Which is better?

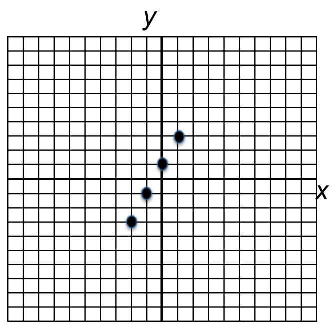
Alex and Morgan were asked to graph the equation $y = 2x + 1$

Alex's "make a table of values" way

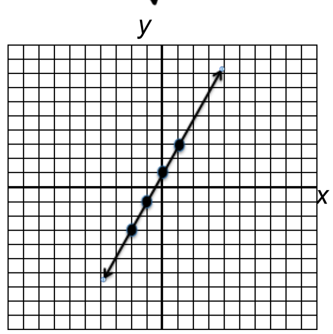
First, I made a table. I chose some *x*-values, then plugged them into the original equation to find corresponding *y*-values.

x	y
-2	$2(-2)+1=-3$
-1	$2(-1)+1=-1$
0	$2(0)+1=1$
1	$2(1)+1=3$

Next, I plotted my points.



Finally, I connected my points and now I have my line.



Morgan's "use the slope and *y*-intercept" way

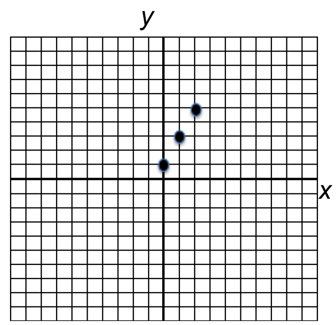
$$y = 2x + 1$$

$$m = 2 = \frac{2}{1}$$

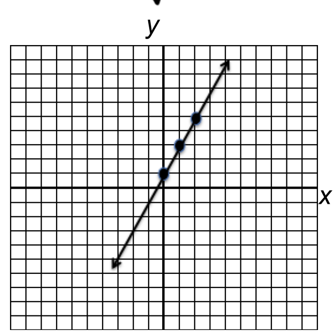
$$b = (0,1)$$

I looked at the equation and saw that it was in slope-intercept form. So I could see that the slope, *m*, was 2 and the *y*-intercept, *b*, was at (0, 1).

Next, I plotted the *y*-intercept. Then I found other points by using the slope. Since the slope is 2, this means that the rise is up 2 and the run is to the right 1.



Here is my final graph.



* Describe Alex's way to a new student in your class.
* Describe Morgan's way to a new student in your class.
* What are some similarities and differences between Alex's and Morgan's ways?* Why did Alex choose the *x*-values he chose?
* Even though Alex and Morgan did different steps, why did they get the same answer?
* Which way is easier, Alex's way or Morgan's way? Why?

Which is better?

Alex and Morgan were asked to graph the equation $y = 2x + 1$

Alex's "make a table of values" way

Morgan's "use the slope and *y*-intercept" way

First, I made a table. I chose some *x*-values, the[n] plugged them [into] the original equation to fin[d] corresponding *y* values.

Next, I plott[ed]...

I looked at the equation and saw that it was in slope-i[nterce]pt form. So I [could s]ee that the [slope,] *m*, was 2 and [the y-]intercept, *b*, was [(0,] 1).

$= 2$

When graphing a linear equation, making a table of values and plotting the slope and *y*-intercept both give you the same graph because both methods allow you to find several points that fall on the line.

There is more than one way to graph a line. Before you start graphing, you can look at the problem first and try to see which way will be easier.

...s means ...is up 2 and ...he right 1.

my po... have my l...

*** Describe Alex's way to a... student in y...**
*** Describe Morgan's way t... new student in ... ass.**
*** What are some similarities and differences be...en Alex's and Morgan's ways?**
*** Why did Alex choose the *x*-values he chose?**
*** Which way is easier, Alex's way or Morgan's way? Why?**

Student Worksheet 4.1.1

1 Describe Alex's way to a new student in your class.

2 Describe Morgan's way to a new student in your class.

3 What are some similarities and differences between Alex's and Morgan's *ways*?

4 Why did Alex choose the x-values he chose?

5 Even though Alex and Morgan did different steps, why did they get the same answer?

6 Which way is easier, Alex's way or Morgan's way? Why?

Which is better?

Alex and Morgan were asked to graph the equation $y = \frac{1}{3}x + 4$ using a table of values.

Alex's "choose typical *x* values" way

$y = \frac{1}{3}x + 4$

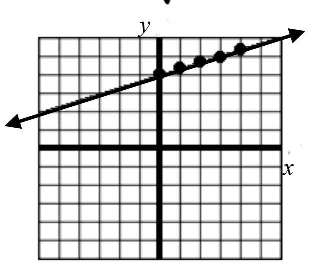
First I chose some *x* values. As I usually do when I make a table of values, I picked *x* to be 0, 1, 2, 3, and 4.

x	*y*
0	
1	
2	
3	
4	

For each *x* value in the table, I plugged it into the equation to find the corresponding *y* value.

x	*y*
0	4
1	13/3
2	14/3
3	5
4	16/3

Then I plotted each ordered pair and connected the dots to give a graph of this line.



Morgan's "choose *x* values more carefully" way

$y = \frac{1}{3}x + 4$

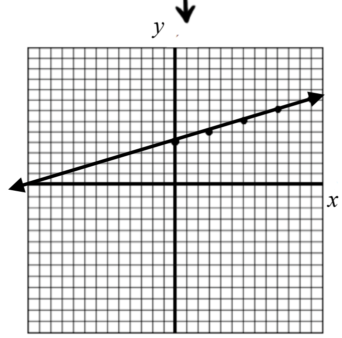
First I chose some *x*-values. I chose multiples of 3.

x	*y*
0	
3	
6	
9	
12	

For each *x* value in the table, I plugged it into the equation to find the corresponding *y* value.

x	*y*
0	4
3	5
6	6
9	7
12	8

Then I plotted each ordered pair and connected the dots to give a graph of this line.



*** How did Alex graph the equation? How did Morgan graph the equation?**

*** What are some similarities and differences between Alex's and Morgan's ways? Why did Morgan chose to use only multiples of 3 for *x*?**

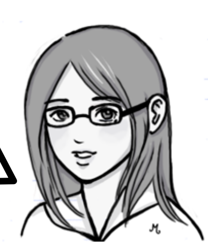
*** Whose way is easier, Alex's or Morgan's? Why?**

Which is better?

Alex and Morgan were asked to graph the equation $y = \frac{1}{3}x + 4$ using a table of values.

Alex's "choose typical *x* values" way	Morgan's "choose *x* values more carefully" way
$\frac{1}{\ }x + 4$	$y = \frac{1}{3}x$
First I chos… values. As I… do when I m… table of valu… picked *x* to be… 2, 3, and 4.	**…e some *x*- …hose …of 3.**
For eac… the…	**…in the**
va…	
The… e…	
graph of this…	**…of this line.**

When creating a table of values to graph an equation, it is helpful to choose x values that will generate whole number values for y (rather than simply choosing x values without considering the specific equation to be graphed).



There is more than one way to pick points for graphing a line. Before you start picking points, you can look at the problem first and try to pick points in the easiest way.

*** How did Alex graph the equation? How did Morg… graph the equation?**

*** What are some similarities and differences betwee… Alex's and Morgan's ways? Why did Morgan chose to use only multiples of 3 for *x*?**

*** Whose way is easier, Alex's or Morgan's? Why?**

Student Worksheet 4.1.2

1a How did Alex graph the equation?

1b How did Morgan graph the equation?

2 What are some similarities and differences between Alex's and Morgan's ways?

3 Why did Morgan choose to use only multiples of 3 for *x*?

4 Whose way is easier, Alex's or Morgan's? Why?

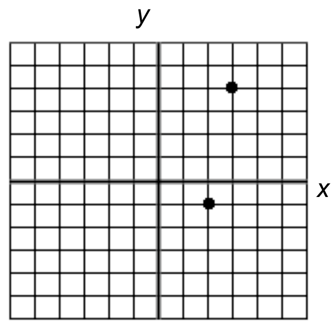
5 If the problem were changed to $y = \frac{2}{7}x + 4$, and you were trying to graph it using Morgan's way, then what *x* values would you choose?

Why does it work?

Alex and Morgan were asked to find the slope of the line passing through (3,4) and (2,-1)

Alex's "graph" way

First I drew a graph and plotted the two given points.



$$m = \frac{5}{1} = 5$$

Starting from the bottom point, I counted the number of units up and to the right necessary to get to the other point. I went up 5 and to the right 1, so the slope is 5/1, which is 5.

Morgan's "formula" way

First I wrote out the formula for slope.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Then I substituted in (3, 4) for (x_1, y_1) and (2, -1) for (x_2, y_2).

$$m = \frac{-1 - 4}{2 - 3}$$

Then I simplified the numerator and denominator.

$$m = \frac{-5}{-1}$$

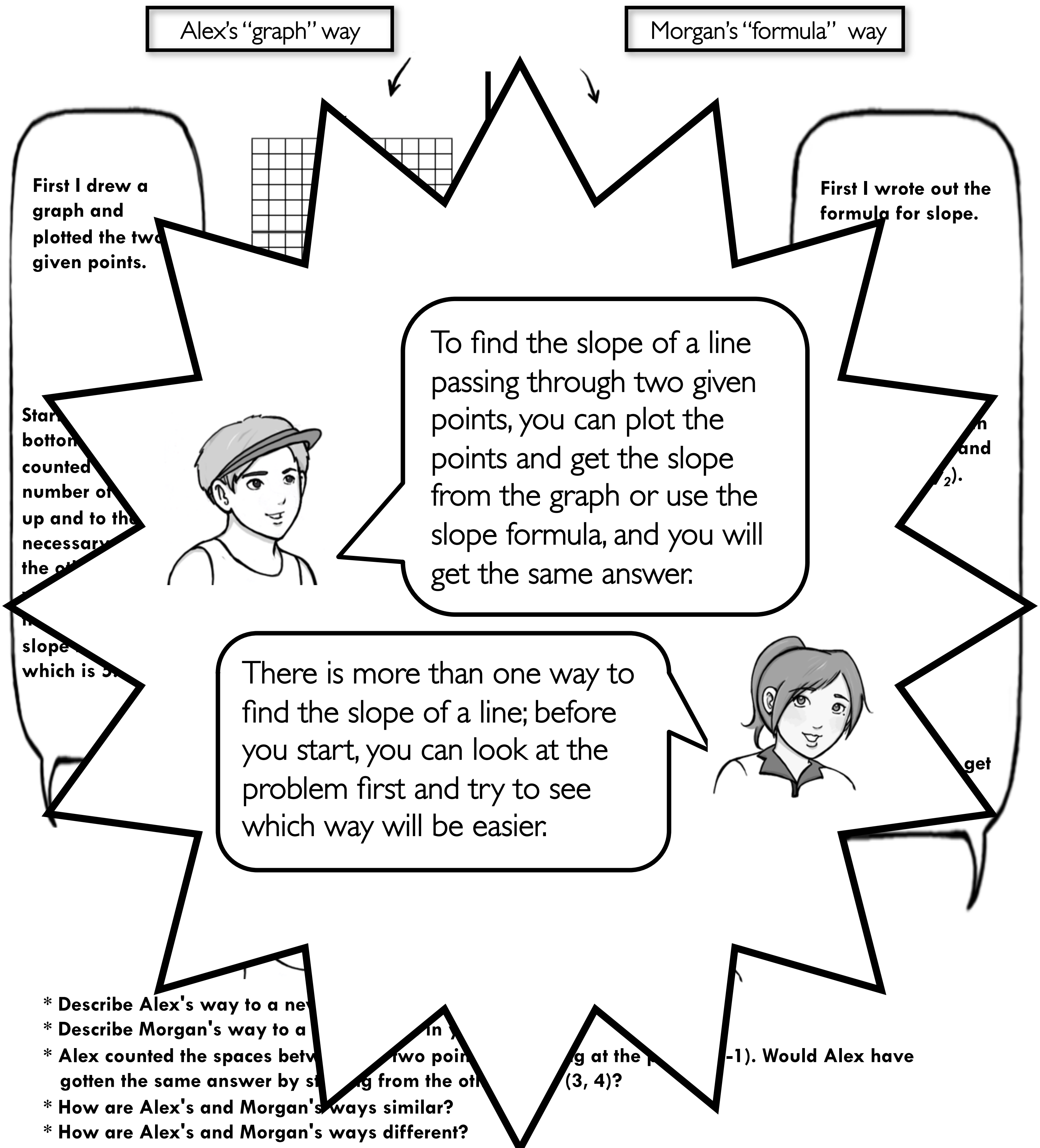
Then I divided to get the slope.

