NAME:_____ Math 7.1

Mr. Rogove Date:_____

LEARNING OBJECTIVE: We will convert rational numbers to decimals using long division. (G7M2L11)

CONCEPT DEVELOPMENT:

RATIONAL NUMBERS

Whole Numbers:
Examples: 7, 12, 116 COUNTING NUMBERS

Integers:
Examples: $-21,\ 2, -32$ ALL WHOLE NUMBERS AND OPPOSITE (NEGATIVE)

Fractions that have integer numerators and denominators:
Examples: $-\frac{3}{4}, \frac{133}{12}, \frac{3}{13}$

Terminate or are repeating, non-terminating decimals:
Examples (terminating): $\frac{1}{2} = 0.5$ STOP
END.

PRIME FACTORS OF DENOMINATORS: ONLY 2's & 5's

Examples: (repeating, non-terminating): $\frac{1}{11} = 0.090909\ldots = 0.\overline{09}$ BAR MEANS "THIS REPEATS FOREVER."

$\frac{1}{12}$ $\frac{3}{36}$ $\frac{1}{3}$ $\frac{68}{69}$

PRIME FACTOR OF SOMETHING OTHER THAN 2 & 5

We can use LONG DIVISION to convert fractions into decimals (both terminating or non-terminating)

Examples:

Terminating (no remainder)	Non-terminating (remainder)
$\frac{3}{8} = .375$	$\frac{5}{6} = .8\overline{3}$

$8\overline{)3.000}$ → -2400 → 60 → -56 → 40 → -40 → 0 ; quotient 0.375

$10\overline{)3.0}$ → -30 → 0 ; quotient $.3$

$6\overline{)5.0}$ → -48 → 20 → -18 → 20 → -18 → 2 ; quotient $0.8\overline{3}$

$\frac{4}{13}$ = REPEATING

$\frac{5}{8}$ = Terminate: $8 = 2 \cdot 2 \cdot 2$

$\frac{3}{20}$ = Terminate: $20 = 2 \cdot 2 \cdot 5$

$\frac{7}{12}$ = REPEAT: $12 = 2 \cdot 2 \cdot 3$

$\frac{3}{36}$ = Repeating: $36 = 2 \cdot 2 \cdot 3 \cdot 3$

$\frac{1}{4}$ = TERMINATING: $4 = 2 \cdot 2$

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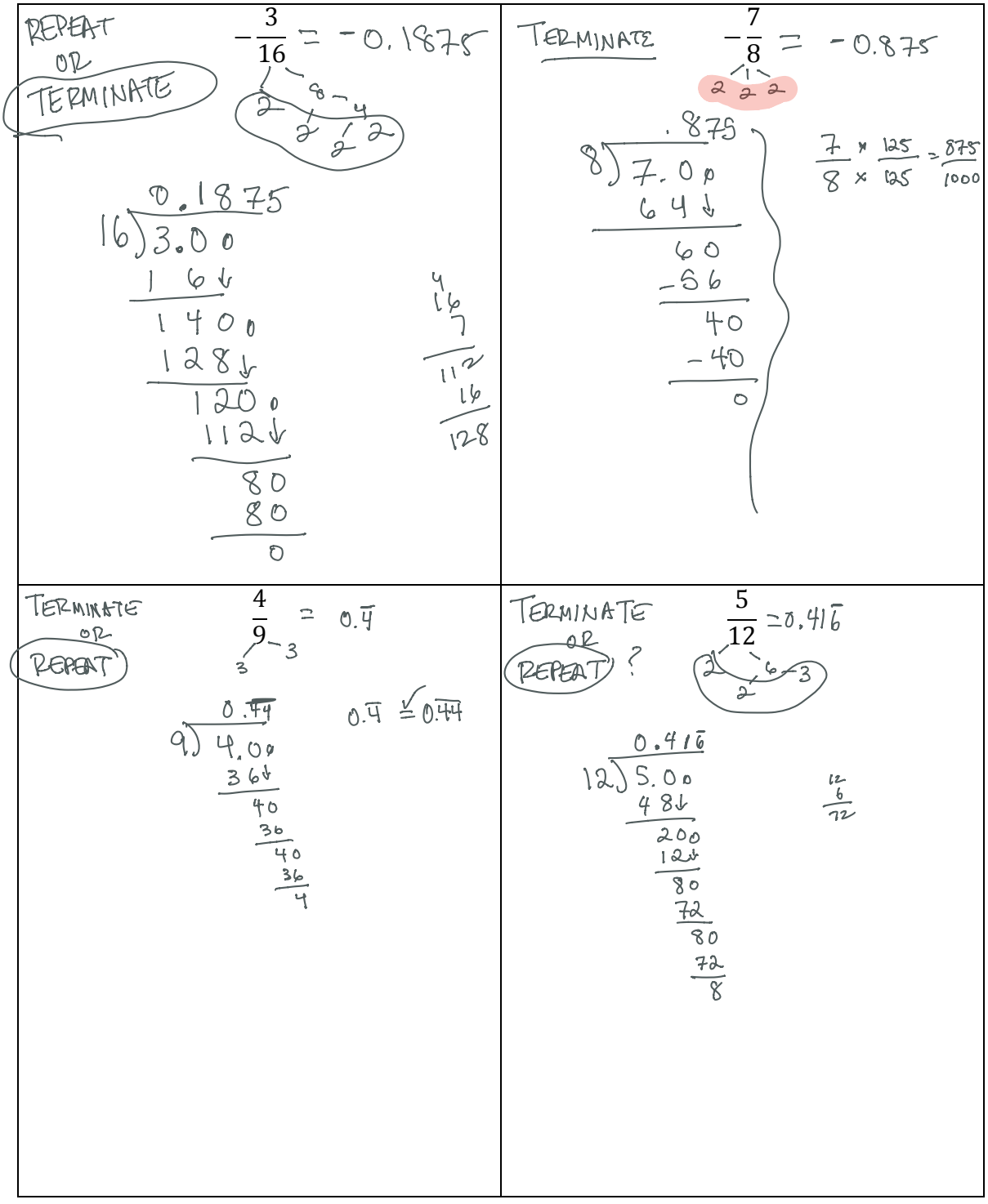
Guided Practice:

