G8 Playlist: Solving Problems with Systems of Equations

Aligns with *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.

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.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.*

Objectives

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

- Write systems of equations to represent real-world and mathematical situations.

- Solve systems of equations algebraically.

Let's get started!

Key Terms

- A **linear equation** is an equation with solutions that 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.

Solving Problems with Systems of Equations

(8.EE.C.8.C)

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.

To solve a real-world or mathematical problem using a system of equations, first write the equations in the system. Then, solve the system algebraically or estimate the solution graphically.

If your students…

Have difficulty writing equations to represent real-world situations:

WATCH: Convert a Real-World Situation Into an Equation

https://learnzillion.com/lesson_plans/8498-convert-a-real-world-situation-into-an-equation#fndtn-lesson

Have difficulty estimating solutions of linear systems graphically:

WATCH: Estimating Solutions of Equations: Graphing

https://learnzillion.com/student/lessons/155-estimate-solutions-of-equations-graphing

Have difficulty solving systems of linear equations:

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

WATCH: Solve Systems of Linear Equations Using the Linear Combinations Method

https://www.opened.com/video/solve-systems-of-linear-equations-by-using-the-linear-combinations/139544

For additional examples of solving real-world problems with systems of linear equations:

WATCH: Systems and Rate Problems

https://www.opened.com/video/systems-and-rate-problems/183273

WATCH: Systems and Rate Problems 2

https://www.opened.com/video/systems-and-rate-problems-2/365793