or of how they get from home to school.

For guidance on what children know and experience about math, refer to the Washington State Early Learning and Development Guidelines (<https://www.del.wa.gov/helpful-resources/washington-state-early-learning-and-developmental-guidelines>) and the Head Start Early Learning Outcomes Framework (<https://eclkc.ohs.acf.hhs.gov/interactive-head-start-early-learning-outcomes-framework-ages-birth-five>).

Learning About My World: Geometry

Infants begin to learn about shapes through hands-on experiences. Educators can provide many opportunities for infants to explore different objects, and see how things fit together. Lift infants up and encourage them to crawl in order to provide experiences with moving their bodies. Use gestures and talk about objects as they move through space. Infants can:

- Play with toys and objects of different shapes and sizes.
- Put things together, such as simple matching puzzles, nesting cups, blocks.
- Follow simple directions that use words like “in,” “on,” “up,” and “down.”

With **toddlers**, talk about names and characteristics of simple shapes. Encourage them to move their bodies and objects through space, and help them understand how objects fit together or inside other things. Provide smaller objects that they can put into a larger box and help them do simple puzzles. Toddlers can:

- Match simple flat shapes (circles, squares, triangles).
- Identify two geometric shapes, such as a circle and a square.
- Follow simple directions for position—such as *up*, *down*, *in*, *on*.

With **preschoolers**, educators provide opportunities to identify, describe, compare, and compose shapes. Discuss characteristics of shapes such as the length of sides, number of sides, and number of angles. Encourage children to create and build shapes from different components. Have children practice following directions involving their own position in space, such as “Stand up” and “Move forward.” Model and encourage using language to describe where things are in space. Preschoolers can:

- Sort and describe items by size, color, and/or shape.
- Match and sort simple flat shapes (circles, squares, triangles).
- Understand words that tell where things are (such as *behind*, *under*, *in*, *on*). Use these words to identify locations.
- Work puzzles with up to 10 pieces.
- Follow simple directions for position (*beside*, *next to*, *between*, etc.)

Soft Shape Blocks

This set of soft shape blocks provides ideal opportunities for children of all ages to safely explore both two- and three-dimensional shapes. The blocks can be stacked, turned, examined from different view points, and labeled to expose children to a broader math vocabulary.



Extension

Involve preschool children in drawing a map of the outside play space by using the soft shape blocks to represent landmarks, equipment, and areas. Make copies of the map, then set up a treasure hunt, marking treasure locations on your map.

Activities

Infants will enjoy experiencing these soft, colorful blocks. Let them sense shapes by encouraging infants to examine, touch, climb on, mouth, and clap the blocks together. Playfully place different shapes in, on, under, or next to other toys that are nearby.

Show **toddlers** how the blocks can be stacked to build a tower, then let them knock it over. Encourage them to build their own tower. Trace the base of each shape on a large cardboard box and cut out the shapes. Ask them to fit the blocks through their corresponding shape on the box. Play Simon Says, giving toddlers simple directions with the blocks, in order to teach spatial concepts.

Encourage **preschoolers** to build something of their own design. Hand them one block at a time and ask them to see how many things in their environment are the same shape. Hide the shape blocks around the room, then give spatial directions to find them. Trace the base of each shape on a large piece of paper and ask preschoolers to match the blocks to their corresponding shape on the paper.

Developing Geometry Skills

Using soft shapes provides opportunities to address the following measurement skills; additionally, you can use these to create learning goals:

- Play with objects and toys of different shapes and sizes.
- Follow simple directions that include position words (“in,” “on,” “up,” and “down.”)
- Identify and label shapes.
- Understand words that tell where things are (such as *behind*, *under*, *in*, *on*). Use these words to identify locations.

Mathematizing Teaching Moves

- Use your eye gaze to direct infants’ attention to the shapes as you’re talking about them.
- Make comments about where shapes are in space (*in*, *on*, *under*, *next to*).
- Model language by naming the two- and three-dimensional shapes, and talking about their sides, angles, lines, and curves.
- Scaffold (e.g., if a child can *almost* fit the block in it’s corresponding shape in the box, offer a gentle prompt to help the child rotate the block as needed to fit).
- Model where to put the block while playing *Simon Says*, then phase out modeling to see who can do it independently.



TALK
about it!

- “You are holding a cube!”
- “What does the triangle feel like?”
- “You’re putting the block on top of another one.”
- “This flat side is a square, but the whole thing is a cube.”
- “Simon says put the sphere under the bucket,” and “Simon says, put the pyramid on your head.”
- “To find the cone, take three big steps toward the window, then look under the box,” or “Walk around the table, then toward the sink and tell me if you see the cube.”

