Lesson Context

BIG PICTURE of this UNIT:	• mastery with algebraic skills to be used in our work with linear functions and equations. • understanding various properties of basic functions and linear equations • how do manipulate equations with more then one variable?		
CONTEXT of this LESSON:	Where we've been We have worked with slope and some linear ideas in spaghetti lab.	Where we are Today we will make connections between the equation and graph of a linear function	Where we are heading How can I use my knowledge of linear relationships to develop linear functions?

Lesson Objectives:

Task 1: Warm Up.
Task 2: Linear Graphical Investigation w/ **DESMOS**
Task 3: Closuring Reflections
Task 4: Extensions

Task 1: Warm Up

1. Solve the following for y.

$$3y + 6x = -12 \qquad y - 5 = \frac{1}{4}(x + 2)$$

Linear Graphical Investigation

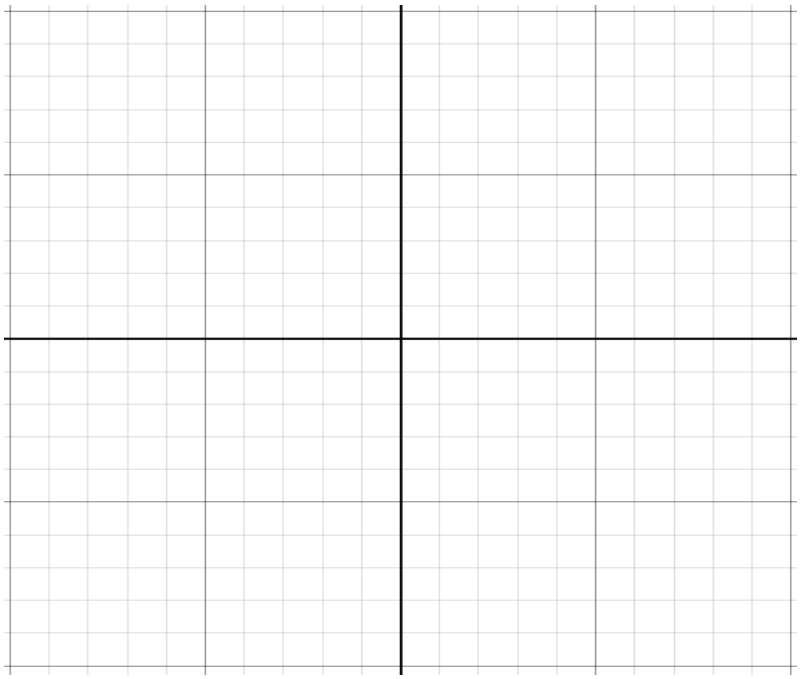
1. For the two equations below, please complete the tables for each in a different color. Make sure to draw the graphs of each in a different color as well.

Equation 1 $y_1 = 2x - 5$	**Equation 2** $y_2 = -\frac{1}{3}x + 5$
Slope(Use points to calculate)	**Slope(Use points to calculate)**
Y Intercept:	**Y Intercept:**
X Intercept:	**X Intercept:**

x	Y_1	x	Y_2

Desmos
X Min: -15
X Max: 10
Y Min: -10
Y Max: 10

Sketch of Graph:

