Two-Dimensional Geometry

In this unit your child will:

▪ Explore the difference between two-dimensional (flat) and three-dimensional (solid) shapes

▪ Identify, describe, sort, compare, and draw 2-D shapes based on their defining attributes

▪ Use simple shapes to form larger shapes

▪ Count and compare the number of objects in different categories in a picture graph

PROBLEM	COMMENTS
Make a circle out of clay.	Children often apply the names of two-dimensional shapes they learned in their preschool years, and will refer to both a ball and a plate as a circle. The unit begins by helping students understand the difference between two-dimensional (2-D) and three-dimensional (3-D) shapes. As they explore with clay, they learn a circle is flat and 2-D, while a sphere is solid and 3-D. Students will learn more about 3-D shapes in Unit 6.
What do you notice about the shapes we sorted? *"Some of the circles are big and some are small. There are more circles than squares. I see 3 rectangles."*	Students sort and classify shape cards based on attributes like number of sides, straight or curved sides, size, and color. As they name the shapes and discuss their attributes, they begin to realize that some features like size, color, or the way the card is turned does not change the shape's name. This helps them focus on the important or defining attributes, like number of sides and corners.
Copy the design shown on the card using pattern block shapes. *"Look! I made a turtle."*	Students use pattern block shapes to create new larger shapes like the turtle figure shown. They count the number of each shape used and fill out the chart to determine which number is greatest and which is least.
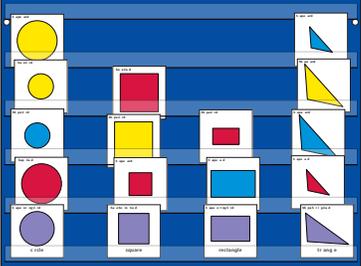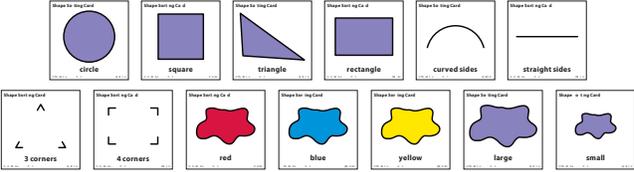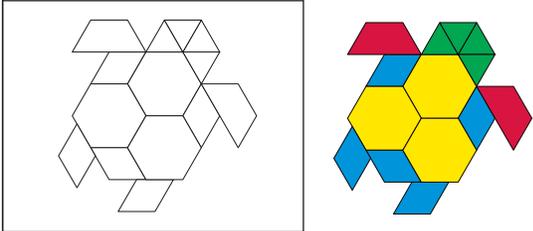
PROBLEM	COMMENTS
Roll the die and spin the spinner. Name the shape you spun, and draw the number of shapes you rolled. Write the number.	Students play games like Spin & Count to practice identifying and drawing shapes. After three rows are filled, they count the number of shapes in each row and write the number.
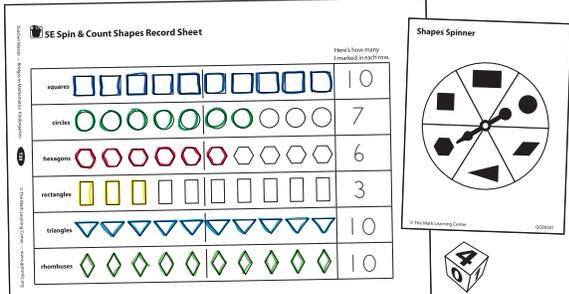
FREQUENTLY ASKED QUESTIONS ABOUT UNIT 5

Q: My child doesn't recognize triangles unless they look like the one shown in her preschool classroom with one point on top.

A: Young children often think that a shape is different if it is turned differently. They may refer to a triangle with a vertex pointed downward as an "upside down" triangle. To help them understand that a shape stays the same even when its position changes, show your child a familiar object like a cup or shoe. Turn it in all directions and ask if it is still the same object. With experience and time, your child will learn that orientation, color, and size are not defining attributes.

Q: Why does my child sometimes call a rectangle a square and a square a rectangle?

A: The idea that "a square is a rectangle, but a rectangle is not necessarily a square" is confusing to many young children. The fact that we refer to them as two differently named shapes adds to the confusion. When your child mixes up the names, take this opportunity to discuss how they are alike and different. You might want to explain that a square is a special kind of rectangle that has all of its sides the same length. Once your child recognizes the similarities and differences between the two, her understanding will grow.
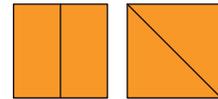
Q: I think my child knows the difference between a rectangle and a triangle, but he often gets the names mixed up. How can I help?

