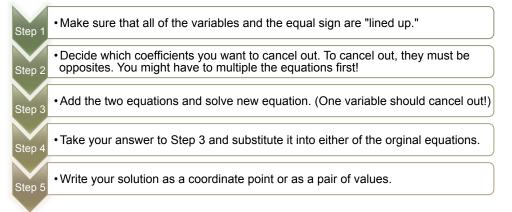


We have learned how to solve linear systems by graphing and substitution. Now we will learn how to solve the linear systems by using a method called \_\_\_\_\_\_\_.

## **Steps for Solving Linear Systems by Elimination**

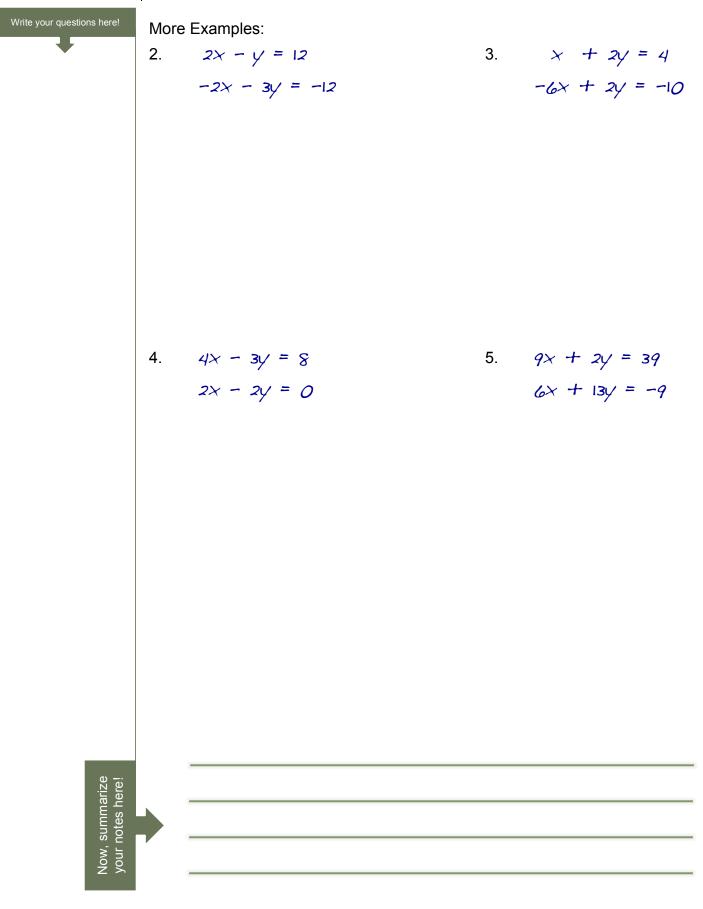


Example 1: Solve the linear system using elimination:

3x - 4y = 105x + 4y = 6

- Step 1: Do you have x over x, y over y and equal sign over equal sign? Yup! Continue on....
- **Step 2:** The y's are already opposites. Our work here is done.
- Step 3: Add the two equations. Solve the resulting equation.
- Step 4: Take the answer from Step 3 and plug it into either of the original equations and solve for the other unknown variable.
- Step 5: Write your solution as a coordinate point or as a pair of values.

## 2 8.3: SOLVING SYSTEMS BY ELIMINATION



## Practice 8.3 Systems of Equations (Elimination)

Show all of your work! Solve each system by elimination.

1) $-4x - 4y = 8$	2) $3x + 2y = -3$
-x + 4y = 12	-3x + y = 12

3) x - 2y = -9 -4x - 2y = -44) -2x + y = 4-2x + 2y = 0

5) $-4x - y = 8$	6) $-x + 4y = -1$
-12x + 3y = -24	-2x - 8y = 14

7) 
$$-6x + 3y = 3$$
  
 $5x - 8y = -8$ 

8) 4x - 3y = -165x + 2y = 3

9) 3x + 2y = 104x + 5y = 18

10) 
$$-5x - 6y = -3$$
  
 $2x + 4y = 6$ 

- 11) Is the point (0, 0) a solution of the system of linear equations below?
  - 2x + y = 24x 2y = 2

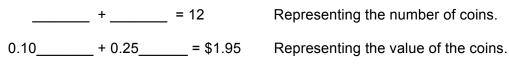
12) Is the point  $(\frac{5}{4}, 7)$  a solution of the system of linear equations below?

$$4x + y = 12$$
  
- $4x + 3y = 16$ 

[8.3: SOLVING SYSTEMS BY ELIMINATION] 5

## **Application and Extension**

- 1. Solve the following system of equations using elimination.
- 2x + 2y = 2-8x + 4y = 16
- You have just enough coins to pay for a loaf of bread priced at \$1.95. You know you have a total of 12 coins, with only quarters and dimes. Let Q = the number of quarters and D = the number of dimes. Complete:



Now, solve the linear system using elimination. (Hint: Multiply the second equation by -10!)

3. The table shows the number of apples needed to make apple pies and applesauce sold at a farm store. During a recent picking at the farm, 169 Granny Smith apples and 95 Red Delicious apples were picked. Write and solve a system to determine how many apple pies and how many batches of applesauce can be made if every apple is used. (*Hint: read across each row to create your equations!*)

Type of Apple	# Needed for π (Pie)	# Needed for Sauce	Total
Granny Smith	5	4	169
<b>Red Delicious</b>	3	2	95

<b>Coming Up:</b> Evaluate each expression if $a = 4$ , $b = -2$ , $c = 10$ , $x = -3$ and $y = -5$ .				
1. (3abc) <sup>2</sup>	2. 3abc <sup>2</sup>	$3.  3a^2b^2c^2$		
Quick Review: Find the equation of the line that passes through the given points.				
1. (-2, -2); (4, 4)	2. (-2, 2); (4, -4)	3. (2, 3); (0, 3)		