

Day 5

Algebra 1

Foundations

Intermediate

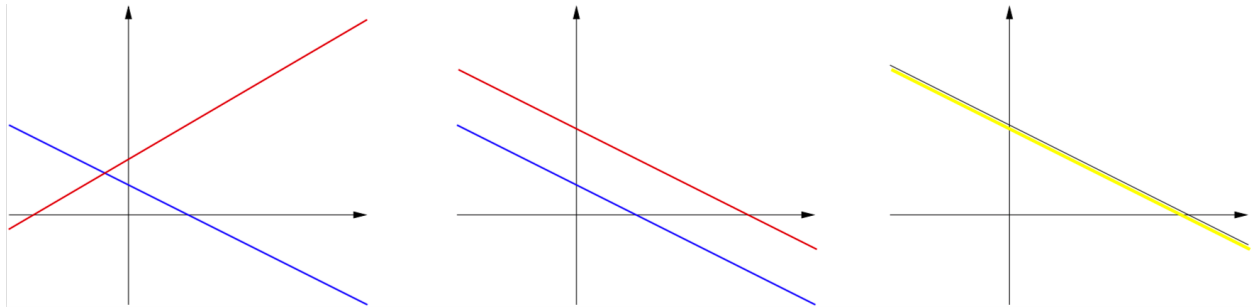
Algebra 2

Standards	<p>A1.AREI.6a <i>Solve systems of linear equations using the substitution method.</i></p> <p>A1.AREI.6b <i>Solve systems of linear equations using linear combination.</i></p>
Learning Targets/I Can Statements	<p>I can use substitution to solve a system of linear equations. I can use elimination to solve a system of linear equations.</p>
Essential Question(s)	<p>How can I solve system of equations by the substitution method?</p> <p>How can I solve system of equations by the combination method?</p>
Resources	<p>https://www.khanacademy.org/math/algebra-basics/alg-basics-systems-of-equations http://crctlessons.com/systems-of-equations-game.html https://www.desmos.com/calculator https://www.mathplanet.com/education/algebra-1/systems-of-linear-equations-and-inequalities/the-elimination-method-for-solving-linear-systems</p>
Learning Activities or Experiences	<p>1st: Recall questions (attached) 2nd: Watch the Khan Academy video (link above) system of linear equation substitution and elimination method Alternative: Notes on systems on linear equations (elimination and substitution method) 3rd: System of linear equations game 4th: Assignment</p>

Recall Questions

1. How many solutions are there for the following equation $5x + 8 = 2x - 3$?
2. How many solutions are there for the following equation $7(x + 3) = 7x + 3$?
3. How many solutions are there for the following equation $\frac{4X-6}{2} = 5X - 3$?
4. What is the solution: $-3(x+4) = 4(x - 10)$
5. What is the solution: $\frac{x-3}{4} = \frac{x+1}{3}$

Systems of Linear Equations



System of Linear Equations: is a collection of two or more equations.

Solving by combination method

To solve a system of equations using substitution...

$$2x + y = 3 \quad \text{and} \quad x + 2y = 12$$

1. Isolate one of the variables in one of the equations, e.g. rewrite $2x + y = 3$ as $y = 3 - 2x$.

2. You can now express the isolated variable using the other one.

Substitute that expression into the second equation, e.g. rewrite $x + 2y = 12$ as $x + 2(3 - 2x) = 12$.

3. Now you have an equation with one variable! Solve it, and use what you got to find the other variable.

$$x + 6 - 4x = 12$$

$$-3x + 6 = 12$$

$$-6 \quad -6$$

$$-3x = 6$$

$$x = -2$$

4. Substitute the x value back into the equation $y = 3 - 2x$

$$y = 3 - 2(-2)$$

$$y = 3 + 4$$

$$y = 7$$

solution = (-2, 7)

Your turn:

$$-3x + y = 7 \quad \text{and} \quad y = 4x$$

Solving by elimination method

$$3y + 2x = 6$$

$$5y - 2x = 10$$

We can eliminate the x-variable by addition of the two equations.

$$3y + 2x = 6$$

$$\underline{+5y - 2x = 10}$$

$$8y = 16$$

$$y = 2$$

The value of y can now be substituted into either of the original equations to find the value of x

$$3y+2x=6$$

$$3(2)+2x=6$$

$$6+2x=6$$

$$x=0$$

The solution of the linear system is $(0, 2)$.

Your Turn:

$$4x - 2y = 12$$

$$-4x + 6y = 4$$