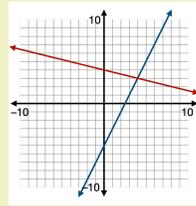


**solve
systems of
linear
equations
graphically**

Emerging

identify the solution from a graph

What is the solution to the system represented by the graph?



Developing

determine the solution given equations in slope-intercept form

Solve graphically:

$$y = 2x - 5$$

$$y = -\frac{1}{4}x + 4$$

Proficient

determine the solution given equations in general form

Solve graphically:

$$2x + 5y + 25 = 0$$

$$4x - 2y + 14 = 0$$

determine the number of solutions

Analyze the system to determine whether it has one solution, no solution, or infinitely many solutions:

$$y = \frac{1}{2}x - 4$$

$$3x - 6y - 12 = 0$$

Extending

create a system given constraints

Create a system so that:

- the solution is $(-3, -1)$
- one line has a negative slope
- one line enters the first quadrant

Place the numbers from 1 to 9 in the boxes below so that the system has infinitely many solutions:

$$\square x + \square y = \square$$

$$\square x + \square y = \square$$

(Each number can be used only once.)

**solve
systems of
linear
equations
algebraically**

Emerging

verify the solution by substitution

Is $(2, 5)$ a solution to the system:

$$y = 3x - 1$$
$$x - 2y = 8?$$

solve by elimination where multiplication is *not* necessary

Solve:

$$3x - 4y = 23$$
$$7x + 4y = 27$$

Developing

solve by substitution where *one* variable is isolated in an equation

Solve:

$$x = 6 - 4y$$
$$2x - 3y = 1$$

solve by elimination where multiplication of *one* equation is necessary

Solve:

$$7x + 2y = -1$$
$$3x - 4y = 19$$

Proficient

solve by substitution where *neither* variable is isolated in an equation

Solve:

$$2x + 5y + 7 = 0$$
$$3x - y = -2$$

solve by elimination where multiplication of *both* equations is necessary

Solve:

$$5x + 4y = 13$$
$$8x + 3y + 3 = 0$$

Extending

select, apply, and defend an algebraic approach

Would you rather solve the following system by elimination or substitution?

$$4x - y - 3 = 0$$
$$6x - 2y - 5 = 0$$

Why?

model and solve contextual problems involving systems of linear equations

Emerging

interpret the solution in context given a model

The heights of two candles over time can be modelled by:

$$h = 20 - 2t$$

$$h = 16 - 1.5t$$

What is the meaning, in context, of the solution (8, 4)?

Developing

model and solve combination problems

Two t-shirts and four hoodies sell for \$254. Four t-shirts and five hoodies sell for \$361. What is the price of each item?

Proficient

model and solve parts-whole and catch-up problems

Tickets to a charity hockey game cost \$12 for adults and \$8 for children. A total of 150 tickets were sold for \$1640. How many of each type of ticket were sold?

A gas vehicle has an initial cost of \$31 000 and an operating cost of \$1500 per year. An electric vehicle has an initial cost of \$43 000 and an operating cost of \$500 per year. How many years will it take for the total cost of both vehicles to be same?

Extending

model and solve mixture problems

A scientist needs to make 200 ml of a 42% alcohol solution. They mix 30% alcohol and 50% alcohol solutions. How much of each solution do they need?