

1.2 Distributive Property & Evaluating Expressions

* **Distributive Property:** is the process of distributing what is on the outside of the parentheses to EVERYTHING in the inside of the parentheses using Multiplication.

* Multiply EVERYTHING inside the () by what is outside!

Algebra Examples

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

↑
"a" times "b"

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

$$a(b-c) = ab-ac$$

$$(b-c)a = ab-ac$$

$$-1(x+5)$$

$$-1(x) - 1(5)$$

$$\underline{-x - 5}$$

Numerical & Algebraic Examples

$$4(20+6) = 4(20) + 4(6)$$

$$80 + 24$$

$$\underline{104}$$

$$(x+4)10 = 10(x) + 10(4)$$

$$\underline{10x + 40}$$

$$-7(b-13) = -7(b) - 7(-13)$$

$$\underline{-7b + 91}$$

$$(x-2)9 = 9(x) + 9(-2)$$

$$\underline{9x - 18}$$

Example 1: Use the Distributive Property to simplify each expression.

a. $6(2+7)$ $6(2) + 6(7)$ $12 + 42$ 54	b. $(x-7)8$ $8(x) + 8(-7)$ $8x - 56$	c. $-9(g-h)$ $-9(g) - 9(-h)$ $-9g + 9h$	d. $(5+3)(-4)$ $-4(5) - 4(3)$ $-20 - 12$ -32	e. $-y(x+z)$ $-y(x) - y(z)$ $-yx - yz$
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There are 2 types of expressions in math:

- * **Numerical Expressions:** consists of a combination of numbers, operation symbols (+, -, ·, ÷), and grouping symbols, BUT NO EQUAL SIGN.
- * **Algebraic Expressions:** consists of a combination of numbers, VARIABLES, operation symbols, and grouping symbols, BUT NO EQUAL SIGN.

A Variable is a letter or a symbol that represents an unknown value in an algebraic expression or an equation. It can be any letter and when it is use more than once in an expression or equation it has the same value.