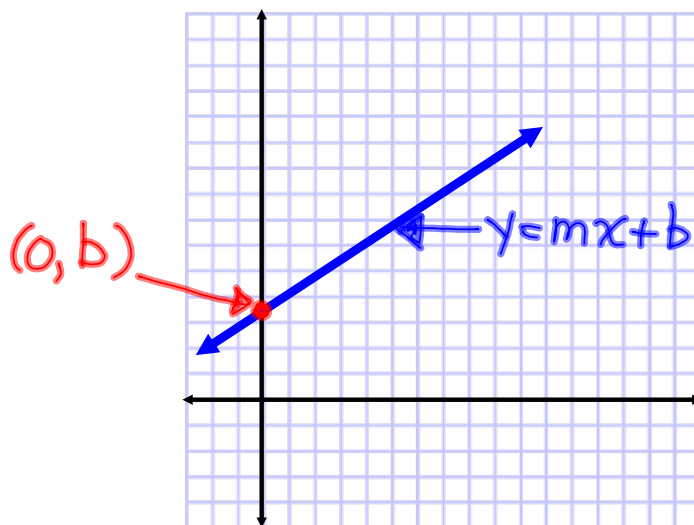


# Algebra I

## Lesson 5-3

- I can write and graph linear equations in slope-intercept form.
- I can model real-world data with an equation in slope-intercept form.

The linear equation  $y = mx + b$  is written in slope-intercept form, where  $m$  is the slope and  $b$  is the y-intercept.



Write an equation of the line whose slope is 3 and whose y-intercept is 5.

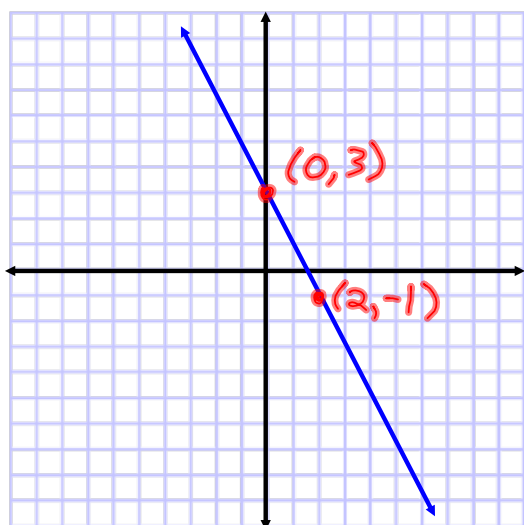
$$m = 3$$

$$b = 5$$

$$y = mx + b$$

$$y = 3x + 5$$

Write an equation of the line shown in the graph.



$$m = \frac{3 + (+1)}{0 - 2} = \frac{4}{-2} = -2$$

$$b = 3$$

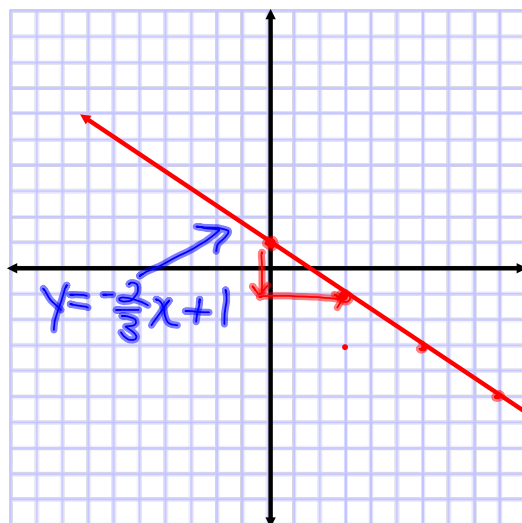
b = y-intercept

$$y = -2x + 3$$

Graph  $y = -\frac{2}{3}x + 1$

$b = (0, 1) = y\text{-intercept}$

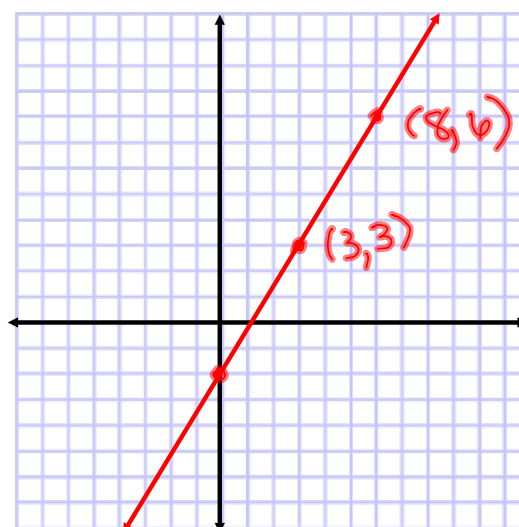
$m = \text{slope} = -\frac{2}{3}$



Graph  $5x - 3y = 6$

$$\begin{array}{r} 5x + -3y = 6 \\ \quad +3y \quad +3y \\ \hline 5x = 6 + 3y \\ \quad -6 \quad -6 \\ \hline \frac{5x + 6}{3} = \frac{3y}{3} \end{array}$$

$$\begin{aligned} \frac{5}{3}x + 2 &= y \\ y &= \frac{5}{3}x + 2 \end{aligned}$$



**If a quantity changes at a constant rate over time, it can be modeled by a linear equation. The y-intercept represents a starting point, and the slope represents the rate of change.**

The natural sweeteners used in foods include sugar, corn sweeteners, syrup, and honey. In 1989, each person in the United States consumed an average of 133 pounds of natural sweeteners.

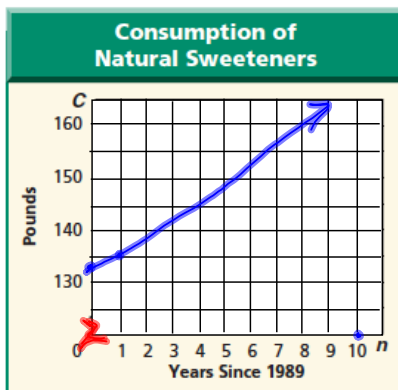
The amount of natural sweeteners consumed has increased by an average of 2.6 pounds per year. Write a linear equation to find the average consumption of natural sweeteners in any year after 1989.

rate of change = 2.6 lb/yr.  
 Start 1989 = 133 (0,133)



0	133
1	135.6

Graph the equation.



Find the number of pounds of natural sweeteners consumed by each person in 1999.

$$y = mx + b$$

$$y = (2.6 \times 10) + 133$$

$$y = 159$$

159 lbs

## Assignment:

Pg. 275-276 #14-32 even;  
40-44 even; 45-46

