Mr. Rogove Date:_____

Learning Objective: We will use tables to find equivalent ratios involving fractions. (G7M1L8)

Concept Development:
We can complete a table of values by finding the constant of proportionality.

Example: Yellow and red paint are mixed in proportion to make an orange color to paint a house. Below is a table of values showing the amount of each color of paint.

Yellow Paint (qts) X	Red Paint (qts) Y	Orange Blend of Paint (qts)
$\frac{3}{4}$ ×3	$2\frac{1}{4}$	3
$1\frac{1}{3}$ ×3	4	$5\frac{1}{3}$
$\frac{3}{8}$ ×3	$\frac{9}{8} = 1\frac{1}{8}$	$\frac{12}{8} = 1\frac{1}{2}$
$\frac{3}{5}$ ×3	$\frac{9}{5}$	$\frac{12}{5} = 2\frac{2}{5}$
$\frac{7}{4} = 1\frac{3}{4}$ ×3	$\frac{21}{4} = 5\frac{1}{4}$	7

Constant of Proportionality:

$$K = \frac{y}{x} = \frac{2\frac{1}{4}}{\frac{3}{4}} = \frac{9}{4} \div \frac{3}{4}$$

$$\boxed{K = 3}$$

$$\frac{9^3}{4} \cdot \frac{4^1}{3_1} = \frac{3}{1} = 3$$

	3
1	3
$\frac{1}{3}$	1

$$y = \widehat{k}x$$
$$y = 3x$$

$$\frac{9}{5} \div \frac{3}{1}$$

$$\frac{9}{5} \cdot \frac{1}{3} = \frac{9 \div 3}{15 \div 3} = \frac{3}{5}$$

GUIDED PRACTICE:

Steps For Completing Tables of Values Given Partial Information
1. Read the problem scenario carefully.
2. Use the information to find out your constant of proportionality.
3. Set up an equation using $y = kx$.
4. Plug in known values to complete table with missing values.

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 decides that it would be fair for each hiker to carry a backpack that is the same fraction of his weight as all of the other hikers. In this set up, the heaviest hiker would carry the heaviest load. The table shows the weight of the hiker and his backpack. Find the missing information.

Proportion (handwritten)

$16 oz. = 1 lb$ (handwritten left margin)

Hiker's weight	Backpack weight	Total Weight
152 lbs. 4 oz. $\times \frac{2}{21}$	14 lbs. 8 oz	166 lbs. 12 oz
107 lbs. 10 oz. $\times \frac{2}{21}$	10 lbs. 4 oz.	117 lbs. 14 oz.
129 lbs. 15 oz. $\times \frac{2}{21}$	12 lb. 6 oz.	142 lbs. 5 oz
68 lbs. 4 oz. $\times \frac{2}{21}$	6 lb. 8 oz.	74 lbs. 12 oz.
91 lb. 4 oz $\times \frac{2}{21}$	8 lbs. 12 oz. $8\frac{3}{4}$	100 lbs. 10 oz.
105 lb. $\times \frac{2}{21}$	10 lbs.	115 lbs.

Handwritten work (left margin):

$K = \dfrac{y}{x}$

$\dfrac{14\frac{1}{2}}{152\frac{1}{4}}$

$\dfrac{10\frac{1}{4}}{107\frac{5}{8}}$

$14\frac{1}{2} \div 152\frac{1}{4}$

$\dfrac{29}{2} \div \dfrac{609}{4}$

$\dfrac{29^1}{2_1} \cdot \dfrac{4^2}{609_{21}} = \boxed{\dfrac{2}{21}}$

$8\frac{3}{4} \div \dfrac{2}{21}$

$\dfrac{35}{4} \div \dfrac{2}{21} = \dfrac{35}{4}\left(\dfrac{21}{2}\right) = \dfrac{735}{8} = 91\frac{7}{8}$

$129\frac{15}{16} \times \dfrac{2}{21}$

$\dfrac{207\frac{9^{99}}{16_8} \times \dfrac{2^1}{21_1}} = \dfrac{99}{8} = 12\frac{3}{8}$

$68 lbs. 4 oz = 68.4 lbs?$
$= 68\frac{1}{4} lbs$

$68\frac{1}{4} \times \dfrac{2}{21}$

$\dfrac{273}{4} \times \dfrac{2}{21} = \dfrac{13}{4} \times \dfrac{21}{1} = \dfrac{13}{2} = 6\frac{1}{2}$

Handwritten box (bottom):

$\times$	10	$\frac{1}{2}$	
8	80	4	84
$\frac{3}{4}$	$7\frac{1}{2}$	$\frac{3}{8}$	$7\frac{7}{8}$

A pizza chain has a recipe that calls for the following amounts of meat on one meat-lovers pizza:

$\frac{1}{4}$ cup of sausage $\frac{1}{3}$ cup of pepperoni

$\frac{1}{6}$ cup of bacon $\frac{1}{8}$ cup of ham

$\frac{1}{8}$ cup of salami

The meat MUST be mixed in this ratio to ensure that customers receive the same great tasting pizza at each store in the chain. Below are 3 orders placed. Fill in the missing amounts.

	Order 1 ×4	Order 2 ×6	Order 3
Sausage (cups)	1	$1\frac{1}{2}$	$2\frac{1}{4}$
Pepperoni (cups)	$\frac{4}{3}$	2	3
Bacon (cups)	$\frac{4}{6} = \frac{2}{3}$	1	$1\frac{1}{2}$
Ham (cups)	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$
Salami (cups)	$\frac{1}{2}$	$3/4$	$1\frac{1}{8}$
TOTAL (cups)	4	6	9

The table below shows 6 different size pans of the same recipe of mac and cheese. If the recipe relating the ratio of ingredients stays the same, how can you alter the recipe for the different sized pans?

Macaroni (Cups) X	Cheese (cups) Y	Pan Size (Number of Cups)
		5
3	$\frac{3}{4}$	
	$\frac{1}{4}$	
$\frac{2}{3}$		
$5\frac{1}{3}$		
		$5\frac{5}{8}$

$$\frac{y}{x} = k$$

Independent Practice:
Texting 1, 2, 3: Math Forum Problem of the Week

Activating Prior Knowledge:
We can fill in tables of values:

Below is a table of values that shows how many green and red M&Ms are in holiday packs of different sizes of M&Ms. Fill in the missing values:	Below is a table that compares the number of pencils students carry on them to the number of pens. The ratio will always be constant. Find the missing values:

Red	Green	Total
20	30	
40		
	90	
		400

# of pencils	# of pens	Total # of writing instruments
		25
6	9	
2		
	24	

Closure:

No closure.

Teacher Notes:
Correlates to lesson 13 from Module 1 Grade 7. Assign Problem set for HW.

Texting 1, 2, 3 for independent practice for students to work together…hand in for grade? Only partially relevant to this specific lesson in that students can fill in tables to solve the problem, but there is no third column for totals…as this is irrelevant…nonetheless, this is a good problem for students to work.