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4-2 Study Guide and Intervention

Simplifying Algebraic Expressions

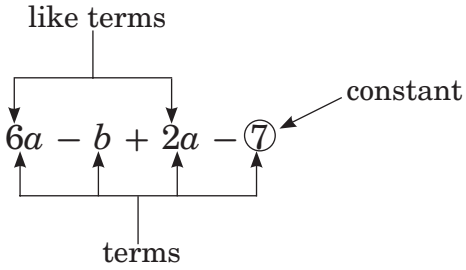
Parts of Algebraic Expressions

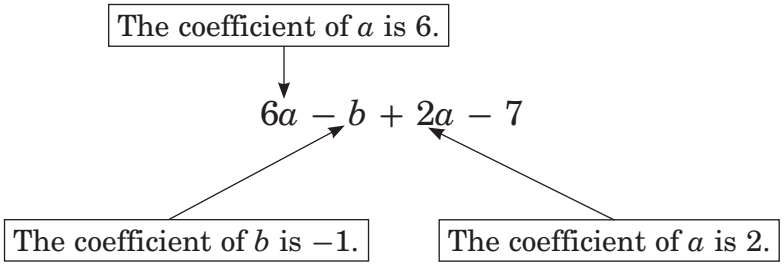
term: a number, variable, or a product of numbers and variables; terms in an expression are seperated by addition or subtraction signs

coefficient: the numerical part of a term that also contains a variable

constant: term without a variable

like terms: terms that contain the same variables





Example **Identify the terms, like terms, coefficients, and constants in the expression $4m - 5m + n - 7$.**

$4m - 5m + n - 7 = 4m + (-5m) + n + (-7)$ Definition of Subtraction

$= 4m + (-5m) + 1n + (-7)$ Identity Property

The terms are $4m$, $-5m$, and $1n$. The like terms are $4m$ and $-5m$. The coefficients are 4, -5, and 1. The constant is -7.

Lesson 4-2

Exercises

Identify the terms, like terms, coefficients, and constants in each expression.

1. $2 + 6a + 4a$

2. $m + 4m + 2m + 5$

3. $3c + 4d - c + 2$

4. $5h - 3g + 2g - h$

5. $3w + 4u - 6$

6. $4r - 5s + 5s - 2r$

7. $-4r - 7 + 6r - s$

8. $-12 - 8x + 8x - 2z$

9. $\frac{4}{7}a + \frac{3}{7}b + \frac{1}{5}a$

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4-2 Study Guide and Intervention *(continued)*

Simplifying Algebraic Expressions

Simplify Algebraic Expressions When an algebraic expression has no like terms and no parentheses, we say that it is in **simplest form.**

To make it easier to simplify an algebraic expression, rewrite subtraction as addition. Then use the Commutative Property to group like terms together.

Example 1 **Simplify $6x - 5 - x + 7$.**

$6x - 5 - x + 7 = 6x + (-5) + (-x) + 7$	Definition of Subtraction
$= 6x + (-5) + (-1x) + 7$	Identity Property
$= 6x + (-1x) + (-5) + 7$	Commutative Property
$= 5x + 2$	Simplify.

Example 2 **Simplify $5t - 7(s - 4t)$.**

$5t - 7(s - 4t) = 5t + (-7)[s + (-4t)]$	Definition of Subtraction
$= 5t + (-7s) + (-7 \cdot -4)t$	Distributive Property
$= 5t + (-7s) + 28t$	Simplify.
$= 5t + 28t + (-7s)$	Commutative Property
$= 33t + (-7s)$ or $33t - 7s$	Simplify.

Exercises

Simplify each expression.

1. $9m + 3m$ **2.** $5x - x$ **3.** $8y + 2y + 3y$ **4.** $4 + m - 3m$

5. $13a + 7a + 2a$ **6.** $3y + 1 + 5 + 4y$ **7.** $8d - 4 - d + 5$ **8.** $10 - 4s + 2s - 3$

9. $-15e + 7 - 5e - 9$ **10.** $-8(r + 6) - r + 1$ **11.** $-12c + 3 - 9(11 - c)$

12. $4.3x - 8.1 + 0.2x - 17.5$ **13.** $-7.6 - 9y - 6.5 + 4.7y$ **14.** $-0.3g - 4.2 + 6.1g - 0.9$

15. $\frac{1}{5}(p - 10) + 13p - 7$ **16.** $(a + 12)\frac{5}{6} - 5a + 11$ **17.** $-6h - 5 + \frac{2}{3}(24h - 12)$

18. $7h - 8(2g - 3h)$ **19.** $-6n + 3(4p + 2n)$ **20.** $(-2f + e)5 - 12f$