Solving Ratio Problems Using Methods Specified in the Common Core
Karen Heinz (heinz@rowan.edu), Rowan University
NCTM Regional Conference, Las Vegas, NV
Friday, October 25, 2013
8:30 AM – 10:00 AM

Focus: CCSS-M 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.

Problems:

1. At Store A, Halloween candy is sold in bags of 360 pieces for $18. At Store B, Halloween candy is sold in bags of 240 pieces for $16. If the quality of the candy is the same in both bags, which store has the better buy?
2. To make a particular shade of purple paint, 4 pints of red paint are mixed with 5 pints of blue paint. For each of the following problems, assume that we want to make this same shade of purple paint.
   a. How many pints of blue paint are needed to mix with 28 pints of red paint?
   b. How many pints of red paint are needed to mix with 55 pints of blue paint?
   c. How many pints of red paint and how many pints of blue paint are needed to make 108 pints of purple paint?
3. Terry is on a long trip and is driving at a constant rate. Early in the trip, it took Terry 24 minutes to go 28 miles.
   a. How long does it take Terry to go 7 miles?
   b. How long will it take Terry to go 140 miles?
   c. How many miles can Terry travel in 36 minutes?
   d. What is Terry's speed in miles per hour?
   e. What is Terry's speed in miles per minute?
   f. How many minutes does it take Terry to go 1 mile?
4. Two numbers are in the ratio of 3 to 4. If one of the numbers is 18, what are the possible sums of the two numbers?
5. A 24-oz bottle of Sunshine Orange Juice costs $3.60. A 30-oz bottle of Outstanding Orange Juice costs $4.80. If the quality of the two juices is the same, which is the better buy?
6. The Sunshine company sells OJ in 24-oz and in 30-oz bottles. The 24-oz bottle costs $3.60. If the cost per ounce is the same for both bottles, what is the price of the 30-oz bottle?
7. The ratio of Maria's DVDs to Ned's DVDs was 7 to 3. After Maria gave Ned 10 DVDs, they had the same amount. How many DVDs do they have altogether?
8. At JFK Elementary School, the ratio of students who order pizza to those who order chicken nuggets is 3:2.
   a. Last Tuesday the school fed 420 students. How many students had pizza and how many students had chicken nuggets?
   b. Last Wednesday, 220 students ate chicken nuggets. How many students ate pizza?
   c. Last Thursday, 327 students ate pizza. How many students ate chicken nuggets?

Tables of Equivalent Ratios

Double Number Line Diagrams