Name _____ Class _____ Date _____

Reteaching

Problem

Elimination is one way to solve a system of equations. Think about what the word "eliminate" means. You can eliminate either variable, whichever is easiest.

Solve and check the following system of linear equations.

$$4x - 3y = -4$$
$$2x + 3y = 34$$

Solution The equations are already arranged so that like terms are in columns.

Notice how the coefficients of the y-variables have the opposite sign and the same value.

$$\begin{array}{r} 4x - 3y = -4 \\ 2x + 3y = 34 \\ \hline 6x = 30 \\ x = 5 \end{array}$$

Add the equations to eliminate y.

Divide both sides by 6 to solve for x.

$$\begin{array}{r} 4(5) - 3y = -4 \\ 20 - 3y = -4 \\ -3y = -24 \\ y = 8 \end{array}$$

Substitute 5 for x in one of the original equations and solve for y.

The solution is (5, 8).

Check

$$\begin{array}{r} 4x - 3y = -4 \\ 4(5) - 3(8) \stackrel{?}{=} -4 \\ 20 - 24 \stackrel{?}{=} -4 \\ -4 = -4 \ \checkmark \end{array}$$

Substitute your solution into both of the original equations to check.

You can check the other equaton.

Exercises

Solve and check each system. SHOW ALL YOUR WORK!!! Use a separate sheet of paper to show work.

1. $3x + y = 3$

$-3x + y = 3$

2. $6x - 3y = -14$

$6x - y = -2$

3. $3x - 2y = 10$

$x - 2y = 6$

4. $4x + y = 8$

$x + y = 5$

Name _____ Class _____ Date_____

Reteaching (continued)

If none of the variables has the same coefficient, you have to multiply before you eliminate.

Problem

Solve the following system of linear equations.

$$-2x + 3y = -1$$
$$5x + 4y = 6$$

Solution

$5(-2x - 3y) = (-1)5$ $2(5x + 4y) = (6)2$	Multiply the first equation by 5 (all terms, both sides) and the second equation by 2. You can eliminate the x variable when you add the equations together.
$-10x - 15y = -5$ $10x + 8y = 12$ $-7y = 7$	Distribute, simplify and add.
$y = -1$	Divide both sides by 7.
$5x + 4(-1) = 6$	Substitute –1 in for y in the second equation to find the value of x.
$5x - 4 = 6$	Simplify.
$5x = 10$	Add 4 to both sides.
$x = 2$	Divide by 5 to solve for x.

The solution is (2, –1).

Check $-2x + 3y = -1$ Substitute your solution into both original equations.

$-2(2) - 3(-1) \stackrel{?}{=} -1$

$-1 = -1$ ✓ You can check the other equation.

Exercises

Solve and check each system. SHOW ALL YOUR WORK!!! Use a separate sheet of paper to show work.

5. $x - 3y = -3$

$-2x + 7y = 10$

6. $-2x - 6y = 0$

$3x + 11y = 4$

7. $3x + 10y = 5$

$7x + 20y = 11$

8. $4x + y = 8$

$x + y = 5$