Name: _____ **Class:** _____

M8-U5: Notes #5 - Solving by Elimination **Date:** _____

You have already developed some useful strategies for solving a simple linear equation like $3x + 5 = 10$. You know that you can add or subtract the same quantity on both sides and preserve equality. The same is true for multiplication or division. These ideas, called the *Properties of Equality,* can help you develop another method for solving linear equations. This method involves combining separate linear equations (through the four basic operations) into one equation with only one variable. **Other names for this method are *Combination, Addition, or Elimination.***

Examples:

1. $\begin{cases} x + y = 3 \\ x - y = -9 \end{cases}$

2. $\begin{cases} 2x - 4y = 10 \\ -2x + 6y = -4 \end{cases}$

Try It!

a. $\begin{cases} 2x + y = 3 \\ -2x + y = 1 \end{cases}$

b. $\begin{cases} x + y = 30 \\ x - y = 6 \end{cases}$

Examples:

3. $\begin{cases} 6x-7y=-4 \\ -4x-7y=26 \end{cases}$

4. $\begin{cases} x+3y=9 \\ x-2y=-6 \end{cases}$

Try It!

a. $\begin{cases} 5x+7y=77 \\ 5x+3y=53 \end{cases}$

b. $\begin{cases} 9x-3y=24 \\ 7x-3y=20 \end{cases}$

Now let's investigate some other systems that involve other uses of the elimination method.

5. $\begin{cases} 2x+5y=-1 \\ x+2y=0 \end{cases}$

6. $\begin{cases} 6x+3y=0 \\ -3x+3y=9 \end{cases}$

Try It!

a. $\begin{cases} 8x-9y=19 \\ 4x+y=-7 \end{cases}$

b. $\begin{cases} 4x-y=6 \\ 3x+2y=21 \end{cases}$

Name: _____ **Class:** _____

M8-U5: HW #5 – Solving Systems by Elimination **Date:** _____

Solve by elimination. Show your work.

1. $\begin{cases} x+2y=7 \\ 3x-2y=-3 \end{cases}$

2. $\begin{cases} 3x+y=20 \\ x+y=12 \end{cases}$

3. $\begin{cases} 2x+5y=-1 \\ x+2y=0 \end{cases}$

4. $\begin{cases} 3x+5y=10 \\ x-5y=-10 \end{cases}$

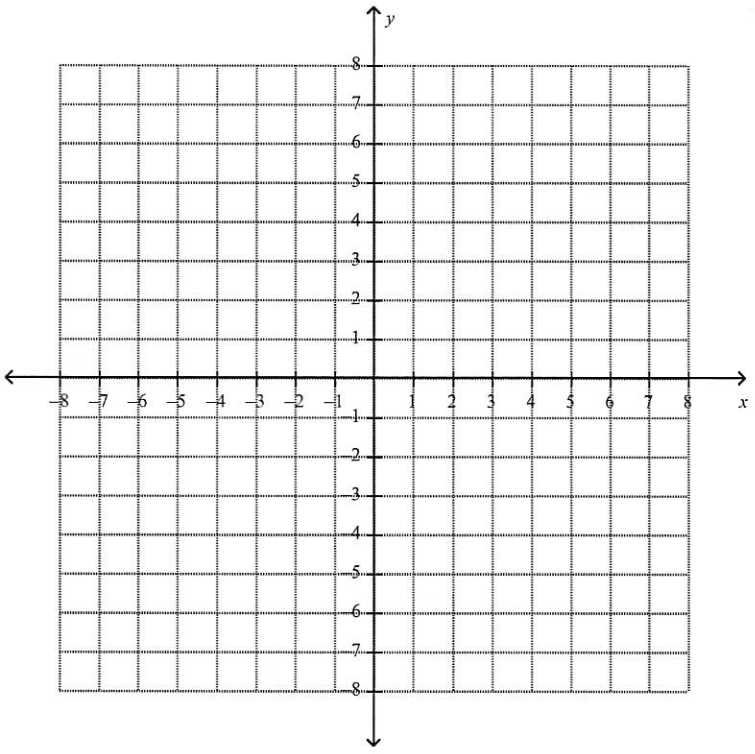
5. $\begin{cases} -6x-4y=21 \\ -6x+3y=0 \end{cases}$

6. $\begin{cases} 3x+6y=6 \\ 2x-3y=4 \end{cases}$

Spiral:

Solve the following system of equations graphically.

7. $\begin{cases} y=-\frac{3}{4}x+3 \\ y=\frac{3}{2}x-6 \end{cases}$



Name: _____ **Class:** _____

M8-U5: Notes #6 - Solving by Elimination (Day 2) **Date:** _____

Examples:

1. $\begin{cases} 3x+5y=10 \\ 5x+7y=10 \end{cases}$

2. $\begin{cases} 15x+3y=9 \\ 10x+7y=-4 \end{cases}$

Try It!

a. $\begin{cases} 2x-3y=-11 \\ 3x+2y=29 \end{cases}$

b. $\begin{cases} 5x+7y=-1 \\ 4x-2y=22 \end{cases}$

Examples:

3. The sum of two numbers is 18. The sum of the greater number and twice the smaller number is 25. Find the numbers.

4. Suppose a band at another school sells erasers for $2 per package and pencils for $5 per package. The band sells 220 packages in all and earns a total of $695. Write a system of equations to find the number of each type of package sold.