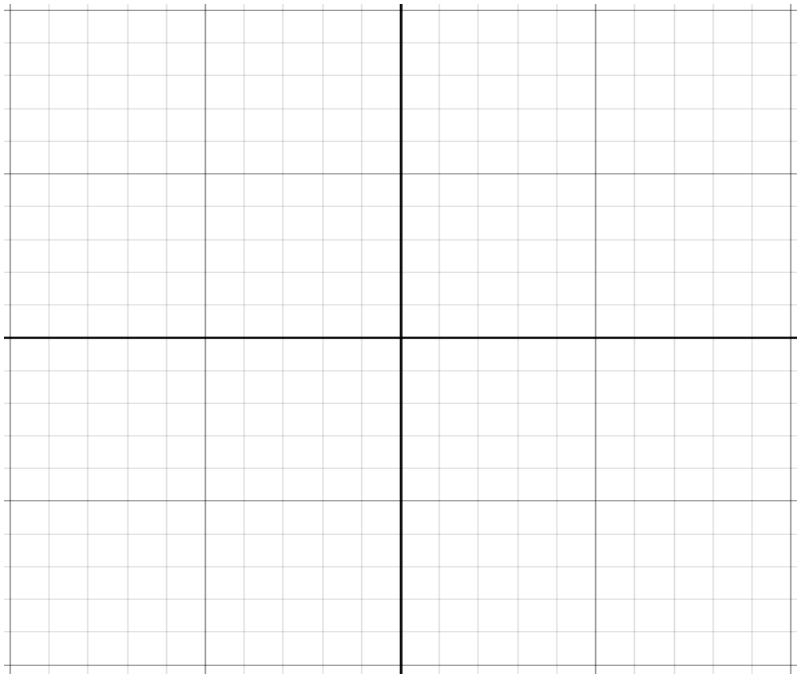


Find the intersection point of the two graphs.	Put this point in your data table (x,y) =

2. For the two equations below, please complete the tables for each in a different color. Make sure to draw the graphs of each in a different color as well.

Equation 1 $y_1 = \frac{1}{4}x + 2$	**Equation 2** $y_2 = -\frac{3}{2}x$
Slope(Use points to calculate)	**Slope(Use points to calculate)**
Y Intercept:	**Y Intercept:**
X Intercept:	**X Intercept:**

x	Y_1	x	Y_2

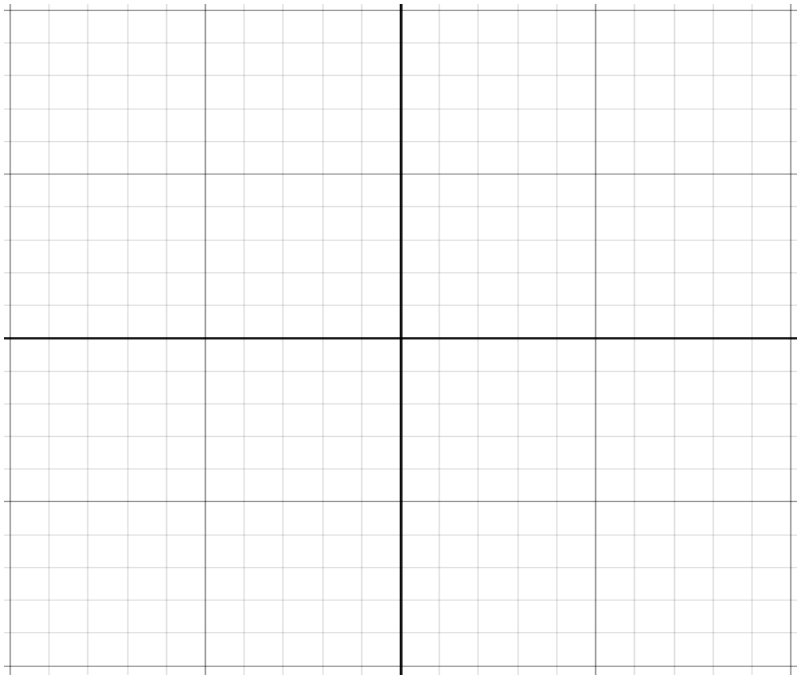
Desmos	Sketch of Graph:
X Min: -10 X Max: 10 Y Min: -10 Y Max: 10	

Find the intersection point of the two graphs.	Put this point in your data table (x,y) =

3. For the two equations below, please complete the tables for each in a different color. Make sure to draw the graphs of each in a different color as well.

Equation 1 $y = 6$	**Equation 2** $x = -3$
Slope(Use points to calculate)	**Slope(Use points to calculate)**
Y Intercept:	**Y Intercept:**
X Intercept:	**X Intercept:**