$$m = 5$$

- **Describe Alex's way to a new student in your class.**
- **Describe Morgan's way to a new student in your class.**
- **Alex counted the spaces between the two points, beginning at the point (2, -1). Would Alex have gotten the same answer by starting from the other point, (3, 4)?**
- **How are Alex's and Morgan's ways similar?**
- **How are Alex's and Morgan's ways different?**
- **If the two points in the problem were changed to (-20, 6) and (14, 35), would Alex's way or Morgan's way be better?**
- **Even though Alex and Morgan did different first steps, why did they both get the same answer?**

Why does it work?

Alex and Morgan were asked to find the slope of the line passing through (3,4) and (2,-1)



*** Describe Alex's way to a ne…**

*** Describe Morgan's way to a … in …**

*** Alex counted the spaces betw… two poin… g at the … -1). Would Alex have gotten the same answer by st… g from the oth… (3, 4)?**

*** How are Alex's and Morgan's ways similar?**

*** How are Alex's and Morgan's ways different?**

*** If the two points in the problem were changed to (-20, 6) and (14, 35), would Alex's way or Morgan's way be better?**

*** Even though Alex and Morgan did different first steps, why did they both get the same answer?**

Student Worksheet 4.2.1

1 Describe Alex's way to a new student in your class.

2 Describe Morgan's way to a new student in your class.

3 Alex counted the spaces between the two points, beginning at the point (2, -1). Would Alex have gotten the same answer by starting from the other point, (3, 4)?

4 How are Alex's and Morgan's ways similar?

5 How are Alex's and Morgan's ways different?

6 If the two points in the problem were changed to (-20, 6) and (14, 35), would Alex's way or Morgan's way be better?

7 Even though Alex and Morgan did different first steps, why did they both get the same answer?

Why does it work?

Alex and Morgan were asked to graph the equation $4x - 3y = -12$ by plotting the *x*- and *y*-intercepts.

Alex's "find the intercepts by setting *x* and *y* equal to zero" way

First I found the *y*-intercept. I found it by setting *x* equal to zero and solving the equation.

$$4x - 3y = -12$$

$$\text{When } x = 0:$$

$$4(0) - 3y = -12$$

$$y = 4$$

$$(0,4)$$

Then I found the *x*-intercept. I found it by setting *y* equal to zero and solving the equation.

$$4x - 3y = -12$$

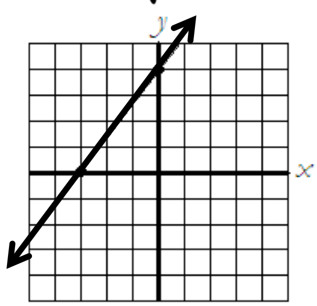
$$\text{When } y = 0:$$

$$4x - 3(0) = -12$$

$$x = -3$$

$$(-3,0)$$

Then I plotted the *x*- and *y*-intercepts and connected the dots to give a graph of this line.



Morgan's "find the intercepts by covering terms up" way

First I found the *y*-intercept. I covered up the *x* term and solved the equation that was still showing, in my head, to get the *y* intercept of 4.

$$4x - 3y = -12$$

$$-3y = -12$$

$$y = 4$$

$$(0,4)$$

Then I found the *x*-intercept. I covered up the *y* term and solved the equation that was still showing, in my head, to get the *x* intercept of -3.

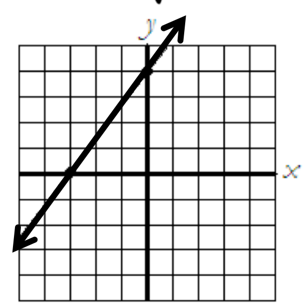
$$4x - 3y = -12$$

$4x$  $= -12$

$$x = -3$$

$$(-3,0)$$

Then I plotted the *x*- and *y*-intercepts and connected the dots to give a graph of this line.



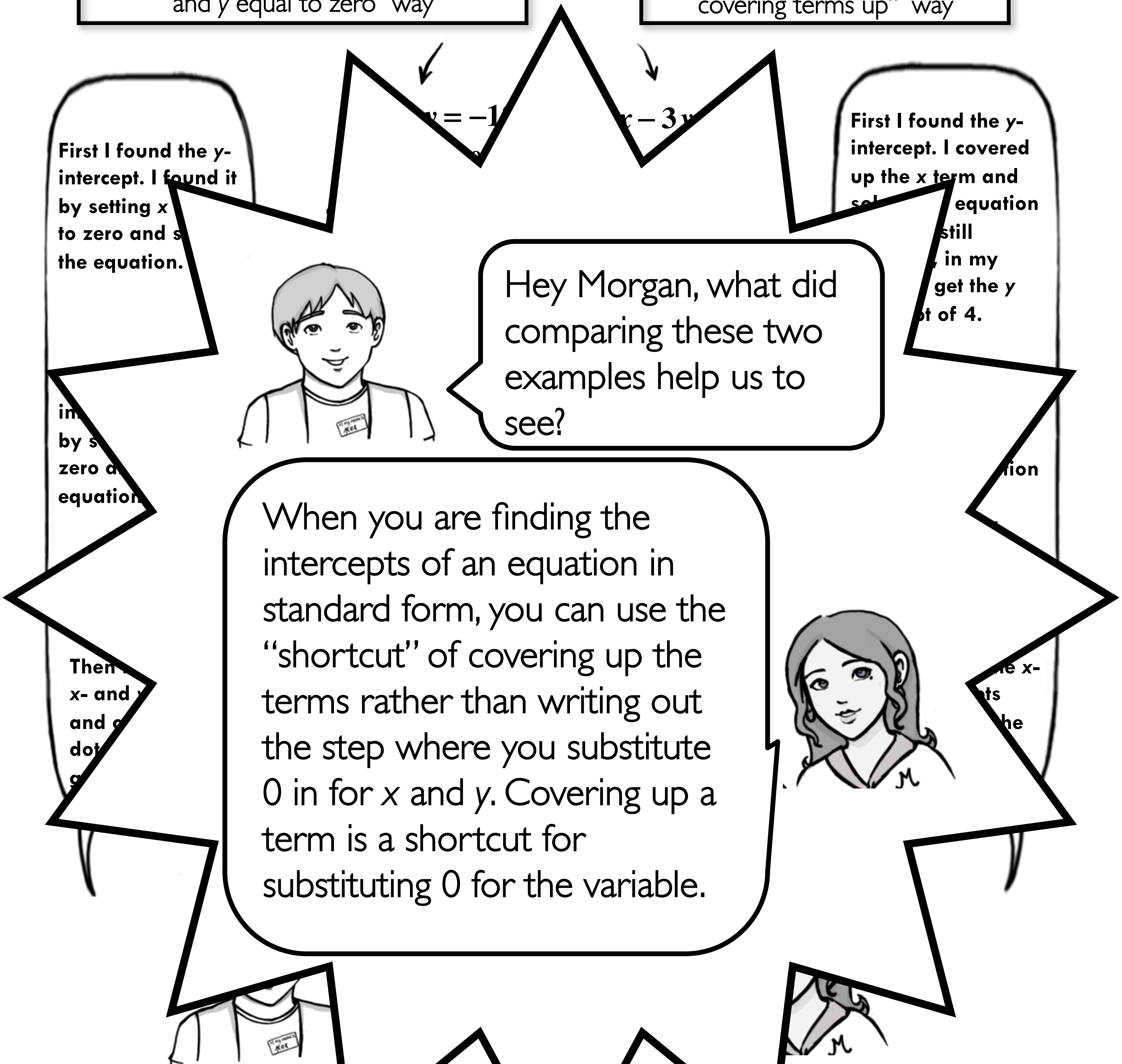
*** How did Alex find the intercepts? How did Morgan find the intercepts?**
*** What are some similarities and differences between Alex's and Morgan's ways?**
*** Why did Alex and Morgan get the same intercepts, even though their ways are different?**
*** On a timed test, whose way would you use, Alex's or Morgan's?**

Why does it work?

Alex and Morgan were asked to graph the equation $4x - 3y = -12$ by plotting the *x*- and *y*-intercepts.

Alex's "find the intercepts by setting *x* and *y* equal to zero" way

Morgan's "find the intercepts by covering terms up" way



* **How did Alex find the i s? How d find the in ?**
* **What are some similari and differences n Alex's and M an's ways?**
* **Why did Alex and Morgan get the same inte s, even though their ways are different?**
* **On a timed test, whose way would you use, ex's or Morgan's?**

Student Worksheet 4.3.1

1a How did Alex find the intercepts?

1b How did Morgan find the intercepts?

2 What are some similarities and differences between Alex's and Morgan's *ways*?

3 Why did Alex and Morgan get the same intercepts, even though their ways are different?

4 On a timed test, whose way would you use, Alex's or Morgan's? Why?

Why does it work?

Alex and Morgan were asked to write the equation of the line in point-slope form that passes through (3,7) and (8,22).

