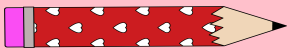
February 11, 2013

8th Grade
Lesson 75



I can recognize and solve proportions from implied ratios found in word problems.

Things to remember about ratios

- A ratio is a comparison of two numbers.
- Ratios are often written in the form of fractions.
- A proportion is a statement that two ratios are equal.

This equation is called a proportion. → $\frac{3}{4} = \frac{9}{12}$

Many ratio word problems do not actually use the word ratio. When we read the problem, we must recognize that the problem is a ratio problem. We must also be able to pick out the **implied ratio**.

It takes $2\frac{1}{2}$ eggs to make 140 cookies. Jenny wants to make 1680 cookies. How many eggs does she need?

The word problem above is a ratio problem about eggs and cookies. We can write the ratio with eggs in the numerator and cookies in the denominator so the proportion looks like this...

$$\frac{E}{C} = \frac{E}{C}$$

The first sentence in the problem gives us the implied ratio. With the number of "eggs" in the numerator, write the ratio in the box below:

$$\square = \frac{E}{C}$$

Jenny wants to make 1680 cookies, so we use 1680 for C and solve for E.

$$\frac{2\frac{1}{2}}{140} = \frac{E}{1680}$$

To begin solving, set up the equal cross products...

$$\frac{5}{2} \cdot 1680 = 140 \cdot E$$

Then, simplify...

$$4200 = 140 \cdot E$$

Solve by dividing each side of the equation by 140...

$$\frac{4200}{140} = \frac{140 \cdot E}{140}$$

$$30 = E$$

Jenny needs 30 eggs to make 1680 cookies.

Now it's your turn...follow the pattern of setting up and solving an implied ratio word problem for the following problem.

It takes 3 tons of fertilizer to fertilize 170 acres. Farmer Brown wants to fertilize 1870 acres. How many tons of fertilizer does Farmer Brown need?

Assignment:

Problem Set 75 #1-10, 14, 16, 18, 19, 24, 25