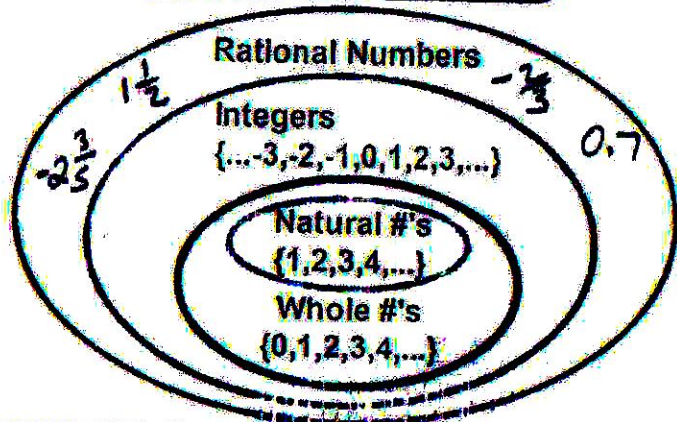


Accelerated Math Notes
(Lesson 3.2)
Rational Numbers



A rational number is a number that can be written as a ratio in the form $\frac{a}{b}$ where a and b are integers and $b \neq 0$

We can verify these are rational numbers by using the definition.

$$\frac{-3}{4} = -\frac{3}{4}$$

$$a = -3 \quad b = 4$$

$$\frac{4^2}{3} = \frac{14}{3}$$

$$a = 14 \quad b = 3$$

$$0.5 = \frac{5}{10}$$

$$a = 5 \quad b = 10$$

If a number is a rational number, it can be written either as a repeating decimal or a terminating decimal.

$\frac{3}{2}$ is rational because 1.5 is terminating decimal.

$\frac{1}{3}$ is rational because $0.\overline{3}$ is a repeating decimal.

$\sqrt{2}$ is NOT rational (It is irrational) because the decimal 1.4142136 continues but never repeats in a pattern that we could identify with bar notation.

Other irrational #'s

$$\pi \quad \sqrt{11}$$

Identify all sets to which each number belongs.

Rational (Q) Irrational # (Z) Integer (I) Whole # (W) Natural # (N)

$\sqrt{16} = 4$
Q, I, W, N

2π
I

-1.4
Q

$\frac{5}{12}$
Q

$\frac{3^4}{5}$
Q

$\sqrt{3}$
I

48
Q, I, W, N

-12
Q, I

When we use rational numbers we often need to find an equivalent form of the number to understand the situation.

Payton has a "two ninety six" batting average.

$$.296 = \frac{296}{1000} \quad \begin{array}{l} \text{hits} \\ \text{at bats} \end{array}$$

The scale at the deli counter says 0.7 and Josh asked for three fourths of a pound of ham.

0.75 scale is a little less than $\frac{3}{4}$

Ways to compare rational numbers:

- *Use a 0 $\frac{1}{2}$ 1 benchmark chart
- *Write all numbers as decimals
- *Write all numbers as fractions with like denominators
- *Use a combination of the above strategies

Write these numbers in order from smallest to largest:

0.006 $\frac{73}{75}$ 0.57 $\frac{7}{500}$ $\frac{5}{16}$

Close to 0	Close to $\frac{1}{2}$	Close to 1
① .006 = $\frac{6}{1000}$	④ $\frac{5}{16}$ ③ .57	⑤ $\frac{73}{75}$
② $\frac{7}{500} = \frac{14}{1000}$		

Write these numbers in order from smallest to largest:

$\frac{3}{5}$ 0.62 0.007 $\frac{5}{9}$ $\frac{3}{50}$

Close to 0	Close to $\frac{1}{2}$	Close to 1
② $\frac{3}{50} = .06$	⑤ .62	
① .007	③ $\frac{5}{9} = .\bar{5}$	
	④ $\frac{3}{5} = .6$	