

Name Kley
Mrs. Roubos

Date _____
8R Period _____

Converting Rational Numbers

I. Every number has a decimal expansion. The rational numbers are those with decimal expansions that **terminate** or eventually **repeat** in a single digit, a block of digits, or zeros. All those that don't terminate or repeat are irrational.

ex $76 = 76.0000\dots$

II. A rational number is any number that can be written as a fraction $\frac{n}{d}$, where n (numerator) and d (denominator) are integers and $d \neq 0$. (can't divide by 0)

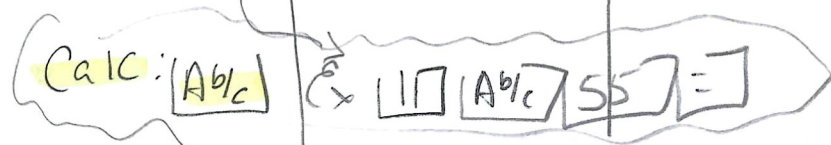
→ NOT Real

III. Simplifying Fraction

A) Steps: Divide both the numerator and the denominator by the Greatest Common factor (GCF) until they have no common factors other than 1. (prime #'s)

B) Examples:

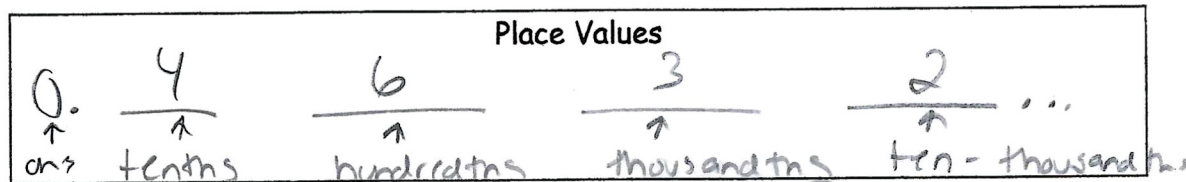
1) $\frac{11}{55} \div 11 = \frac{1}{5}$ 2) $\frac{-24}{32} \div 8 = \frac{-3}{4}$ 3) $\frac{3}{7} = \frac{3}{7}$ 4) $\frac{18}{27} \div 9 = \frac{2}{3}$



IV. Writing a terminating decimal as a fraction-

A) Steps: 1) Identify the place value of the digit farthest to the right

2) Write all of the digits after the decimal point as the numerator with the place value as the denominator



Calc:
2nd
PRB
gets you
P → D

B) Examples: Convert the following decimals to fractions. (in simplest form)

1) $0.2 = \frac{2}{10} \div 2 = \frac{1}{5}$ 2) $0.533 = \frac{533}{1000}$ 3) $8.34 = \frac{834}{100} \div 2 = \frac{417}{50}$ 4) $14.2625 = \frac{142625}{10000} \div 125 = \frac{1141}{80}$

V. Writing a repeating decimal as a fraction

A) Steps: 1) Identify the digits that repeat. Those numbers become your numerator.

Calc:

2nd PRB) together
F → D

2) The amount of digits in the numerator is the amount of 9's you place in the denominator.

B) Examples: Convert the following decimals to fractions. (in simplest form)

you must fill the entire display with repeating numbers when putting into the calc

1) $0.\overline{343434}$
 $\left(\frac{34}{99}\right)$

2) $0.\overline{5555}$
 $\left(\frac{5}{9}\right)$

3) $0.\overline{547547}$
 $\left(\frac{547}{999}\right)$

4) $4.\overline{626262}$
 $\left(4\frac{62}{99}\right)$

VI Writing a fraction as a decimal

A) Steps: Divide the numerator by the denominator (use long division)

$\frac{8}{13} = 13\sqrt{8}$

numerator
denominator



denominator $\sqrt{\text{numerator}}$

B) Examples: Convert the following fractions to decimals.

Calc: just divide #'s (1st) to get answer ex $\left(\frac{11}{9}\right) = 1.22$ *nearest hundredth then show work

CALC $\left(\frac{\square}{\square}\right)$

1) $\frac{11}{9} = 1.22$

$$\begin{array}{r} 9 \overline{) 11.00} \\ \underline{9} \\ 20 \\ \underline{18} \\ 20 \\ \underline{18} \\ 2 \end{array}$$

 $\left(1.22\right)$

2) $\frac{7}{20} = 0.35$

$$\begin{array}{r} 20 \overline{) 7.00} \\ \underline{60} \\ 100 \\ \underline{70} \\ 300 \\ \underline{200} \\ 100 \\ \underline{100} \\ 0 \end{array}$$

 $\left(0.35\right)$

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

$$\begin{array}{r} 3 \overline{) 15} \\ \underline{15} \\ 0 \end{array}$$

 $\left(5\right)$

4) $\frac{9}{40} = 0.225$

$$\begin{array}{r} 40 \overline{) 9.000} \\ \underline{80} \\ 100 \\ \underline{80} \\ 200 \\ \underline{200} \\ 0 \end{array}$$

 $\left(0.23\right)$