Alex's "use the first point" way

First I wrote the point-slope form of a line.

$$y - y_1 = m(x - x_1)$$

↓

Next, I found the slope using the slope formula. I used (3,7) as point #1 and (8,22) as point #2.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{22-7}{8-3}$$

$$\frac{15}{5} = 3$$

↓

Then I plugged in the coordinates of point #1 to get my equation.

$$y - 7 = 3(x - 3)$$

↓

Finally, I wanted to check my answer with Morgan so I put it in slope-intercept form.

$$y - 7 = 3(x - 3)$$

$$y - 7 = 3x - 9$$

$$y = 3x - 2$$

Morgan's "use the second point" way

First I wrote the point-slope form of a line.

$$y - y_1 = m(x - x_1)$$

↓

Next, I found the slope using the slope formula. I used (3,7) as point #1 and (8,22) as point #2.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{22-7}{8-3}$$

$$\frac{15}{5} = 3$$

↓

Then I plugged in the coordinates of point #2 to get my equation.

$$y - 22 = 3(x - 8)$$

↓

Finally, I wanted to check my answer with Alex so I put it in slope-intercept form.

$$y - 22 = 3(x - 8)$$

$$y - 22 = 3x - 24$$

$$y = 3x - 2$$

* **Describe Alex's way to a new student in your class. Describe Morgan's way to a new student in your class.**
* **How do you know whether Alex's or Morgan's way is correct?**
* **Describe how Alex's and Morgan's ways are similar and different.**
* **Even though Alex and Morgan did different steps, why did they get the same answer?**
* **Would Alex and Morgan have gotten the same slope value if they had used (8,22) as point #1 and (3,7) as point #2?**

Why does it work?

Alex and Morgan were asked to write the equation of the line in point-slope form that passes through (3,7) and (8,22).

Alex's "use the first point" way	Morgan's "use the second point" way
$y - y_1 = m(x - x_1)$	$y - y_1 = m(x - x_1)$

First I wrote the point-slope form of a line.

Next, I found the slope using th slope formula used (3,7) as p #1 and (8,22) a point #2.

Then I p the coord of point get

to ch answer w Morgan in slop for

First I wrote the point-slope form of a line.

Next, I found the e using the pe formula. I ed (3,7) as point 1 and (8,22) as oint #2.

gged in dinates #2 to on.

with Alex in slope- m.

When writing the equation of a line in point-slope form, you can choose to substitute in either of the given points for (x_1, y_1). Either way, the equation will give you the same line.

There is more than one way to find the equation of a line. Before you start, you can look at the problem first and try to see which way will be easier.

* **Describe Alex's way to a new o a new student in your class.**

* **How do you know whether Al gan's t?**

* **Describe how Alex's and Morg ays are sim fferent.**

* **Even though Alex and Morgan d different steps, ld they get the s e answer?**

* **Would Alex and Morgan have gotten the same slop lue if they had used (8,22) as point #1 and (3,7) as point #2?**

Student Worksheet 4.4.1

1 Describe Alex's way to a new student in your class.

2 Describe Morgan's way to a new student in your class.

3 How do you know whether Alex's or Morgan's way is correct?

4 Describe how Alex's and Morgan's ways are similar and different.

5 Even though Alex and Morgan did different steps, why did they get the same answer?

6 Would Alex and Morgan have gotten the same slope value if they had used (8,22) as point #1 and (3,7) as point #2?

Which is better?

Alex and Morgan were asked to graph $y-1=4(x-2)$.

Alex's "convert to slope-intercept form" way

First, I noticed that this line is given in point-slope form. Before graphing, I wanted to convert it to slope-intercept form.

$$y-1=4(x-2)$$

I added 1 on either side.

$$y=4(x-2)+1$$

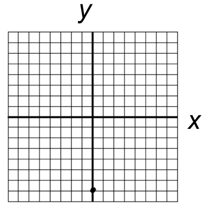
Then I distributed the 4.

$$y=4x-8+1$$

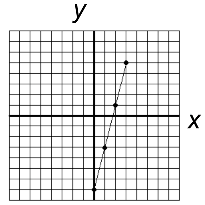
I simplified my expression. Now the equation is in slope-intercept form.

$$y=4x-7$$

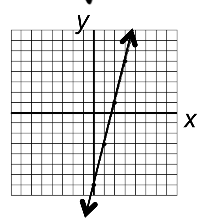
To graph it, first I plotted the y-intercept, which is at (0, -7).



Then I looked at my equation and found the slope of the line, which is 4. I used the slope to plot several more points that fall on the line. I started at my point (0, -7) and counted up 4, right 1 to plot several more points.



Then I connected the dots to get the graph of my line.



Morgan's "use point-slope form" way

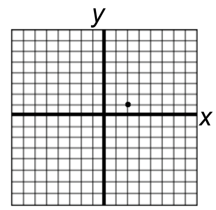
First I wrote the general equation for a line in point-slope form. I compared that to the equation given in the problem.

$$y-y_1=m(x-x_1)$$

$$y-1=4(x-2)$$

By looking at my equation, I can find one ordered pair that falls on the line. It is (2, 1).

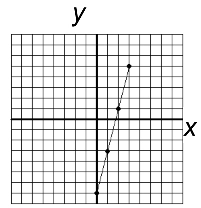
So I plotted this point.



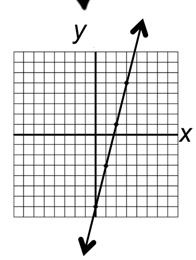
Then I looked at my equation again, and I found the slope of the line, which is 4.

$$y-1=4(x-2)$$

I used the slope to plot several more points that fall on the line. I started at my point (2, 1) and counted up 4, right 1, and also down 4, left 1 to plot several more points.



Then I connected the dots to make a line. This is my graph!



* How did Alex graph the equation?
* Why did Alex begin by solving for *y*?
* How did Morgan graph the equation?
* Describe some similarities and differences between Alex's and Morgan's ways.
* Did Alex and Morgan get the same answer? How do you know?
* Whose way is easier, Alex's or Morgan's?
* The slope-intercept form of an equation and the point-slope form of an equation both tell you the location of one point on the line. What part of the equation in slope-intercept form tells you the location of a point? What part of the equation in point-slope form tells you the location of a point?

Which is better?

Alex and Morgan were asked to graph $y - 1 = 4(x - 2)$.

Alex's "convert to slope-intercept form" way

Morgan's "use point-slope form" way

$y - 1 = 4(x - 2)$

$y - y_1 = m(x - x_1)$

(2) +

1 = 4

First, I noticed that this line is given in point-slope form. Before graphing, I wanted to convert it to slope-intercept form.

I added 1 on either side.

Then I distributed

I si
Now
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line.

First I wrote the general equation for a line in point-slope form. I compared that to the equation given in the problem.

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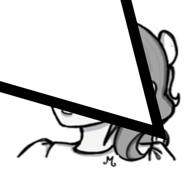
line.

When you have to graph an equation given in point-slope form, you don't have to convert it to slope-intercept form. It may be easier to graph the line directly from the point-slope form $y - y_1 = m(x - x_1)$.

There is more than one way to graph a line. Before you start, you can look at the problem first and try to see which way will be easier.



- * **How did Alex graph the eq**
- * **Why did Alex begin by solv y?**
- * **How did Morgan graph the uation?**
- * **Describe some similarities and differences betw Alex's and Morgan's ways.**
- * **Did Alex and Morgan get the same answer? How do you know?**
- * **Whose way is easier, Alex's or Morgan's?**
- * **The slope-intercept form of an equation and the point-slope form of an equation both tell you the location of one point on the line. What part of the equation in slope-intercept form tells you the location of a point? What part of the equation in point-slope form tells you the location of a point?**

Student Worksheet 4.4.2

1a How did Alex graph the equation?

1b How did Morgan graph the equation?

2 Why did Alex begin by solving for y?

3 Describe some similarities and differences between Alex's and Morgan's ways.

4 Did Alex and Morgan get the same answer? How do you know?

5 Whose way is easier, Alex's or Morgan's?

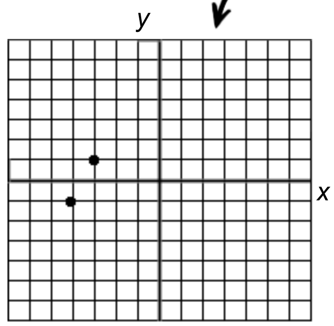
6 The slope-intercept form of an equation and the point-slope form of an equation both tell you the location of one point on the line. What part of the equation in slope-intercept form tells you the location of a point?

Which is better?

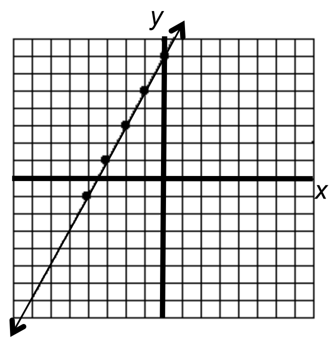
Alex and Morgan were asked to find the *y*-intercept of the line connecting the two points (-3, 1) and (-4, -1).

Alex's "graphing" way

First I drew a graph and plotted the two given points.



Then I looked at the points and found the slope of the line. To get from one point to the next, I went up two and to the right one. I repeated this pattern to draw more points on the line until it crossed the *y*-axis to get the y-intercept, which is (0,7).



Morgan's "algebraic" way

First I wrote out the slope-intercept form of the equation of a line. In this equation, *b* is the *y*-intercept.

$$y = mx + b$$

↓

Then I used the slope formula to find the slope. It is 2.

$$m = \frac{-1-1}{-4-(-3)}$$

$$\frac{-2}{-1} = 2$$

↓

Then I substituted the slope for *m* in the equation.

$$y = 2x + b$$

↓

Then I substituted in one of the given points, (-4, -1), for *x* and *y* in the equation.

$$-1 = 2(-4) + b$$

↓

Then I eliminated the parentheses.

$$-1 = -8 + b$$

↓

Then I solved for *b* to get the answer, which means that the *y*-intercept is at (0,7).

$$7 = b$$

- *** Why did Alex plot the two points as a first step?**
- *** Why did Morgan write the equation for a line in slope-intercept form as a first step?**
- *** What are some similarities and differences between Alex's and Morgan's *ways*?**
- *** Even though Alex and Morgan did different steps, why did they both get the same answer?**
- *** If the points given were changed to (520, 657) and (-3000, -25), would Alex's way or Morgan's way be better?**
- *** If the points given were changed to (0.56, 29) and (-2/3, 65.733), would Alex's way or Morgan's way be better?**

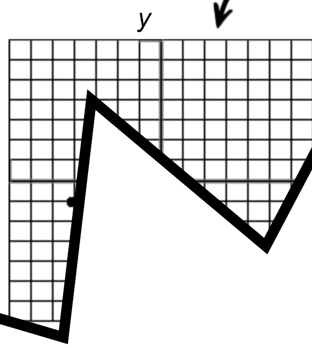
Which is better?

Alex and Morgan were asked to find the *y*-intercept of the line connecting the two points (-3, 1) and (-4, -1).

Alex's "graphing" way

Morgan's "algebraic" way

First I drew a graph and plotted the two given points.



Then I looked the points and found the slope the line. To get from th two right repeate pattern to more lin wh

$$y = mx + b$$

First I wrote out the slope-intercept form of the equation of a line. In this equation, *b* is the *y*-intercept.

Then I used the slope mula to find the ope. It is 2.

hen I substituted the

tituted in e given (-4, -1), for *x* e equation.

olved for *b* e answer, ns that t is at

When you are given two points, you can determine the y-intercept of the line that passes through both points either (1) graphically or (2) algebraically. For some problems, the algebraic method may be easier than the graphing method, such as when the numbers given in the problem are large or messy.

Before you start, you can look at the problem first and try to see which way will be easier.