Try making the vocabulary part of everyday conversations. Next time you are making toast or sandwiches, consider asking your child if you should cut the bread in rectangles or triangles. Most children have a preference or enjoy making a choice, and doing so provides an opportunity to use the vocabulary. If your kindergartener has had experiences with tricycles, it may be helpful to talk about how a tricycle has three wheels, and a triangle has three sides and three corners.

Remember that while geometry has a unique vocabulary, and we encourage students to use it, our real goal is to focus attention on the similarities, differences, parts (that is, number of sides and vertices/corners) and other attributes that define a shape. The vocabulary gives us all a common ground when discussing those ideas. Kindergartners can understand that it is easier to convey meaning when everyone uses the same language to say "the triangle" rather than describing "that little pointy thing." While we want to model correct geometric vocabulary and encourage students to use it themselves, we want children to discuss shapes in ways that make sense to them.

Please see the attached Geometry Vocabulary Terms for additional support.

GEOMETRY VOCABULARY TERMS

cone a three-dimensional shape (solid) with a circular or elliptical base and a curved surface that tapers to the vertex
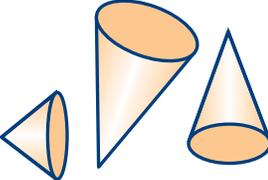
cube a three-dimensional shape (solid) whose 6 faces are all squares
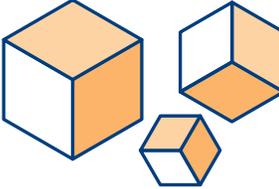
cylinder a three-dimensional shape (solid) with one curved surface and two congruent flat ends that are circular or elliptical

edge the line along which 2 faces of a three-dimensional shape (solid) meet
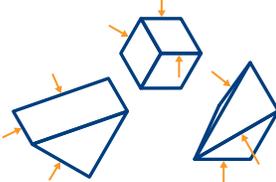
hexagon a two-dimensional (flat) shape with 6 sides
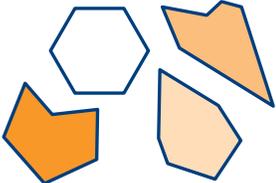
pyramid a three-dimensional shape (solid) that has a base with 3 or more sides, and has triangular faces that meet at a point
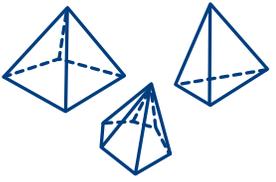
rectangle a two-dimensional (flat) shape with 2 pairs of parallel sides (4 sides total) and 4 right angles
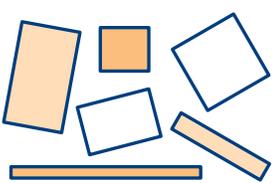
rectangular prism a three-dimensional shape (solid) whose 6 faces are all rectangles
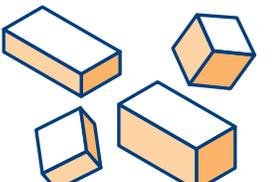
rhombus a two-dimensional (flat) shape with 4 congruent sides
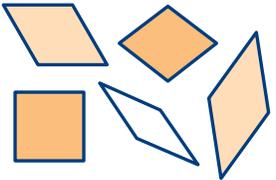
square a two-dimensional (flat) shape with 4 congruent sides and 4 right angles
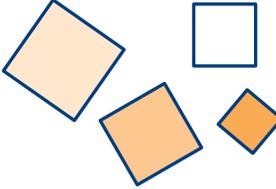
three-dimensional (3-D) shape a solid shape with depth, width, and height; a shape that has volume
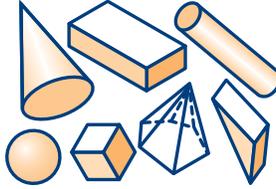
trapezoid a two-dimensional (flat) shape with 4 sides, exactly 1 pair of which are parallel
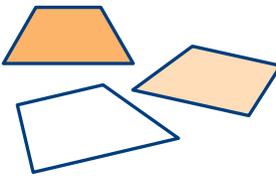
triangle a two-dimensional (flat) shape with 3 sides
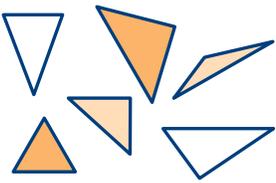
triangular prism a three-dimensional shape (solid) with 2 triangular bases and 3 rectangular faces
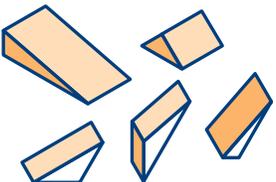
two-dimensional (2-D) shape a flat shape with length and width; a shape that has area but not volume
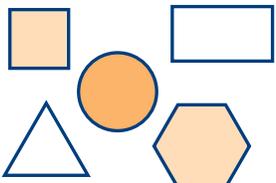
vertex or corner the point at which the sides of a two-dimensional (flat) shape or the edges of a three-dimensional shape (solid) intersect