x	Y_1	x	Y_2

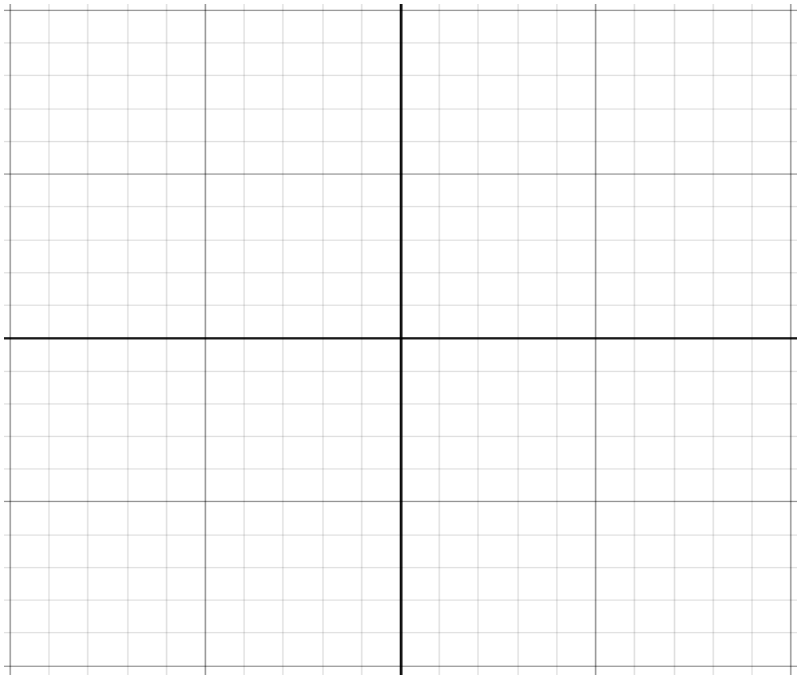
Desmos	Sketch of Graph:
X Min: -10 X Max: 10 Y Min: -10 Y Max: 10	

Find the intersection point of the two graphs.	Put this point in your data table (x,y) =

4. For the two equations below, please complete the tables for each in a different color. Make sure to draw the graphs of each in a different color as well.

Equation 1 $y = -7$	**Equation 2** $x = 4.5$
Slope	**Slope**
Y Intercept:	**Y Intercept:**
X Intercept:	**X Intercept:**

x	Y_1	x	Y_2

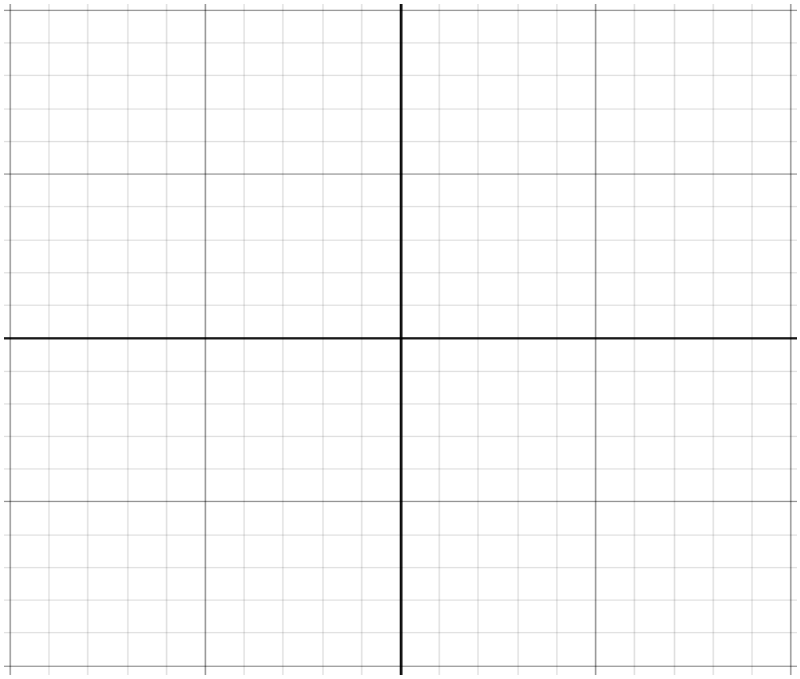
Desmos	Sketch of Graph:
X Min: -10 X Max: 10 Y Min: -10 Y Max: 10	

Find the intersection point of the two graphs.	Put this point in your data table (x,y) =

5. For the two equations below, please complete the tables for each in a different color. Make sure to draw the graphs of each in a different color as well.

Equation 1 $y_1 = 200x + 600$	**Equation 2** $y_2 = 600x + 50$
Slope	**Slope**
Y Intercept:	**Y Intercept:**
X Intercept:	**X Intercept:**

