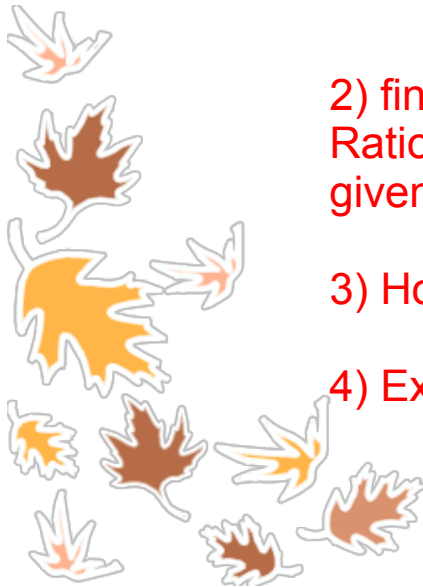Agenda:

1) Bell Ringer: unit rate practice matching (page after 104)

2) finish Lesson 13: Finding Equivalent Ratios
given the Total

3) Homework: Finish Lesson 13 (1-4)

4) Exit Ticket p. 111

Sep 7-12:49 PM

Problem Set

1. You are getting ready for a family vacation. You decide to download as many movies as possible before leaving for the road trip. If each movie takes $1\frac{2}{5}$ hours to download and you downloaded for 5 ¼ hours, how many movies did you download?

    $5\frac{1}{4} \div 1\frac{2}{5}$

2. The area of a blackboard is $1\frac{1}{3}$ square yards. A poster's area is $\frac{8}{9}$ square yards. Find a unit rate and explain, in words, what the unit rate means in the context of this problem. Is there more than one unit rate that can be calculated? How do you know?

    $1\frac{1}{3} \div \frac{8}{9} = \frac{4}{3} \div \frac{8}{9} = \frac{4}{3} \times \frac{9^{3}}{8_{2}} = 1\frac{1}{2}$

3. A toy remote control jeep is 12 ½ inches wide while an actual jeep is pictured to be 18 ¾ feet wide. What is the value of the ratio of the width of the remote control jeep to width of the actual jeep?

    $12\frac{1}{2} \div \left(\boxed{18\frac{3}{4}} \times 12\right)$

    $12\frac{1}{2} \div 225$

    $\frac{25}{2} \div 225$

    $1\frac{25}{2} \times \frac{1}{225_{9}} = \frac{1}{18}$

Lesson 13: Finding Equivalent Ratios Given the Total Quantity

Classwork

Example 1

A group of 6 hikers are preparing for a one-week trip. All of the group's supplies will be carried by the hikers in backpacks. The leader decided that it would be fair for each hiker to carry a backpack that is the same fraction of his weight as all the other hiker's. In this set-up, the heaviest hiker would carry the heaviest load. The table below shows the weight of each hiker and the weight of his/her backpack.

Complete the table. Find the missing amounts of weight by applying the same ratio as the first 2 rows.

$y \div x$

$14\frac{8}{16} \div 152\frac{4}{16} = \frac{2}{21}$

$10\frac{4}{16} \div 107\frac{10}{16} = \frac{2}{21}$

$\frac{3 \cdot 2}{8 \cdot 2} = \frac{6}{16}$

Hiker's Weight	Backpack Weight	Total Weight (lbs)
152 lb 4 oz $\frac{4}{16}$	14 lb 8 oz $\frac{8}{16}$	166 lb 12 oz
107 lb 10 oz $\frac{10}{16}$	10 lb 4 oz $\frac{4}{16}$	117 lb 14 o.
129 lb 15 oz $\frac{3}{21}$	12 lb 6 oz $\frac{6}{16}$	142 lb 5 o.
68 lb 4 oz		

$\begin{array}{r} 152 \\ +\ 14 \\ \hline 166 \end{array}$ $\begin{array}{r} 4 \\ +\ 8 \\ \hline 12 \end{array}$

$\begin{array}{r} 107 \\ +\ 10 \\ \hline 117 \end{array}$ $\begin{array}{r} 10 \\ +\ 4 \\ \hline 14 \end{array}$

$\begin{array}{r} 129 \\ +\ 12 \\ \hline 141 \\ 142 \end{array}$ $\begin{array}{r} 15 \\ +\ 6 \\ \hline 21 \\ -16 \\ \hline 5 \end{array}$

Sep 30-8:47 AM

4

$\frac{1 \cdot 8}{2 \cdot 8} = \frac{8}{16}$ 68 lb 4 oz $\frac{}{16}$	$\times \frac{2}{21}$ 6 lb 8 oz.	74 lb 12 oz
$\frac{7 \cdot 2}{8 \cdot 2} = \frac{14}{16}$ 91 lb 14 oz	$\frac{5}{21}$ 8 lb 12 oz $\frac{}{16}$	100 lb 10 oz.
105 lb	$\frac{2}{21}$ 10 lb	115 lb.

$\begin{array}{r} 68 \\ + 6 \\ \hline 74 \end{array}$ $\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$

$\begin{array}{r} 91 \\ + 8 \\ \hline 99 \\ 100 \end{array}$ $\begin{array}{r} 14 \\ + 12 \\ \hline 26 \, oz. \\ - 16 \\ \hline 10 \end{array}$

Example 2

When a business buys a fast food franchise, it is buying the recipes used at every restaurant with the same name.   For example, all Pizzeria Specialty House Restaurants have different owners but they must all use the same recipes for their pizza, sauce, bread, etc.   You are now working at your local Pizzeria Specialty House restaurant and listed below are the amounts of meat used on one meat-lovers pizza.

