

**SEPTEMBER 14, 2015 [QUIZ  
POSTPONED UNTIL TUESDAY! :)]**

**UNIT 1: RATIONAL NUMBERS**

**SECTION 3.1:  
WHAT IS A RATIONAL  
NUMBER?**

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## **WHAT'S THE POINT OF TODAY'S LESSON?**

**We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Numbers 3" OR "N3" which states:**

**"Demonstrate an understanding of rational numbers by: comparing and ordering rational numbers; solving problems that involve arithmetic operations on rational numbers."**



## What does **THAT** mean???

**SCO N3 means that we will compare and order (largest vs smallest), add, subtract, multiply and divide fractions and any numbers that can be written as fractions. For example, sometimes we will work with  $\frac{1}{2}$  or 0.5. We have to know how to work with both.**





## **THE NUMBER SYSTEM**

### **N - NATURAL NUMBERS**

**All positive non-zero numbers; in other words, all positive numbers. This does not include zero. These are the numbers we use to count.**

**Ex: 1, 2, 3, 4, 5, ...**

### **W - WHOLE NUMBERS**

**All positive numbers as well as zero. The whole number set expands upon the natural number set to include zero.**

**Ex: 0, 1, 2, 3, 4, 5, ...**

### **I - INTEGERS**

**All positive and negative numbers as well as zero. Integers expand upon the whole number set to include negative numbers.**

**Ex: ... , -3, -2, -1, 0, 1, 2, 3, ...**

**Q - RATIONAL NUMBERS**

A number that can be expressed as the quotient of two integers; in other words, a rational number is any number that can be expressed as a fraction. (The denominator cannot be 0.)

Ex:  $0.2$ ,  $-0.2$ ,  $0.\overline{3}$ ,  $4$ ,  $-4$ ,  $0$ ,  $\frac{1}{2}$ ,  $-\frac{1}{2}$ ,  $\sqrt{4}$ ,  $\sqrt{9} \dots = 3 = \frac{3}{1}$   
 $\frac{2}{10}$   $-\frac{2}{10}$   $\frac{3}{9}$   $\frac{4}{1}$   $-\frac{4}{1}$   $\frac{0}{3}$   $= 2 = \frac{2}{1}$

 **$\overline{Q}$  - IRRATIONAL NUMBERS**

A number that cannot be expressed as a quotient of integers; in other words, an irrational number is any number that cannot be expressed as a fraction. This includes all non-terminating and non-repeating decimals.

Ex:  $\pi$  (3.141592...), 1.23456738...,  $\sqrt{15}$ ,  $-\pi$ , ...

**R - REAL NUMBERS**

All rational and irrational numbers.

"The quotient of two integers":

$$\frac{a}{b}, b \neq 0$$

$$\frac{0}{3} \checkmark$$

= 0

$$\frac{\cancel{3}}{\cancel{0}}$$

= ~~1~~ -

$$\frac{-2}{3} \checkmark$$

$$\frac{5}{-3} \checkmark$$

$$\frac{-1}{-4} \checkmark$$

=  $\frac{1}{4}$

$$\frac{0.2}{7}$$

=  $\frac{\frac{2}{10}}{7}$

$$\frac{0.2}{0.7}$$

Which number groups do the following numbers belong to? (NOTE: Every number belongs to AT LEAST 2 number groups.)

1. 2    R    Q I W N     $\frac{2}{1}$

2. -3    R    Q I     $-\frac{3}{1}$

3.  $\frac{1}{4}$     R    Q

4.  $\pi$     R     $\overline{Q}$

5.  $\sqrt{15}$     R     $\overline{Q}$

6. -0.9    R    Q

7.  $\sqrt{25} = 5$     R    Q I W N

8. 0    R    Q I W

$$\frac{-9}{10} \quad \frac{5}{1} \quad \frac{0}{5}$$



TRUE or FALSE:

1. ALL integers are rational numbers. T
2. ALL natural numbers are whole numbers. T
3. ALL rational numbers are natural numbers. F
4. ALL integers are irrational numbers. F

**Have you ever heard the  
"Mathematical Pi" song?**



**CONCEPT REINFORCEMENT:**  
**(my way of saying "homework")**

**STUDY FOR TOMORROW'S QUIZ ON  
"THE EGG"! :)**