Warmup 11/(The only poositive number
that is three times the sum of its digits)
(This is Week 7!)

1. Write about what you did during thanksgiving break.
2) Describe, in words, how you would graph the following equation:

$$
y=\frac{1}{2} x+3
$$

\#3 and \#4 will be on the next two slides.

## 1 minute challenge

- I am going to show you an equation with TWO VARIABLES in it. ( $x$ and $y$ )
- You will need to find as many solutions as you can. This will be an ( $\mathrm{x}, \mathrm{y}$ ) pair that works in the equation.
- FOR EXAMPLE, IF YOUR EQUATION WAS $y=3 x$, you could use $(2,6)$, because if $x=2$, then $y=6$.
- MAKE A LIST of your solutions on a blank piece of paper. The person with the most in one minute wins. You must write each solution as an ordered pair.

1 minute:

- Find as many solutions to this equation as you can:
$x+y=11$


## Reminder:

- There was no ALEKS due today, but there will be 60 minutes due next Monday.
- Anything you did over break, or Monday/Tuesday last week, or this upcoming week will count.


## Go over Equations Test

- May Retake individual tasks


## New Unit: Systems of Equations

Is there a solution for both equations???

$$
\begin{aligned}
& y=2 x-1 \\
& x+y=11
\end{aligned}
$$

Do you think there is ANOTHER pair of
numbers besides $(4,7)$ that works in both?

$$
\begin{aligned}
& y=2 x-1 \\
& x+y=11
\end{aligned}
$$

Remind me: what does the GRAPH of an equation like this look like?


Which ( $\mathrm{x}, \mathrm{y}$ ) works for BOTH?

Which ( $\mathrm{x}, \mathrm{y}$ ) works for BOTH?

$$
\begin{gathered}
x-y=7 \\
x y=30
\end{gathered}
$$

Which ( $\mathrm{x}, \mathrm{y}$ ) works for BOTH?

$$
\begin{gathered}
y=2 x \\
x+y=15
\end{gathered}
$$

Which ( $\mathrm{x}, \mathrm{y}$ ) works for BOTH?
$x+y=13$
$x-y=-3$

Which ( $\mathrm{x}, \mathrm{y}$ ) works for BOTH?

$$
\begin{gathered}
x+y=5 \\
x+y=10
\end{gathered}
$$

Which ( $\mathrm{x}, \mathrm{y}$ ) works for BOTH?

$$
\begin{gathered}
y=-\frac{1}{3} x+4 \\
y=\frac{3}{2} x-7
\end{gathered}
$$



## Solving Systems by Graphing

Objective:
-Use graphing to solve systems of equations
-Learn how to graph equations that are NOT in slope-intercept form

## -A system of equations is a set of more than one equation.

## Solving by Graphing

- It is pretty difficult to solve most systems just by looking at them. However, if you know how to graph the equations, then finding the point of intersection can be easy!
- To solve a system of equations, find the ( $x, y$ ) pair that works in BOTH equations!!!


## VERY IMPORTANT to

## understand:

- $y=\frac{1}{2} x+3$



## ESSENTIAL IDEA

- If an ( $x, y$ ) point is on the graph of an equation, that $x$ and $y$ will also make the equation true.


## Example 1

$$
\left\{\begin{array}{c}
y=-\frac{1}{3} x+4 \\
y=\frac{3}{2} x-7
\end{array}\right.
$$

Checking our solution

$$
\begin{aligned}
& \left\{\begin{array}{cl}
y=-\frac{1}{3} x+4 & \text { Solution: }(6,2 \\
y=\frac{3}{2} x-7
\end{array}\right. \\
& \cdot 2=-\frac{1}{3}(6)+4 \\
& \cdot 2=-2+4
\end{aligned} \begin{array}{ll}
2=\frac{3}{2}(6)-7 \\
\cdot 2=2 & \text { • } 2=2=7
\end{array}
$$

## Example 2

$$
\left\{\begin{array}{c}
y=2 x-9 \\
y=-3 x+6
\end{array}\right.
$$



Check the solution:
$\cdot\left\{\begin{array}{c}y=2 x-9 \\ y=-3 x+6\end{array}\right.$

- The solution was $(3,-3)$.


## Homework:

- Simple Systems of Equations worksheet
- Solve using guess \& check or whatever smart strategies you can come up with !!!
- Solving Systems by Graphing worksheet
- Due on WEDNESDAY but you can get a head start today if you want

