Warm Up
10/9/18

1.Complete the table:

Characteristic	How to prove
Parallel Lines	Same slope
Perpendicular Lines (Right angles)	Opposite reciprocal Slope
Side length	1. distance 2. Pythagorean theorem

2. Given the points (10, 4) and (14, -3)

A. Find the midpoint

$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

$$\left(\frac{10+14}{2}, \frac{4+(-3)}{2}\right)$$

$$\left(12, \frac{1}{2}\right)$$

B. Find the distance

$$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

$$\sqrt{(14-10)^2+(-3-4)^2}$$

$$\sqrt{(4)^2+(-7)^2}$$

$$\sqrt{16+49}$$

$$d=\sqrt{65}$$

WHAT IS IT

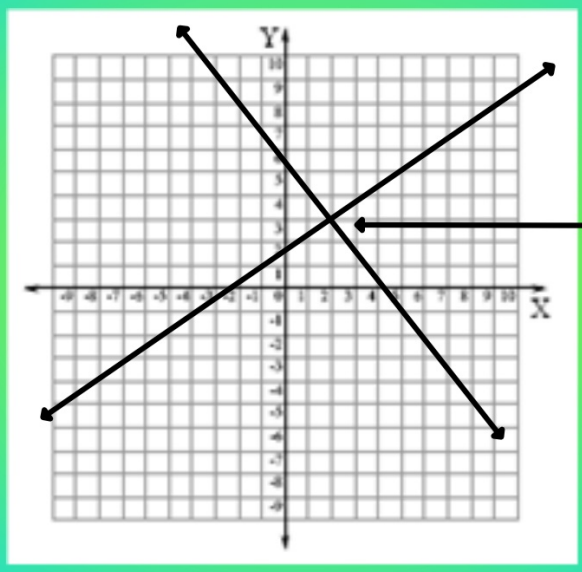
Two or more linear equations involving the same variables form a system of equations.

A solution of the system of equations is an ordered pair that satisfies *both* equations.

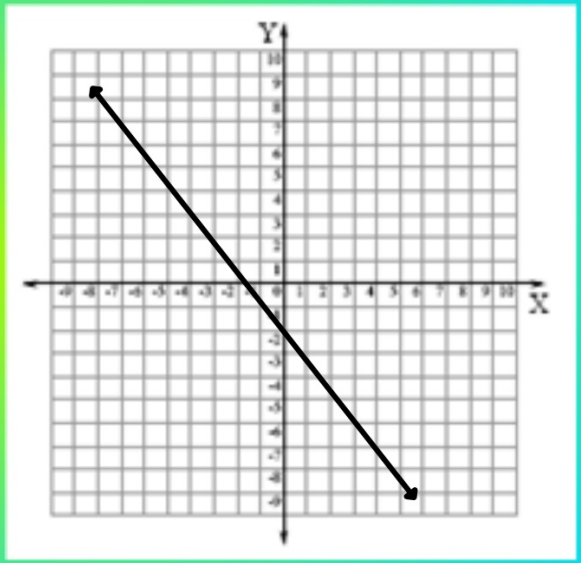
Systems of Equations

GRAPHING METHOD

Two intersecting lines will have 1 solution.

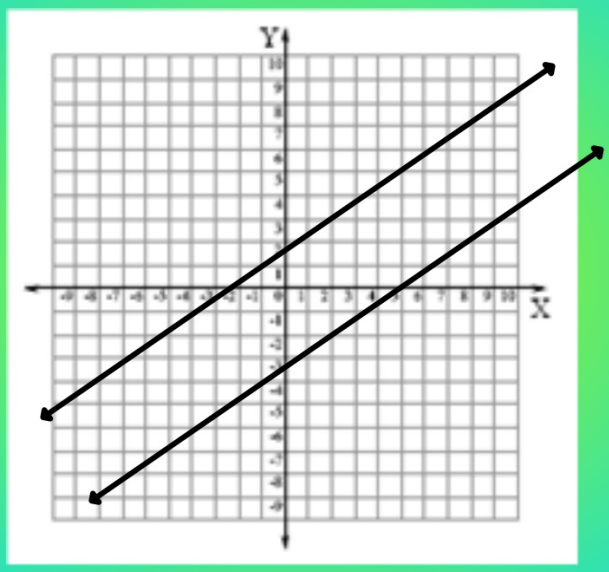


Two lines that are the same will have <u>infinitely many solutions</u>.



(The lines are
on top of eachother)

Two parallel lines will have <u>no solution.</u>



(They never intersect)

Graphing Method

WHEN TO USE??

