

Notes for R.1 Real Numbers and Their Properties  
(pp. 2 – 11)

Name \_\_\_\_\_  
Date \_\_\_\_\_  
Instructor \_\_\_\_\_

**Topics:** Classifying numbers, placing numbers on the number line, order of operations, properties

**Definitions to use:**

Sets of numbers (6)

Subset

Real number line

Exponential notation

Order of Operations

Inverse

Closure

Distributive

Identity

Commutative

Associative

I. Common sets of numbers (pp. 2 – 3)

1.

2.

3.

4.

5.

6.

Ex. Place  $\frac{-9}{4}$ ,  $\frac{-3}{7}$ ,  $\frac{8}{5}$ , -6, -2, 2, 0 on a number line.

(Hint: Change all fractions into mixed numbers)

Ex. Given set  $W = \{ 5, -4, \sqrt{15}, \frac{3}{0}, \frac{6}{7}, \frac{-8}{3} \}$ . Classify all of these into one or more of the sets of numbers.

II. Exponential Notation (p. 4)

If  $a$  is a real number and  $n$  is any positive integer, then  $a^n = a \cdot a \cdot a \cdot a \dots a$ , where  $a$  is called the \_\_\_\_\_ and  $n$  is called the \_\_\_\_\_.

Ex. Evaluate  $-2^5$ .

Ex. Evaluate  $(-3)^2$ .

Ex. Evaluate  $-4^2$ .

\*Note the differences that the parentheses and the odd/even value of the exponent make on the sign of the answer.

\*Calculator Hint: The calculator applies the exponent to what's just in front of it... whether it's a number (like 2 or 4) or the parentheses (like -3).

### III. Guidelines for Operation on Real Numbers = Order of Operations (pp. 5 – 7)

If grouping symbols, such as \_\_\_\_\_, \_\_\_\_\_,  
or \_\_\_\_\_ are present:

1.

2.

3.

4.

5.

Ex.  $7^2 - 15 + 3 =$

Ex.  $\frac{16 \div 8 \cdot 6 - 2^2}{10 - 4^2 + 2} =$

\*Calculator Hint: When a fraction has more than one number in the numerator or the denominator, you must use ( ) around each of those parts, so that the calculator can “see” how the fraction looks.

Ex.  $(16 \div 8 * 6 - 2 ^ 2) \div (10 - 4 ^ 2 + 2)$ , since both parts have the more than one value.

### IV. Properties of Real Numbers (pp. 7 – 11)

1. The Commutative Property states \_\_\_\_\_ and \_\_\_\_\_, and deals with the \_\_\_\_\_ in which you perform the operation.
2. The Associative Property deals with \_\_\_\_\_ and \_\_\_\_\_ three numbers.
3. The Identity Properties preserves the identity of the value by using \_\_\_\_\_ for addition and \_\_\_\_\_ for multiplication.
4. The Inverse Properties use \_\_\_\_\_ for addition and \_\_\_\_\_ for multiplication. The Additive Inverse is the \_\_\_\_\_ or opposite of  $a$  and the Multiplicative Inverse is the \_\_\_\_\_ of  $a$ .
5. The Distributive Property distributes a value through a sum or difference. It changes sums to \_\_\_\_\_ and products to \_\_\_\_\_.

Assignment:

Text: pp.11 – 13, #1- 6, 9 – 35 odd, 43 – 46, 47 – 51 odd, 67 - 72

“Review of Algebra”: p. 7, #17, 19, 21