*** Why did**

*** Why did Morgan write th a first step?**

*** What are some similaritie 's *ways*?**

*** Even though Alex and M differe did t the same answer?**

*** If the points given were c to (520, 6 8000, -25), Alex's way or Morgan's way be better?**

*** If the points given were changed to (0.56, 29) (-2/3, 65.733), would Alex's way or Morgan's way be better?**

Student Worksheet 4.5.1

1a Why did Alex plot the two points as a first step?

1b Why did Morgan write the equation for a line in slope-intercept form as a first step?

2 What are some similarities and differences between Alex's and Morgan's *ways*?

3 Even though Alex and Morgan did different steps, why did they both get the same answer?

4 If the points given were changed to (520, 657) and (-3000, -25), would Alex’s way or Morgan’s way be better?

5 If the points given were changed to (0.56, 29) and (-2/3, 65.733), would Alex’s way or Morgan’s way be better?

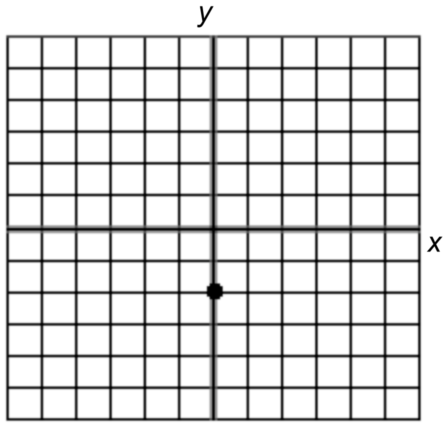
Which is correct?

Alex and Morgan were asked to graph the equation $y = 3x - 2$

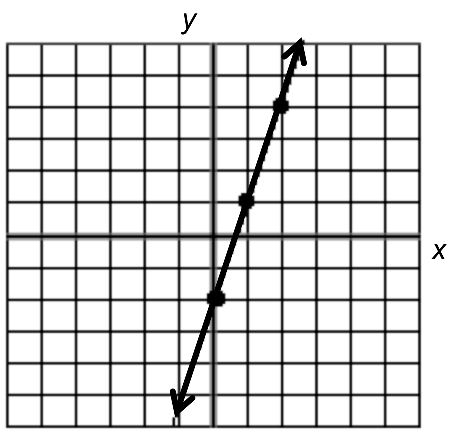
Alex's "slope and *y*-intercept" way

$$y = 3x - 2$$

First I graphed the -2, which is the *y*-intercept.



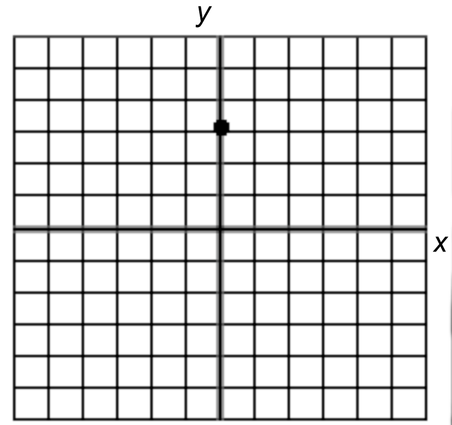
Then I used the slope to find more points. Since the slope is 3, I went up three units and to the right 1 unit to get two more points, then connected them to get the line.



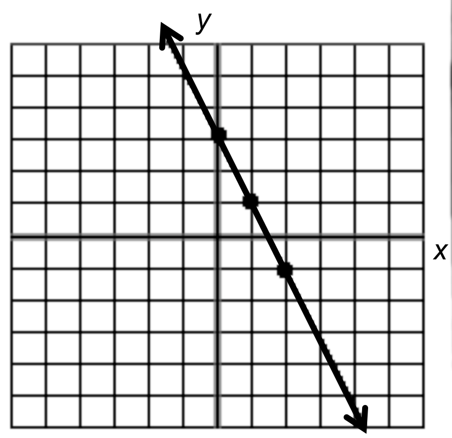
Morgan's "slope and *y*-intercept" way

$$y = 3x - 2$$

First I graphed the 3, which is the *y*-intercept.



Then I used the slope to find more points. Since the slope is -2, I went down two units and to the right 1 unit to get two more points, then connected them to get the line.



- * **Describe Alex's way to a new student in your class.**
- * **Describe two ways that Alex's and Morgan's ways are similar.**
- * **Describe two ways that Alex's and Morgan's ways are different.**
- * **Which answer is correct, Alex's or Morgan's? How do you know?**
- * **Can you give a general rule that describes what you have learned from comparing Alex's and Morgan's ways of solving this type of problem?**

Which is correct?

Alex and Morgan were asked to graph the equation $y = 3x - 2$

Alex's "slope and *y*-intercept" way	Morgan's "slope and *y*-intercept" way
$y = 3x - 2$	$y = 3x - 2$

First I graphed the -2, which is the *y*-intercept.

Fir t I graphed ... 3, which is ...e *y*-intercept.

Then I ... Since ... 3, I went ... units and to ... right 1 uni... two mor... then c... then... line.

...the ... is ... down ...nits and to ... 1 unit to ...ore ...n ...e.

Hey Alex, what did we learn from comparing these right and wrong ways?

In the slope-intercept form of the equation $y = mx + b$, m represents the slope and b represents the y-intercept. Be careful that you don't confuse these!

* **Describe Alex`s way to a nev... in your...**
* **Describe two ways that Alex'... Morgan's w... ...milar.**
* **Describe two ways that Alex's and Morgan's wa... different.**
* **Which answer is correct, Alex's or Morgan's? How ... you know?**
* **Can you give a general rule that describes what you have learned from comparing Alex's and Morgan's ways of solving this type of problem?**

Student Worksheet 4.5.2

1 Describe Alex's way to a new student in your class.

2 Describe two ways that Alex's and Morgan's ways are similar.

3 Describe two ways that Alex's and Morgan's ways are different.

4 Which answer is correct, Alex's or Morgan's? How do you know?

5 Can you give a general rule that describes what you have learned from comparing Alex's and Morgan's ways of solving this type of problem?

Which is correct?

Alex and Morgan were asked to graph the equation $y = -\frac{2}{5}x + 1$

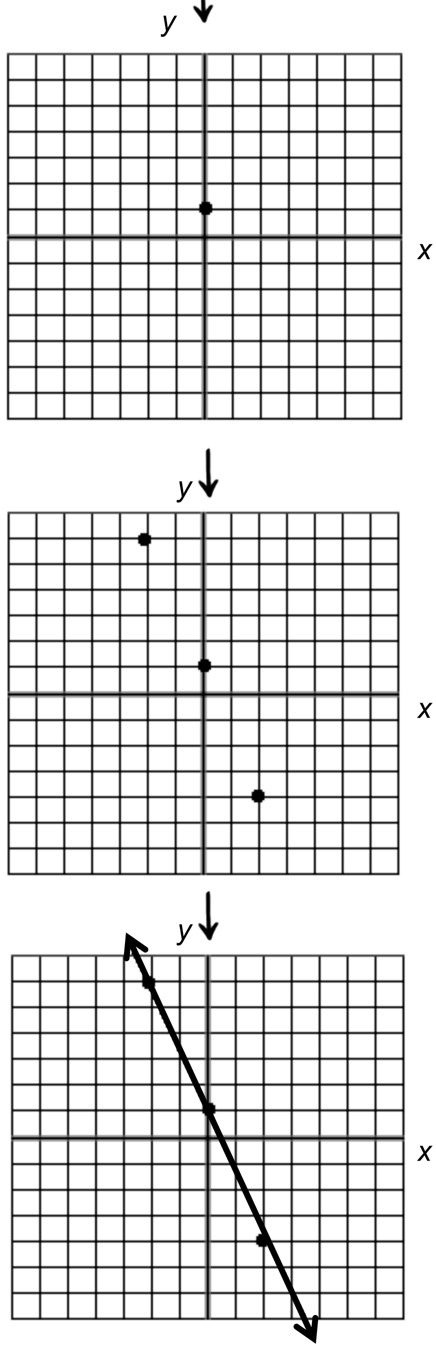
Alex's "plot 'run over rise'" way

$y = -\frac{2}{5}x + 1$

First I plotted the *y*-intercept, which is at (0,1).

Then I plotted two points using the slope of the equation. The slope is -2/5, so I went down five and to the right two, to get to the next point. To find another point, I went up five and left two.

Then I drew a line through the three points to finish graphing the line.



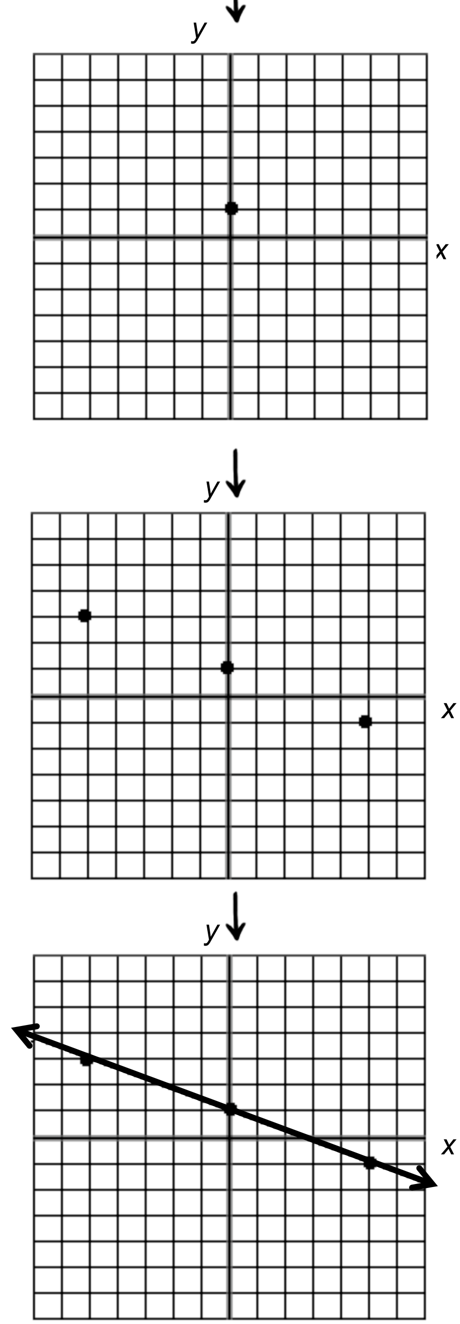
Morgan's "plot 'rise over run'" way

$y = -\frac{2}{5}x + 1$

First I plotted the *y*-intercept, which is at (0,1).

Then I plotted two points using the slope of the equation. The slope is -2/5, so went down two and right five, to get to the next point. To find another point, I went up two and left five.

Then I drew a line through the three points to finish graphing the line.