Shape-Art Sponges

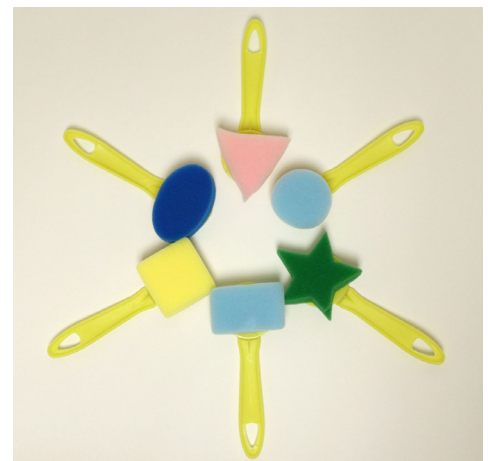
Using shape-art sponges provides children the opportunity to combine creativity with their awareness of shapes, their properties, and where the shapes are relative to each other on the paper, or any other material they are painting on.

Activities

Infants can experience these sponges through their senses by examining, squeezing, pressing, and throwing them. Infants who can sit up in a supportive structure can begin doing simple art projects by dipping the sponges in paint, and stamping shapes on surfaces.

Encourage **toddlers** to dip the sponges in paint and experiment with the shapes and pictures that they can create. Make a template with a stamp of each shape to see if they can match their stamp to the template. Let them stack the sponges to explore three-dimensional structures. Show them what shapes look like when stamping them upside-down or slightly rotated. Prompt toddlers to use spatial language to tell you where they want you to stamp the shapes.

Talk with **preschoolers** about the landscape, equipment, and unique spaces of the inside or outdoor learning environment and help them design a map using the sponge stampings. Ask a child to secretly stamp a shape on their paper, cover it, then describe it to see if others can guess the shape. Hide a shape in your hand and have children close their eyes and imagine a shape that you describe.



Extension

Put a large pool of paint in the middle of each child's paper, fold the paper in half and press, then open it back up to see the resulting shape. Ask about their observations and explain what *symmetry* is.



TALK
about it!

- "You made a circle!"
- "You put a rectangle between two circles."
- "These shapes on your paper are flat and 2-dimensional, how is your sponge different?"
- "What does your cylinder feel like?"
- "My shape has four sides and four corners and all sides are the same length."
- "Does your shape have any curved lines?"
- "I wonder what else we could add to our map?"

Developing Geometry Skills

Using shape sponges provides opportunities to address the following geometry skills; additionally, you can use these to create learning goals:

- Play with toys and objects of different shapes and sizes.
- Follow simple directions that include position words ("in," "on," "up" and "down.")
- Match simple flat shapes (circles, squares, triangles).
- Identify and label geometric shapes.
- Use spatial memory to create mental images of shapes.

Mathematizing Teaching Moves

- Label shapes and comment about their position in space, relative to other shapes on the paper (or other medium).
- Scaffold (for children who are *almost* ready to use other shapes to create a larger shape, model using two triangles to make a square for a house).
- Count aloud the number of sides and angles of shapes on the children's art work.
- Draw attention to straight lines and curved lines.

Geoboards and Craft Loops

Invite children to work individually or in pairs to create and transform shapes with craft loops on the geoboards.

Each geoboard has two sides. On one side, children can practice making a circle and a square and the other side provides options to create a variety of shapes of different sizes. Children can create shapes as they please or copy a shape seen on another geoboard.

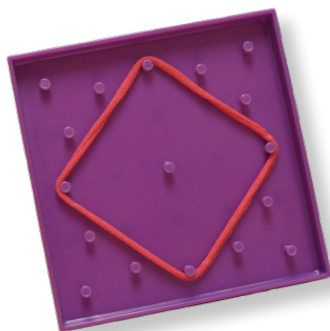
Activities

Invite **preschoolers** to identify names and describe the attributes of shapes they make. Encourage them to add new shapes or break them apart. Provide cutout laminated shapes in various colors and sizes for children to use as models. Have many different and unusual examples of a same shape. Get really creative and encourage children to make designs with their craft loops.

Developing Geometry Skills

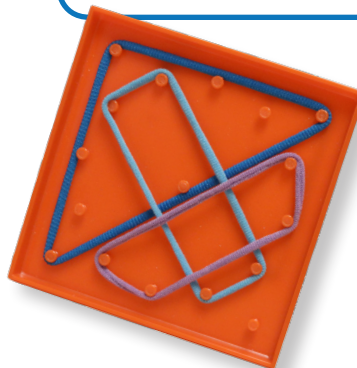
Using geoboards provides opportunities to address the following geometry skills, which you can use to create learning goals:

- Identify, match, and compare shapes.
- Describe shapes by their characteristics.
- Put two shapes together to make another shape.
- Make predictions of what a transformed shape will look like.