x	Y_1	x	Y_2

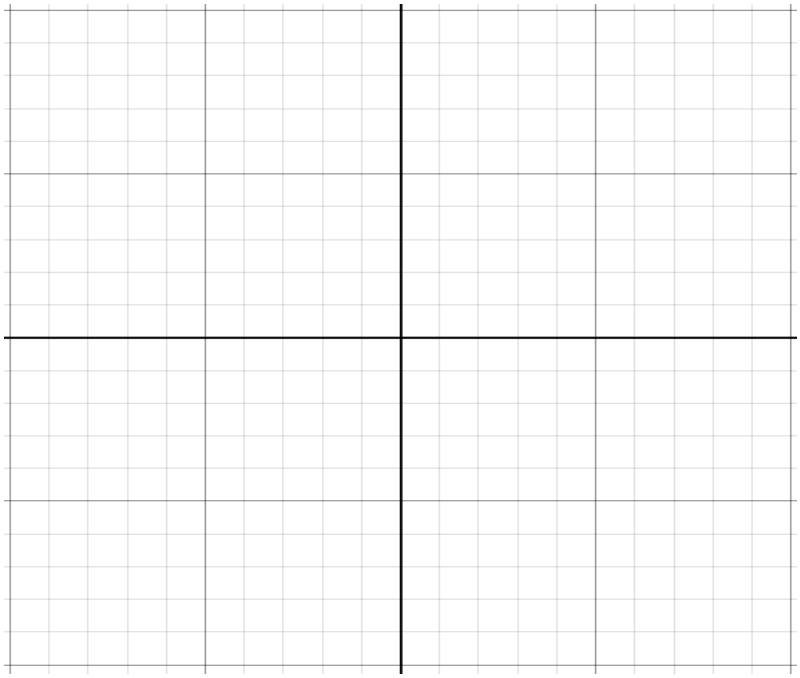
Desmos	Sketch of Graph:
X Min: -1 X Max: 5 Y Min: -10 Y Max: 2000	

Find the intersection point of the two graphs.	Put this point in your data table (x,y) =

6. For the two equations below, please complete the tables for each in a different color. Make sure to draw the graphs of each in a different color as well.

Equation 1 $y_1 = \frac{7}{3}x - 8$	**Equation 2** $y_2 = \frac{7}{3}x + 1$
Slope	**Slope**
Y Intercept:	**Y Intercept:**
X Intercept:	**X Intercept:**

x	Y_1	x	Y_2

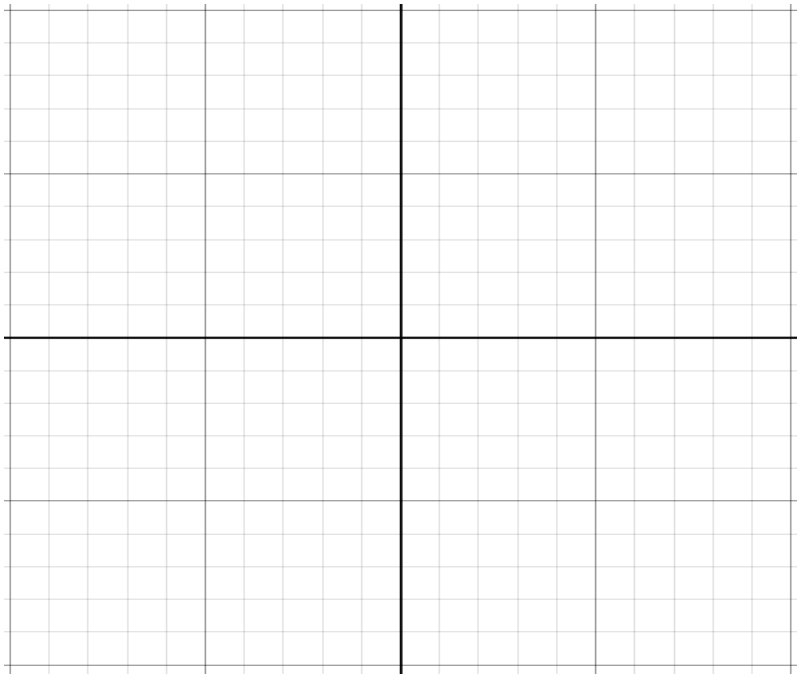
Desmos	Sketch of Graph:
X Min: -15 X Max: 10 Y Min: -10 Y Max: 10	

Find the intersection point of the two graphs.	Put this point in your data table (x,y) =

7. For the two equations below, please complete the tables for each in a different color. Make sure to draw the graphs of each in a different color as well.

