

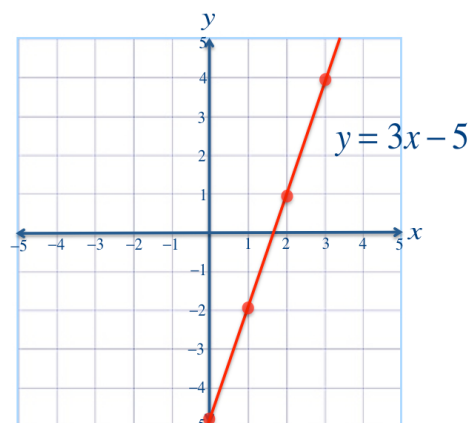
Linear Relations - Vertical Lines



In the previous tutorial, we constructed a graph from the equation of a *linear relation*. In this tutorial, we'll continue to explore and graph various forms of an equation for a *linear relation*.

Let's begin by reviewing what we already understand about the equation and graph shown below.

- I'll begin by focusing on the equation itself... How would I describe the look of this equation?
- How might the look of this equation help me explain how the two variables, x and y , are *related*?



- For this equation... y is a *function of x* . How would I explain the meaning of this statement?

In preparing to graph this equation, I'll need to construct a table of values. Here is a sample set of values recorded in the left-hand column of the table.

- What do I know about these values?
- How would I explain these values?
- How would I describe or explain the information that I'll record in the column on the right-hand side of the table?

x	y
0	
1	
2	
3	



- How would I demonstrate using the *x*-coordinate values, shown in the table, to determine each *y*-coordinate value?

<i>x</i>	<i>y</i>
0	
1	
2	
3	

- How could I use the coordinate values shown in my table to illustrate why the *relation* represented by the equation is *linear*?

How would I explain and demonstrate using the coordinate values in my table to determine locations/points on my graph?

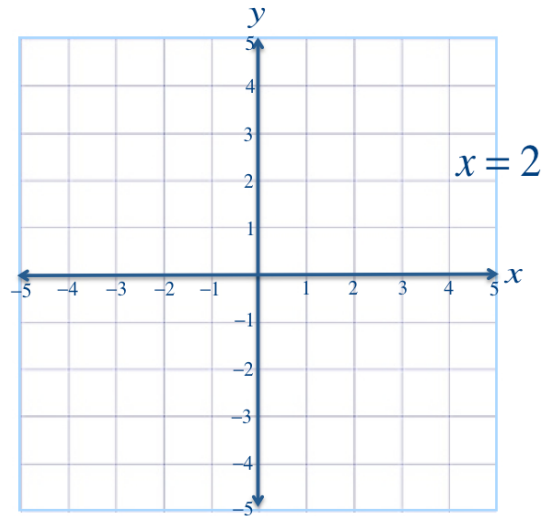


How do I know the points I plotted to construct my graph illustrate that the equation represents *linear relation*?

Let's consider a new equation... $x=2$

- How would I describe this new equation as being different to the previous example $y=3x-5$?

- Based on the look of this equation, what prediction can I make about the location of any point used to graph this equation?



- If each point on my graph has the x -coordinate 2... how would I describe the look of this graph?
- Does my new graph verify that the equation $x=2$ represents a *linear relation*? How would I justify my answer?
- Does the statement... *y is a function of x* apply to my new graph? How would I justify my answer?



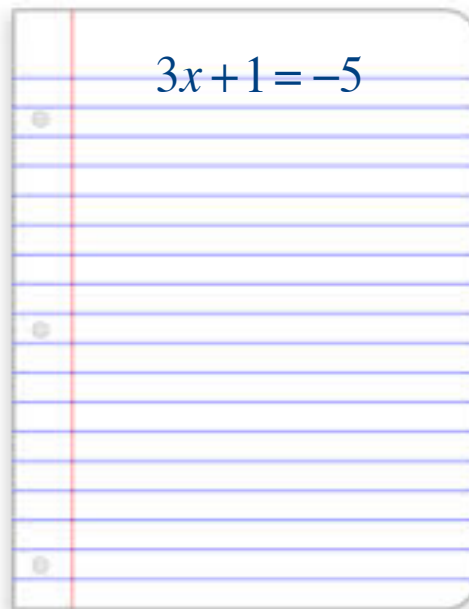
Let's consider another example of an equation representing a *linear relation*.

$$3x + 1 = -5$$

- How would I describe this equation as being different/same compared to the previous example $x=2$?

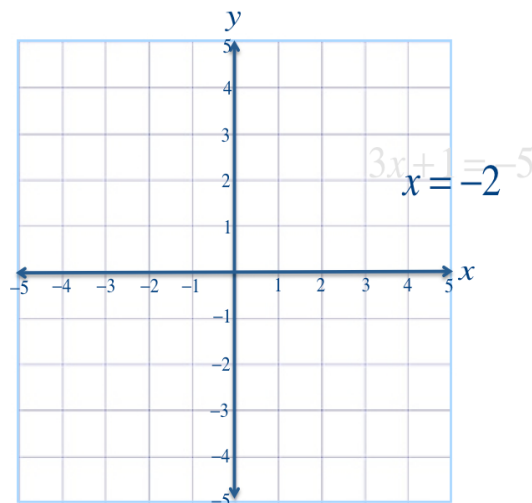
My first step in preparing to graph this equation will require me to solve for the variable.

- How would I explain the statement... solve for the variable?
- What am I being asked to do when... solving for the variable?
- How would I explain and demonstrate my thinking as I solve for the variable in this equation?



Having solved for the variable, my next step in preparing to graph the equation will be to create a table of values.

- What do I need to understand when creating this table?



- Why is creating a table of values an important step in preparing to graph my equation?
- How would I summarize my thinking when constructing a graph using my table of values?

Linear Relations-Vertical Lines-Skills Checklist



- ☑ I can compare/describe the following forms of an equation representing a linear relation... $y=3x-5$, $x=2$, $3x+1=-5$
- ☑ I can explain and demonstrate how I create a table of values using each form of an equation... $y=3x-5$, $x=2$, $3x+1=-5$
- ☑ I can explain and demonstrate how I would isolate and determine the value of the variable in the equation $3x+1=-5$
- ☑ I can explain and demonstrate using a table of values to plot points/locations on a graph
- ☑ I can use a graph to verify that an equation represents a linear relation

I can use these terms in my explanation...

- Input
- Independent Variable
- Output
- Dependent Variable

Linear Relations-Vertical Lines-Worksheet



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