Notes 2.6

**Vocabulary: Multiplicative Inverse**---the reciprocal of a nonzero number *a*, written $\frac{1}{a}$

Inverse Property of Multiplication for Real Numbers

The product of a nonzero number and its multiplicative inverse is 1.

Algebra: a($\frac{1}{a}$) = 1, where a ≠ 0 Example: 4($\frac{1}{4})$ = 1

Example: What are the multiplicative inverses of:

$-\frac{4}{9}$ , 0, and 3?

$-\frac{9}{4}$, doesn’t exist, and $\frac{1}{3}$

**Division Rule for Real Numbers:**

To divide a number a by *a* nonzero number *b*, multiply *a* by the multiplicative inverse of *b*.

Algebra: a ÷ b = a($\frac{1}{b}$), where b ≠ 0. Example: 7 ÷ 2 = 7($\frac{1}{2}$) or 7 \* $\frac{1}{ 2}$

**The Sign of a Quotient:**

1. The quotient of two real numbers with the same sign is positive.
2. The quotient of two real numbers with different signs is negative.
3. The quotient of 0 and any nonzero real number is 0.

Example: (-4) ÷ (-2) = $\frac{-4}{-2}$ = 2

(9) ÷ (-3) = $\frac{9}{-3}$ = -3

(0) ÷ (-8) = $\frac{0}{-8}$ = 0

Example: Find the mean temperature of Barrow, Alaska if the temperatures in February were -22, -24, -36, -39 in degrees Fahrenheit.

Mean = Average = $\frac{(-22)+(- 24)+(-36)+(-39) }{4}$ =$\frac{-121}{4}$ = -30$\frac{1}{4}$ ᵒF

Example: Simplify the expression:

$$\frac{21x-14}{-7}$$

$\frac{21x}{-7}$ + $\frac{-14}{-7}$

-3x + 2