

Chapter 1-4: Identity and Equality Properties

I. Identity Properties

A. Additive Identity

The sum of any number and 0 is equal to the number

$$a + 0 = a$$

$$2 + 0 = 2$$

B. Multiplicative Identity

The product of any number and 1 is the number.

$$a \cdot 1 = a$$

$$2 \cdot 1 = 2$$

II. Multiplication Properties

A. Multiplication Property of Zero

The product of any number and zero is equal to zero.

$$a \cdot 0 = 0$$

$$2 \cdot 0 = 0$$

B. Multiplicative Inverse Property

Two numbers whose product is 1 are multiplicative inverses.

$$a/b \cdot b/a = 1$$

$1/2 \cdot 2/1 = 1$ Another term for multiplicative inverse is reciprocal.

III. Substitution

If $a = b$, then b can be substituted into any equation for a .

if $n = 15$, then for $3n$

$$3 \cdot 15$$

Example 1:

$$42 \cdot n = 42$$

Example 2:

$$N + 0 = 15$$

Example 3:

$$n \cdot 9 = 1$$

Example 4:

$$13n = 0$$

Example 5:

$$6(12 - 48 \div 4)$$

Example 6: $\frac{1}{4}(12 - 8) + 3(15 \div 5 - 2)$