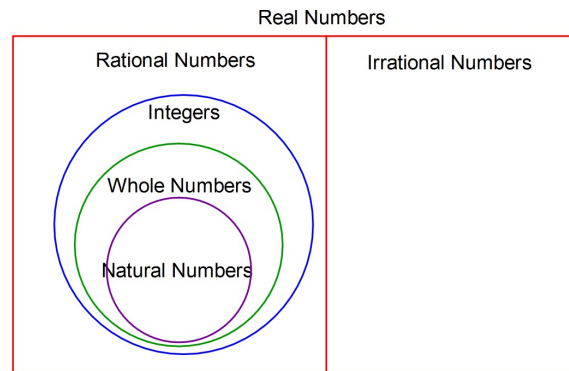


N  
R  
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In  
W



Real Numbers

Rational Numbers

- Any number that can be written as a fraction.
- All terminating decimals.
- All repeating decimals.

Irrational Numbers

- Any number that can't be written as a fraction.
- Non-terminating Non-repeating decimals.

Examples of Irrational Numbers

Integers ... -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, ...

Whole Numbers 0, 1, 2, 3, 4, 5, ...

Natural Numbers 1, 2, 3, 4, 5, ...

1. List ALL of the groups of Real Numbers each of the following belongs to.

a)  $1.\overline{777}$

R

b)  $-\frac{6}{2}$  -3

R  
I

c) 1.34

R

d)  $\sqrt{16}$   
4

R  
W  
I  
N

e)  $3\pi$  Irr

2. Simplify.

$$6 \div 2(7 - 5)^2 \div (8 - 11)$$

$$\begin{aligned} &6 \div 2(2)^2 \div (-3) \\ &6 \div 2(4) \div (-3) \\ &3 \cdot 4 \div (-3) \\ &12 \div (-3) \\ &-4 \end{aligned}$$

3. There are 16 ounces in a pound.

Write an equation for the number of pounds in an unknown number of ounces.

Define your variables!

EQ:  $\frac{x}{16} = y$

$$x = 16 \cdot y$$

Variables:  $x = \text{ounces}$   
 $y = \text{pounds}$

$x = 3$	$2x =$
$x = 5$	$2x =$
$x = 10$	$2x =$

My conjecture is: any number multiplied by 2 produces a larger number than what you started with.

Algebraically my conjecture would be stated:  $2x > x$

Is this conjecture true? If not, give a counterexample

Is this conjecture true? If not, give a counterexample.

$$x^2 > x$$

Is this conjecture true? If not, give a counterexample.

$$\frac{x}{2} < x$$

### Objective 1 – Classifying Real Numbers

Example 1: Name the set(s) of numbers to which each number belongs.

- a.) 23  $\begin{matrix} R \\ W \\ I \\ N \end{matrix}$     b.) 0  $\begin{matrix} R \\ W \\ I \end{matrix}$     c.) 4.581  $R$     d.) -12  $\begin{matrix} R \\ I \end{matrix}$
- e.) -4.67  $R$     f.) 6  $\begin{matrix} R \\ W \\ I \\ N \end{matrix}$

### Example 2: Real-World Problem Solving

Which set of numbers is most reasonable for each situation?

- a.) the number of students who will go on the class trip.

ANS: W, N

- b.) the height of the door frame in your classroom.

ANS: R, W, N

**Absolute Value:** The distance a number is away from zero.

Example 3: Evaluate each expression for  $c = 5$ ,  $d = 1$ , and  $e = 6$ .

- a.)  $-|c + d|$   
 $-|5 + 1|$   
 $-|6| = -6$
- b.)  $2e + |c \div d|$   
 $2 \cdot 6 + |5 \div 1|$   
 $2 \cdot 6 + |5|$   
 $2 \cdot 6 + 5$   
 $12 + 5 = 17$
- c.)  $|e - d| \div c$   
 $|6 - 1| \div 5$   
 $5 \div 5 = 1$
- d.)  $|d + 2| + |-7|$   
 $|1 + 2| + 7$   
 $3 + 7$   
 $10$

### Conjectures and Counterexamples:

- A conjecture is a guess based on many observations. To prove a conjecture is false you use a counterex.
- For example: Suppose a friend says that all integers are whole numbers. You respond that -3 is an integer but not a whole number. You are using a counterex to prove the statement is false.

Example 4: Is each conjecture true or false? If it is false, give a counterexample.

a.) All whole numbers are rational numbers.

T

b.) All whole numbers are integers.

T

c.) No fractions are whole number.

F       $\frac{3}{1}$        $\frac{6}{2}$

### Classwork: Section 1.2-1.3 Worksheet

- Groups of 2-3.
- Your Task: Complete each set of problems
- **EVEN PROBLEMS ONLY.**
- Skip the following:
  - Section 1.2 - #44-51
  - Section 1.3 - #13-24
- Turn in before you leave.

IXL #2 - due Friday at 6pm

A.8 & I.7 (I not an L)