Equation 1 $y_1 = \frac{5}{2}x - 6$	**Equation 2** $y_2 = -\frac{2}{5}x$
Slope	**Slope**
Y Intercept:	**Y Intercept:**
X Intercept:	**X Intercept:**

x	Y_1	x	Y_2

Desmos	Sketch of Graph:
X Min: -10 X Max: 10 Y Min: -10 Y Max: 10	

Find the intersecition point of the two graphs.	Put this point in your data table (x,y) =

Task 3: Closing Reflections and Connections:

1. Please make any connections between the slope of your graph, and where that shows up in the equation and in the tables. _____
_____
_____
_____

2. Please make any connections between the y-intercepts of your graph, and where that shows up in your equations and in your tables. . _____
_____
_____
_____

3. Please make a connection between the slope of your graphs and the direction of your graphs. _____
_____
_____

4. Please write about any other observations that you see in this exploration. _____
_____
_____
_____

Task 4: Extension #1

Ext. 1
Given the graph to the right, please without using technology generate a table for the graph, find it's slope, y-intercepts and then write the equation for it. All without technology.

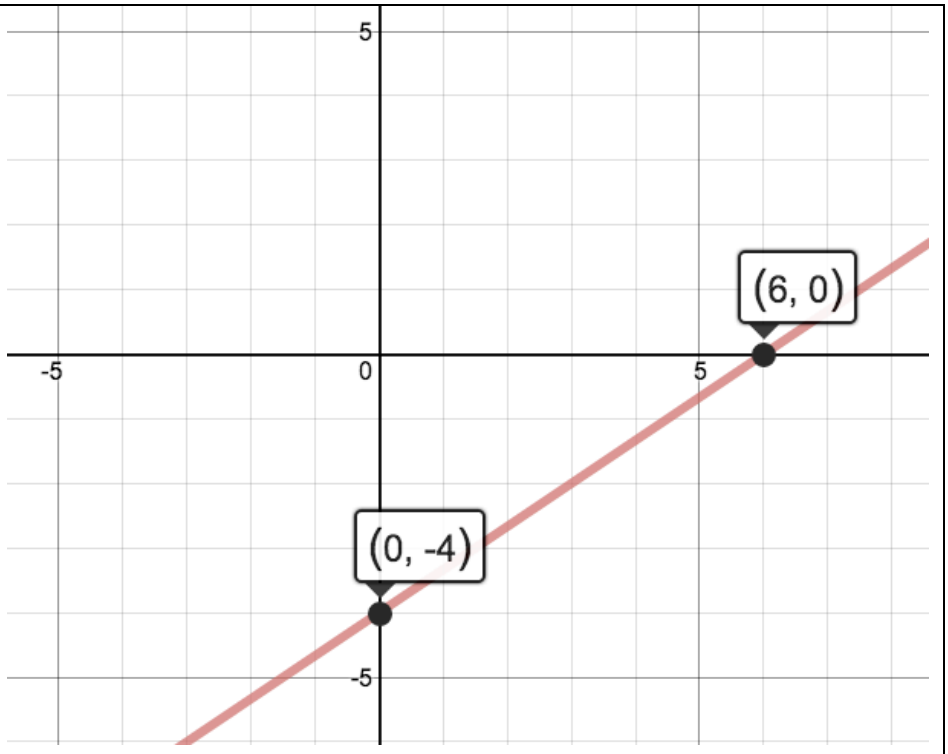


Table	Y –Int: Explain how you got this	Slope Explain how you got this	Equation:
x | y | | | | | | | | | |			

Task 4: Extension #2

Ext. 1

Given the equation below find the y-intercept, slope, generate a table of values, and then draw the graph without technology.