$\dfrac{6}{24} =$ $\dfrac{1}{4}$ cup of sausage

$\dfrac{8}{24} =$ $\dfrac{1}{3}$ cup of pepperoni

$\dfrac{4}{24} =$ $\dfrac{1}{6}$ cup of bacon

$\dfrac{3}{24} =$ $\dfrac{1}{8}$ cup of ham

$\dfrac{3}{24} =$ $\dfrac{1}{8}$ cup of beef

Common denominator

What is the total amount of toppings used on a meat-lovers pizza? _____ $\dfrac{24}{24} = 1$ _____ cups

Add

The meat must be mixed using this ratio to ensure that customers will receive the same great tasting meat-lovers pizza from every Pizzeria Specialty House Restaurant nationwide. The table below shows 3 different orders for meat-lovers pizza on Superbowl Sunday. Using the amounts and total for one pizza given above, fill in every row and column of the table so the mixture tastes the same.

$3 \div \frac{1}{3} = 9$

x		Order 1 (y)	Order 2 (y)	Order 3 (y)
$\frac{1}{4}$	Sausage (cups)	1	$\frac{6}{4} = 1\frac{1}{2}$	$\frac{9}{4} = 2\frac{1}{4}$
$\frac{1}{3}$	Pepperoni (cups)	$\frac{4}{3} = 1\frac{1}{3}$	$\frac{6}{3} = 2$	3
$\frac{1}{6}$	Bacon (cups)	$\frac{4}{6} = \frac{2}{3}$	1	$\frac{9}{6} = 1\frac{1}{2}$
$\frac{1}{8}$	Ham (cups)	$\frac{1}{2}$	$\frac{6}{8} = \frac{3}{4}$	$\frac{9}{8} = 1\frac{1}{8}$
$\frac{1}{8}$	Beef (cups)	$\frac{4}{8} = \frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$
1	TOTAL (cups)	4	6	9

Exercises

1. The table below shows 6 different-sized pans of the same recipe for macaroni and cheese. If the recipe relating the ratio of ingredients stays the same, how might it be altered to account for the different sized pans?

x y $x \cdot y$

unit Rate

$\frac{3}{4} \div 3 = \frac{1}{4}$

Noodles (cups)	Cheese (cups)	Pan Size (number of cups) — total
4 ÷¼	1 ÷5	5
3	$\frac{3}{4}$	$3\frac{3}{4}$
1 ÷¼	$\frac{1}{4}$	$1\frac{1}{4}$
$\frac{2}{3}$ ×¼	$\frac{1}{6}$	$\frac{5}{6}$
$5\frac{1}{3}$ ×¼	$1\frac{1}{3}$	$6\frac{2}{3}$
4 ½	$1\frac{1}{8}$ ÷5	$5\frac{5}{8}$

unit Rate

$1\frac{1}{4} \div \frac{1}{4} = 5$

Lesson Summary:

To find missing quantities in a ratio table where a total is given, determine the unit rate from the ratio of two given quantities and use it to find the missing quantities in each equivalent ratio.

Sep 30-8:50 AM

Problem Set

1. Students in 6 classes, displayed below, ate the same ratio of cheese pizza slices to pepperoni pizza slices. Complete the following table, which represents the number of slices of pizza students in each class ate.

① Find unit Rate
$15 \div 6 = 2.5$

$x \quad y \quad z$
$+$

$\div 1.4$

$21 \div 15 = 1.4$

Slices of Cheese Pizza	Slices of Pepperoni Pizza	Total Pizza
	5	7
6	15	21
8	×2.5 20	
$5\frac{1}{2}$	÷2.5 $13\frac{3}{4}$ ×1.4	
$3\frac{1}{3}$	×2.5 $8\frac{1}{3}$	
	÷1.4	$2\frac{1}{10}$

2. To make green paint, students mixed yellow paint with blue paint. The table below shows how many yellow and blue drops from a dropper several students used to make the same shade of green paint.

a.   Complete the table.

unit Rate

$5\frac{1}{4} \div 3\frac{1}{2} = 1\frac{1}{2}$

x y x y

Yellow (Y) (ml)	Blue (B) (ml)	Total
3 ½	5 ¼	8 $\frac{3}{4}$
		5
	6 ¾	
6 ½		

unit Rate

$8\frac{3}{4} \div 5\frac{1}{4} = 1\frac{2}{3}$

$\div 1\frac{2}{3}$ $\div 1\frac{1}{2}$ $\times 1\frac{2}{3}$ $\times 1\frac{1}{2}$

b.   Write an equation to represent the relationship between the amount of yellow paint and blue paint.

3.

a.   Complete the following table

Distance Ran (miles)	Distance Biked (miles)	Total Amount of Exercise (miles)
		6
$3\frac{1}{2}$	7	
	$5\frac{1}{2}$	
$2\frac{1}{8}$		
	$3\frac{1}{3}$	

b.   What is the relationship between distances biked and distances ran?

4. The following table shows the number of cups of milk and flour that are needed to make biscuits. Complete the table.

Milk (cups)	Flour (cups)	Total (cups)
7.5		
	10.5	
12.5	15	
		11