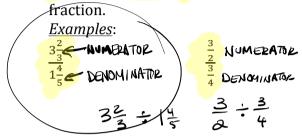
Date:_____

LEARNING OBJECTIVE: We will evaluate complex fractions and explore ratios involving fractions. (Lesson 37)

CONCEPT DEVELOPMENT:

Complex Fractions: A fractions whose numerator or denominator is itself a



Fractions are...

- · DIVISION PROBLEMS
- · PARTS OF A WHOLE

- · RATIO
- · RATES

Refresher on Unit Rates and Constant of Proportionality:

Unit Rates are ratios where the denominator is 1. When comparing two quantities (time and distance for example), the unit rate is calculated as $\frac{y}{z}$. The result is the constant of proportionality (k) (which is the SAME as the unit rate).

Two formulas to remember:

$$y = kx$$

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

Example: The chart below shows the balance in Atenea's savings account over time:

Time	Amount
(in Months)	(in Dollars)
X	Y
$\bigcup_{i=1}^{n} 0$	0 <i>D</i>
1	40
2	80
3,	120
6)	240
18	720
5	200

Date:

GUIDED PRACTICE:

Steps for Evaluating Complex Fractions and Rates Involving Fractions

- 1. Read the Problem Carefully and set up an equation to find the unit rate $\left(\frac{y}{x} = k\right)$
- 2. Rewrite the complex fraction as a division problem.
- 3. Evaluate the division problem (multiply by the reciprocal) to find the unit rate.

	<u>2</u> <u>9</u>
	8
	3
_	3
\mathcal{Q} \mathcal{Q}	
<u> </u>	c 22
9 • 3	Simplify??
(241
0 3	2.3 _ 6 +6 []
2,3,	20 = 5 = 1
a · · ·	9.8 = 72 +6 = 12
-1 8	1.0

$$\frac{1}{4}$$

$$\frac{4}{5} \cdot \frac{1}{4} \quad \frac{4}{5} \times \frac{4}{1} \cdot \frac{1}{5}$$

$$\frac{1\frac{1}{3}}{\frac{4}{3}} = \frac{18}{5} \cdot \frac{4}{3}$$

$$\frac{18}{5} \cdot \frac{3}{4} = \frac{18\cdot 3}{5\cdot 4} = \frac{54 \div 2}{30 \div 2} = \frac{27}{10}$$

$$\frac{10\frac{1}{2}}{1\frac{3}{4}}$$

$$\frac{21}{2} \cdot \frac{7}{4}$$

$$\frac{21}{2} \cdot \frac{7}{4}$$

$$\frac{21}{2} \cdot \frac{7}{4} = \frac{\cancel{3}\cancel{1}\cancel{4}}{\cancel{3}\cancel{7}\cancel{7}} = \frac{\cancel{6}\cancel{1}\cancel{4}}{\cancel{1}\cancel{4}}\cancel{6}$$

A turtle walks $\frac{7}{8}$ of a mile in 50 minutes. What is the unit rate expressed in miles per hour?

$$\frac{hr}{\frac{5}{6}} = \frac{7}{8} = \frac{7}{8} = \frac{5}{6}$$

$$\frac{3}{6} = \frac{7}{8} = \frac{5}{8} = \frac{7}{8} = \frac{5}{8}$$

$$\frac{10}{10} = \frac{14}{8} = \frac{7}{8} = \frac{42}{40} = \frac{24}{20}$$

Turtle walks 21 miles/hr.

You recently bought a $3\frac{1}{4}$ pound tri tip for eighteen and one-half dollars. How much is your tri tip per <u>pound</u>?

Date:

Izzy ran $6\frac{3}{4}$ miles in 45 minutes.

PATE: MILES PER HOUR.

