Name:_____ Date:_____

Notes
Algebra Section 4.2
Pages 215-221

Goal: "You will use a table to graph a linear equation"
"You will graph horizontal and vertical lines"
"Choose appropriate *x* values"

Vocabulary

Linear Equation: Any equation whose graph is a straight line.

If you graph it and it is not a straight line, you made an error.

Solution: **Any ordered pair (x,y) that makes the equation true when substituted.

** Any point on the line

** Note: Since a line continues on forever in both directions, and there are infinite points on a line, then a linear equation has infinite solutions.

Example: Which ordered pair is a solution to : $3x - y = 7$; (3,4) or $(1,-4)$? Explain.

$(3,4)$

x= 3
y= 4

Plug x and y into the equation.

$3x - y = 7$
$3(3) - 4 = 7$
$9 - 4 = 7$
$5 = 7$
No

$(1,-4)$

x= 1
y= -4

Plug x and y into the equation.

$3x - y = 7$
$3(1) - (-4) = 7$
$3 - (-4) = 7$
$7 = 7$
Yes

Which one is a solution to the equation? $(1,-4)$

Try These:

1) Which ordered pair is a solution to: $2x - 6 = 3y$; (3,-2) or (0,-2)?

$(0,-2)$

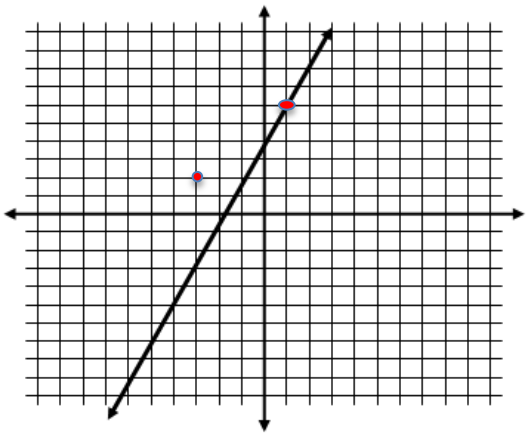
2) Is $(4, -1)$ a solution to $x + 2y = 5$? Why or why not?

No. When x=4 and y=-1 the equation is not true.

3) Are the following points solutions to the linear equation represented by the line graphed?

a) (1, 6)
b) (–3, 2)

a is a solution but b is not a solution



4) List three ordered pairs that are solutions to the equation $3x - 5 = y$

$(-2, -11)$ $(1, -2)$ $(4,7)$

$(-1, -8)$ $(2, -1)$ $(5,10)$

$(0, -5)$ $(3,4)$ $(6,13)$

5) List four ordered pairs that are a solution to the equation $2x + 3 = y$

$(-2, -1)$ $(1,5)$ $(4,11)$

$(-1,1)$ $(2,7)$ $(5,13)$

$(0,3)$ $(3,9)$ $(6,15)$

6) If x is 5, what ordered pair is a solution to the equation $2x + 7 = y$?

$(5,17)$

Graphing a linear equation by making a table:

1) Choose 5 appropriate values for *x*. Typically these values are:

**Do not choose these values if:

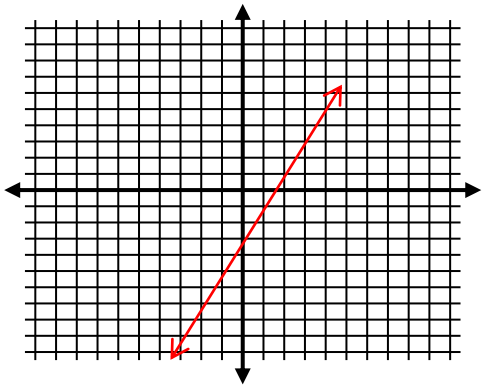
- There is a restriction on the domain. For example, if it says $x \geq 0$, then you must choose only positive values, or if dealing with time. Time cannot be negative.

-If after putting the equation in function form, the coefficient of *x* is a fraction, then it makes most sense to choose multiples of the denominator to avoid fractions.

