Mathematical Reasoning…

Make a word wall box at the left hand corner of your paper with the words you see in the reading that are also on your word wall.

You will need to write your answers down on your own paper for this assignment. Name:

Date:

Time started\_\_\_\_\_ finished\_\_\_\_\_

Directions: READ the page independently. When you have finished reading, talk with your group about what you read. Your talk should produce a learning statement for your group.

Fractions V.s. Rational Numbers

 Many students ask: “What’s the difference between a fraction and a rational number?” The difference is not “big”, but it is important to consider. The difference between the two is somewhat like the difference between a set of words on one hand and a sentence on the other. For example, $\frac{1 }{π }$, is a fraction that is not a rational number. On the other hand $\frac{2 }{3 }$ is both a fraction and a rational number. To get a little deeper, a fraction is a string of symbols that includes a fraction bar, a numerator, and a denominator. The fraction $\frac{3 }{ 4 }$ means, that a whole part is broken into 4 parts and 3 of those parts are being used. As a rational number, $\frac{3 }{ 4 }$ means a pair of whole numbers whose quotient is 0.75. A rational number is defined by its Value. Unlike a fraction, which represents how much of a thing is being used? For completeness, we say that a number is rational if it CAN be represented as a quotient of two integers. So 0.75 is rational because we can find a pair of integers, 3 and 4, whose quotient is 0.75. However, if you had to find a pair of integers whose quotient is the value of $\frac{1 }{ π }$ , your quotient would produce an irrational number, and YET, it is still a fraction. Consider this question: “are these numbers getting bigger or smaller;$ \frac{1 }{2 }$,$\frac{1 }{3 }$,$ \frac{1 }{4 }$ ,$\frac{1 }{5 }$,$ \frac{1 }{6 }$ ? Before you answer, consider the difference between a number (which has value) and a numeral, which is a symbol. So the numbers above are getting smaller while the numerals are getting bigger. This contrast between symbol and substance also explains the difference between a rational number and a fraction. A fraction is a part of a whole, while a rational number is made of two integers; one in the numerator and one in the denominator.

Making Reasonable Connections….

1. Draw a picture that represents this fraction:$\frac{3}{4}$.
2. Use a number line to represent this rational number: $\left|\frac{3}{4}\right|$.

Talk with your group about the similarities and differences between the fraction in (a) and the rational number in (b). Write down what the group finds similar and different.

Similar\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Different\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Identifying rational numbers on the number line…**

Using the notebook paper and ruler provided, measure the length of the red line in INTEGERS. \_\_\_\_\_\_\_\_\_ Use the ruler to draw a line on the paper and find a midpoint; mark the midpoint “0”. Mark off 4 equal ticks on both sides of your zero, and label them as a number line. The ticks farthest from “0” (on both sides) should be labeled as 1 (don’t forget to indicate direction). Use a colored pencil to represent the following rational numbers:

$$\frac{-3}{8}, \frac{-6}{16}$$

(Write the length in the space)

Q#1. Talk with your group to decide how to answer the following question: Are these two rational numbers equivalent? Why or why not.

Q#2. Talk with your group to determine two smaller rational equivalent numbers. Write the numbers and describe how you would represent them on the number line.

*Extra Credit: What do you notice about the denominators of the smaller equivalent rational numbers that you wrote down? Explain what you noticed and why it makes sense… (15pts)*