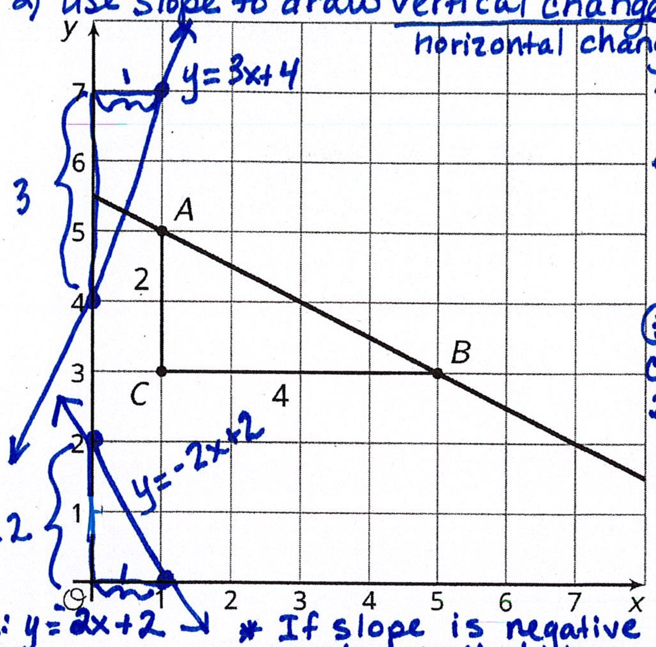
Unit 3

Lesson 10 Summary

We learned earlier that one way to find the slope of a line is by drawing a slope triangle. For example, using the slope triangle shown here the slope of the line is $-\frac{2}{4}$, or $-\frac{1}{2}$ (we know the slope is negative because the line is decreasing from left to right).

* How to draw line from equation: Ex: $y=3x+4$
1) Begin w/ "b" - y-intercept & make a point ex: $b=4$
2) use slope to draw vertical change or horizontal change



Slope Δ ex: $m=3=\frac{3}{1}$

③ connect 2 pts. to make line

Ex: $y=-2x+2$

* If slope is negative make vertical change go down

But slope triangles are only one way to calculate the slope of a line. Let's compute the slope of this line a different way using just the points $A=(1,5)$ and $B=(5,3)$. Since we know the slope is the vertical change divided by the horizontal change, we can calculate the change in the y-values and then the change in the x-values. Between points A and B, the y-value change is $3-5=-2$ and the x-value change is $5-1=4$. This means the slope is $-\frac{2}{4}$, or $-\frac{1}{2}$, which is the same as what we found using the slope triangle.

$\frac{5-3}{1-5}=\frac{2}{-4}=-\frac{1}{2}$

Notice that in each of the calculations, We subtracted the value from point A from the value from point B. If we had done it the other way around, then the y-value change would have been $5-3=2$ and the x-value change would have been $1-5=-4$, which still gives us a slope of $-\frac{1}{2}$. But what if we were to mix up the orders? If that had happened, we would think the slope of the line is *positive* $\frac{1}{2}$ since we would either have calculated $\frac{-2}{-4}$ or $\frac{2}{4}$. Since we already have a graph of the line and can see it has a negative slope, this is clearly incorrect. It we don't have a graph to check our calculation, we could think about how the point on the left, $(1,5)$, is higher than the point on the right, $(5,3)$, meaning the slope of the line must be negative.

negative sign can be in the numerator, denomintor, or next to the fraction bar, they are all the same answer

1	5
-5	3

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

* Make sure to always start with the same point when subtracting your y-values & your x-values