Unit 5
LT: I can use proportional reasoning to solve real-world problems:

Most Important Homework Problems:
5-9, 5-10, 5-11, 5-18, 5-19, 5-101, 5-111, CL 5-149.

Extra practice is available using Edulastic (Unit 5 Study Assignment) and Thinking Blocks.

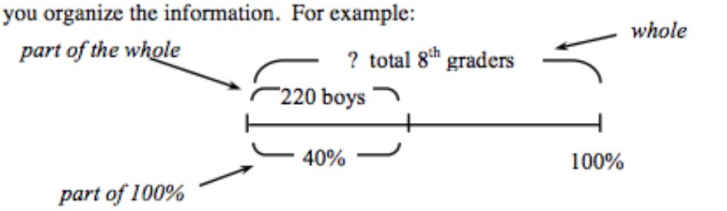
Extra Practice Worksheets

My Examples:

PART-TO-WHOLE RELATIONSHIPS

Percentages, fractions, and decimals are all different ways to represent a portion of a whole or a number. Portion-whole relationships can also be described in words.

You can represent a part-to-whole relationship with a linear model like the one below. To solve a percentage problem described in words, you must first identify three important quantities: the percent, the whole, and the part of the whole. One of the quantities will be unknown. A diagram can help you organize the information. For example:



Once the parts have been identified, you can use reasoning to extend the part to the whole. For example, if 220 students are 40% of eighth graders, then 10% must be $220 \div 4 = 55$. Then 100% must be $55 \cdot 10 = 550$ students. Another way to solve the problem is to find the ratio of 220 boys to the whole (all students) and compare that ratio to 40% and 100%. This could be written:

$$\frac{40}{100} \cdot \boxed{\ \ } = \frac{220}{?}, \text{ then } \frac{40}{100} \cdot \boxed{\frac{5.5}{5.5}} = \frac{220}{?}$$

You can see above that the total number of 8th graders is 550.

To remember how to rewrite decimals or fractions as percents, and to rewrite percents as fractions or decimals, refer to the Math Notes box at the end of Lesson 1.3.1.

My Examples:

EQUIVALENT RATIOS

A **ratio** is a comparison of two quantities by division. A ratio can be written in words, as a fraction, or with colon notation. Most often in this course, ratios will be written as fractions or stated in words.

For example, if there are 28 students in a math class and 15 of them are girls, you can write the ratio of the number of girls to the number of students in the class as:

15 girls to 28 students $\quad \frac{15 \text{ girls}}{28 \text{ students}} \quad$ 15 girls : 28 students

You used a Giant One to write equivalent fractions in Chapter 1. To rewrite any ratio as an **equivalent ratio**, write it as a fraction and multiply it by a fraction equal to one. For example, you can show that the ratio of raisins to peanuts is the same for a larger mixture using a Giant One like this:

$$\frac{4 \text{ raisins}}{7 \text{ peanuts}} \cdot \boxed{\frac{20}{20}} = \frac{80 \text{ raisins}}{140 \text{ peanuts}}$$

Equivalent fractions (or ratios) can be thought of as families of fractions. There are an infinite number of fractions that are equivalent to a given fraction. You may want to review the basis for using a Giant One — the Multiplicative Identity — in the Math Notes box in Lesson 1.2.5.

Key Vocabulary

percentage:

part:

whole:

ratio:

equivalent ratios: