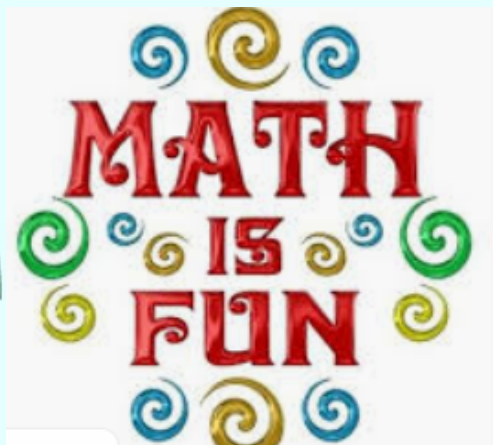


Good morning my Amazing Students!
2/2/2021

You have 5 minutes to complete
the Warm-up on your classkick
boards!



Warm-Up

2/2/2021

Solve for y in these equations:

1. $3x + y = -6$

2. $-2x + 3y = 12$

3. $y - mx = b$

(Literal Equations)



$$\textcircled{1} \begin{array}{r} 3x + y = -6 \\ -3x \quad -3x \\ \hline y = -3x - 6 \end{array}$$

$$\textcircled{2} \begin{array}{r} -2x + 3y = 12 \\ +2x \quad +2x \\ \hline 3y = 2x + 12 \\ \underline{\quad 3} \quad \underline{\quad 3} \\ y = \frac{2x + 12}{3} \end{array}$$

$$y = \frac{2x + 12}{3}$$

$$y = \frac{2x}{3} + 4$$

Slope (m) = $\frac{2}{3}$

y-intercept (b) = 4

$$\textcircled{3} \begin{array}{r} y - mx = b \\ +mx \quad +mx \\ \hline y = mx + b \end{array}$$

4. Solve this system by graphing:

$$\begin{cases} 2 + y = 2x \\ y - 2x = 5 \end{cases}$$

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

$$\textcircled{1} \quad y = 2x - 2$$

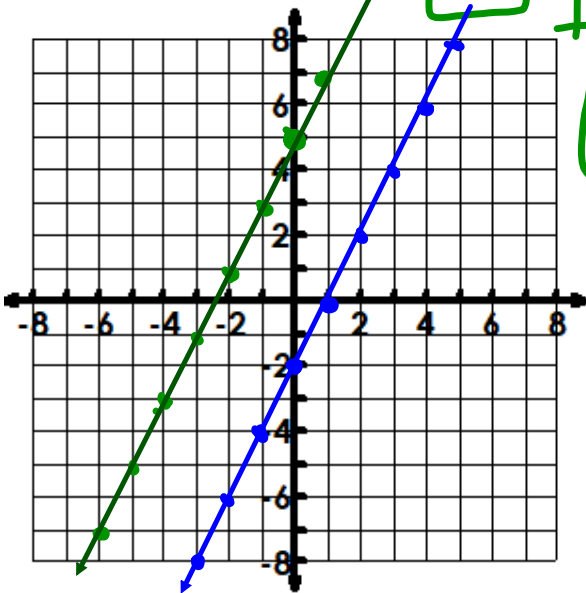
$$m = \frac{2}{1}$$

$$b = -2$$

$$\textcircled{2} \quad \begin{array}{r} y - 2x = 5 \\ +2x \quad \quad +2x \\ \hline y = 2x + 5 \end{array}$$

$$y = 2x + 5$$

$$m = \frac{2}{1} \quad b = 5$$



Solution:

No solution

$$\textcircled{1} y = 2x - 2$$

$$\textcircled{2} y = 2x + 15$$

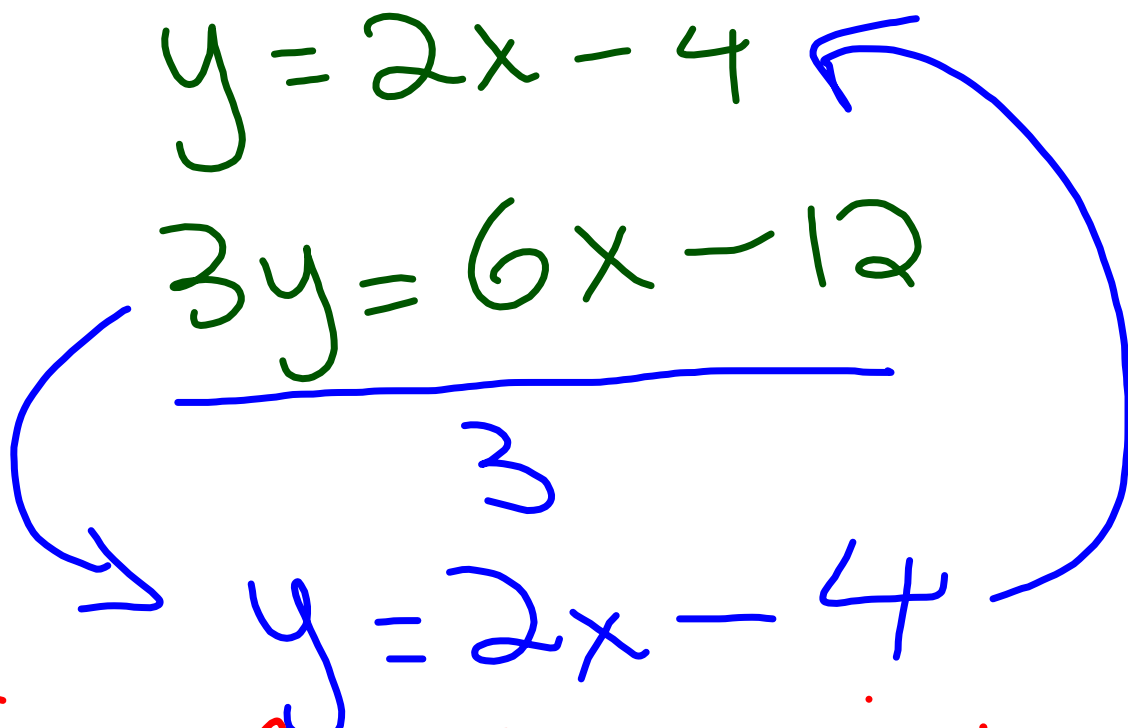
Note: Same slopes, different y-intercepts = parallel lines graph
= No solution!!!

