Week 19: 1/4-1/8   Math I   Due: 1/11

Objectives:
1. To solve systems of equations by graphing.
2. To analyze special systems.
3. To solve systems of equations using substitution.
4. To solve systems of equations using elimination.

Monday:
In Class:
Section 4-1: #1-6 and notes in composition books
Homework:
Section 4-1: #7-23

Tuesday:
In Class:
Section 4-2: #1-8
Homework:
Complete 4-2 re-teaching handout attached.

Wednesday:
Go to text website: www.pearsonsuccessnet.com
Click on section 4-3 and WATCH online problems 1-5 and complete "Got It's" that follow.
THESE WILL BE CHECKED THURSDAY AND POINTS WILL BE DUDUCTED IF NOT COMPLETE.

Thursday:
In Class:
Section 4-3: #1-10
Homework:
Complete 4-3 re-teaching handout attached.

Friday:
Complete Week 19 Quiz in Google Classroom
Go to text website: www.pearsonsuccessnet.com
Click on section 4-4 and WATCH online problems 1-3 and complete "Got It's" that follow.
THESE WILL BE CHECKED MONDAY AND POINTS WILL BE DEDUCTED IF NOT COMPLETE.

Name _____ Class _____ Date _____

Reteaching

Solving Systems Using Substitution

You can solve a system of equations by substituting an equivalent expression for one variable.

Problem

Solve and check the following system:

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

Solution

$x + 2y = 4$	The first equation is easiest to solve in terms of one variable.
$x = 4 - 2y$	Get x to one side by subtracting $2y$.
$2(4 - 2y) - y = 3$	Substitute $4 - 2y$ for x in the second equation.
$8 - 4y - y = 3$	Distribute.
$8 - 5y = 3$	Simplify.
$8 - 8 - 5y = 3 - 8$	Subtract 8 from both sides.
$-5y = -5$	Divide both sides by -5.
$y = 1$	You have the solution for y. Solve for x.
$x + 2(1) = 4$	Substitute in 1 for y in the first equation.
$x + 2 - 2 = 4 - 2$	Subtract 2 from both sides.
$x = 2$	The solution is (2, 1).

Check Substitute your solution into either of the given linear equations.

$x + 2y = 4$	
$2 + 2(1) \overset{?}{=} 4$	Substitute (2, 1) into the first equation.
$4 = 4 \checkmark$	You check the second equation.

Exercises

Solve each system using substitution. Check your answer.

1. $x + y = 3$
$2x - y = 0$

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

3. $2x - 2y = 10$
$x - y = 5$

4. $4x + y = 8$
$x + 2y = 5$

4-2

Name _____ Class _____ Date _____

Reteaching (continued)

Solving Systems Using Substitution

Solve and check the following system:

$\frac{x}{2} - 3y = 10$

$3x + 4y = -6$

Solve

$\frac{x}{2} - 3y = 10$	First, isolate x in the first equation.
$\frac{x}{2} = 10 + 3y$	Add $3y$ to both sides and simplify.
$x = 20 + 6y$	Multiply by 2 on both sides.
$3x + 4y = -6$	Substitute $20 + 6y$ for x in second equation.
$3(20 + 6y) + 4y = -6$	Simplify.
$60 + 22y = -6$	Subtract 60 from both sides.
$22y = -66, y = -3$	Divide by 22 to solve for y.
$\frac{x}{2} - 3(-3) = 10$	Substitute -3 in the first equation.
$\frac{x}{2} + 9 = 10$	Simplify.
$x = 2$	Solve for x.

The solution is $(2, -3)$.

Check $3(2) + 4(-3) \stackrel{?}{=} -6$

$-6 = -6 \checkmark$

Now you check the first equation.

Exercises

Solve each system using substitution. Check your answer.

5. $-2x + y = 8$
$3x + y = -2$

6. $3x - 4y = 8$
$2x + y = 9$

7. $3x + 2y = 25$
$2x + 3y = -6$

8. $6x - 5y = 3$
$x - 9y = 25$

4-3

Reteaching

Solving Systems Using Elimination

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.

Problem

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.

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

$$4x - 3y = -4$$
$$4(5) - 3(8) \overset{?}{=} -4$$
$$20 - 24 \overset{?}{=} -4$$
$$-4 = -4 \checkmark$$

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

You can check the other equaton.

Exercises

Solve and check each system.

1. $3x + y = 3$
   $-3x + y = 3$

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

3. $3x - 2y = 10$
   $x - 2y = 6$

4. $4x + y = 8$
   $x + y = 5$

4-3

Reteaching (continued)

Solving Systems Using Elimination

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.
$-10x - 15y = -5$ $\underline{10x + 8y = 12}$ $-7y = 7$	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.
	$-2(2) - 3(-1) \overset{?}{=} -1$	
	$-1 = -1 \checkmark$	You can check the other equation.

Exercises

Solve and check each system.

5. $x - 3y = -3$
    $-2x + 7y = 10$

6. $-2x - 6y = 0$
    $3x + 11y = 4$

7. $3x + 10y = 5$
    $7x + 20y = 11$

8. $4x + y = 8$
    $x + y = 5$