Mathematizing Teaching Moves

- Give gentle prompts to guide children who need extra help with manipulating the rubber bands.
- Model how to make a simple shape.
- Talk aloud while describing attributes of shapes.
- Explain that lines are a series of dots or points, and that corners are the point where two lines come together.



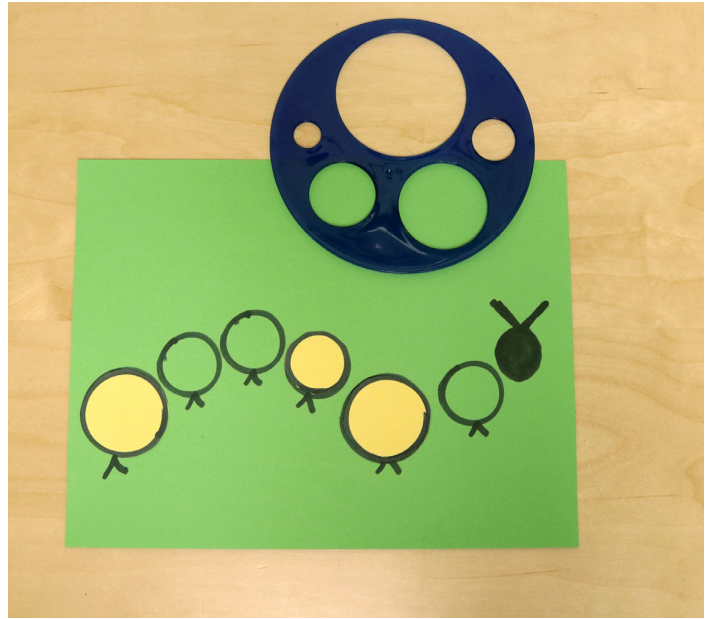
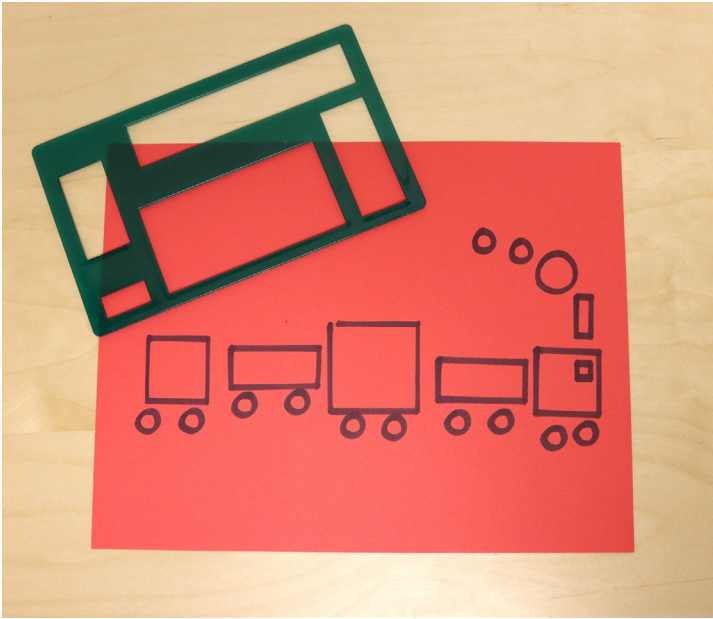
TALK
about it!

- “Your shape has three sides and three corners. You made a triangle!”
- “Let’s count the sides and corners to find out what shape this is.”
- “Alicia’s rectangle is long and skinny. Kumar’s rectangle is wide and fat. They are both rectangles because they have four sides and four straight corners, but two sides are longer than the other.”
- “Can you think of another way to make a triangle?”
- “You made a rectangle. How can you turn it into a triangle?”

Shape Stencils and Foam Paper

These shapes stencils are extremely versatile, offering infants and young children the chance to see different examples of the same shape and to compose shapes in creative ways.

Even better, make your own set of foam shapes by tracing the stencil shapes on a variety of colored foam papers and cutting them out. They can be used for art projects, planned learning activities, or simply for exploration.



Developing Geometry Skills

Using shape stencils provides opportunities to address the following geometry skills, which you can use to create learning goals:

- Put together shapes, such as simple matching puzzles, nesting cups.
- Identify geometric shapes.
- Describe items by size, color, and/or shape.
- Match and sort simple flat shapes (circles, squares, triangles).
- Work with puzzles.



Mathematizing Teaching Moves

- Comment about the properties of the shapes the children make and play with; help them label the shapes.
- Ask open-ended questions about children's observations of the shapes they trace and cut.
- Compare these flat shapes to the soft blocks that are three-dimensional, and discuss.
- Show children what happens when the larger shapes are folded in various ways.
- Cut out some non-examples to compare with examples (e.g., a triangle with curved corners, a lopsided circle, a square with lines that don't connect at the corner.)