What if you had:

$$y = 2x - 4$$

$$3y = 6x - 12$$

3



Same slope, same y-int

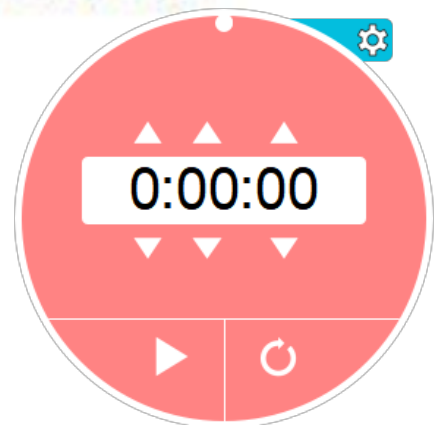
Infinite many solutions

Quick Check on CTLS 2/2/2021

SCBFOA - Solving Systems by Graphing Quick Check



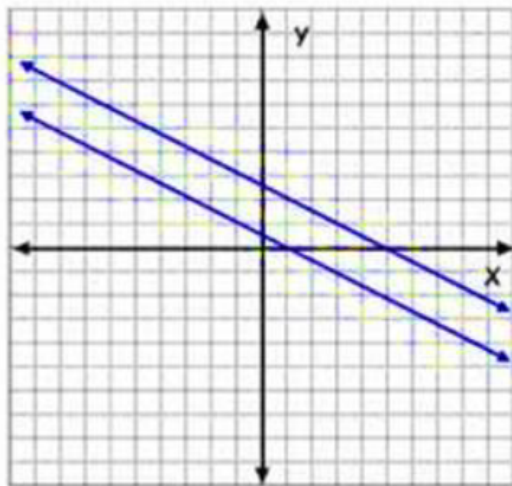
**FORMATIVE
ASSESSMENT**



1. If a system of linear equations has infinite solutions, what do you know about the graphs of the equations?

- A. The graphs are parallel
- B. The graphs intersect
- C. The graphs lie on top of each other (coincide)
- D. The graphs are perpendicular

2.



What is the solution to the system of equations?

- A. (1, 0)
- B. (0, 3)
- C. Infinitely many solutions
- D. No solution

3. The ordered pair $(5, 9)$ is a solution to which linear system?

A. \checkmark $x + y = 14$ $5 + 9 = 14$
 ~~$x + 2y = 11$~~ $-5 + 2(9) = 11$

B. \checkmark $-x + y = 4$ $-5 + 9 = 4$
 ~~$2x - y = 9$~~ $2(5) - 9 = 9$

C. \checkmark $-x + y = 4$ $-5 + 9 = 4$
 $2x + y = 19$ $2(5) + 9 = 19$

D. \checkmark $x + y = 14$ $5 + 9 = 14$
 ~~$2x - 2y = 14$~~ $2(5) - 2(9) = 14$

2/2/2021

Solving Literal Equations

Essential Question

How can I isolate a variable in a literal equation and solve for it?

Steps for Isolating Variables

1. Locate the variable you are trying to isolate.
2. Follow the rules for solving equations to get that variable by itself.

