

Name: _____

Unit 2: Linear Functions

Date: _____ Bell: _____

Homework 5: Solving Systems of Equations
by Elimination & Applications

**** This is a 2-page document! ****

Directions: Solve each system of equations by elimination. Clearly identify your solution.

1. $3x + y = 11$
 $5x - y = 21$

2. $2x - 9y = -51$
 $2x - 3y = -9$

3. $5x + 12y = -34$
 $2x + 4y = -12$

4. $-3x + 8y = 73$
 $x - 7y = -46$

5. $9x + 4y = -72$
 $2x - 3y = -16$

6. $4x - 11y = 68$
 $6x + 5y = -27$

7. $5x = 15 - 5y$
 $8y + 26 = 2x$

8. $14x + 7y = -7$
 $y = -2x - 1$

Directions: Define your variables and set up a system of equations, then solve.

9. A storeowner mixed 8 pounds of peanuts and 5 pounds of M&M's. This 13 pound mixture sold for \$55.27. A second mixture included 6 pounds of peanuts and 4 pounds of M&M's. This 10 pound mixture sold for \$42.70. Find the cost per pound of the peanuts and M&M's.

10. Katy's favorite rides at the amusement park are the roller coaster and water slide. The wait time for the roller coaster is 25 minutes and the wait time for the water slide is 10 minutes. If she went on 12 rides total and waited three hours in line, how many times did she go on each ride?

11. A collection of nickels and dimes is worth \$9.45. If the number of dimes is doubled, the value is \$16.65. Find the number of each coin.

12. Zack has two savings accounts with a total of \$9,000. He withdrew 10% from one and 60% from the other to buy his girlfriend an engagement ring. If the ring cost \$2,175, find the remaining balance in each account.

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples	
<i>Systems with</i> 3 VARIABLES	①	CHOOSE TWO EQUATIONS in which you can easily eliminate a variable. Let's call this new equation after the elimination Equation A .
	②	ELIMINATE THE SAME VARIABLE from a combination of the equation you didn't use and one of the ones you did. Let's call this equation after the elimination Equation B .
	③	PUT EQUATION A AND EQUATION B TOGETHER and SOLVE THAT SYSTEM . You now have two of your variables!
	④	SUBSTITUTE your answers from step 3 into either original equation to find the remaining variable. Write your solution as (x, y, z).

:: EXAMPLES ::

1. $2x - 6y + 9z = -8$
 $5x + y + 2z = 10$
 $3x + y - 8z = -28$

2. $4x + y - 3z = 45$
 $6x - 4y + 3z = 41$
 $2x - 7y - 11z = 85$

3. $5x - 3y + 8z = -59$
 $9x - 4y - z = -60$
 $5x + 2y + 4z = -47$

4. $x - 5y + 3z = 39$
 $3x + 8y - z = -19$
 $2x - 6y - 5z = -29$

5. $x + y + 3z = 12$
 $-3x + 7y - 2z = -35$
 $7x - 6y - 5z = 32$

:: APPLICATIONS ::

6. The theater sells three types of tickets: general admission, senior citizen, and child. Mark bought 9 general admission, 2 senior citizen, and 3 child tickets and paid \$170. Sarah bought 5 general admission, 4 senior citizen, and 7 child tickets and paid \$173. Kyle bought 4 general admission, 1 senior citizen, and 6 child tickets and paid \$116.50. Find the cost of each type of ticket.

7. Jamie has a collection of 78 nickels, dimes, and quarters worth \$12.40. If the number of quarters is doubled, the value becomes \$22.15. How many of each type of coin does Jamie have?