Tips for Helping at Home

- Questions to ask:

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

    What about putting things in order?

    Could you try it with simpler numbers?

    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 opportunities at home to talk about area with your child. For example:

    Do you have square tiles covering a floor or bathroom wall? How many squares are there?

    Suppose you make roll-out cookies with your child. This poses a problem of area: how can you place the cookie cutters so that you cover the most area, and have the least amount of dough left over? Do you have to rotate the cookie cutter to get the best fit?

- Download Tetrominoes to play on your computer at home. See your teacher for the password.

    http://investigations.scottforesman.com/flips.html

Mathematical Emphasis

Investigation 1: Motions with Tetrominoes

- Measuring an area by covering a flat space with square units

- Finding systematically all possible geometric arrangements of a given number

- Finding patterns for covering a space

- Comparing area of rectangles with different dimensions

- Describing physical motions in precise ways as a series of slides, flips and turns

- Comparing two shapes to decide if they are congruent or not after using geometric motions - slides, flips, turns - to try fitting one shape exactly on top of the other
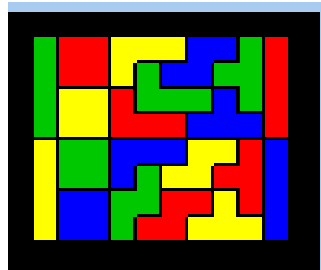
Investigation 2: Finding Area

- Measuring area by covering a flat space with square units

- Comparing the area of two shapes by determining if they cover they same amount of flat space

- Comparing shapes to see if they are congruent through motions such as rotation (turns) and reflections (flips)

- Exploring relationships among shapes: for example, a rectangle can be cut into two triangles, each of which is half the area of the rectangle

- Finding the area of complex shapes by cutting them into recognizable smaller units of area such as square units and half units

Websites

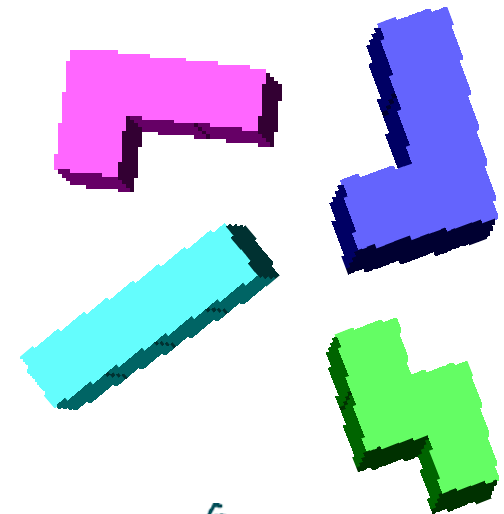http://cms.everett.k12.wa.us/math/Third Grade

Blokus Puzzler -
http://www.gottfriedville.net/blokus/index.htm

Investigations
in Number, Data, and Space

Grade 3
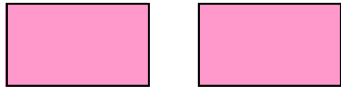
Flips, Turns and Area

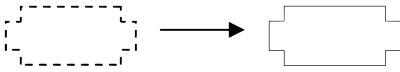## 2 - D Geometry

Everett Public Schools

Vocabulary

Area - the size a surface takes up. Measured in square units.
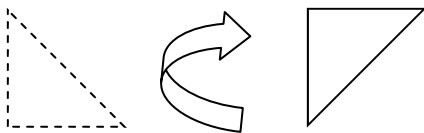
Congruent - having the same size and shape

Slide - move an item in any direction without rotating it.
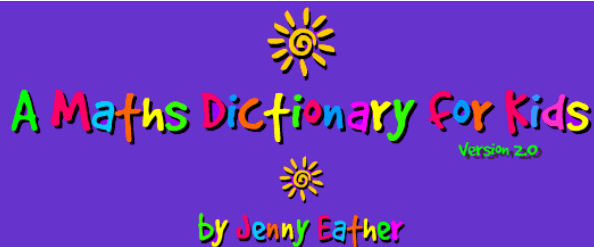

Flip - reflect or turn over

Turn - to rotate around a point

Glossary

http://www.amathsdictionaryforkids.com/

A Maths Dictionary for Kids
Version 2.0

by Jenny Eather

## Understanding the Area of Triangles

Many of us learned about area only through memorizing formulas; we often did not really understand what or why we were multiplying. In this unit, students learn about measuring area as "covering a flat surface with square units."

Finding the areas of triangles is done not by using a formula, but by looking at the triangle in relationship to a related rectangle.
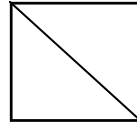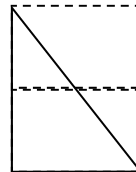

When students are comfortable with the unit square as 1 square unit and the small triangle as half of a unit, they will spend time talking about the 1-unit triangle.

How do you know what the area of this shape is?
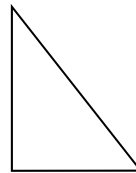
Students can use their Tetromino Puzzle to help them think about how the triangle is related to one square unit.

First, you can think of this shape as half of a 2-unit rectangle. Since the rectangle is 2 square units, and the triangle is half of the whole shape, we can conclude that the triangle is half of 2 or 1-square units.

Another way is to cut the triangle into two pieces and rearrange the pieces to make a unit square.

Clements, D. Investigations in Number, Data, and Space: Flips, Turns, and Area. Dale Seymour Publications, 1998.

Game

Arranging Chairs Puzzle

What you will need:

30 small objects to use as chairs (for example, cubes, blocks, tiles, chips, pennies, buttons)
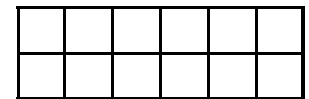
What to do:

1. Choose a number between 4 and 30.

2. Figure out all the ways you can arrange that many chairs. Each row must have the same number of chairs. Your arrangements will make rectangles of different sizes.

3. Write down the dimensions of each rectangle you make.

4. Choose another number and start again. Be sure to make a new list of dimensions for each new number.
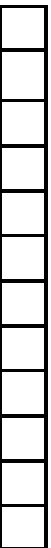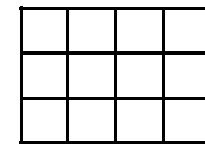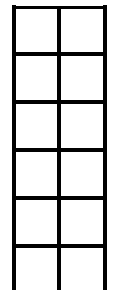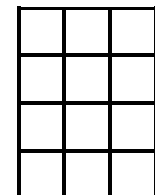
Example:

All the ways to arrange 12 chairs

Dimensions

1 by 12

12 by 1

2 by 6

6 by 2

3 by 4

4 by 3