

## G8 Playlist: Solving Pairs of Linear Equations Algebraically

Aligns with *CCSS.MATH.CONTENT.8.EE.C.8.B: Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example,  $3x + 2y = 5$  and  $3x + 2y = 6$  have no solution because  $3x + 2y$  cannot simultaneously be 5 and 6.*

### Related Standards

- *CCSS.MATH.CONTENT.8.EE.C.7: Solve linear equations in one variable.*
- *CCSS.MATH.CONTENT.8.EE.C.8.A: Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.*
- *CCSS.MATH.CONTENT.8.EE.C.8.C: Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*
- *CCSS.MATH.CONTENT.HSA.REI.C.6: Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.*
- *CCSS.MATH.CONTENT.HSA.REI.C.6: Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.*



## Objectives

In this module, you will learn and practice the following skills:

- Solve systems of linear equations using substitution.
- Solve systems of linear equations using elimination (linear combinations).

Let's get started!

## Key Terms

- A **linear equation** is an equation whose solutions form a straight line.
- A **solution** of a linear equation or system of linear equations is an ordered pair  $(x, y)$  that makes the equation(s) true.
- A **system** of linear equations is two or more linear equations with the same variables.

PREVIEW



## Solving Pairs of Linear Equations Algebraically

(8.EE.C.8.B)

A **solution** to a pair of **simultaneous linear equations** is an **ordered pair**  $(x, y)$  that is a solution to both equations. That is, the values of  $x$  and  $y$  make both equations true. A pair of linear equations can have one solution, no solution, or infinitely many solutions.

To solve a pair of linear equations algebraically, transform the equations to a single equation in one variable and solve for that variable. Then, substitute that value into one of the original equations to solve for the second variable. Algebraic methods include substitution and elimination (linear combinations).

If your students...

### Have difficulty solving pairs of equations using substitution:

WATCH: Solve Systems of Linear Equations Using Substitution

<https://learnzillion.com/student/lessons/1362-solve-systems-of-linear-equations-using-substitution>

### Have difficulty solving pairs of equations using elimination (linear combinations):

WATCH: Solve Systems of Linear Equations by the Addition/Elimination Method

<https://www.opened.com/video/solve-systems-of-linear-equations-by-the-addition-elimination/139542>

### For extra practice solving pairs of equations algebraically:

COMPLETE: Solve a System of Equations Using Substitution

<https://www.ixl.com/math/grade-8/solve-a-system-of-equations-using-substitution>

COMPLETE: Solve a System of Equations Using Elimination

<https://www.ixl.com/math/grade-8/solve-a-system-of-equations-using-elimination>