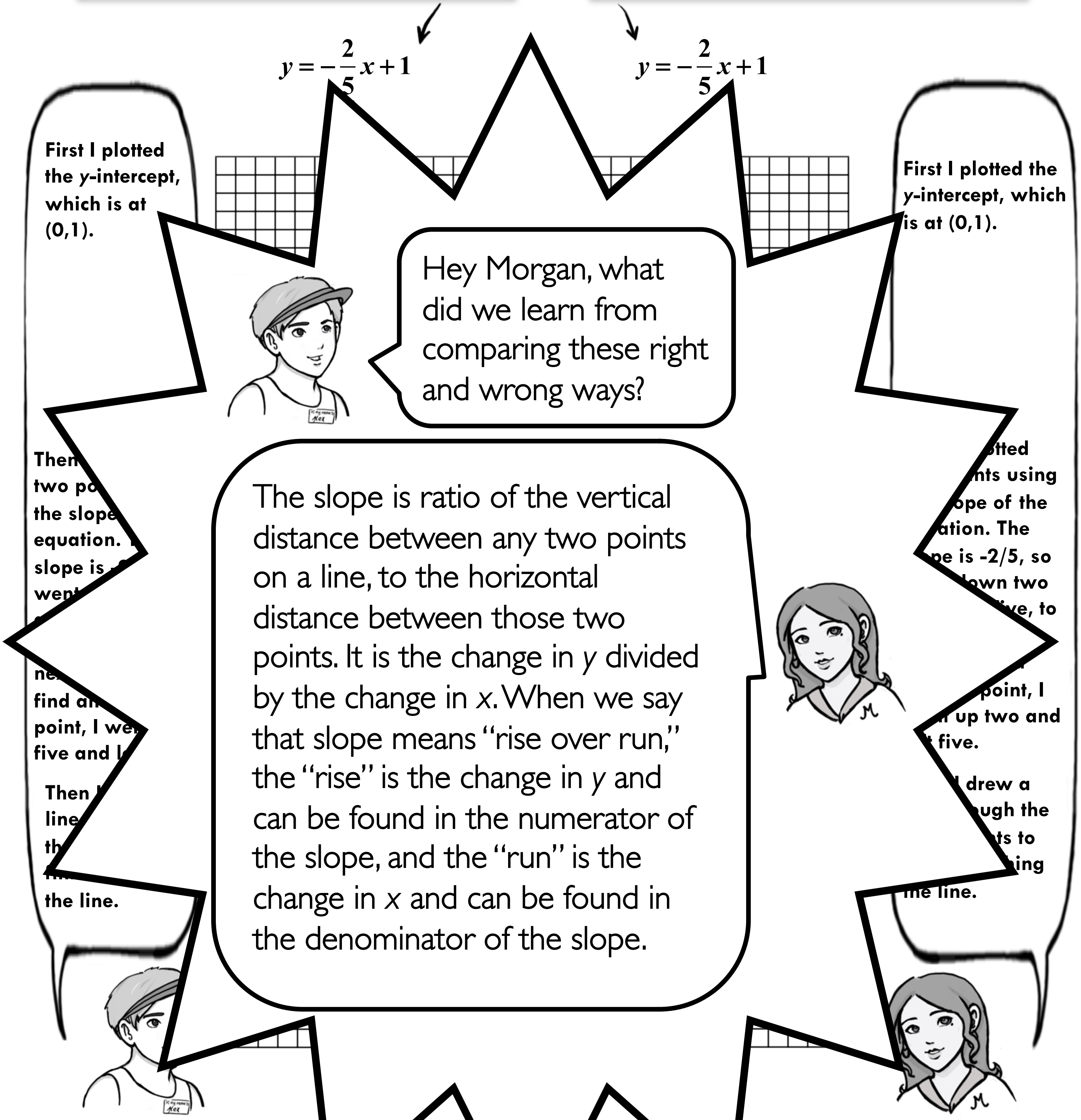
- **How did Alex graph this line? How did Morgan graph this line?**
- **Describe two ways that Alex's and Morgan's ways are similar.**
- **Describe two ways that Alex's and Morgan's ways are different.**
- **Which line is correctly graphed, Alex's or Morgan's? How do you know?**
- **In thinking about the similarities and differences between Alex's and Morgan's ways, what conclusions can you draw about how to solve this type of problem?**

Which is correct?

Alex and Morgan were asked to graph the equation $y = -\frac{2}{5}x + 1$

Alex's "plot 'run over rise'" way

Morgan's "plot 'rise over run'" way



*** How did Alex graph this li... did Mor... his line?**

*** Describe two ways that Ale... nd Morgan's ... e similar.**

*** Describe two ways that Ale... s and Morgan's ... re different.**

*** Which line is correctly graphed, Alex's or Morga... ? How do you know?**

*** In thinking about the similarities and differences between Alex's and Morgan's ways, what conclusions can you draw about how to solve this type of problem?**

Student Worksheet 4.5.3

1a How did Alex graph this line?

1b How did Morgan graph this line?

2 Describe two ways that Alex's and Morgan's ways are similar.

3 Describe two ways that Alex's and Morgan's ways are different.

4 Which line is correctly graphed, Alex's or Morgan's? How do you know?

5 In thinking about the similarities and differences between Alex's and Morgan's ways, what conclusions can you draw about how to solve this type of problem?

How do they differ?

Alex was asked to graph the equation $y = x$,
and Morgan was asked to graph the equation $y = 3x$.

Alex's "graph $y = x$" way

I rewrote the equation in $y = mx + b$ form.

$y = x$

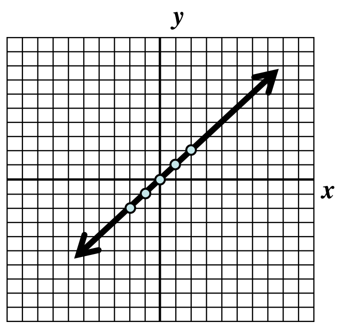
↓

$y = mx + b$

$y = 1x + 0$

↓

I graphed the y-intercept, (0,0) and counted up 1, right 1 and down 1, left 1 to plot other points on the line. I connected the points to draw the graph of the line.



Morgan's "graph $y = 3x$" way

$y = 3x$

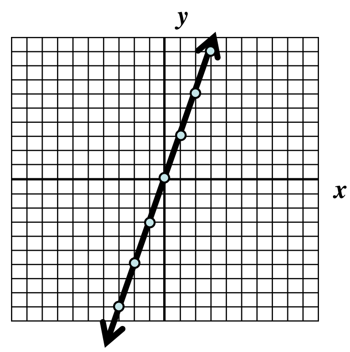
↓

$y = mx + b$

$y = 3x + 0$

↓

I rewrote the equation in $y = mx + b$ form.



I graphed the y-intercept, (0,0) and counted up 3, right 1 and down 3, left 1 to plot other points on the line. I connected the points to draw the graph of the line.

*** How did Alex graph the line given by his equation? How did Morgan graph the line given by her equation?**

*** Can you think of another way that Alex and Morgan could have used to find the graphs of their lines?**

*** What are some similarities and differences between Alex's and Morgan's problems?**

*** What are some similarities and differences between Alex's and Morgan's graphs?**

*** If *m* were changed to -3, how would this affect the graph of the line? What about if *m* were changed to $\frac{1}{3}$?**

*** How does changing the value of *m* affect the graph of a line?**

How do they differ?

Alex was asked to graph the equation $y = x$,
and Morgan was asked to graph the equation $y = 3x$.

Alex's "graph $y = x$" way

Morgan's "graph $y = 3x$" way

I rewrote the equation in $y = mx + b$ form.

e the on in x + b form.

I graphe intercept, counted up 1 and down 1 to plot poi poi graph o

and , right 3, left e.

In the slope-intercept form of a line ($y = mx + b$), the coefficient of x, which is m, indicates the slope. Changing the value of m changes the slope, or the steepness, of the line.

*** How did A given by her equatio**
*** Can you nk of another to find the gr hs of their lines?**
*** What are some similaritie erenc lex's an's problems?**
*** What are some similaritie ifference Alex's a gan's graphs?**
*** If m were changed to -3, h would this af graph of the li ? What about if m were changed to $\frac{1}{3}$?**

*** How does changing the value of m affect the graph of a line?**

Student Worksheet 4.5.4

1a How did Alex graph the line given by his equation?

1b How did Morgan graph the line given by her equation?

2 Can you think of another way that Alex and Morgan could have used to find the graphs of their lines?

3 What are some similarities and differences between Alex's and Morgan's problems?

4 What are some similarities and differences between Alex's and Morgan's graphs?

5 If m were changed to -3, how would this affect the graph of the line? What about if m were changed to $\frac{1}{3}$?

6 How does changing the value of m affect the graph of a line?

How do they differ?

Alex was asked to graph the equation $y = 2x$
and Morgan was asked to graph the equation $y = -2x$.

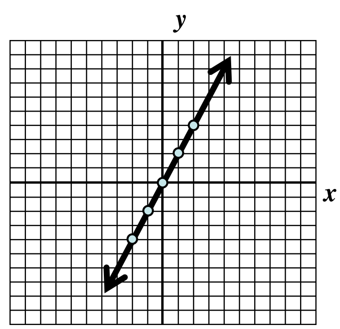
Alex's "graph $y = 2x$" way

$$y = 2x$$

↓

$$y = mx + b$$
$$y = 2x + 0$$

↓



I rewrote the equation in $y = mx + b$ form.

I graphed the y-intercept, (0,0) and counted up 2, right 1 and down 2, left 1 to plot other points on the line. I connected the points to draw the graph of the line.

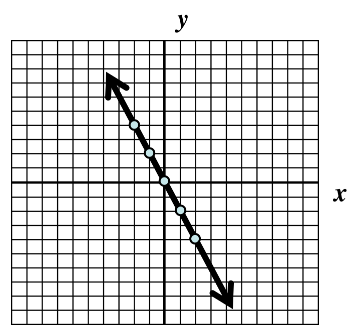
Morgan's "graph $y = -2x$" way

$$y = -2x$$

↓

$$y = mx + b$$
$$y = -2x + 0$$

↓



I rewrote the equation in $y = mx + b$ form.

I graphed the y-intercept, (0,0) and counted down 2, right 1 and up 2, left 1 to plot other points on the line. I connected the points to draw the graph of the line.

*** How did Alex graph the line given by his equation? How did Morgan graph the line given by her equation?**
*** Can you think of another way that Alex and Morgan could have used to find the graphs of their lines?**
*** What are some similarities and differences between Alex's and Morgan's problems?**
*** What are some similarities and differences between Alex's and Morgan's graphs?**
*** How does changing the sign of *m* affect the graph of a line?**

How do they differ?

Alex was asked to graph the equation $y = 2x$
and Morgan was asked to graph the equation $y = -2x$.

Alex's "graph y = 2x" way

Morgan's "graph y = -2x" way

I rewrote the equation in $y = mx + b$ form.

...e the ...n in ...x + b form.

I graphe... intercept, ... counted up ... 1 and down ... 1 to plo... poi... poi... graph o...

...and ...n 2, ... 2, ...her ...e.

In the slope-intercept form of a line ($y = mx + b$), the coefficient of x, which is m, indicates the slope.

Changing the sign of m changes the slope, or the steepness, of the line. When a line has a positive slope, its height increases from left to right. When a line has a negative slope, its height decreases from left to right.

*** How did ... graph the ... graph the ... iven by her equation?**
*** Can you think of another ... ex... ou... to find the graphs of their lines?**
*** What are some similaritie... differences ... Alex's and ...an's problems?**
*** What are some similarities and differences b... n Alex's and Mo...an's graphs?**
*** How does changing the sign of m affect the g... n of a line?**

Student Worksheet 4.5.5

1a How did Alex graph the line given by his equation?

