Notes: Solving Systems by Elimination

Solving systems of equations by elimination works with the properties of addition. You strategically set up the equations so that you can add the equations together and make one of the variables eliminate.

Step 1: Change both equations to standard form
Step 2: Check to see if you need to manipulate your equation so that a variable cancels out when combining.
Step 3: Add your equations together so you are left with only one variable.
Step 4: Solve for the single variable you now have.
Step 5: Plug that variable into either equation
Step 6: Check by substitution!!!

$x - y = -12$
$x + y = -24$

$x - y = 11$
$2x + y = 19$

$-9y = 2x - 25$
$-4x - 9y = -23$

$2x + 8y = 6$
$5x = -15 + 20y$

$-8x - 4y = -24$
$-4x - 2y = -12$

$4x + 3y = -12$
$4x = -25 - 3y$

$8x + y = -16$
$-6x + 2y = -10$

Castel and Gabriella are selling pies for a school fundraiser. Customers can buy apple pies and lemon meringue pies. Castel sold 6 apple pies and 4 lemon meringue pies for a total of $80. Gabriella sold 6 apple pies and 5 lemon meringue pies for a total of $94. What is the cost each of one apple pie and one lemon meringue pie?

 Name_____

Solving Systems of Equations by Elimination

Date_____ Period____

Solve each system by elimination.

1) $-4x - 2y = -12$
$4x + 8y = -24$

2) $4x + 8y = 20$
$-4x + 2y = -30$

3) $x - y = 11$
$2x + y = 19$

4) $-6x + 5y = 1$
$6x + 4y = -10$

5) $-2x - 9y = -25$
$-4x - 9y = -23$

6) $8x + y = -16$
$-3x + y = -5$

7) $-6x + 6y = 6$
$-6x + 3y = -12$

8) $7x + 2y = 24$
$8x + 2y = 30$

9) $5x + y = 9$
$10x - 7y = -18$

10) $-4x + 9y = 9$
$x - 3y = -6$

11) $-3x + 7y = -16$
$-9x + 5y = 16$

12) $-7x + y = -19$
$-2x + 3y = -19$

13) $16x - 10y = 10$
$-8x - 6y = 6$

14) $8x + 14y = 4$
$-6x - 7y = -10$

15) $-4x - 15y = -17$
$-x + 5y = -13$

16) $-x - 7y = 14$
$-4x - 14y = 28$

17) $-7x - 8y = 9$
$-4x + 9y = -22$

18) $5x + 4y = -30$
$3x - 9y = -18$

19) $-4x - 2y = 14$
$-10x + 7y = -25$

20) $3x - 2y = 2$
$5x - 5y = 10$

21) $5x + 4y = -14$
$3x + 6y = 6$

22) $2x + 8y = 6$
$-5x - 20y = -15$

23) $-14 = -20y - 7x$
$10y + 4 = 2x$

24) $3 + 2x - y = 0$
$-3 - 7y = 10x$

Name_____

Solving Systems of Equations by Elimination

Date_____ Period____

Solve each system by elimination.

1) $-4x - 2y = -12$
$4x + 8y = -24$

(6, −6)

2) $4x + 8y = 20$
$-4x + 2y = -30$

(7, −1)

3) $x - y = 11$
$2x + y = 19$

(10, −1)

4) $-6x + 5y = 1$
$6x + 4y = -10$

(−1, −1)

5) $-2x - 9y = -25$
$-4x - 9y = -23$

(−1, 3)

6) $8x + y = -16$
$-3x + y = -5$

(−1, −8)

7) $-6x + 6y = 6$
$-6x + 3y = -12$

(5, 6)

8) $7x + 2y = 24$
$8x + 2y = 30$

(6, −9)

9) $5x + y = 9$
$10x - 7y = -18$

(1, 4)

10) $-4x + 9y = 9$
$x - 3y = -6$

(9, 5)

11) $-3x + 7y = -16$
$-9x + 5y = 16$

(−4, −4)

12) $-7x + y = -19$
$-2x + 3y = -19$

(2, −5)

13) $16x - 10y = 10$
$-8x - 6y = 6$

$(0, -1)$

14) $8x + 14y = 4$
$-6x - 7y = -10$

$(4, -2)$

15) $-4x - 15y = -17$
$-x + 5y = -13$

$(8, -1)$

16) $-x - 7y = 14$
$-4x - 14y = 28$

$(0, -2)$

17) $-7x - 8y = 9$
$-4x + 9y = -22$

$(1, -2)$

18) $5x + 4y = -30$
$3x - 9y = -18$

$(-6, 0)$

19) $-4x - 2y = 14$
$-10x + 7y = -25$

$(-1, -5)$

20) $3x - 2y = 2$
$5x - 5y = 10$

$(-2, -4)$

21) $5x + 4y = -14$
$3x + 6y = 6$

$(-6, 4)$

22) $2x + 8y = 6$
$-5x - 20y = -15$

Infinite number of solutions

23) $-14 = -20y - 7x$
$10y + 4 = 2x$

$(2, 0)$

24) $3 + 2x - y = 0$
$-3 - 7y = 10x$

$(-1, 1)$