Activities

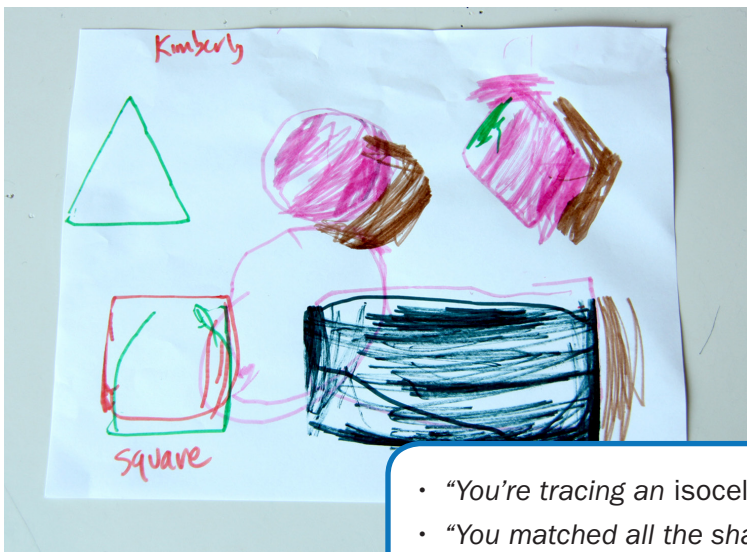
Help **infants** feel the attributes of the shapes by encouraging them touch and hold each stencil while being careful with those that have sharp corners. Play peek-a-boo through the shape holes and show infants how to trace the outside of the entire shape, and the inside of shapes that are cut out, by running your finger along the edges.

Toddlers can begin to use large markers and crayons to trace many different kinds of the same shape. Allow them to explore their own ideas of what the shapes represent in their pictures. With your pre-made foam shapes, make a simple picture and show it to the children. Then cover it up to see if they can re-create the same image. Take toddlers outside and let them trace items of different shapes they find in nature onto their foam paper.

Show **preschoolers** how to create their own foam shapes. Trace shapes to form a picture such as a train or caterpillar and ask them to match the foam shapes. Encourage them to create their own designs, maps of the classroom, or shape and color patterns. See if preschoolers can sort a foam shape set by different properties such as the number of sides, points, or angles they have.

Extension

Make your own puzzle! Draw a simple shape on a piece of foam paper, then draw curved and straight lines to divide that shape into parts. Cut it all out and encourage children to investigate how shapes fit together.



TALK
about it!

- “You’re tracing an isosceles triangle!”
- “You matched all the shapes to the picture and made a train!”
- “Even though these sides are different lengths, it is still a triangle.”
- “That’s much smaller, but it is still a rectangle just like your big one.”
- “What could you make out of these three shapes?”
- “What happens when we fold this in half?”
- “Will you tell me about your picture?”

The Secret Birthday Message

In this story, a boy follows a map to find a birthday surprise. The book includes many shape, direction, and position words.

Activities

Read this book twice. During the first reading, you can focus on the shapes found in the birthday message: *semi-circle, star, oval, triangle, circle, rectangle, and square*. During a second reading, focus on directional and position words: *up, in, down, through, below, and behind*.

Infants can explore the book and the pictures while you label the shapes. Encourage them to manipulate soft shapes as they listen to the story. Emphasize basic direction words such as *up* and *down*. Use gestures.

With **toddlers**, talk about basic geometric shapes and their characteristics. Help them find shapes in the room around them.

After reading the book, ask **preschoolers** to recall shapes mentioned in the book. Play a game where they identify similar shapes in the room. Talk about specific features of shapes (straight or curved lines, number of lines and angles).

TALK
about it!

Extension

Organize a treasure hunt or obstacle course. Make maps for the children similar to the map in the book, using shapes for furniture and landmarks in the room, and arrows for directions.

- A square is a special kind of rectangle. It has four equal sides."
- "If we put two same-size triangles together, we get a rectangle."
- "How do you know the clock is a circle?"
- "How do we get to our garden patch from our room?"

Developing Geometry Skills

Reading this book provides opportunities to address the following measurement skills; additionally, you can use these to create learning goals:

- Follow simple directions that use words like "in," "on," "up," and "down."
- Understand words that tell where things are (such as *behind, under, in, on*). Use these words to identify locations.
- Describes shapes in terms of curved or straight lines, length of sides, number of sides, and number of angles.

Mathematizing Teaching Moves

- Invite children to make shapes using their bodies.
- Relate shapes in the book to shapes of objects in the environment.
- Post examples of simple maps and landscapes on the wall.

Great geometry books:
Shapes, Shapes, Shapes
Cubes, Cones, Cylinders and Spheres
Jacob Lawrence In The City
Wild About Shapes
Shapes (Picture This)
Rosie's Walk