NAME _____ DATE _____ PERIOD _____

1-5 The Distributive Property *(Pages 26–31)*

A **term** is a number, a variable, or a product or quotient of numbers and variables. Some examples of terms are x^2 and $3y$. The expression $3a + 5$ has two terms. **Like terms** are terms that contain the same variable, with corresponding variables having the same power. For example, $2x^2$ and $7x^2$ are like terms, but $4b^2$ and $2b$ are not. The expressions $8g + 4g$ and $12g$ are **equivalent expressions** because they denote the same number. An expression is in **simplest form** when it is replaced by an equivalent expression having no like terms and no parentheses. The **coefficient** of a term is the numerical factor. For example, in $8g$, 8 is the coefficient. You can use these facts plus the **Distributive Property** to simplify expressions.

Distributive Property	For any numbers a, b, and c, $a(b + c) = ab + ac$ and $(b + c)a = ba + ca$; $a(b - c) = ab - ac$ and $(b - c)a = ba - ca$.

Examples

a. Rewrite $7(2x + 3)$ without parentheses.

Use the Distributive Property.

$7(2x + 3) = 14x + 21$

The expression $14x + 21$ is in simplest form because it has no parentheses and no like terms.

b. Simplify the expression $3x^2 + 2x + 6x + x^2$.

Group and combine like terms using the Distributive Property.

$3x^2 + 2x + 6x + x^2$

$= 3x^2 + x^2 + 2x + 6x$ *Rearrange the terms.*

$= (3 + 1)x^2 + (2 + 6)x$ *Remember, $x^2 = 1x^2$.*

$= 4x^2 + 8x$ *Simplify.*

Practice

Use the distributive property to rewrite each expression without parentheses.

1. $3(a + 4)$ **2.** $2(x + 3)$ **3.** $(h - 5)6$

4. $-3(b + f)$ **5.** $x(2 + y)$ **6.** $a(b + c)$

Simplify each expression, if possible. If not possible, write *in simplest form*.

7. $4x + 2x$ **8.** $6a + 3b$ **9.** $12xy + 4xy$

10. $11m + 7m^2 + 5m^2$ **11.** $10b + 6b^2 + 4b^3$ **12.** $27x^2 - 18x^2$

13. $15b^3 + 10b + 20b^3$ **14.** $2x^2 + 2x^2$ **15.** $3y^4 - 9y^5 + 15y^4 + 3y^6$

16. Mental Math How would you use the Distributive Property to find the product of 6 and 104 mentally? Show your steps.

17. **Standardized Test Practice** Use the Distributive Property to rewrite the expression $2(m + 4h + 2a)$ without using parentheses.

A $2m + 4h + 2a$ **B** $2m + 8h + 4a$ **C** $m + 4h^2 + 4a$ **D** $4m + 4h + 4a$

Answers: **1.** $3a + 12$ **2.** $2x + 6$ **3.** $6h - 30$ **4.** $-3b - 3f$ **5.** $2x + xy$ **6.** $ab + ac$ **7.** $6x$ **8.** in simplest form **9.** $16xy$ **10.** $11m + 12m^2$ **11.** in simplest form **12.** $9x^2$ **13.** $35b^3 + 10b$ **14.** $4x^2$ **15.** $18y^4 - 9y^5 + 3y^6$ **16.** $6(100 + 4) = 600 + 24 = 624$ **17.** B