2) Plug your 5 values into the function for *x*, find out what *y* is for each to complete your table.

x	-2	-1	0	1	2
y	-7	-5	-3	-1	1

$y = -3 + 2x$

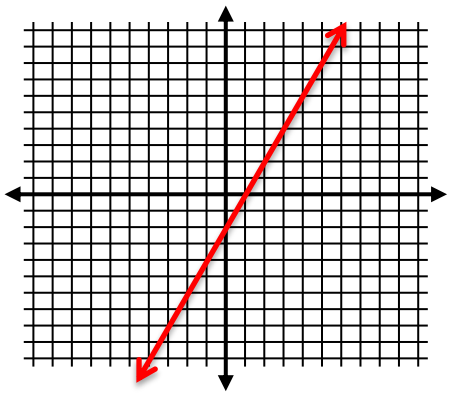


3) Graph the ordered pairs you now have from your table.

Try These:

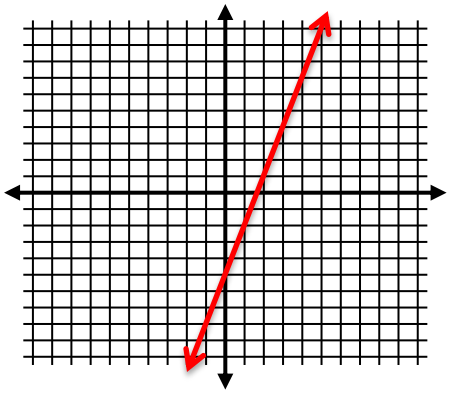
1) Graph $y = 2x - 2$

x	-2	-1	0	1	2
y	-6	-4	-2	0	2

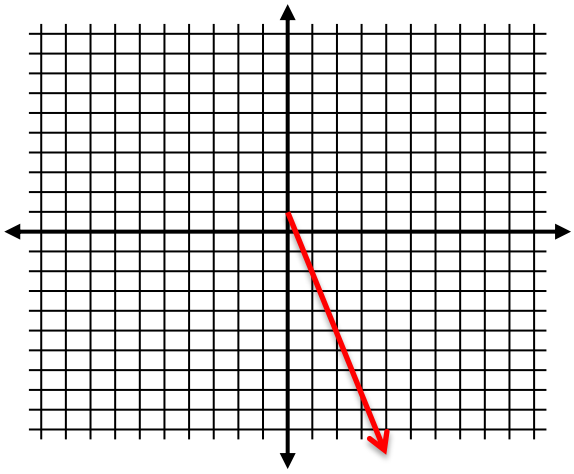


2) Graph $y = 3x - 5$

x	-2	-1	0	1	2
y	-11	-8	-5	-2	1



3) Graph $y = -3x + 1$ with a domain of $x \geq 0$



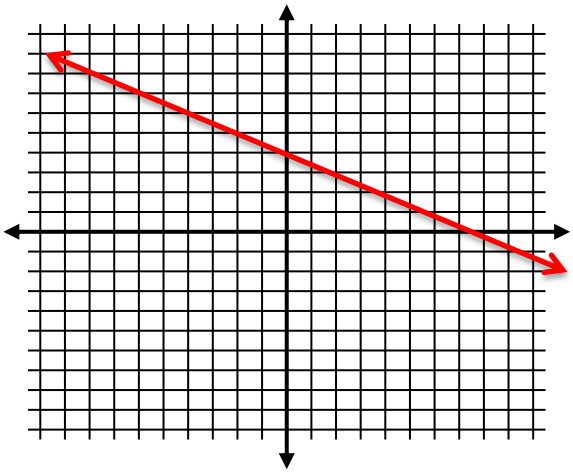
*which values can you **not** choose for x? Why? You cannot choose negative values because x is greater than or equal to 0.