...when both equations are in slope-intercept form (y=mx+b)

Ex: $y = x + 3$

$y = x - 1$

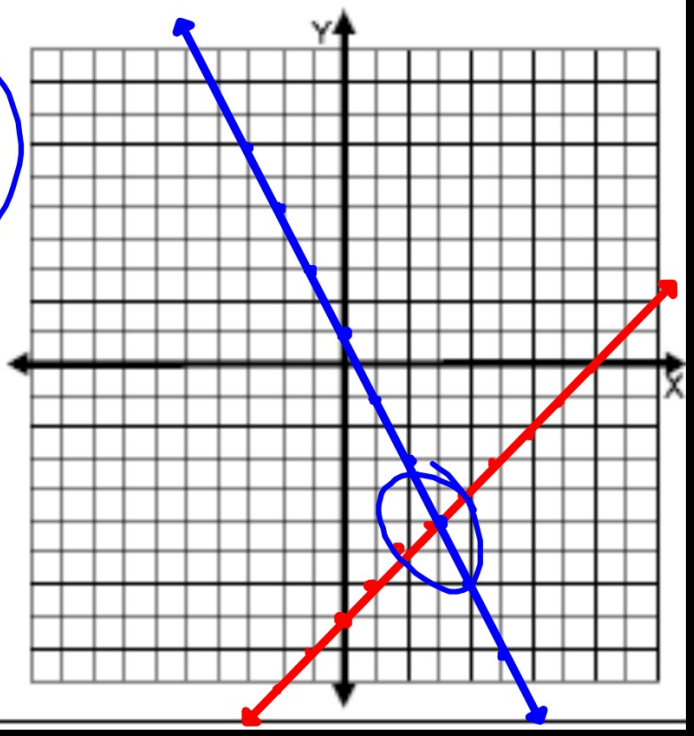
Solving by Graphing

Note: Make sure equations are in Slope-intercept form!

1. $y = x - 8$

$y = -2x + 1$

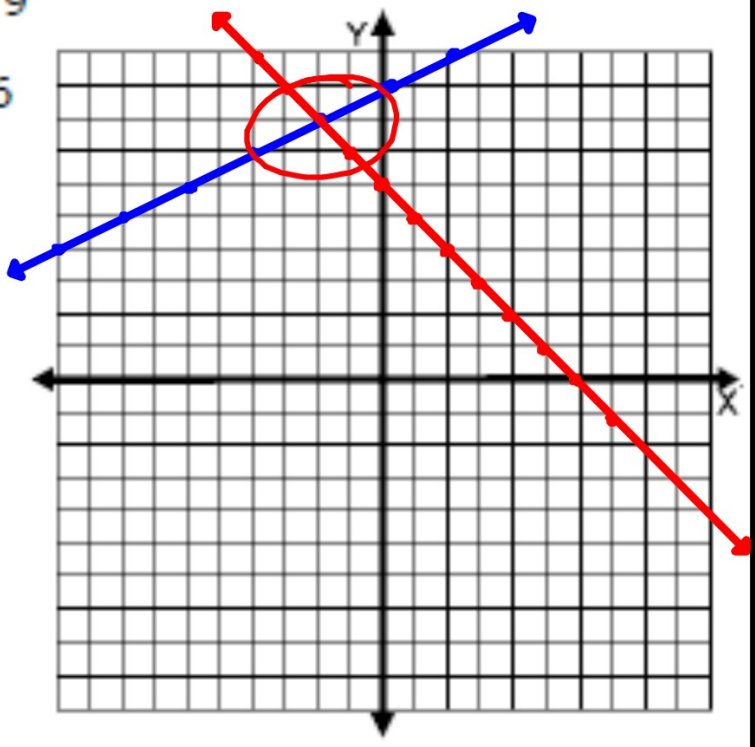
(3, -5)



2. $y = \frac{1}{2}x + 9$

$y = -x + 6$

(-2, 8)

