

# Parent Newsletter

## Chapter 5: Ratios and Rates

### Standards

#### Common Core:

- 6.RP.1:** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- 6.RP.2:** Understand the concept of a unit rate  $a/b$  associated with a ratio  $a:b$  with  $b \neq 0$ , and use rate language in the context of a ratio relationship.
- 6.RP.3:** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

### Students will...

- Understand the concept of a ratio.
- Use ratios to describe the relationship between two quantities.
- Use ratio tables to find equivalent ratios.
- Understand the concepts of rates and unit rates.
- Write unit rates.
- Compare ratios.
- Compare unit rates.
- Graph ordered pairs to compare ratios and rates.
- Write percents as fractions with denominators of 100.
- Write fractions as percents.
- Find percents of numbers.
- Find the whole given the part and the percent.
- Use conversion factors (rates) to convert units of measurement.
- Solve real-life problems.

### Key Ideas

#### Ratio

- Ratios can be part-to-part, part-to-whole, or whole-to-part comparisons.
- The ratio of  $a$  to  $b$  can be written as  $a : b$ .

#### Rate and Unit Rate

- Rate:  $a$  units :  $b$  units
- Unit rate:  $\frac{a}{b}$  units : 1 unit

#### Writing Percents as Fractions

- A percent can be written as a fraction with a denominator of 100.
- $n\% = \frac{n}{100}$

#### Writing Fractions as Percents

- Write an equivalent fraction with a denominator of 100. Then write the numerator with the percent symbol.

#### Finding the Percent of a Number

- Write the percent as a fraction. Then multiply by the whole.
- The percent times the whole equals the part.

#### Finding the Whole

- Write the percent as a fraction. Then divide the part by the fraction.
- The part divided by the percent equals the whole.

### Key Terms

A **ratio** is a comparison of two quantities.

Two ratios that describe the same relationship are **equivalent ratios**.

A table used to find and organize equivalent ratios is called a **ratio table**.

A **rate** is a ratio of two quantities using different units.

A **unit rate** compares a quantity to one unit of another quantity.

**Equivalent rates** have the same unit rate.

A **percent** is a part-to-whole ratio where the whole is 100.

The **U.S. customary system** is a system of measurement that contains units for length, capacity, and weight.

The **metric system** is a decimal system of measurement, based on powers of 10, that contains units for length, capacity, and mass.

A **conversion factor** is a rate that equals 1.

**Unit analysis** is a process used to decide which conversion factor will produce the appropriate units.



## Reference Tools

**Ratio:** a comparison of two quantities. Ratios can be part-to-part, part-to-whole, or whole-to-part comparisons.

Example

4 to 5

Example

2 : 5

Example

teachers : students

A **Definition and Example Chart** can be used to organize information about a concept. Fill in the top rectangle with a term and its definition or description. Fill in the rectangles that follow with examples to illustrate the term. Each sample answer shows 3 examples, but your student can show more or fewer examples. Definition and example charts are useful for concepts that can be illustrated with more than one type of example.

## Games

- I Have..., Who Has...?
- Match Them Up
- Order Matters
- How Close Can You Get?
- It's National Metric Week

These are available online in the *Game Closet* at [www.bigideasmath.com](http://www.bigideasmath.com).

## Essential Questions

How can you represent a relationship between two quantities?

How can you find two ratios that describe the same relationship?

How can you use rates to describe changes in real-life problems?

How can you compare two ratios?

What is the connection between ratios, fractions, and percents?

How can you use mental math to find the percent of a number?

How can you compare lengths between the customary and metric systems?

## Quick Review

- When writing rates it is very important to write the related units. The units tell the context for the rate.
- Ratios should be written as  $a$  to  $b$  or  $a : b$ .
- When a ratio is a part-to-whole comparison, it is equivalent to the fractional representation.

•  $60\% = 60 \text{ out of } 100 = \frac{60}{100}$

part  
per  
one hundred (whole)

- Equivalent fractions are fractions that represent the same amount. For example,  $\frac{2}{5}$  and  $\frac{4}{10}$  are equivalent fractions.

### U.S. Customary to Metric Conversions

1 inch = 2.54 centimeters      1 foot  $\approx$  0.3 meter  
1 mile  $\approx$  1.61 kilometers      1 quart  $\approx$  0.95 liter  
1 gallon  $\approx$  3.79 liters      1 cup  $\approx$  237 milliliters  
1 pound  $\approx$  0.45 kilogram      1 ounce  $\approx$  28.3 grams  
1 gallon  $\approx$  3785 cubic centimeters

\*More conversions are available on page B1 of the textbook.

## What's the Point?

The ability to use ratios and rates is very useful in real life for events like cooking with recipes. Have your student figure out how to make a dinner for 6 people based on a recipe that serves 4 people. How much of each ingredient will he or she need?

The STEM Videos available online show ways to use mathematics in real-life situations. The Chapter 5: Human Circulatory System STEM Video is available online at [www.bigideasmath.com](http://www.bigideasmath.com).