Try It!

a. Grandma's Bakery sells single crust apple pies for $6.99 and double crust cherry pies for $10.99. The total number of pies sold on a busy Friday was thirty-six. If the amount collected for all the pies that day was $331.64, how many of each type of pies was sold?

b. A promoter priced tickets to a concert as follows: $17 when purchased in advance and $20 when purchased at the door. The total number of tickets purchased was 514, and ticket sales totaled $9,158. How many tickets were sold at the door?

Name: _____ **Class:** _____

M8-U5: HW #6 – Solving Systems by Elimination (Day 2) **Date:** _____

Solve by elimination. Show your work.

1. $\begin{cases} 6x+3y=27 \\ -4x+7y=27 \end{cases}$

2. $\begin{cases} 4x+5y=3 \\ 3x-2y=8 \end{cases}$

3. $\begin{cases} 4x-3y=11 \\ 3x-5y=-11 \end{cases}$

4. $\begin{cases} 5x+8y=40 \\ 3x-10y=-13 \end{cases}$

Use a system of equations to model each situation. Solve by any method.

5. The sum of two numbers is 30. The sum of the greater number and three times the lesser number is 54. Find the numbers.

6. Shopping at Savers Mart, Lisa buys her children four shirts and three pairs of pants for $85.50. She returns the next day and buys three shirts and five pairs of pants for $115.00. What is the price of each shirt and each pair of pants?

7. An amusement park charges admission plus a fee for each ride. Admission plus two rides costs $10. Admission plus five rides cost $16. What is the charge for admission and the cost of a ride?

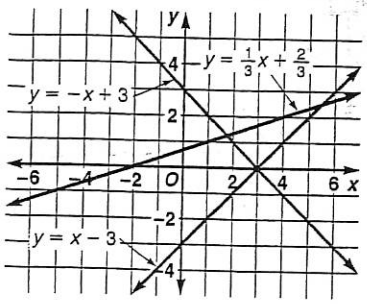
NAME REVIEW FOR SYSTEMS OF EQUATIONS DATE

sec (CH. 7) 7.1-7.3

Chapter 8 Mid-Chapter Test (Lessons 8-1 through 8-3)

Algebra 1

Use the graph below to determine whether each system has one solution, no solution, or infinitely many solutions. If the system has one solution, name it.



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

1. _____

2. $x - 3y = -2$
   $\frac{1}{3}x - y = -\frac{2}{3}$

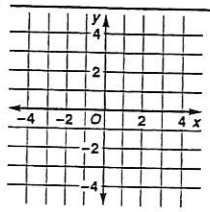
2. _____

Graph each system of equations. Then determine whether the system has one solution, no solution, or infinitely many solutions. If the system has one solution, name it.

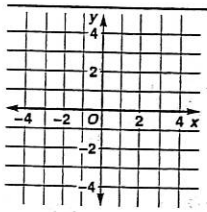
3. $y = 4$
   $y = -2$

4. $x - 3y = -9$
   $x + 3y = 3$

3. _____



4. _____



Use substitution to solve each system of equations.

5. $\frac{1}{2}x + 2y = 12$
   $x - 2y = 6$

6. $4x + y = 0$
   $2y + x = -7$

5. _____

6. _____

Use elimination to solve each system of equations.

7. $r - 5s = -6$
   $r + 2s = 8$

8. $\frac{1}{2}w + v = 7$
   $-\frac{1}{2}w + 3v = -11$

7. _____

8. _____

Use a system of equations to solve each problem.

9. The sum of two numbers is 30. The sum of the greater number and 3 times the lesser number is 54. Find the numbers.

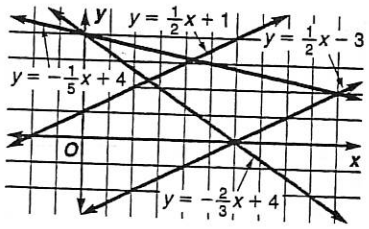
9. _____

8

NAME _____ DATE _____

Chapter 8, Quiz A (Lessons 8-1 and 8-2)

Use the graph at the right to determine whether each system has one solution, no solution, or infinitely many solutions. If the system has one solution, name it.



1. $2x + 3y = 12$
   $x + 5y = 20$

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

1. _____

2. _____

Use substitution to solve each system of equations.

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

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

3. _____

4. _____

5. The units digit of a number is 4 more than the tens digit. If the digits are reversed, the new number is 1 less than twice the original number. Use a system of equations and substitution to find the number.

5. _____

8

NAME _____ DATE _____

Chapter 8, Quiz B (Lesson 8-3)

Use elimination to solve each system of equations.

1. $x + y = 4$
   $x - y = 7$

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

1. _____

2. _____

3. $5r - 3s = 17$
   $2r - 3s = 9$

4. $3x = 2 - 7y$
   $-4x = 30 - 7y$

3. _____

4. _____

5. Find two numbers whose sum is 26 and whose difference is 42.

5. _____