1b How did Morgan graph the line given by her equation?

2 Can you think of another way that Alex and Morgan could have used to find the graphs of their lines?

3 What are some similarities and differences between Alex's and Morgan's problems?

4 What are some similarities and differences between Alex's and Morgan's graphs?

5 How does changing the sign of m affect the graph of a line?

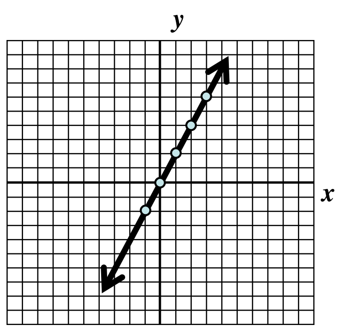
How do they differ?

Alex was asked to graph the equation $y = 2x$
and Morgan was asked to graph the equation $y = 2x + 3$.

Alex's "graph $y = 2x$" way

$y = 2x$

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



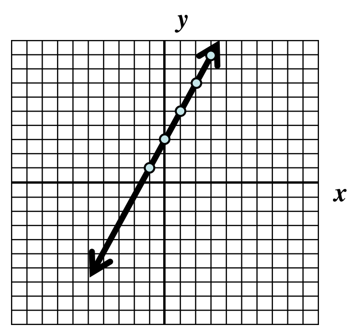
First I made a table of values.

I graphed the y-intercept, (0,0) and counted up 2, right 1 and down 2, left 1 to plot other points on the line. I connected the points to draw the graph of the line.

Morgan's "graph $y = 2x + 3$" way

$y = 2x + 3$

x	y
-1	1
0	3
1	5
2	7
3	9



First I made a table of values.

I graphed the y-intercept, (0,3) and counted up 2, right 1 and down 2, left 1 to plot other points on the line. I connected the points to draw the graph of the line.

*** How did Alex graph the line given by his equation? How did Morgan graph the line given by her equation?**
*** Can you think of another way that Alex and Morgan could have used to find the graphs of their lines?**
*** What are some similarities and differences between Alex's and Morgan's problems?**
*** What are some similarities and differences between Alex's and Morgan's graphs?**
*** How does changing the value of *b* affect the graph of a line?**

How do they differ?

Alex was asked to graph the equation $y = 2x$
and Morgan was asked to graph the equation $y = 2x + 3$.

Alex's "graph $y = 2x$" way

Morgan's "graph $y = 2x + 3$" way

I rewrote the equation in $y = mx + b$ form.

I graphe… intercept, … counted up … 1 and down … 1 to plo… poi… poi… graph o…

…ered the …on in …$x + b$ form.

…and …, right …2, left

…e.

*** How did … graph the … graph the … iven by her equation?**
*** Can you think of another … ex… … ou… to find the graphs of their lines?**
*** What are some similaritie… differences … Alex's and … an's problems?**
*** What are some similarities and differences b… n Alex's and Mo… an's graphs?**
*** How does changing the value of b affect the g… h of a line?**

Student Worksheet 4.5.6

1a How did Alex graph the line given by his equation?

1b How did Morgan graph the line given by her equation?

2 Can you think of another way that Alex and Morgan could have used to find the graphs of their lines?

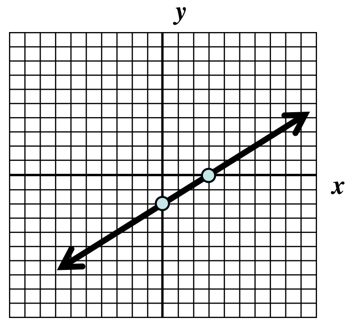
3 What are some similarities and differences between Alex's and Morgan's problems?

4 What are some similarities and differences between Alex's and Morgan's graphs?

5 How does changing the value of b affect the graph of a line?

How do they differ?

Alex was asked to find the *x*-intercept of the line in the graph below, and Morgan was asked to find the *y*-intercept of the line in the graph below.

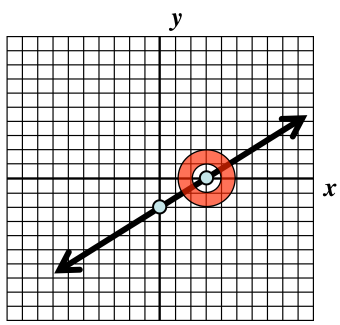


Alex's "find the *x*-intercept" way

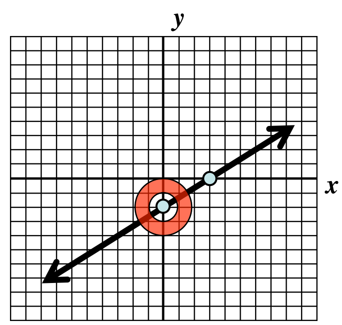
Morgan's "find the *y*-intercept" way

The *x*-intercept is the point where the line intersects the *x*-axis.

It is at (3,0).



(3, 0)



(0, –2)

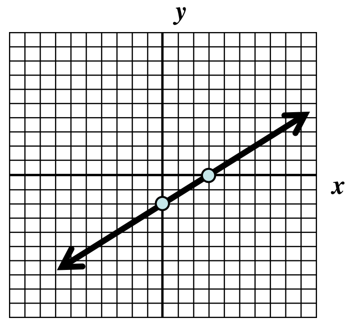
The *y*-intercept is the point where the line intersects the *y*-axis.

It is at (0,-2).

*** How did Alex find the *x*-intercept of the line? How did Morgan find the *y*-intercept of the line?**
*** What are some similarities and differences between Alex's and Morgan's problems?**
*** What are some similarities and differences between the ordered pairs that Alex and Morgan generated?**
*** What is an *x*-intercept? What is a *y*-intercept?**

How do they differ?

Alex was asked to find the *x*-intercept of the line in the graph below, and Morgan was asked to find the *y*-intercept of the line in the graph below.

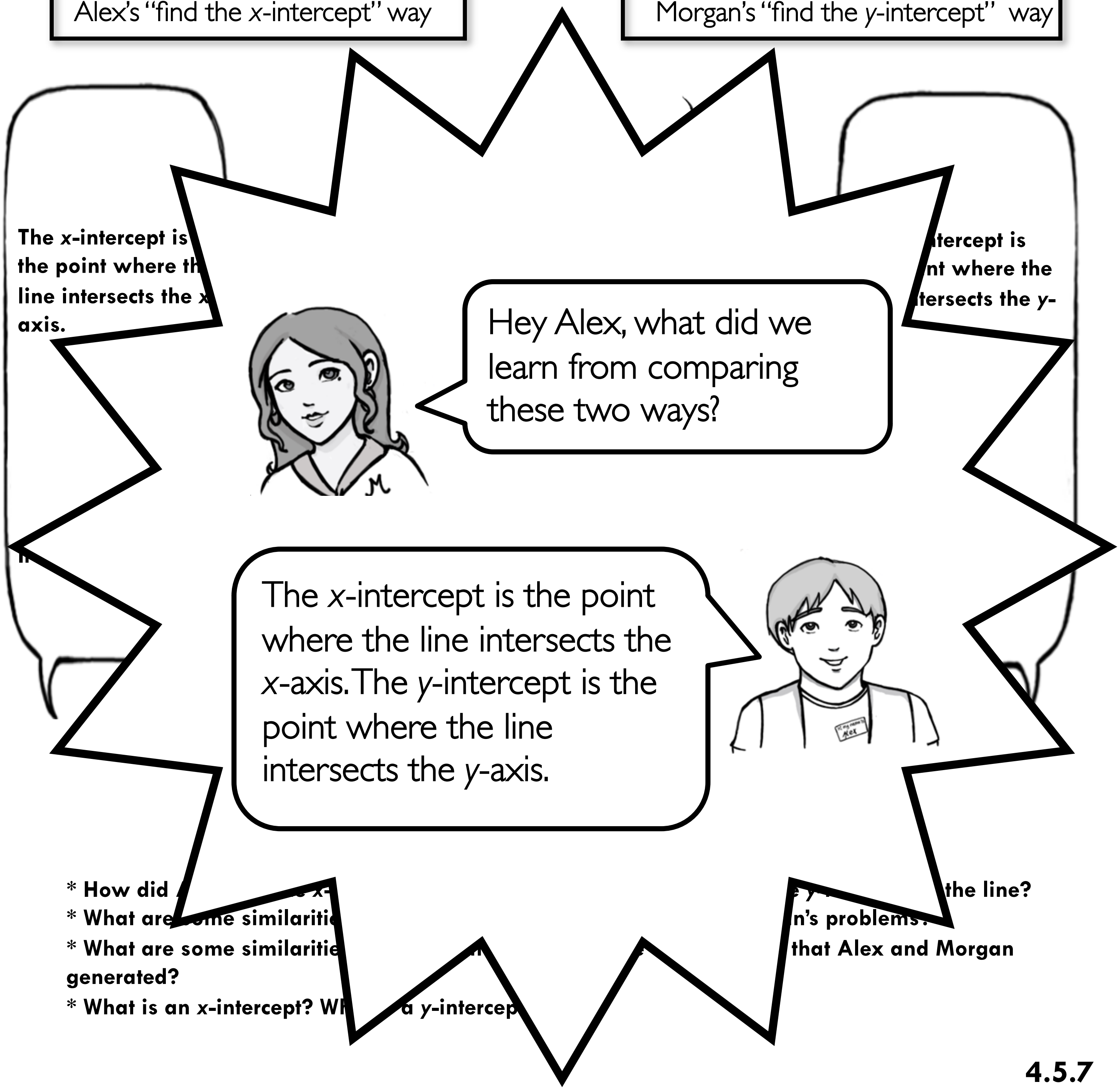


Alex's "find the *x*-intercept" way

Morgan's "find the *y*-intercept" way

The *x*-intercept is the point where th line intersects the x axis.

tercept is nt where the tersects the *y*-



*** How did A x- y the line?**
*** What are some similariti n's problems?**
*** What are some similaritie that Alex and Morgan generated?**
*** What is an *x*-intercept? Wh a *y*-intercep**

Student Worksheet 4.5.7

1a How did Alex find the x-intercept of the line?

1b How did Morgan find the y-intercept of the line?

2 What are some similarities and differences between Alex's and Morgan's problems?

3 What are some similarities and differences between the ordered pairs that Alex and Morgan generated?

4 What is an x-intercept?

5 What is a y-intercept?

Which is better?