Solving an Equation You're Familiar with	Solving a Literal Equation
$2x = 10$ $\frac{2x}{2} = \frac{10}{2}$ $x = 5$	$gh = m$ solve for h $\frac{gh}{g} = \frac{m}{g}$ $h = \frac{m}{g}$
$2x + 5 = 11$ $\frac{2x + 5}{-5} = \frac{11}{-5}$ $\frac{2x}{2} = \frac{6}{2}$ $x = 3$	$ax + b = c$ solve for x $\frac{ax + b}{-b} = \frac{c}{-b}$ $\frac{ax}{a} = \frac{c-b}{a}$ $x = \frac{c-b}{a}$

Guided Practice: I do

1. Solve the equation for b: $a = bh$

$$\frac{a}{h} = \frac{bh}{h}$$

$$\frac{a}{h} = b$$

Guided Practice: I do

2. Solve the equation for b: $y = mx + b$

$$y = mx + \boxed{b}$$

$$-mx$$

$$-mx$$

$$y - mx = b$$

Guided Practice: We do

3. . Solve the equation for w: $p = 2l + 2w$

$$p = 2l + 2w$$

$$\begin{array}{r} p = 2l + 2w \\ -2l \quad -2l \\ \hline \end{array}$$

$$\frac{p - 2l}{2} = \frac{2w}{2}$$

$$\frac{p - 2l}{2} = w$$

or

$$w = \frac{p}{2} - l$$

$$\frac{p}{2} - \frac{2l}{2} = w$$

Guided Practice: We do formula

4. Solve the equation for h : $V = \frac{1}{3}Bh$

$$V = \frac{1}{3} Bh$$

$$3 \cdot V = \cancel{3} \cdot \frac{1}{\cancel{3}} Bh$$

$$\frac{3V}{B} = \frac{Bh}{B}$$

$$\boxed{\frac{3V}{B} = h}$$

Practice: You Do!

5. Solve the equation for y: $6x - 3y = 15$

$$\begin{array}{r} \cancel{6x} - 3\boxed{y} = 15 \\ \cancel{-6x} \qquad \qquad \qquad -6x \end{array}$$

$$\begin{array}{r} -3y = -6x + 15 \\ \hline -3 \qquad \qquad \qquad -3 \end{array}$$

$$y = \frac{-6x + 15}{-3}$$

$$\boxed{y = 2x - 5}$$

Practice: You Do!

6. Solve the equation for a: $\frac{a}{2} - 1 = b$

$$\frac{\boxed{a}}{2} - 1 = b$$

~~2~~ ~~-1~~ ~~+1~~

$$\frac{\boxed{a}}{2} = 2(b+1)$$

$$\boxed{a = 2(b+1)}$$

Essential Question 2/2/2021

- How can solve systems of equations by substitution?

Learning Target



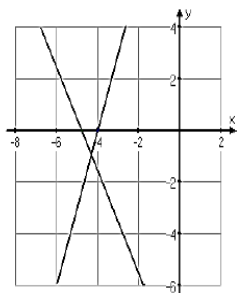
Solving Systems of Equations by Substitution

Day 2 - Solving Systems Using Substitution

Standard(s):

MGSE9-12.A.REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

Name the solution of the systems of equations below:



Were you able to figure out an exact solution???

- Unless a solution to a system of equations are integer coordinate points, it can be very hard to determine the solution.
- Therefore, we need algebraic methods that allow us to find exact solutions to Systems of Equations.
- We will learn two methods: **Substitution** and **Elimination**

Think About It...Some More

How would you find the x and y values for the following systems (i.e a point or solution to the systems)?

a. $-4x + 2y = 24$

$y = 8$

$$-4x + 2(8) = 24$$

$$-4x + 16 = 24$$

$$\begin{array}{r} -16 \\ -16 \end{array}$$

$$-4x = 8$$

$$\begin{array}{r} -4 \\ -4 \end{array}$$

$$x = -2$$

$$(-2, 8)$$

b. $x = 1$

$-2x + 8y = 14$

$$-2(1) + 8y = 14$$

$$\begin{array}{r} -2 \\ +2 \end{array} + 8y = 14$$

$$8y = 16$$

$$\begin{array}{r} 8 \\ 8 \end{array}$$

$$y = 2$$

$$(1, 2)$$

Steps for Solving a System by Substitution

Example:

$$y = x + 1$$

$$2x + y = -2$$

Step 1: Select the equation that already has a variable isolated.	Step 2: Substitute the expression from Step 1 into the other equation for the variable you isolated in step 1 and solve for the other variable.	Step 3: Substitute the value from Step 2 into the revised equation from Step 1 & solve for the other variable. Create an ordered pair (x, y).	Step 4: Check the solution in each of the original equations.
$y = x + 1$	$2x + x + 1 = -2$ $3x + 1 = -2$ $\begin{array}{r} 3x + 1 = -2 \\ -1 \quad -1 \\ \hline 3x = -3 \end{array}$	$y = -1 + 1$ $y = 0$ $(-1, 0)$	<p>Check</p> $0 = -1 + 1 \checkmark$ $2(-1) + 0 = -2$ $-2 + 0 = -2 \checkmark$

$$x = -1$$

Practice - We Do

Example 1: Solve the system below:

$$2x + 2y = 3$$

$$x = 4y - 1$$

$$2(4y - 1) + 2y = 3$$

$$8y - 2 + 2y = 3$$

$$10y - 2 = 3$$

$$10y = 5$$

$$10 \quad | \quad 10$$

$$y = \frac{1}{2} \text{ or } 0.5$$

$$x = 4\left(\frac{1}{2}\right) - 1$$

$$x = 2 - 1$$

$$x = 1$$

$$\text{Solution: } \left(1, \frac{1}{2}\right)$$