

WARM-UP

$$\begin{array}{ccc} \text{Factored Form} & \text{DISTRIBUTED Form} & \text{Simplified Form} \\ 3x(5y - 2w) & = 3x(5y) - 3x(2w) & = 15xy - 6xw \end{array}$$

$$2(5x + 8y) = 2(5x) + 2(8y) = 10x + 16y$$

$$5(4a + b) = 5(4a) + 5(b) = 20a + 5b$$

NAME _____

DATE _____

PERIOD _____

Lesson 5 Reteach

Simplify Algebraic Expressions

COEFFICIENTS 3, -2, 4, 6

$$3x - 2y + 4x + 6y = 7x + 4y$$

$$x + x + x + (-y) + (-y) + x + x + x + x + y + y + y + y + y$$

When a plus or minus sign separates an algebraic expression into parts, each part is called a **term**. The numerical factor of a term that contains a variable is called the coefficient of the variable. A term without a variable is called a **constant**. **Like terms** contain the same variables to the same powers, such as $3x^2$ and $2x^2$.

Example

1 Identify the terms, like terms, coefficients, and constants in the expression $7x - 5 + x - 3x$.

Term:

$$\begin{aligned} 7x - 5 + x - 3x &= 7x + (-5) + x + (-3x) \\ &= 7x + (-5) + 1x + (-3x) \end{aligned}$$

Definition of subtraction
Identity Property; $x = 1x$

The terms are $7x$, -5 , x , and $-3x$. The like terms are $7x$, x , and $-3x$. The coefficients are 7, 1, and -3 . The constant is -5 .

An algebraic expression is in **simplest form** if it has no like terms and no parentheses.

Examples

Write each expression in simplest form.

2 $5x + 3x$

$$5x + 3x = (5 + 3)x \text{ or } 8x \quad \text{Distributive Property; simplify.}$$

3 $-2m + 5 + 6m - 3$

$-2m$ and $6m$ are like terms. 5 and -3 are also like terms.

$$\begin{aligned} -2m + 5 + 6m - 3 &= -2m + 5 + 6m + (-3) && \text{Definition of subtraction} \\ &= -2m + 6m + 5 + (-3) && \text{Commutative Property} \\ &= (-2 + 6)m + 5 + (-3) && \text{Distributive Property} \\ &= 4m + 2 && \text{Simplify.} \end{aligned}$$

OPPOSITE OPERATION

$$5 - \boxed{3} = 2 \quad 5 + \boxed{-3} = 2$$

Exercises

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

1. $-4y - 3 + 2y$

Terms: $-4y, -3, 2y$

Like terms: $-4y, 2y$

Coefficients: $-4, 2$

Constants: -3

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

Terms:

Like terms:

Coefficients:

Constants:

3. $5 + 3a - 4 - a$

Terms:

Like terms:

Coefficients:

Constants:

Write each expression in simplest form.

4. $3d + 6d$

5. $2 + 5s - 4$

6. $2z + 3 - 9z - 8$

Lesson 5 Skills Practice

Simplify Algebraic Expressions

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

1. $4e + 7e + 5$

2. $5a + 2 - 7$

5. $7 - 5y + 2 + 1$

6. $2m + 3m - m$

Write each expression in simplest form.

9. $3t + 6t$

10. $4r + r$

11. $7f - 2f$

15. $8k + 3 + 4k$

16. $7m - 5m - 6$

17. $9 - 6x + 5$

21. $8b + 6 - 8b + 1$

22. $t - 5 - 2t + 5$

23. $4w + 5w + w$

Write an expression in simplest form that represents the total amount in each situation.

27. **RUNNING** You run m miles on Friday, the same amount on Saturday, and 4 miles on Sunday.

28. **READING** Hendrick read b books in January, twice that amount in February, and 1 book in March.