

P.1 REAL NUMBERS*Types of Numbers*

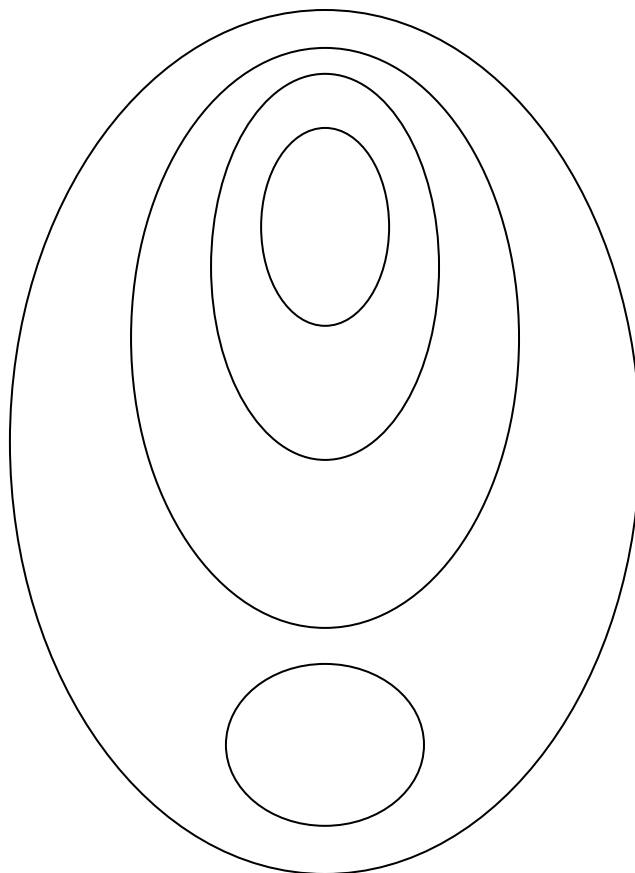
Natural (Counting) Numbers:

Integers:

Rational Numbers:

Irrational Numbers:

Real Numbers:

*Inequalities and Intervals**Example:* Graph the following on a number line:

a) $x \geq -2$

b) $5 < x$

c) $x > -8$

d) $-5 \leq x < 2$

e) $7 < x \leq 12$

Interval notation is another way to describe intervals instead of using an inequality. The ends of an interval are either OPEN or CLOSED. Use a *one-sided parenthesis* to indicate the end of the interval *is open* and a *bracket* to indicate the end of the interval *is closed*.

An _____ interval is used when the endpoint IS NOT included.

A _____ interval is used when the endpoint IS included.

Example: Go back to the last example and write the interval notation for $a - e$.

Example: Graph the following and write the corresponding inequality.

a) $(3, 5]$

b) $[-12, \infty)$

c) $(-\infty, 7)$

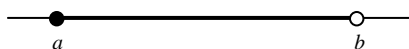
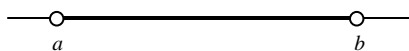
Example: Use words to describe each of the intervals in the last example.

a)

b)

c)

Example: Use interval notation AND inequality notation to describe each interval on the x – axes below.



Example: Use both inequality and interval notation to describe the set of numbers. Define any variables used.

a) My teacher is at least 25 years old.

b) A grade of A in PreCalculus varies between 89.5% and 100%.

Simplifying Expressions with Exponents

Example: Identify the base in each of the following expressions.

a) -4^2

b) $(-4)^2$

c) $(-3)^3$

d) -3^3

e) $2x+1^2$

f) $(2x+1)^2$

Example: Simplify each of the expressions in the last example.

Properties of Exponents

1. $u^m u^n =$

2. $\frac{u^m}{u^n} =$

3. $u^0 =$

4. $u^{-m} =$

5. $(uv)^m =$

6. $(u^m)^n =$

7. $\left(\frac{u}{v}\right)^m =$

Example: Simplify each of the following expressions.

a) $2x^{-1}$

b) $\left(\frac{3}{xy}\right)^{-2}$

c) $\left(\frac{3a^2b}{2a^3b}\right)\left(\frac{4b^3}{a^4b^2}\right)$

d) $\frac{(x^{-2}y^3)^{-2}}{(y^5x^{-2})^{-1}}$

*Properties of Algebra**Commutative Property**Associative Property**Inverse Property**Identity Property**Distributive Property*

Example: Complete the group activities on page 11, #45 and #46.

Using the Distributive Property

Example: Simplify each expression.

a) $(4xy + 2x^3)ax^2$

b) $3a(2a + 5b)$

Many times we need to undo the distributive property. This is the beginning of factoring. When you undo the distributive property, we say you have **factored out the greatest common factor**.

Example: Factor out the GCF from each expression.

a) $3x^2 - 6xy$

b) $15x^3 - 12x^2 + 9x$