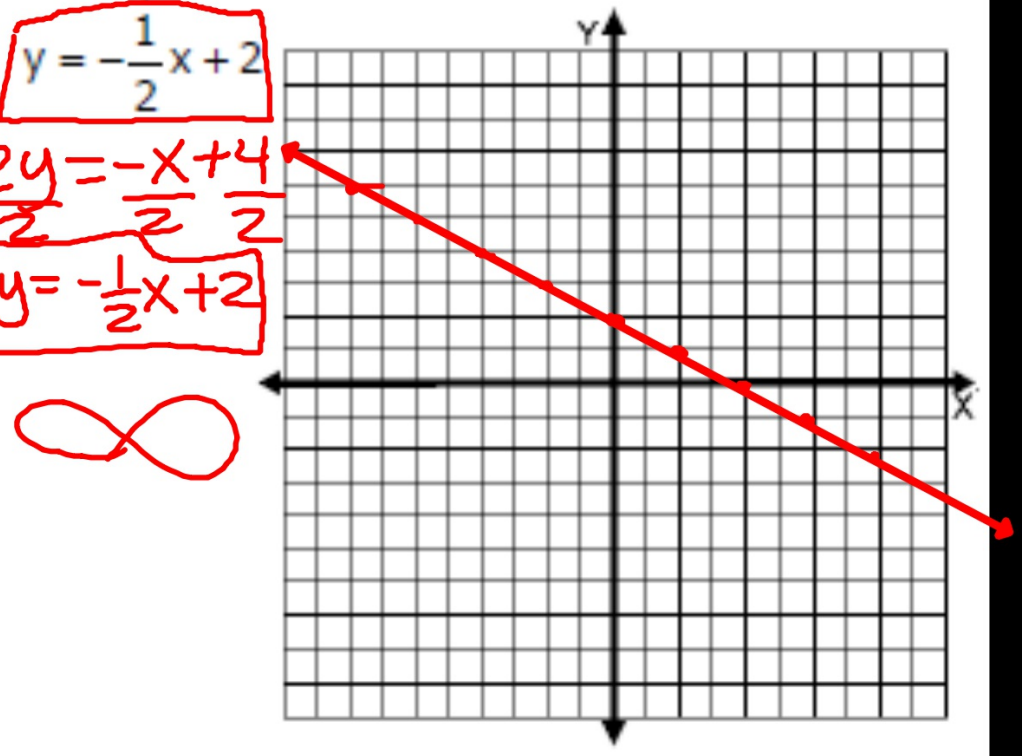


4. $x + 2y = 4$

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

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

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



6. $y = x + 5$

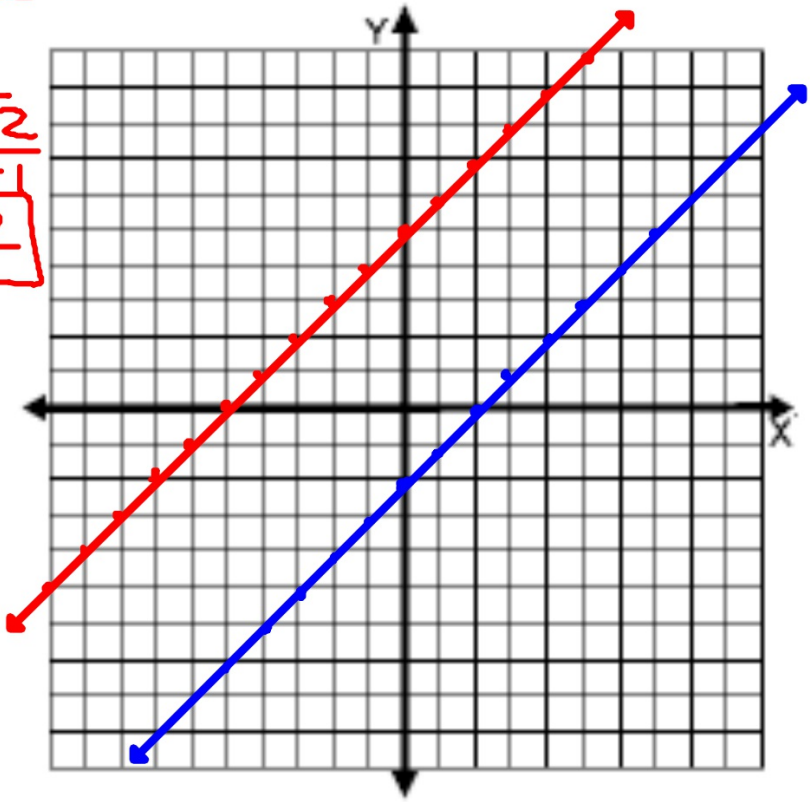
$x - y = 2$

$-x \quad -x$

$-y = -x + 2$

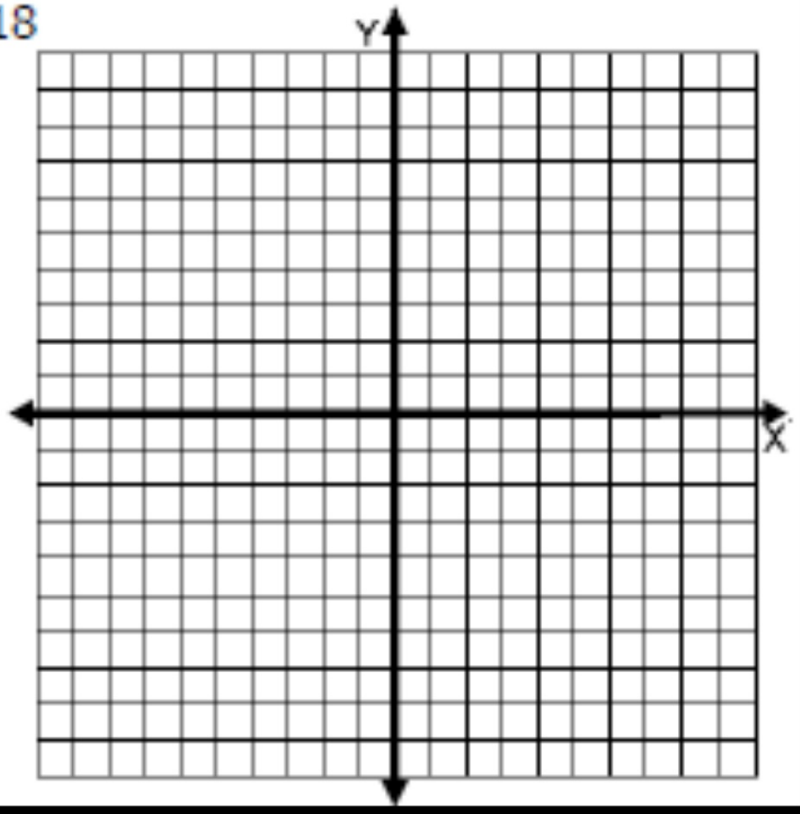
$-1 \quad -1 \quad -1$

$y = x - 2$



8. $x = -2$

$3x - 2y = -18$



SUBSTITUTION METHOD

STEPS TO SOLVE

1. Solve one equation for _X_ or _y_

2. Plug in this expression into the other equation and Solve for the variable.

3. Plug in your answer into the revised equation from Step 1 and Solve for the other variable.

