

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.

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

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

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

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.

$$\begin{array}{l} 1. \quad 2x + 3y = 7 \\ \quad \quad 4x - 3y = 5 \end{array}$$

Solution: _____ **E**

$$\begin{array}{l} 5. \quad 3x + y = 8 \\ \quad \quad x + 2y = 1 \end{array}$$

Solution: _____ **C**

$$\begin{array}{l} 2. \quad 4x + 5y = 16 \\ \quad \quad -4x - 10y = 4 \end{array}$$

Solution: _____ **T**

$$\begin{array}{l} 6. \quad 6x - 3y = -4 \\ \quad \quad -3x + 5y = 9 \end{array}$$

Solution: _____ **F**

$$\begin{array}{l} 3. \quad -6x - 2y = 10 \\ \quad \quad 3x + 2y = 8 \end{array}$$

Solution: _____ **R**

$$\begin{array}{l} 7. \quad 3x - 5y = 25 \\ \quad \quad 2x + 4y = 2 \end{array}$$

Solution: _____ **P**

$$\begin{array}{l} 4. \quad 2x + 4y = 8 \\ \quad \quad -5x + 4y = 1 \end{array}$$

Solution: _____ **E**

_____ **H**
(5, -2) (1, 1½) (-6, 13) (1/3, 2) (2, 1) (3, -1) (9, -4)

