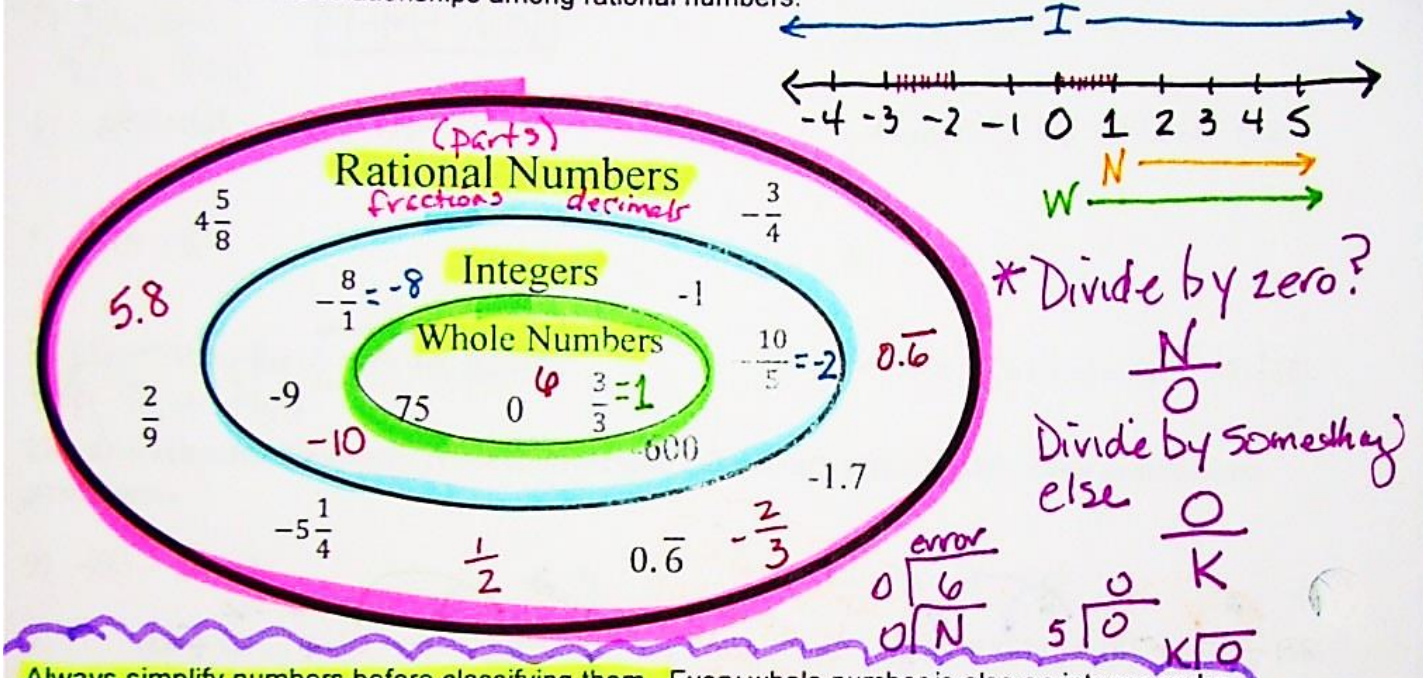
ALG 1: RATIONAL NUMBERS

Page - 18 -

Objectives: I can identify types of rational numbers and express equivalent numbers for comparison.

Rational Numbers

Numbers have different classifications. Some numbers can be classified in multiple ways. A **rational** number is any number that you can write as a ratio, $\frac{a}{b}$ of two integers, where b is not zero. The diagram below shows relationships among rational numbers.



* Divide by zero? $\frac{N}{0}$

Divide by something else $\frac{0}{K}$

$0\overline{)6}$ error $0\overline{)N}$ $5\overline{)0}$ $K\overline{)0}$

Always simplify numbers before classifying them. Every whole number is also an integer and a rational number. Every integer is also a rational number.

Practice

Identify the classification(s) for the following numbers by circling the classification(s) for each.

1)	5.8	Whole Number	Integer	(Rational Number)
2)	6	(Whole Number)	(Integer)	(Rational Number)
3)	-10	Whole Number	(Integer)	(Rational Number)
4)	$0.\overline{6}$ $\frac{6}{9}$ $\frac{2}{3}$	Whole Number	Integer	(Rational Number)
5)	$\frac{1}{2}$	Whole Number	Integer	(Rational Number)
6)	$-\frac{2}{3}$	Whole Number	Integer	(Rational Number)

Page - 19 -

Express each of the fractions as decimals.

1) $\frac{1}{9}$ = $0.\overline{1}$ 2) $\frac{2}{9}$ = $0.\overline{2}$ 3) $\frac{3}{9}$ = $0.\overline{3}$ $\frac{3}{9} = \frac{1}{3}$

4) $\frac{4}{9}$ = $0.\overline{4}$ 5) $\frac{5}{9}$ = $0.\overline{5}$ 6) $\frac{6}{9}$ = $0.\overline{6}$ $\frac{6}{9} = \frac{2}{3}$

7) $\frac{7}{9}$ = $0.\overline{7}$ 8) $\frac{8}{9}$ = $0.\overline{8}$ 9) $\frac{9}{9}$ = 1

10) What pattern is shown when the denominator is 9? the numerator is the repeating decimal

11) What fraction do you think would be equivalent to $0.\overline{14}$? $\frac{14}{99}$

12) What fraction do you think would be equivalent to $0.\overline{128}$? $\frac{128}{999}$ 1, 2, 4, 32, 16, 8

13) What fraction do you think would be equivalent to $0.\overline{32}$? $\frac{32}{99}$

Check your answers to #11 - 13 by changing your fraction to a decimal.

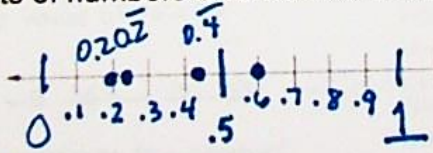
Write the fraction equivalent to each of the following decimal numbers.

14) $-0.\overline{2}$ = $-\frac{2}{9}$ 15) $5.\overline{3}$ = $5\frac{3}{9} = 5\frac{1}{3}$ 16) $0.\overline{4444444}$ = $\frac{4}{9}$

17) $-0.\overline{16}$ = $-\frac{16}{99}$ 18) $4.\overline{124}$ = $4\frac{124}{999}$ 19) $0.\overline{27272727}$ = $\frac{27 \div 9}{99 \div 9}$ $\frac{3}{11}$

Graph the following sets of numbers on a number line. Then list them in order from least to greates

20) {0.6, 0.2, $\frac{2}{9}$, $0.\overline{4}$}

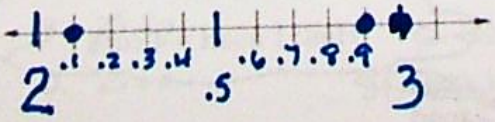


0.2 $\frac{2}{9}$ 0.4 0.6

0.2 0.20 $0.\overline{4}$ & 0.44

$0.\overline{2}$ 0.22

21) {2.9, $\frac{21}{10}$, $2.\overline{9}$, 3}



$\frac{21}{10}$, 2.9, $2.\overline{9}$, 3

$\frac{21}{10} = 2.1$

$2.\overline{9} = 2.99$