Substitution Method

$y = 6x$

$2x + 3y = -20$

$2x + 3(6x) = -20$

$2x + 18x = -20$

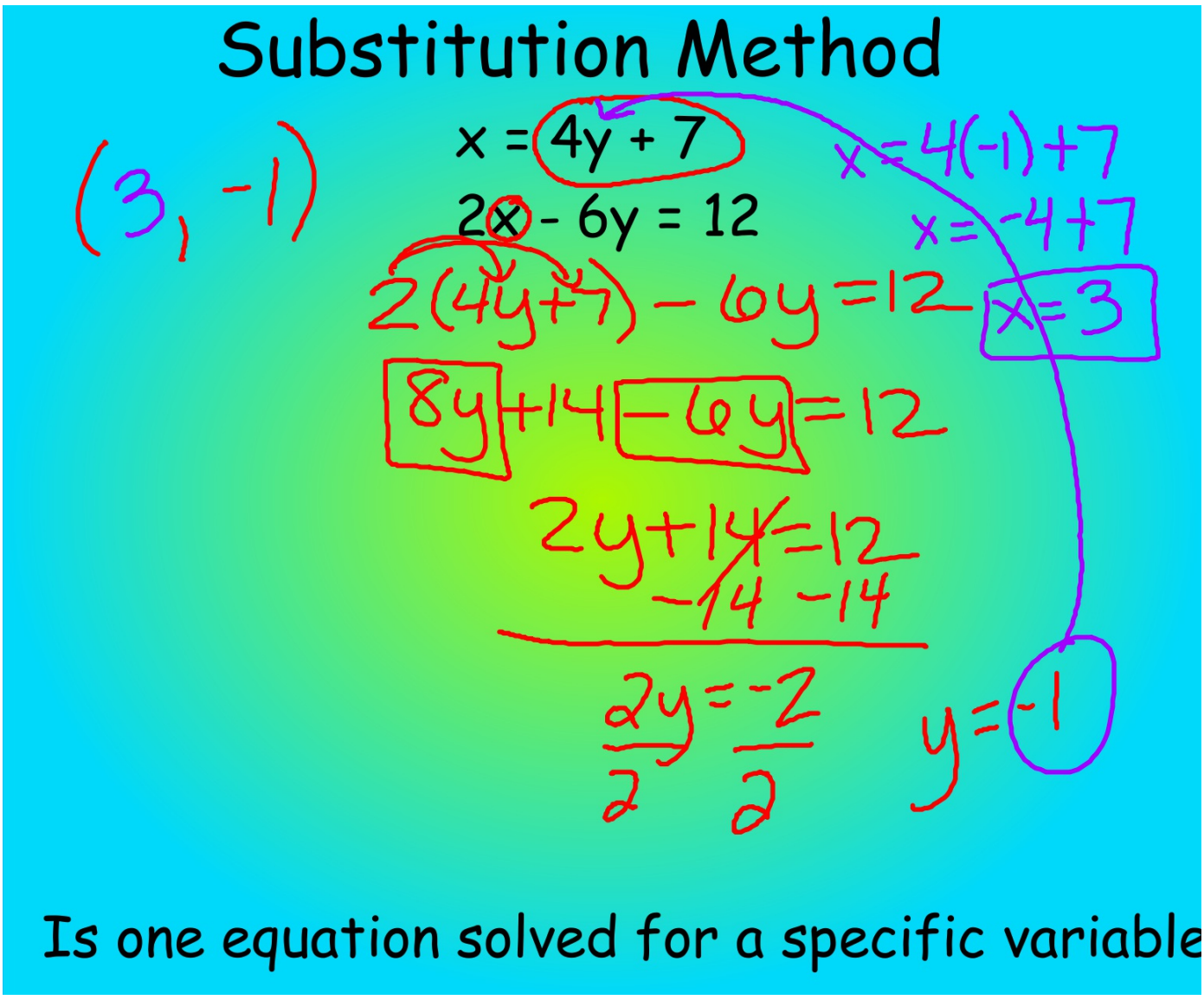
$\frac{20x}{20} = \frac{-20}{20}$

$x = -1$

$y = 6(-1)$

$(-1, -6)$

Substitution Method



Is one equation solved for a specific variable

Substitution Method

(2, 5)

$2x - 3y = -11$

$2x + y = 9$

$-2x \quad -2x$

$y = -2x + 9$

$2x - 3(-2x + 9) = -11$

$2x + 6x - 27 = -11$

$8x - 27 = -11$

$+27 \quad +27$

$\frac{8x}{8} = \frac{16}{8}$ $x = 2$

$2(2) + y = 9$

$4 + y = 9$

$-4 \quad -4$

$y = 5$

Is one equation (or both) solved for a

Steps for Solving by Graphing

Step 1: Enter the equations in the y= screen

