

Comparing and Scaling Glossary

Population Density –

The population density is the average number of things per unit of area (people per square mile)

Proportion – An equation stating that two ratios are equal.

Rate – A rate can be thought of as a direct comparison of two sets (20 cookies for 5 children)

Ratio – A ratio is a comparison of two quantities that tells the scale between them. Ratios may be expressed as quotients, fractions, decimals, percents or given in the form $a:b$.

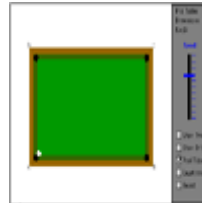
Unit Rate – A unit rate compares an amount to a single unit. For example, 1.9 children per family; 32 mpg.

Web Resources

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

www.illuminations.nctm.org

Paper Pool



Connected Mathematics Project

**Everett Public Schools
Mathematics Program**

Comparing and Scaling

Ratio, Proportion, and
Percent

Unit Goals:

- ◆ Explore proportional relationships between quantities
- ◆ Interpret fractions as ratios as rates, or as comparisons of a part to a whole
- ◆ Scaling ratios up or down
- ◆ Compare quantities using ratios, rates, or percents

Proposed Time Frame:
Approximately 6 weeks

Mathematics in Investigations

Investigation 1 Making Comparisons

- * Make comparisons
- * Develop ways to use ratios, fractions, rates, and unit rates, to answer questions involving proportional reasoning

Investigation 2 Comparing by Finding Percents

- * Make sensible comparisons of data using ratios, fractions, and decimal rates, with a focus on percents
- * Make judgments about rounding data to estimate ratio comparisons

Investigation 3 Comparing by Using Ratios

- * Recognize situations in which ratios are a useful form of comparison
- * Form, label, and interpret ratios from numbers given or implied in a situation
- * Solve scaling problems involving ratios (solving proportions)

Investigation 4 Comparing by Finding Rates

- * Find unit rates
- * Represent data in tables and graphs
- * Find the missing value in a proportion

Investigation 5 Estimating Populations and Population Densities

- * Use geometric scaling to estimate population counts
- * Apply proportional reasoning
- * Use ratios to find missing values in a proportion
- * Use rates to describe population and traffic density (space per person or car)

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

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