Steps for Converting Fractions to Decimals (Long Division)

1. Set up your problem as a long division problem and solve using long division.
2. Check to see if your remainder is 0 (terminating decimals) or if your remainder repeats (non-terminating decimals).



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You and two of your friends are at Amici's for lunch and you just decide to split the check when the bill arrives. When the bill arrives, you see that it's $34.00 How much should you each pay? Use long division to find the answer.

$\frac{34.00}{3}$

$11.33 per person.

11.33
3)34.00
30 00
4.00
3.00
1.00
90
10
9.
10

Oh no! You just realized that you need to calculate in tip. Since the service was really good, you're going to leave a $7.00 tip. How much do you each pay now?

$\frac{7}{3} + \frac{34}{3} = \frac{41}{3}$

$13.66 per person

13.66
3)41
30
11
9
2.0
18
20
18

I bought a package of 12 snickers bars at Safeway last week and paid $7.00 for them. Use long division to find out how much each one cost.

.583
12)7.0
60
100
96
40
36
40

12
5
60

12
8
96

12
3
36

≈ About $0.58 per Snicker Bar

At target, you can buy 11 rulers for $3.00. How much does each ruler cost? Use long division to figure it out.

0.2727
11)3.00
22
80
77
30
-22
80
77
3

About $0.27

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Independent Practice:

Steps for Converting Fractions to Decimals (Long Division)

1. Set up your problem as a long division problem and solve using long division.
2. Check to see if your remainder is 0 (terminating decimals) or if your remainder repeats (non-terminating decimals).

$-\frac{17}{16}$	$\frac{10}{11}$
A department store is having a sale on socks…buy ten pairs get the 11^{th} pair free. You pay $19 for all of your socks. How much do they cost per pair?	Actually the clerk counted wrong at the check out and actually gave you 12 pairs of socks (BONUS!) How much is each pair now?

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Activating Prior Knowledge:

We know the rules for dividing integers:

$-65 \div -13$	$72 \div (-4)$

Closure:

Which of the following fractions will have repeating decimals, and which will have terminating decimals? How do you know?

A. $\frac{3}{4} = 0.75$ Term.	
B. $-\frac{11}{16}$ (2 2 2 2) Terminate!	
C. $\frac{6}{34}$ (2, 17) Repeating	
D. $\frac{512}{9} \rightarrow$ Repeating; $\frac{504}{9} = \frac{168}{3} = 56 \rightarrow$ Terminating	

$\frac{1}{5} = \frac{3}{15} = \frac{1}{5}$ (5)

Teacher Notes:

Homework should be ENY from lesson 14 and enrichment.