

# Commutative, Associative and Distributive Properties, Identities and Inverses

Commutative Property of Addition

$$a + b = b + a$$

Commutative Property of Multiplication

$$a \cdot b = b \cdot a$$

Associative Property of Addition

$$(a + b) + c = a + (b + c)$$

Associative Property of Multiplication

$$(a \cdot b) \cdot c = a \cdot (b \cdot c)$$

Distributive Property

$$a \cdot (b + c) = a \cdot b + a \cdot c$$

Identity for Addition

$$a + 0 = a$$

Identity for Multiplication

$$a \cdot 1 = a$$

Additive Inverse

$$a + (-a) = 0$$

Multiplicative Inverse

$$a \cdot \frac{1}{a} = 1$$

Directions: Name the property.

1.  $17 \cdot 5 = 5 \cdot 17$

2.  $6(5+8) = 6(5) + 6(8)$

3.  $4 + 0 = 4$

4.  $(3 \times 7) + 5 = (7 \times 3) + 5$

5.  $(-2 \times 3) + 6 = 6 + (-2 \times 3)$

6.  $1 \cdot x = x$

$$7. (b+2)a = ba + 2a$$

$$8. xy + 0 = xy$$

$$9. 19 \cdot x^2 = x^2 \cdot 19$$

$$10. -6x \cdot 1 = -6x$$

$$11. 8 \cdot \frac{1}{8} = 1$$

$$12. 5 + (-5) = 0$$

$$13. 4(5 \cdot y) = (4 \cdot 5)y$$

$$14. (6-3)5 = 6(5) - 3(5)$$

$$15. 3(8+4) = (8+4)3$$