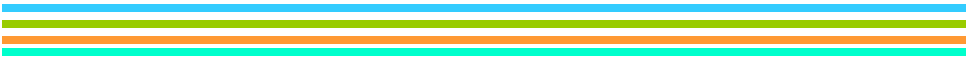


# Unit 2: 2-D Geometry



**TEAMBPCS**  
Office of  
Mathematics PreK-12

The PreK-12 Mathematics curriculum focuses on problem solving, communication, and critical thinking in order to provide a foundation where every student reaches their potential to become a globally competitive, mathematically literate citizen.

## About this Unit

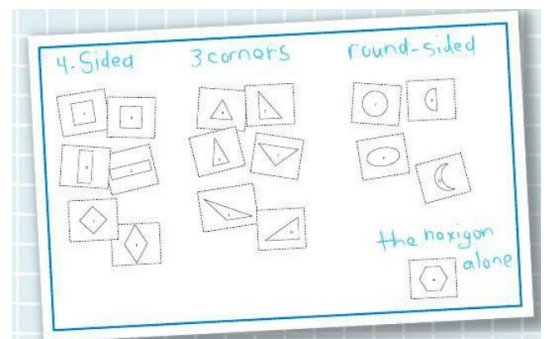
This geometry unit focuses on two-dimensional shapes (2-D) and the relationships between shapes. Students observe, describe, compare, classify, represent, and compose and decompose 2-D shapes. Students learn to use geometric language to describe and identify important features of familiar 2-D shapes. As they sort and describe groups of shapes, they begin to distinguish specific attributes of triangles and quadrilaterals. The *Shapes* software is introduced as a tool for extending and deepening this work. This tool is designed for K-2 students to explore how different shapes go together.

## Working with Two-Dimensional Shapes

First grade students develop the understanding that shapes can be classified by defining attributes such as number of sides or number of angles. They also develop the understanding that non-defining attributes of shapes are features that may be present, but do not identify what the shape is called (e.g. color, size, orientation, etc.). First grade students identify, name, draw, build, and sort 2-dimensional shapes. These pictures show how students might reason about shapes and their attributes.

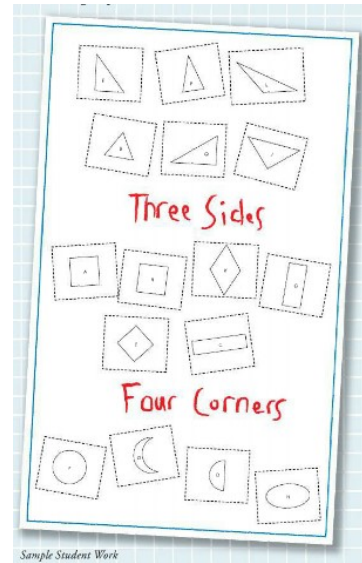
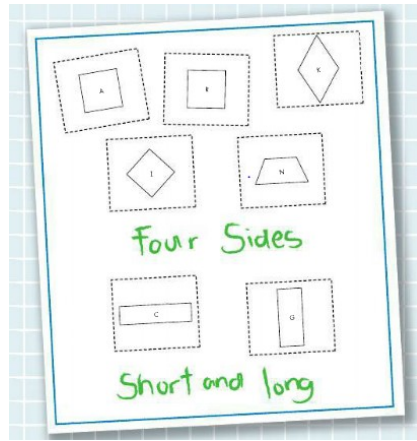


Students make groups of shapes by sorting them. This requires them to look for similarities and differences among the attributes of different shapes. This picture shows how one student might sort and classify shapes.



## Working with Two-Dimensional Shapes

Students may choose to sort the same shapes in different ways.

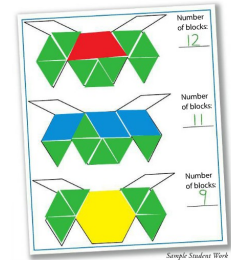
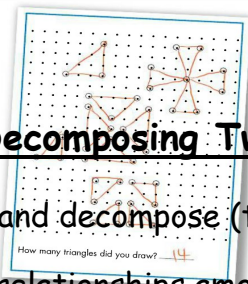


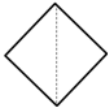
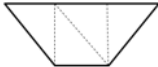

Developing visual images of shapes as well as drawing 2-D shapes are ways that students come to know the important features of shapes.

## Composing and Decomposing Two-Dimensional Shapes

Students compose (put together) and decompose (take apart) shapes to make other shapes.

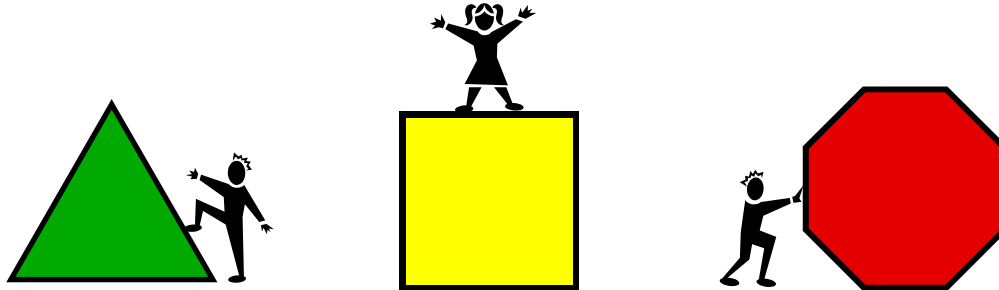
Students at this age are learning relationships among numbers by putting them together and by taking them apart. Similarly, they are learning about geometric relationships by composing and decomposing shapes. As students become more aware of relationships among shapes they begin to come up with their own ideas such as the ones shown below.



<p><b>Student A:</b> I made a square. I used 2 triangles.</p> 	<p><b>Student B:</b> I made a trapezoid. I used 4 triangles.</p> 	<p><b>Student C:</b> I made a tall skinny rectangle. I used 6 triangles.</p> 
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## Helping Your Child at Home



- Go on a shape hunt outside or in the house, ask your child to name the shapes of doors, windows, bicycle wheels, etc.
- Ask your child to identify the shapes of various road signs while traveling in the car.
- Talk with your child about the various shapes of items packaged in the grocery store.

### Visit these Websites for math activities.

- [Concentration](http://illuminations.nctm.org) (http://illuminations.nctm.org)  
Students try to find matches between shapes and shape names. The cards can be face-up or face-down. The computer will read the words aloud if requested.
- [Attribute Blocks](http://nlvm.usu.edu) (http://nlvm.usu.edu)  
Students play "Guess my Rule" as they try to figure out the secret rule based on which Attribute Blocks (different shapes that are large/small and different colors) fit the rule, and by placing additional shapes and getting feedback (clicking "Check").
- [Puzzle Blocks](http://www.inventionatplay.org) (http://www.inventionatplay.org)  
Students arrange a set of 2-D shapes to form a picture.

