

Name _____

Solving Linear Systems by Linear Combinations

Quick Review

1. Align the equations with like terms in columns.
2. If needed, multiply one or both of the equations by a number so that there are opposite coefficients for one of the variables.
3. Add the equations. Solve for the remaining variable.
4. Substitute the value from Step 3 for that variable in either of the original equations. Solve for the other variable.
5. Check your solution (x, y) by substituting the x and y values in the original equations.

$$\begin{array}{r} -3x + y = 1 \quad (\text{Multiply by } -2) \\ 2x + 2y = 10 \end{array}$$

$$\begin{array}{r} 6x - 2y = -2 \\ + 2x + 2y = 10 \\ \hline 8x = 8 \\ x = 1 \end{array}$$

$$\begin{array}{r} -3(1) + y = 1 \\ y = 4 \end{array}$$

Solution: (1, 4)

$$\begin{array}{r} -3x + y = 1 \quad 2x + 2y = 10 \\ -3(1) + 4 \stackrel{?}{=} 1 \quad 2(1) + 2(4) \stackrel{?}{=} 10 \\ 1 = 1 \quad 10 = 10 \end{array}$$

Use linear combinations to solve each linear system.
Then use the answer code to reveal a message.

(5, -2)
(1, 1\frac{1}{2})
(-6, 13)
(\frac{1}{3}, 2)
(2, 1)
(3, -1)
(9, -4)

1. $2x + 3y = 7$
 $4x - 3y = 5$

Solution: _____

E

2. $4x + 5y = 16$
 $-4x - 10y = 4$

Solution: _____

T



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

$3x + 2y = 8$

Solution: _____ **R**

4. $2x + 4y = 8$

$-5x + 4y = 1$

Solution: _____ **E**

5. $3x + y = 8$

$x + 2y = 1$

Solution: _____ **C**

6. $6x - 3y = -4$

$-3x + 5y = 9$

Solution: _____ **F**

7. $3x - 5y = 25$

$2x + 4y = 2$

Solution: _____ **P**