MILES NUMERATOR FRACTION

BOR

$$\frac{\binom{\frac{3}{4}}{\frac{3}{4}}}{\frac{\frac{3}{4}}{\frac{3}{4}}} = \frac{\frac{27}{4}}{\frac{\frac{3}{4}}{\frac{3}{4}}} = \frac{27}{4} \cdot \frac{\frac{3}{4}}{\frac{3}{4}}$$

$$\frac{\cancel{27}}{\cancel{37}} \cdot \cancel{\cancel{37}}_{1} = \frac{9}{1} = 9$$

Julia ran $3\frac{3}{4}$ miles in 25 minutes. Who ran at a faster pace?

RATE: MILES PER HOUR

$$\frac{3^{\frac{3}{4}}}{5} = \frac{15}{4}$$

$$\frac{5}{12}$$

$$\frac{12}{12}$$

$$\frac{15}{4} \div \frac{5}{12} = \frac{15}{4} \cdot \frac{12}{5} = \frac{180}{20} = 9$$
Julia runs at 9MPH

 $1\frac{2}{3}$ pounds of turkey cost five and a quarter dollars.

DOLLARS PER BOUND

$$\frac{\text{Dollars}}{\text{Found}} \quad \frac{5\frac{1}{4}}{1\frac{2}{3}} = \frac{21}{4}$$

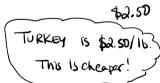
$$\frac{21}{4} \div \frac{5}{3} = \frac{21}{4} \cdot \frac{3}{5} = \frac{63}{20}$$

$$= 3\frac{3}{20} = 3.15$$
TURKEY COSTS
$$= 3.15 / 15.$$

 $7\frac{1}{2}$ pounds of turkey cost eighteen and three-quarter dollars. Which is a better buy?

DOLLARS PER POUND

$$\frac{75}{4} \div \frac{15}{2} = \frac{35}{4} \times \frac{2}{15} = \frac{5}{2} = 2\frac{1}{2}$$



Date:_____

INDEPENDENT PRACTICE:

$10\frac{1}{2}$	_ a
$3\frac{1}{3}$	3/20

$$\frac{6\frac{1}{4}}{2\frac{1}{2}} = 2\frac{1}{2}$$

For Anthony's birthday his mother is making cupcakes for his 12 friends. The recipe calls for $3\frac{1}{3}$ cups of flour. The recipe makes $2\frac{1}{2}$ dozen cupcakes. Anthony's mother only has 1 cup of flour. Is there enough flour for each of Anthony's friends to get a cupcake?

Not enough

Sally is mixing red and blue paint for a painting. The table below shows the different mixtures being used.

Red Paint	Blue Paint	
(quarts)	(quarts)	
$1\frac{1}{2}$	$2\frac{1}{2}$	+
$2\frac{2}{5}$	4	
$3\frac{3}{4}$	$6\frac{1}{4}$ 3	_
1.2	2	3/
1.8	3	3

Is the amount of blue paint proportional to the amount of red paint? What is the unit rate?

Date:_____

ACTIVATING PRIOR KNOWLEDGE:

We can look at charts and determine the constant of proportionality

Time (minutes)	Distance (in
	miles)
12	0.3
16	0.4
28	0.7
36	0.9
48	1.2

Pencils sold	Money spent
3	0.57
11	2.09
5	0.95
7	1.33

CLOSURE:

In order to brew $11\frac{1}{4}$ cups of coffee, I need $4\frac{1}{2}$ tablespoons of coffee grinds. How much coffee can I make with 1 tablespoon of coffee grinds? How much coffee grinds do I need for 1 cup of coffee?

$$\frac{11\frac{1}{4}}{4\frac{1}{2}} = \frac{\frac{45}{4}}{\frac{9}{2}} = \frac{45}{4} \cdot \frac{9}{2} = \frac{45}{4} \cdot \frac{9}{2} = \frac{5}{2} = 2\frac{1}{2} cps$$

TEACHER NOTES:

Need to teach complex fractions before teaching ratios of complex fractions. Maps to lesson 11 of Mod 1, Grade 7. Paired with lesson 12 also.

Give Lesson 11 Exercises as HW. Or Glowing rectangles as classwork/HW?