Lines: Lesson 1

Introduction to Lines: Notes

Name: _____

List some of the infinite answers to $y=-3x+5$

x = 0 y = 5

x = 1 y = 2

To "solve" lines:

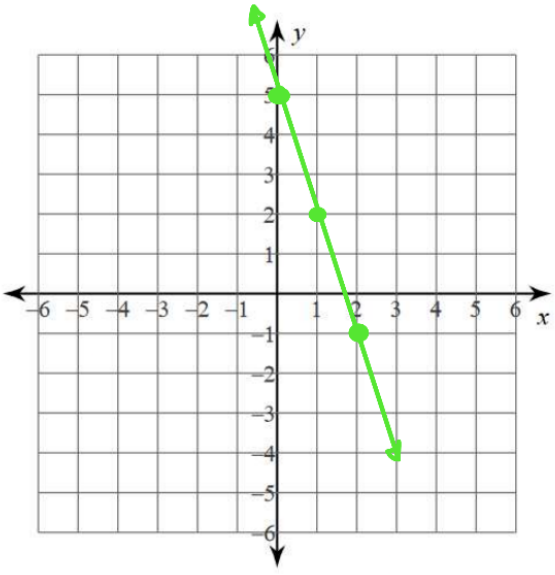
1. Make a table. x, the equation, y, point.
2. Choose x values (at least 2).

   Best choices: 0 and 1 OR in $\frac{2}{3}x+8=y$, choose 0 and 3.
3. Plug in x's and evaluate.
4. Translate x and y into a point.
5. Plot your points and make a line.

Solve:

$y=-3x+5$

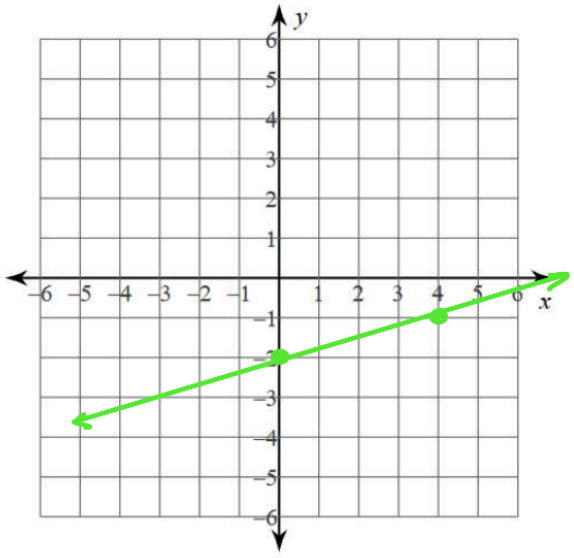
x	$-3x+5$	y	point
0	-3(0)+5	5	(0,5)
1	-3(1)+5	2	(1,2)
2	-3(2)+5	-1	(2,-1)



Solve:

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

x	$\frac{1}{4}x - 2$	y	Point
0	$\frac{1}{4}(0) - 2$	-2	(0, -2)
4	$\frac{1}{4} \cdot \frac{4}{1} - 2$ $1 - 2$	-1	(4, -1)



y-intercept: -2

slope: $\frac{\text{up}}{\text{over}}$: $\frac{1}{4}$

Which of these points fit on the line $y = -2x + 1$? (1, 3) (0, 5) (2, -3)

$3 \stackrel{?}{=} -2 \cdot 1 + 1$
 $3 \stackrel{?}{=} -2 + 1$
 $3 \neq -1$ ∴ no

$5 \stackrel{?}{=} -2 \cdot 0 + 1$
 $5 \stackrel{?}{=} 0 + 1$
 $5 \neq 1$ ∴ no

$-3 = -2 \cdot 2 + 1$
 $-3 = -4 + 1$
 $-3 = -3$ ∴ yes

What we know about lines so far:

1. Any equation with an x and y, where they are not raised to visible powers, will create a straight line.
2. We can create a table of values to fit the *x*'s and *y*'s.
3. Every point on the line is an answer to the equation.
4. The *y*-intercept is the last number when written like this: $y = \frac{5}{1}x + 7$ (slope, y-int)
5. To go from one point to another, I go up the top number, down the bottom number, and is called the slope.