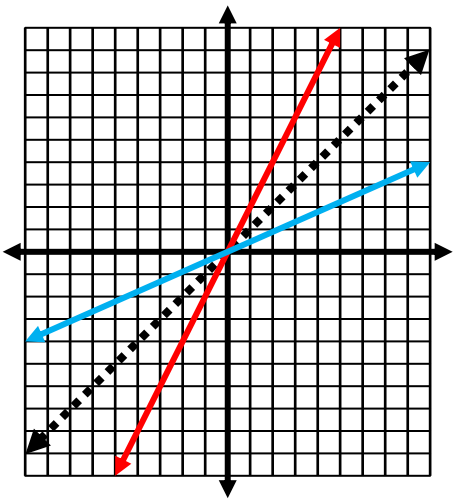
Name _____ Date _____

# Reporting Category 3 (A.6.C.) Notes

The slope-intercept form for a linear equation is $y = b + mx$. The coefficient of x (m) and the constant (b) have a special role in graphing a linear function.



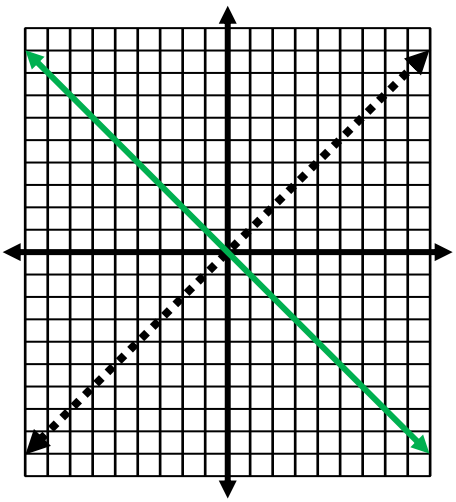
Let's first take a look at how the coefficient (m) can alter the graph.

The parent function y = x is shown as the dotted line on the graph. The red line on the graph shows how the graph would change if we altered the equation to y = 2x.

The blue line on the graph shows how the graph would change if we altered the equation to y = $\frac{1}{2}$ x.

*If the m is greater than 1 (m > 1) then the slope becomes steeper.*
*If the m is between zero and 1 (0 < m < 1) then the slope becomes less steep or shallow.*

The m is not always positive. A negative m changes the graph as well. Let's look at how the graph changes if the m is a negative number.



The parent function y = x is shown as the dotted line on the graph. The green line on the graph shows how the graph would change if we altered the equation to y = -x.

*If the m is a negative number then the line is reflected.*

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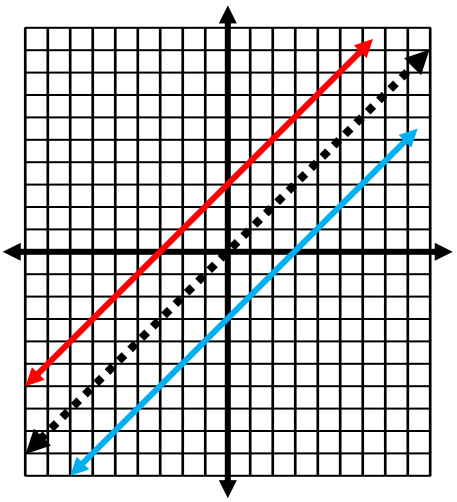
# Reporting Category 3 (A.6.C.) Notes

The constant or the "b" can change the graph as well. Let's look at how both a positive b and a negative b can alter the graph.

The parent function y = x is shown as the dotted line on the graph.



The red line shows how the graph would change if we alter the equation to y = x + 3.

The blue line shows how the graph would change if we alter the equation to y = x - 3.

*If the b is positive or greater than 0 (b > 0), the line will be shifted up.*

*If the b is negative or less than 0 (b < 0), the line will be shifted down.*

Let's put it all together:

The "m" affects the steepness of the graph. It can become <u>more steep</u> (m > 1) or <u>less steep</u> (0 < m < 1). The "m" also makes the line <u>reflect</u> if the m is negative.

The "b" can make the graph <u>shift up</u> (b > 0) or it can make the graph <u>shift down</u> (b < 0).