

**EXAMPLES**  
1, 2, and 3

on pp. 444–445  
for Exs. 12–17

**EXERCISES**

Solve the linear system using elimination.

12.  $x + 2y = 13$   
 $x - 2y = -7$

13.  $4x - 5y = 14$   
 $-4x + y = -6$

14.  $x + 7y = 12$   
 $-2x + 7y = 18$

15.  $9x - 2y = 34$   
 $5x - 2y = 10$

16.  $3x = y + 1$   
 $2x - y = 9$

17.  $4y = 11 - 3x$   
 $3x + 2y = -5$

**7.4** Solve Linear Systems by Multiplying First

pp. 451–457

**EXAMPLE**

Solve the linear system:  $x - 2y = -7$  **Equation 1**  
 $3x - y = 4$  **Equation 2**

**STEP 1** Multiply the first equation by  $-3$ .

$$\begin{array}{r} x - 2y = -7 \\ 3x - y = 4 \end{array} \quad \begin{array}{l} \times (-3) \\ \rightarrow \end{array} \quad \begin{array}{r} -3x + 6y = 21 \\ 3x - y = 4 \end{array}$$

**STEP 2** Add the equations.

$$5y = 25$$

**STEP 3** Solve for  $y$ .

$$y = 5$$

**STEP 4** Substitute 5 for  $y$  in either of the original equations and solve for  $x$ .

$$x - 2y = -7 \quad \text{Write Equation 1.}$$

$$x - 2(5) = -7 \quad \text{Substitute 5 for } y.$$

$$x = 3 \quad \text{Solve for } x.$$

► The solution is  $(3, 5)$ .

**CHECK** Substitute 3 for  $x$  and 5 for  $y$  in each of the original equations.

Equation 1	Equation 2
$x - 2y = -7$	$3x - y = 4$
$3 - 2(5) \stackrel{?}{=} -7$	$3(3) - 5 \stackrel{?}{=} 4$
$-7 = -7 \checkmark$	$4 = 4 \checkmark$

**EXERCISES**

Solve the linear system using elimination.

18.  $-x + y = -4$   
 $2x - 3y = 5$

19.  $x + 6y = 28$   
 $2x - 3y = -19$

20.  $3x - 5y = -7$   
 $-4x + 7y = 8$

21.  $8x - 7y = -3$   
 $6x - 5y = -1$

22.  $5x = 3y - 2$   
 $3x + 2y = 14$

23.  $11x = 2y - 1$   
 $3y = 10 + 8x$

24. **CAR MAINTENANCE** You pay \$24.50 for 10 gallons of gasoline and 1 quart of oil at a gas station. Your friend pays \$22 for 8 gallons of the same gasoline and 2 quarts of the same oil. Find the cost of 1 quart of oil.

**EXAMPLES**  
1 and 2

on pp. 451–452  
for Exs. 18–24