# **Properties of Addition and Multiplication**

## **Commutative Property of Addition:**

Words: Changing the order of the addends does not change the sum.

**Numbers:** 5 + 8 = 8 + 5 **Algebra:** *a* + *b* = *b* + *a* 

## **Commutative Property of Multiplication:**

Words: Changing the order of the factors does not change the product.

**Numbers:**  $5 \cdot 8 = 8 \cdot 5$  **Algebra:**  $a \cdot b = b \cdot a$ 

#### Associative Property of Addition:

Words: Changing the grouping of the addends does not change the sum.

Numbers: (7 + 4) + 2 = 7 + (4 + 2) Algebra: (a + b) + c = a + (b + c)

## Associative Property of Multiplication:

Words: Changing the grouping of the factors does not change the product.

**Numbers:**  $(7 \cdot 4) \cdot 2 = 7 \cdot (4 \cdot 2)$  **Algebra:**  $(a \cdot b) \cdot c = a \cdot (b \cdot c)$ 

Addition Property of Zero: (also called the Identity Property of Addition)

Words: The sum of any number and 0 is that number.

Numbers: 7 + 0 = 0 Algebra: a + 0 = a

#### **Multiplication Property of Zero:**

Words: The product of any number and 0 is zero.

Numbers:  $9 \cdot 0 = 0$  Algebra:  $a \cdot 0 = 0$ 

Multiplication Property of One: (also called the Identity Property of Multiplication)

**Words:** The product of any number and 1 is that number.

Numbers:  $4 \cdot 1 = 4$  Algebra:  $a \cdot 1 = a$