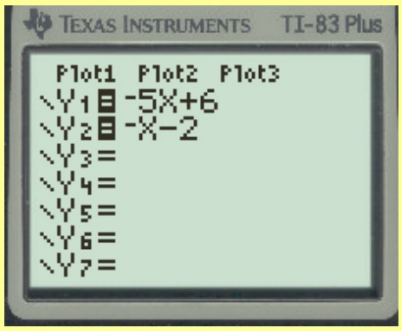
Step 2: Graph the equations. Use a standard graphing window(ZOOM 6)

Step 3: Use the calc feature(2nd Trace). Choose intersect to find the point where the lines intersect.

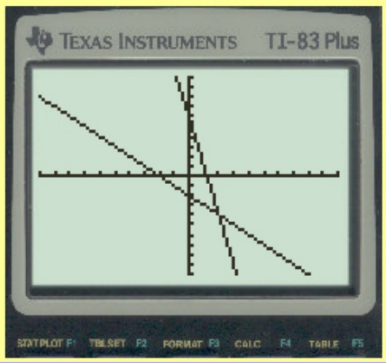
Step 4: Record your answer as (x , y)

Example 1: y= -5x + 6
y= -x - 2

Step 1: Enter the equation in y=

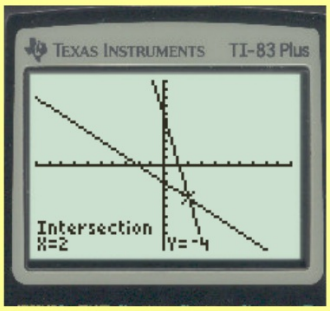


Step 2: Graph using the standard window…Zoom #6



Step 3: Use the Calc feature. Choose Intesect to find the point where the lines intersect.

*Note: You will need to hit ENTER three times until you see the words INTERSECTION!



Step 4: Record your answer as (x,y)

Solution: (2, -4)