

Tips for Helping at Home

- Questions to ask:

What is it that you don't understand (have the student be specific)?

What information do you need?

What strategies are you going to use?

Can you guess and check?

Does this make sense?

What can you do to explain your answer to show others what you are thinking?

Does your answer seem reasonable?

- Look for different shapes in the environment.

Where do you see rectangles and squares?

Are there some shapes within other shapes, such as panes in a window?

- Look for arrays - for example, in floor tiles, calendars, and window panes.
- Look for patterns in fabric, wallpaper, flags, or other places that are half one color and half another. How can your child tell that the patterns are half and half?
- Look for designs that are symmetrical.

Have fun exploring these ideas with your child.

Mathematical Emphasis

Investigation 1—Composing and Decomposing Shapes

- Sorting, describing, and identifying shapes by various attributes
- Composing and decomposing two- and three dimensional shapes
- Describing spatial and numerical relationships found among shapes

Investigation 2—What Is a Rectangle?

- Identify triangles and rectangles based on the number of sides, the number of corners, and the number of square corners
- Visualizing, constructing, and drawing rectangular arrays
- Using numbers to compare rectangular arrays

Investigation 3: Fractions of Geometric Shapes

- Constructing arrays to represent numbers and identifying halves of the arrays
- Investigating halves of three-dimensional solids
- Constructing two-dimensional arrays that re divided into thirds and fourths
- Describing fractional parts of an array as fractions of a rectangular region
- Describing fractional parts of an array as fractions of the set of tiles used to construct the array
- Designing and constructing a rectangular region that is divided into halves, thirds, or fourths

Investigation 4: Symmetry

- Finding and describing objects that have mirror symmetry
- Making two-dimensional symmetrical designs
- Building three-dimensional symmetrical structures

Investigations in Number, Data, and Space



Shapes, Halves, and Symmetry Grade 2

Geometry and Fractions

Unit Goals:

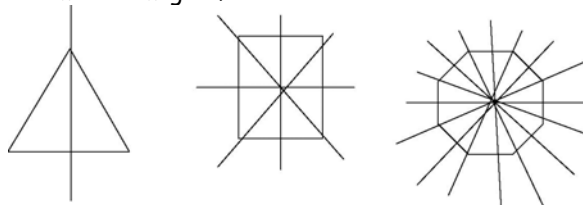
- Students explore the structure of shapes and how they can decomposed or put together into other shapes
- Students investigate the structure of rectangular arrays by covering rectangles with tiles, and by building, drawing, and describing rectangles
- Students find halves of rectangles and other two- and three- dimensional shapes.
- Students explore symmetry by making symmetrical designs and pictures

Proposed Time Frame:

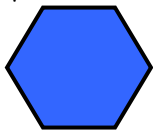
7 weeks

Vocabulary

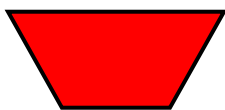
symmetry - an object is symmetrical when one side is a mirror image of the other



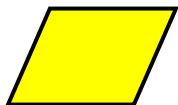
a
hexagon - a shape with six sides



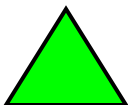
trapezoid - a four sided shape with one pair of parallel sides



rhombus - a shape with four equal sides



triangle - a shape with three sides



array - a set of objects usually arranged in rows and columns

About the Mathematics In This Unit

For the next few weeks we will be investigating geometry and fractions. We will investigate relationships among shapes and put shapes together to build other shapes. For example, children will be using pattern blocks (two dimensional shapes) to make a hexagon shape by combining two trapezoids or by combining six triangles. Children will look for ways that a large design can be covered with different numbers of blocks.

We will also investigate rectangular arrays. Checkerboards and floor tiles are arrays that are familiar to many children. An egg carton is a 2- by- 6 array. Activities with arrays provide experiences with fractions and area. Children will build arrays with square tiles, then draw them. They will compare all the arrays that can be built for a number such as 12. Later in the unit we will use rectangular arrays to show fractions. Each child will design a Fraction Flag that is divided into equal parts.

The last part of this unit is about symmetry. Students will make symmetrical designs with pattern blocks and investigate symmetry using a mirror. These activities, as well as others in this unit, help children develop visual thinking.

Game

Turn Over 10

Materials: One deck of Numeral Cards 0-10 (four of each) plus four wild cards

Players: 2 to 3

How to play:

The object of the game is to turn over and collect combinations of cards that total 10.

1. Arrange the cards face down in four rows of five cards. Place the rest of the deck face down in a pile.

2. Take turns. On a turn, turn over one card then another.

A wild card can be made into any number. If the total is less than 10, turn over another card. If the total is more than 10, your turn is over and the cards are turned face down in the same place. If the total is 10, take the cards and replace them with cards from the deck. You get another turn.

3. Place each of your card combinations of 10 in separate piles so they don't get mixed up.

4. The game is over when no more 10's can be made.

5. At the end of the game, make a list of the number combinations for 10 that you made.

Web Resources

<http://www.dreamsbeginhere.org/static/aboutdcps/departments/acadprog/mathematics/index.asp>