x	0	1	2	3	4
y	1	-2	-5	-8	-11

***Identify the range…**

$1, -2, -5, -8, -11$

4) Graph $y = \frac{1}{2}x + 4$

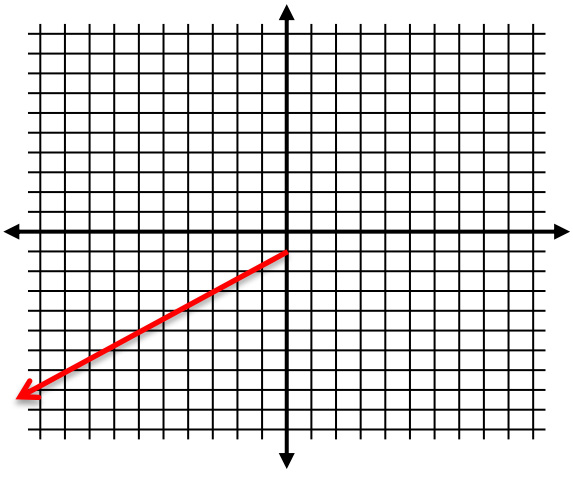


**which values should you pick for x? Why?

0 and multiples of 2 to eliminate the fraction.

x	0	2	4	6	8
y	4	3	2	1	0

5) Graph $y = 2x - 1$ with a domain of $x \leq 0$ then identify the range.

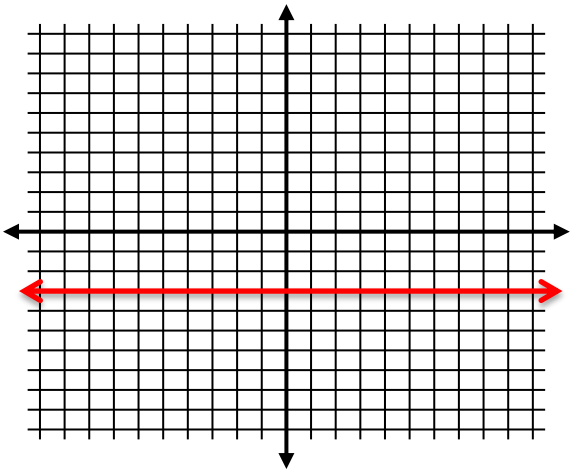


x	-12	-9	-6	-3	0
y	-9	-7	-5	-3	-1

Range: $-9, -7, -5, -3, -1$

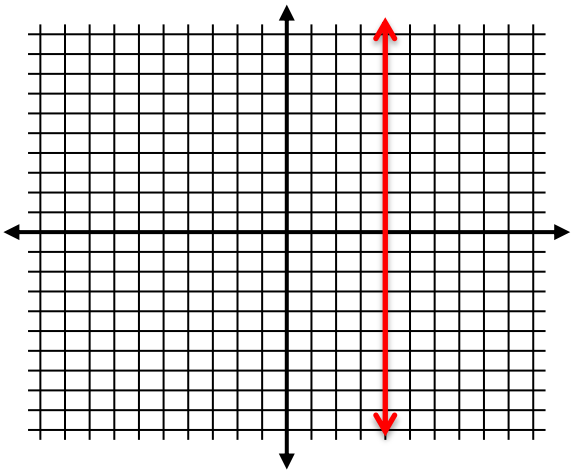
6) Graph $y = -3$

x	-2	-1	0	1	2
y	-3	-3	-3	-3	-3



7) Graph $x = 4$

x	4	4	4	4	4
y	-2	-1	0	1	2



8) The distance, d, in miles, that a runner travels is given by the function $d = 6t$ where t is the time (in hours) spent running. The runner plans to go for a 1.5 hour run. Set up a table and identify the domain and range of the function. Choose at least 4 values for t.

t	0	0.5	1	1.5
d	0	3	6	9

Domain: $1.5 \geq t \geq 0$
Range: $9 \geq d \geq 0$

9) For gas that costs \$2 per gallon, the equation $C = 2g$ gives the cost, C, in dollars for g gallons of gas. You plan to pump \$10 worth of gas. Set up a table and identify the domain and range.

g	0	1	2	3	4	5
C	0	2	4	6	8	10

Domain: $0 \leq g \leq 5$
Range: $0 \leq C \leq 10$