Alex and Morgan were asked to graph the equation $3x - 2y = 6$

Alex's "*x*- and *y*-intercepts" way

$$3x - 2y = 6$$

↓

First I found the *x*-intercept, by plugging in 0 for y in the equation and solving for x.

$$3x - 2(0) = 6$$
$$3x = 6$$
$$x = 2$$
$$x\text{-intercept is } (2, 0)$$

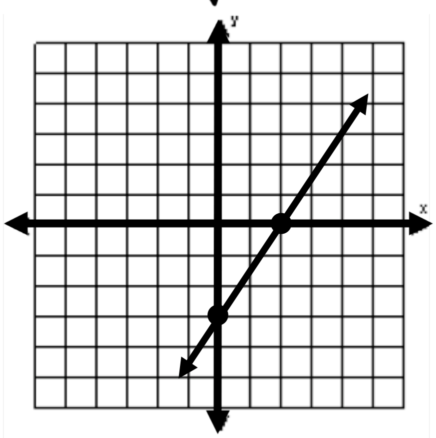
↓

Then I found the *y*-intercept, by plugging in 0 for x in the equation and solving for y.

$$3(0) - 2y = 6$$
$$-2y = 6$$
$$y = -3$$
$$y\text{-intercept is } (0, -3)$$

↓

Then I plotted the two intercepts and connected them to get the line.



Morgan's "slope-intercept" way

$$3x - 2y = 6$$

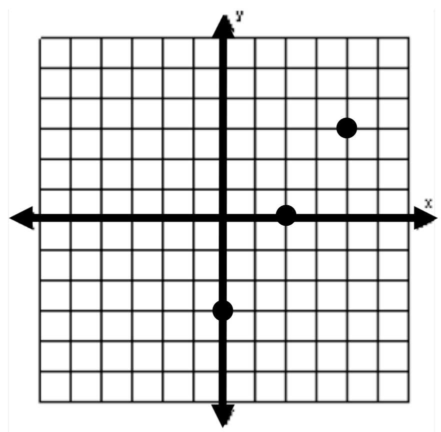
↓

First I put the equation in slope-intercept form by solving for *y*.

$$-2y = -3x + 6$$
$$y = \frac{3}{2}x - 3$$

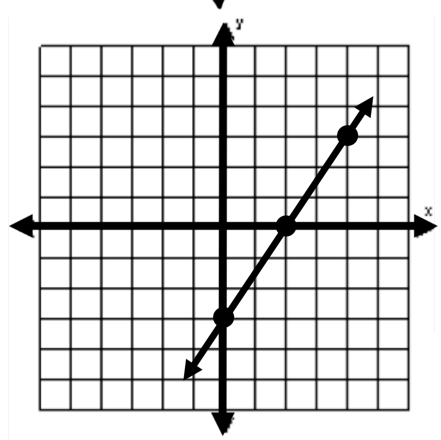
↓

Then I graphed the equation using the intercept (0, -3) and the slope of 3/2.



↓

Then I connected the points to get the line.



*** How did Alex graph the line?**

*** Why did Morgan solve the equation for *y* as a first step?**

*** Name a step that Morgan did that Alex did not. Why did Alex not do that step?**

*** What are some similarities and differences between Alex's and Morgan's ways?**

*** If the original problem were** $y = \frac{3}{2}x - 3$**, would Alex's way or Morgan's way be better?**

Alex and Morgan were asked to graph the equation $3x - 2y = 6$

Alex's "*x*- and *y*-intercepts'" way

Morgan's "slope-intercept'" way

$3x - 2y = 6$

$3x - 2$ … 6
$3x = 6$ …
$x = 2$ …
x-int …

$3x - 2y = 6$

$-2y$ … $+ 6$

First I found the *x*-intercept, by plugging in 0 for y in the equation and solving for x.

Then I found … by … 0 for … equatio… solving fo…

Then I pl… the two … interc… con… to…

First I put the equation in slope-intercept form by solving for *y*.

… I graphed … (0, -3) … e slope … /2.

… ed the … get the

When you have to graph an equation given in standard form, you don't have to automatically convert it to slope-intercept form. It may be easier to graph the line directly from the standard form, by substituting 0 for *x* and for *y* to find the intercepts.

There is more than one way to graph a line. Before you start, you can look at the problem first and try to see which way will be easier.

* **How did Alex graph the …**
* **Why did Morgan solve th… for *y* …?**
* **Name a step that Morgan … at Alex did … did Alex no… at step?**
* **What are some similarities … nd differences b… Alex's and Morg…n's ways?**

* **If the original problem were** $y = \frac{3}{2}x - 3$ **, would Alex's way or Morgan's way be better?**

Student Worksheet 4.6.1

1 How did Alex graph the line?

2 Why did Morgan solve the equation for y as a first step?

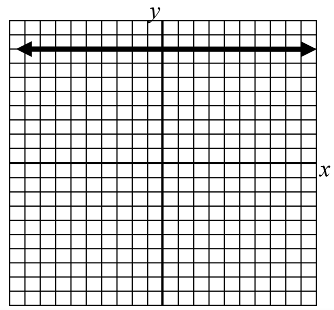
3 Name a step that Morgan did that Alex did not. Why did Alex not do that step?

4 What are some similarities and differences between Alex's and Morgan's ways?

5 If the original problem were $y = \frac{3}{2}x - 3$ would Alex's way or Morgan's way be better?

Why does it work?

Alex and Morgan were asked to determine the slope of the horizontal line below from its graph.



Alex's "use the slope formula" way

First, I read any two points off the line.

$$(-5, 8) \text{ and } (3, 8)$$

↓

Then I substituted these two ordered pairs into the slope formula, which is $m = \dfrac{y_2 - y_1}{x_2 - x_1}$.

$$m = \frac{8 - 8}{-5 - 3}$$

↓

I simplified, to get that the slope of this line is zero.

$$m = \frac{0}{-8} = 0$$

Morgan's "inspect the patterns in a T-table" way

First, I read several points off the line and put them into a T - table.

x	y
-9	8
-6	8
0	8
5	8
7	8

↓

I looked at the table and noticed that the *y* values never change, even when the *x* values change.

x	y
-9	8
-6	8
0	8
5	8
7	8

↓

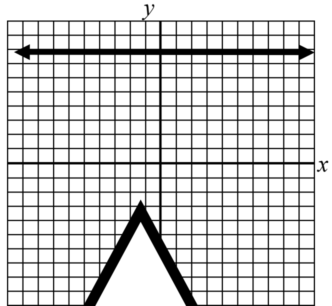
Since slope measures the change in *y* values for each change in *x* values, I know that the slope is zero.

The slope is 0.

* How did Alex find the slope? How did Morgan find the slope?
* What are some similarities and differences between Alex's and Morgan's ways?
* Which way is easier, Alex's way or Morgan's way? Why?
* What are some advantages of Alex's way? Of Morgan's way?

Why does it work?

Alex and Morgan were asked to determine the slope of the horizontal line below from its graph.



Alex's "use the s... ...ula" wa...

Mor... ...ect the patterns in a T-table" way

First, I read any two points off the line.

Then I sub... these two ... pairs in... sl...

I sim... th... this line is zer...

First, I read several points off the line and put them into a T - table.

...ed at the ...e and noticed ...y values ...e,

...ope ...the ...values ...ge in ...values, I know that the slope is zero.

Hey Morgan, what did comparing these two examples help us to see?

These examples helped us see why the slope of a horizontal line is 0. For a horizontal line, all of the points on the line have the same value for the *y* coordinate, so the difference between the *y* coordinates of any two points on the line will be 0 and thus the slope will be 0.

*** How did Alex find the slope... ...nd Morga... ...lope?**
*** What are some similarities a... ...ifferences be... ...ex's and Morg... ...ways?**
*** Which way is easier, Alex's way or Morgan's wa... ...hy?**
*** What are some advantages of Alex's way? Of Mo... ...an's way?**

Student Worksheet 4.7.1

1a How did Alex find the slope?

1b How did Morgan find the slope?

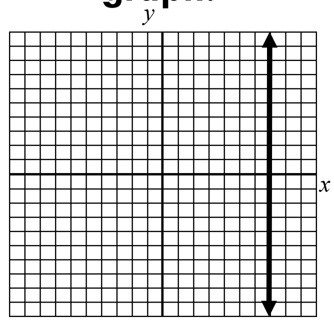
2 What are some similarities and differences between Alex's and Morgan's *ways*?

3 Which way is easier, Alex's way or Morgan's way? Why?

4 What are some advantages of Alex's way? Of Morgan's way?

Why does it work?

Alex and Morgan were asked to determine the slope of the line below from its graph.



Alex's "use the slope formula" way

First, I read any two points off the line.

$(7, 4)$ and $(7, -1)$

Then I substituted these two ordered pairs into the slope formula, which is $m = \dfrac{y_2 - y_1}{x_2 - x_1}$.

$$m = \frac{4 - (-1)}{7 - 7}$$

I simplified. Since any number divided by zero is undefined, I found that this line has no slope.

$$m = \frac{5}{0}$$

Morgan's "inspect the patterns in a T-table" way

First, I read several points off the line and put them into a T - table.

x	y
7	-6
7	-1
7	0
7	-2
7	-5

I looked at the table and noticed that the *x* values never change, even when the *y* values change.

x	y
7	-6
7	-1
7	0
7	-2
7	-5

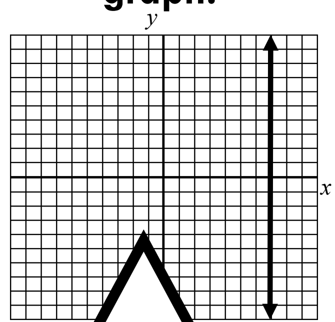
This line has no slope.

Since slope measures the change in *y* values for each change in *x* values, and since the *x* values don't change, I know that this line has no slope.

- **How did Alex find the slope? How did Morgan find the slope?**
- **What are some similarities and differences between Alex's and Morgan's ways?**
- **Which way is easier, Alex's way or Morgan's way? Why?**
- **What are some advantages of Alex's way? Of Morgan's way?**

Why does it work?

Alex and Morgan were asked to determine the slope of the line below from its graph.



Alex's "use the s[...]rmula" way

Morga[...]ect the patterns in a T-table" way

First, I read an[...] two points off the line.

Then I su[...] these two [...] pairs into[...] slop[...]

I simplifi[...] any nu[...] divi[...] un[...] that this line ha[...] no slope.

[...]rst, I read several points off the line and put them into a T - table.

[...] at the [...]and noticed [...]e *x* values [...]nge, [...]ae,

[...] slope [...]res the [...] *y* values [...]ange in [...] [...]alues don't change, I know that this line has no slope.

What did comparing these two examples help us to see?

These examples help us see why the slope of a vertical line is undefined. For a vertical line, all of the points on the line have the same value for the x coordinate, so the difference between the x coordinates of any two points on the line will be 0. Division by 0 is undefined, so thus the slope of any vertical line will be undefined.

* **How did Alex find the slope[...] Morg[...]ope?**
* **What are some similarities a[...]erences be[...]x's and Mor[...] ways?**
* **Which way is easier, Alex's w[...]y or Morgan's w[...]y?**
* **What are some advantages of Alex's way? Of M[...]an's way?**

Student Worksheet 4.8.1

1a How did Alex find the slope?

1b How did Morgan find the slope?

2 What are some similarities and differences between Alex's and Morgan's *ways*?

3 Which way is easier, Alex's way or Morgan's way? Why?

4 What are some advantages of Alex's way? Of Morgan's way?

How do they differ?

Alex and Morgan were given the set of ordered pairs $\{(-3,6),\ (2,5),\ (3,1),\ (2,4)\}$, and asked to determine if the relation is a function.

