

## Stretching and Shrinking Glossary

**Congruent Figures** – Congruent figures have corresponding angles that are equal and corresponding sides the same length

**Corresponds, Corresponding** – Corresponding sides or angles have the same relative position in similar figures.

**Ratio** – A ratio is a comparison of two quantities that tells the scale between them

**Scale Factor** – The scale factor shows the ratio of the lengths of similar figures. If the scale factor is 3, all the length measures in the image are three times the corresponding measures in the original

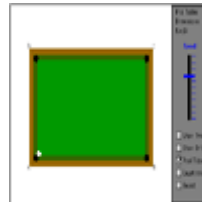
**Similar** – Similar figures have the same shape. Two figures are mathematically similar if and only if their corresponding angles are equal and the ratios of all pairs of corresponding sides are equal

## Web Resources

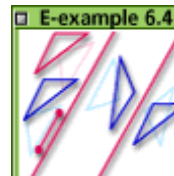
You will find the Factor Game and the Product Game at:

[www.illuminations.nctm.org](http://www.illuminations.nctm.org)

## Paper Pool



## Using Transformations and Interactive Figures



## Connected Mathematics Project

## Everett Public Schools Mathematics Program

## Stretching and Shrinking

*Geometry  
Similarity*

Unit Goals:

- ◆ Enlarge and shrink plane figures
- ◆ Identify the corresponding parts of similar figures
- ◆ Describe and produce transformation of plane figures
- ◆ Analyze scale factors between figures
- ◆ Apply properties of similar figures

Proposed Time Frame:  
Approximately 6 weeks

## Mathematics in Investigations



### Investigation 1 Enlarging Figures

- \* Make enlargements of similar figures with a rubber band stretcher
- \* Describe in an intuitive way what the word *similar* means
- \* Consider relationships between lengths and between angles in simple, similar figures

### Investigation 2 Similar Figures

- \* Locate points in a coordinate system
- \* Graph figures using algebraic rules
- \* Predict how figures on a coordinate system are affected by a given rule
- \* Experiment with examples and counterexamples of similar shapes

### Investigation 3 Patterns of Similar Figures

- \* Recognize similar figures and be able to tell why they are similar
- \* Build a larger similar shape from copies of a basic shape
- \* Understand that the sides and perimeters of similar figures grow by a scale factor and that the areas grow by the square of the scale factor
- \* Find a missing measurement in a pair of similar figures
- \* Recognize that triangles with equal corresponding angles are similar

### Investigation 4 Using Similarity

- \* Use definition of similarity to recognize when figures are similar
- \* Find the missing measurement in pairs of similar figures
- \* Solve problems that involve scaling up and down

### Investigation 5 Similar Triangles

- \* Recognize similar figures in the real world
- \* Find a missing measurement in a pair of similar figures
- \* Apply what has been learned about similar figures to solve real-world problems

### Tips for Helping at Home

Good questions and good listening will help children make sense of mathematics and build self-confidence. A good question opens up a problem and supports different ways of thinking about it. Here are some questions you might try, notice that none of them can be answered with a simple “yes” or “no”.

#### Getting Started

- \* What do you need to find out?
- \* What do you need to know?
- \* What terms do you understand or not understand?

#### While Working

- \* How can you organize the information?
- \* Do you see any patterns or relationships that will help solve this?
- \* What would happen if...?

#### Reflecting about the Solution

- \* How do you know your answer is reasonable?
- \* Has the question been answered?
- \* Can you explain it another way?

### At Home:

- 1 Talk with your child about what’s going on in mathematics class.
- 2 Look for ways to link mathematical learning to daily activities. Encourage your child to figure out the amounts for halving a recipe, estimating gas mileage, or figuring a restaurant tip.
- 3 Encourage your child to schedule a regular time for homework and provide a comfortable place for their study, free from distractions.
- 4 Monitor your child’s homework on a regular basis by looking at one problem or asking your child to briefly describe the focus of the homework. When your child asks for help, work with them instead of doing the problem for them.

### At School

- 1 Attend Open House, Back to School Night, and after school events.
- 2 Join the parent-teacher organization

Connected Mathematics Project

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