$$y = -3x + 9$$

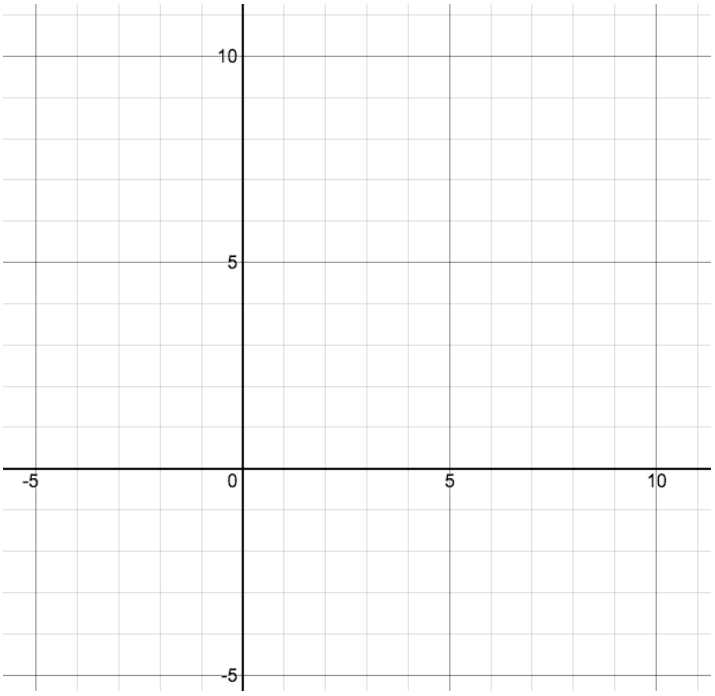


Table		Y –Int: Explain how you got this	Slope Explain how you got this
x	y		

Task 4: Extension #3

Ext. 1

Given the two points below find the y-intercept, slope, generate a table of values, and then draw the graph without technology.

$(-2,-2)$

$(0,-5)$

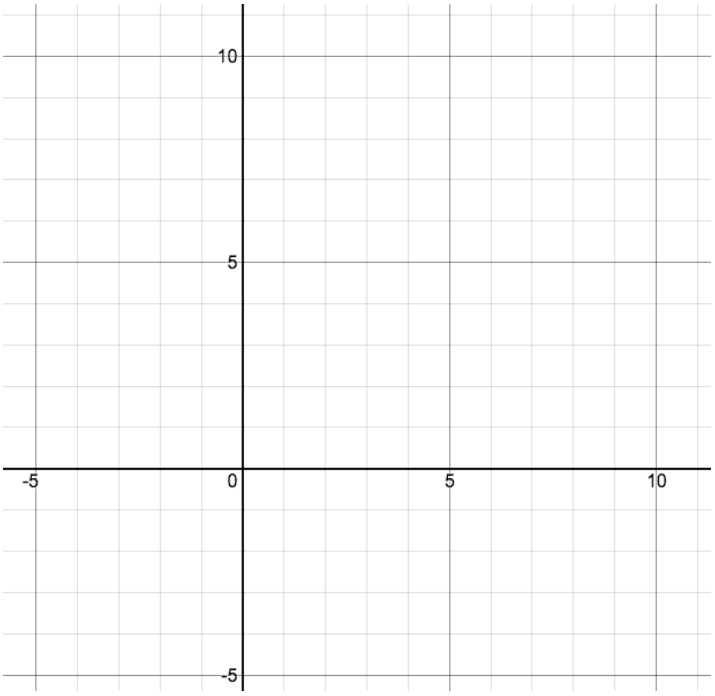


Table		Y –Int: Explain how you got this	Slope Explain how you got this
x	y		

Task 4: Extension #4

Ext. 1

Given the two points below find the y-intercept, slope, generate a table of values, and then draw the graph without technology.

$(-6,-8)$

$(3,7)$

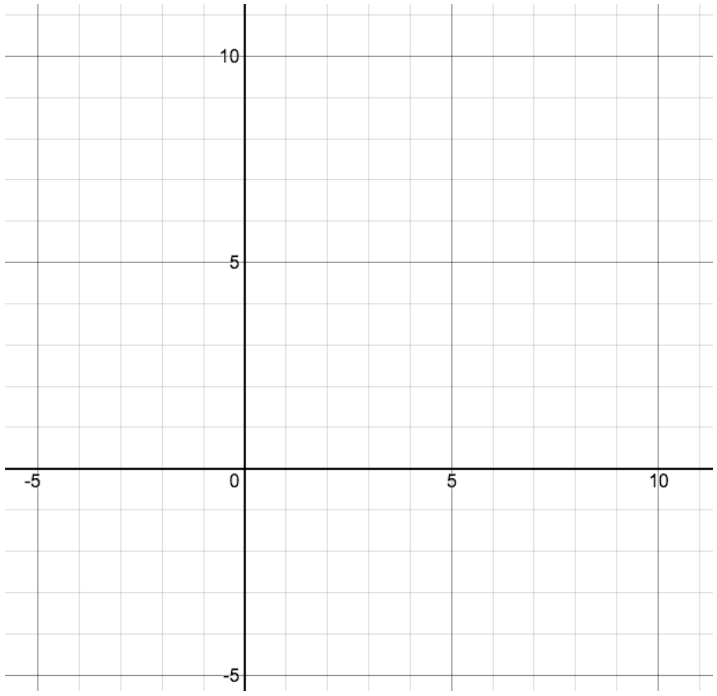


Table	Y –Int: Explain how you got this	Slope Explain how you got this

x	y