

# 2.3

## Simplifying Variable Expressions

**Goal:** Simplify variable expressions.

### Vocabulary

Terms of an expression:

Coefficient of a term:

Constant term:

Like terms:

### Example 1 Identifying Parts of an Expression

Identify the terms, like terms, coefficients, and constant terms of the expression  $5 - 2x - 3 + x$ .

#### Solution

1. Write the expression as a sum: .

2. Identify the parts of the expression. Note that because  $x = \square x$ , the coefficient of  $x$  is  $\square$ .

Terms:

Like terms:

Coefficients:

Constant terms:

✓ **Checkpoint** Identify the terms, like terms, coefficients, and constant terms of the expression.

1.  $4y - 6 + 3y$

2.  $9 + w - 5 - 8w$

**Example 2** *Simplifying an Expression*

$$\begin{aligned}5m + 8 - 3m - 7 &= 5m + 8 + (\quad) + (\quad) && \text{Write as a sum.} \\&= 5m + (\quad) + \square + (\quad) && \text{Commutative property} \\&= [\square + (\quad)]m + \square + (\quad) && \text{Distributive property} \\&= \square && \text{Simplify.}\end{aligned}$$

**Example 3** *Simplifying Expressions with Parentheses*

a.  $3(x + 2) - x + 9 = \square - x + 9$  Distributive property  
 $= \square$  Group like terms.  
 $= \square$  Combine like terms.

b.  $2k - 5(k + 4) = 2k - \square$  Distributive property  
 $= \square$  Combine like terms.

c.  $5a - (5a - 7) = 5a - \square(5a - 7)$  Identity property  
 $= 5a - \square$  Distributive property  
 $= \square$  Combine like terms.  
 $= \square$  Simplify.

✓ **Checkpoint** Simplify the expression.

3. $4y - 6 + 3y$	4. $9 + w - 5 - 8w$
5. $4(x - 1) - 2x - 7$	6. $-6(k + 3) + 5k$