Alex's "make a table of values" way

I made a table of values.

x (domain)	*y* (range)
-3	6
2	5
2	4
3	1

I saw that the element 2 in the domain is paired with both a 5 and a 4 in the range.

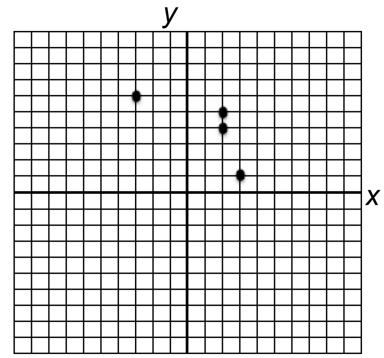
x (domain)	*y* (range)
-3	6
2	5
2	4
3	1

Because of this, I believe that this relation is not a function.

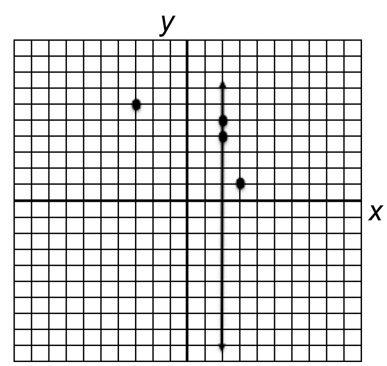
Not a function

Morgan's "graph and use the vertical line test" way

I graphed the ordered pairs on a coordinate plane.



Then I tried using the vertical line test. I found that I could draw a vertical line that intersected my graphed points more than once.



Because of this, I believe that this relation is not a function.

Not a function

- **How did Alex complete the problem?**
- **How did Morgan complete the problem?**
- **Describe a way in which Alex's and Morgan's ways are similar.**
- **Describe a way in which Alex's and Morgan's ways are different.**
- **Why does the vertical line test tell us the same thing as the table of values?**
- **Can you think of another way of determining whether this relation is a function, besides Alex's way and Morgan's way?**
- **If the problem were changed so you were instead asked to determine whether $y = 2x + 6$ was a function, would you use Alex's way or Morgan's way? Why?**

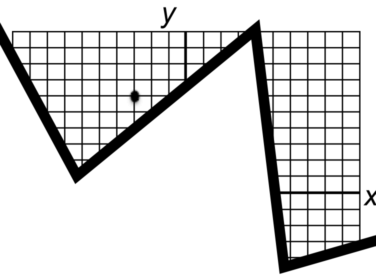
How do they differ?

Alex and Morgan were given the set of ordered pairs $\{(-3,6),\ (2,5),\ (3,1),\ (2,4)\}$, and asked to determine if the relation is a function.

Alex's "make a table of values" way	Morgan's "graph and use the vertical line test" way

I made a table of values.

x (doma	*y* (range)
-3	
2	
2	
3	



I graphed the ordered pairs on a coordinate plane.

I saw that th
e
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paire
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- **How did**
- **How di organ comple**
- **Describe a way in which**
- **Describe a way in which org dif**
- **Why does the vertical line us the sa the tabl es?**
- **Can you think of another of determinin er this relation function, besides Alex's way and Morgan's way?**
- **If the problem were changed so you were inste asked to determine whether $y = 2x + 6$ was a function, would you use Alex's way or Morgan's way? Why?**

Student Worksheet 4.9.1

1a How did Alex complete the problem?

1b How did Morgan complete the problem?

2 Describe a way in which Alex's and Morgan's ways are similar.

3 Describe a way in which Alex's and Morgan's ways are different.

4 Why does the vertical line test tell us the same thing as the table of values?

5 Can you think of another way of determining whether this relation is a function, besides Alex's way and Morgan's way?

6 If the problem were changed so you were instead asked to determine whether $y = 2x + 6$ was a function, would you use Alex's way or Morgan's way? Why?

How do they differ?

Alex was asked to determine whether average rainfall is a function of the month, and Morgan was asked to determine whether the month is a function of the average rainfall.

Month	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average Rainfall in inches	3.9	3.3	3.9	3.6	3.2	3.2	3.1	3.4	3.5	3.8	4.0	3.7

Alex's "month is the domain" way

I need to figure out whether average rainfall is a function of the month.

I rewrote the expression in function notation with month in the domain and average rainfall in the range.

For each month, there is only 1 average rainfall.

So yes, average rainfall is a function of the month.

Is $y = f(x)$?

↓

Is average rainfall = f(month) ?

↓

Month	x	Jan.	Feb.	March	...	Sept	Oct	Nov	Dec
Av. Rainfall in in	y	3.9	3.3	3.9	...	3.5	3.8	4.0	3.7

↓

average rainfall = f(month)

Morgan's "month is the range" way

I need to figure out whether the month is a function of average rainfall.

I rewrote the expression in function notation with average rainfall in the domain and month in the range.

I noticed that an average rainfall of 3.9 inches happened in both January and March.

So no, the month is not a function of average rainfall.

Is $y = f(x)$?

↓

Is month = f(average rainfall) ?

↓

Month	x	Jan.	Feb.	March	...	Sept	Oct	Nov	Dec
Av. Rainfall in in	y	3.9	3.3	3.9	...	3.5	3.8	4.0	3.7

↓

Not a function

* Describe what Alex did to a new student in your class. How did Alex decide whether or not the relation was a function?

* Describe what Morgan did to a new student in your class. How did Morgan decide whether or not the relation was a function?

* What are some similarities and differences between Alex's and Morgan's problems?

* What are some similarities and differences between Alex's and Morgan's ways?

* Why did Alex consider month as the domain, while Morgan considered average rainfall as the domain?

* In thinking about the similarities and differences between Alex's and Morgan's ways, what conclusions can you draw about how to solve this type of problem?

How do they differ?

Alex was asked to determine whether average rainfall is a function of the month, and Morgan was asked to determine whether the month is a function of the average rainfall.

Month	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average Rainfall in inches	3.9	3.3	3.9	3.6	3.2	3.2	3.1	3.4	3.5	3.8	4.0	3.7

Alex's "month is th ain" way

organ's "m the range" way

I need to figure out whether average rainfall is a function of the month.

I re expre function notation w month in the domain and average rain

For ea month, the is only 1 average rainfall.

So y average rainfall is a function of the month.

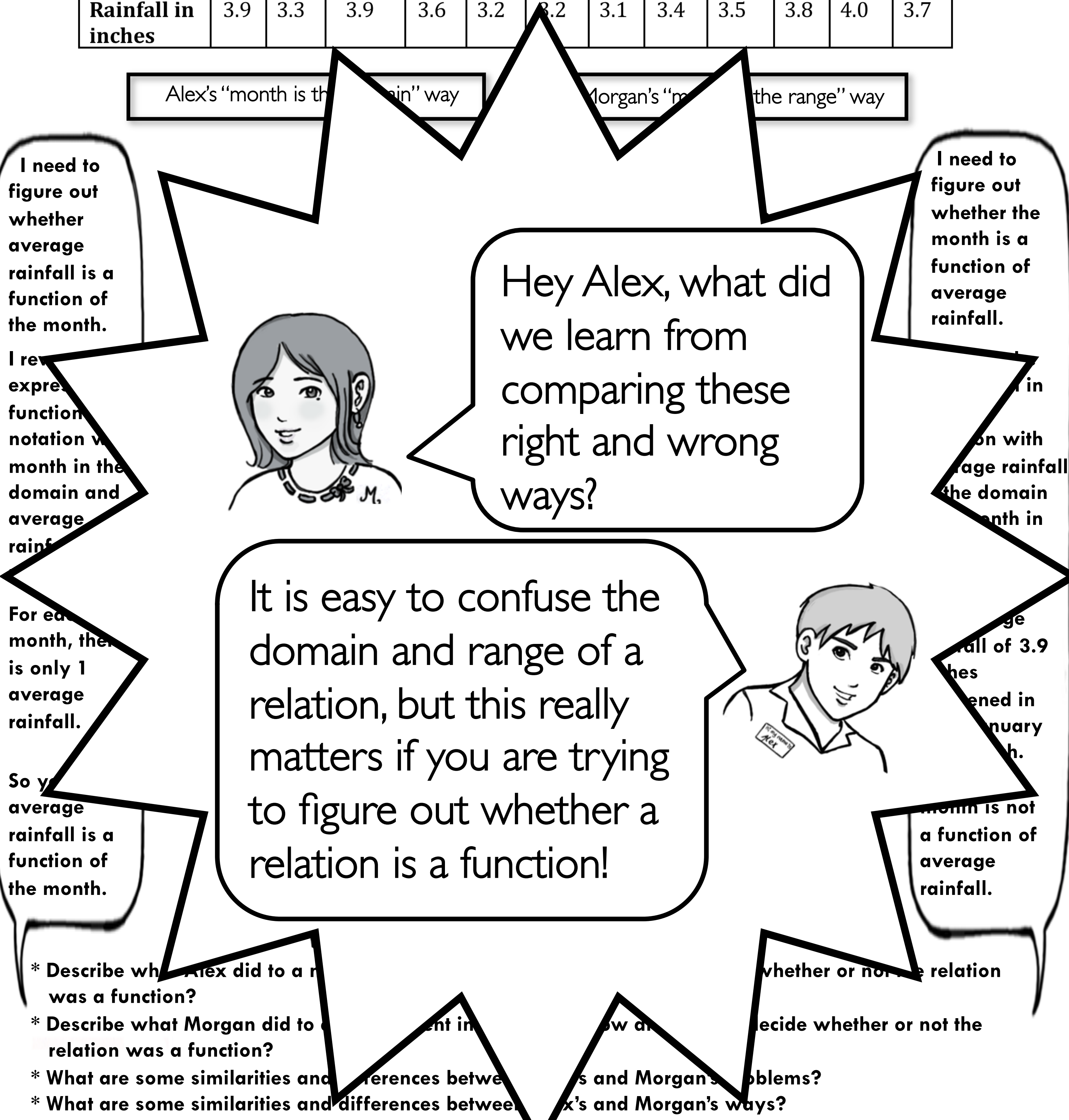
I need to figure out whether the month is a function of average rainfall.

in

n with rage rainfall the domain nth in

ge all of 3.9 hes ened in nuary h.

month is not a function of average rainfall.



* Describe wh lex did to a whether or no e relation was a function?
* Describe what Morgan did to ent in w d ecide whether or not the relation was a function?
* What are some similarities and ferences betwe s and Morgan's blems?
* What are some similarities and differences betwee x's and Morgan's ways?
* Why did Alex consider month as the domain, while organ considered average rainfall as the domain?
* In thinking about the similarities and differences between Alex's and Morgan's ways, what conclusions can you draw about how to solve this type of problem?

Student Worksheet 4.9.2

1 Describe what Alex did to a new student in your class. How did Alex decide whether or not the relation was a function?

2 Describe what Morgan did to a new student in your class. How did Morgan decide whether or not the relation was a function?

3 What are some similarities and differences between Alex's and Morgan's *problems*?

What are some similarities and differences between Alex's and Morgan's *ways*?

4 Why did Alex consider month as the domain, while Morgan considered average rainfall as the domain?

5 In thinking about the similarities and differences between Alex's and Morgan's ways, what conclusions can you draw about how to solve this type of problem?