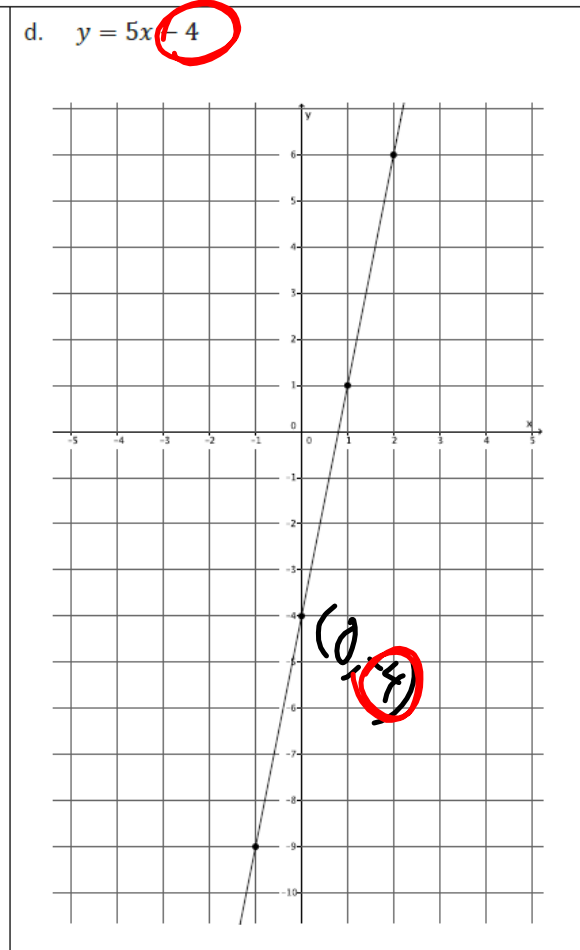
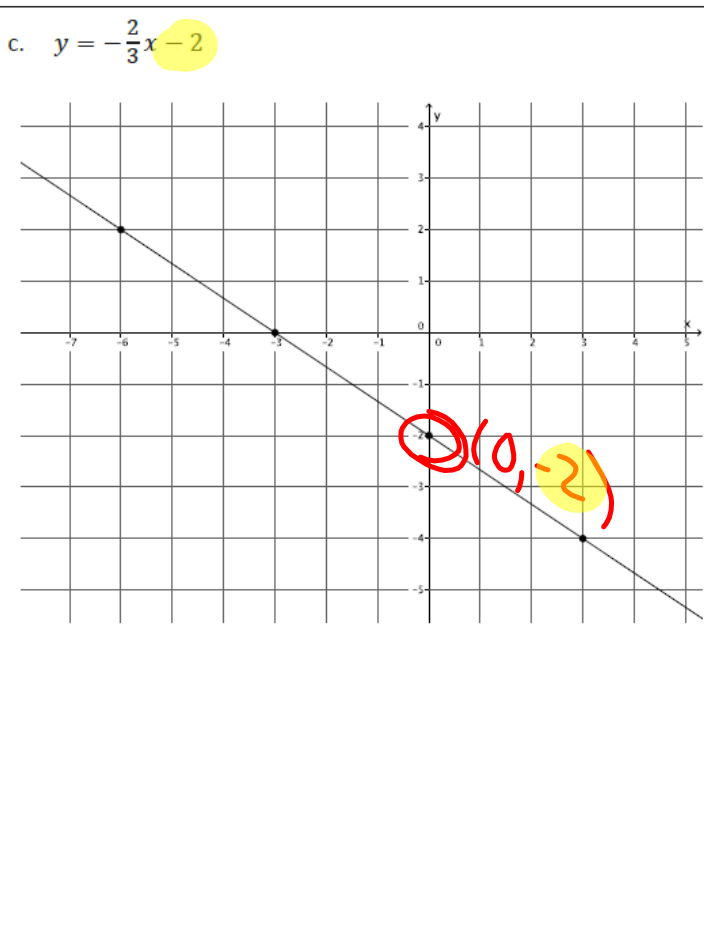
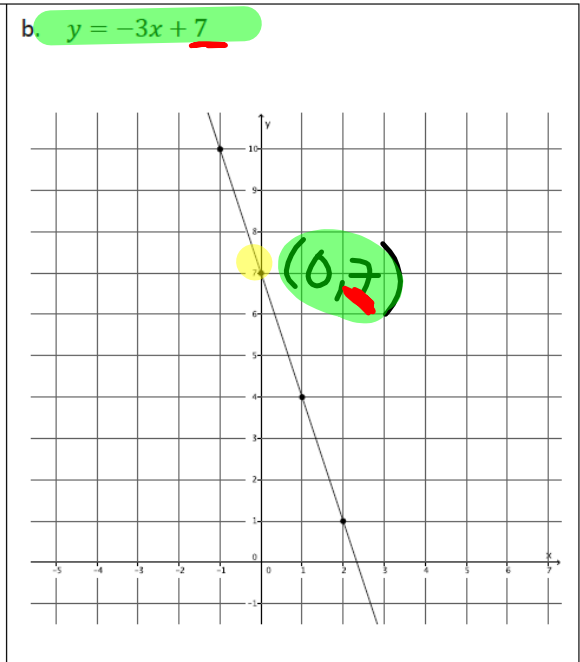
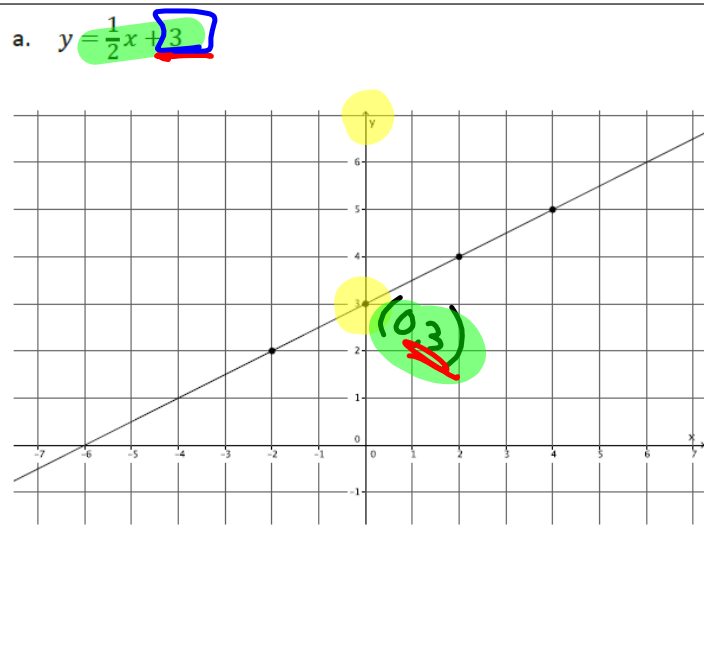


Classwork

Opening Exercise

Examine each of the graphs and their equations. Identify the coordinates of the point where the line intersects the y-axis. Describe the relationship between the point and the equation $y = mx + b$.



$$y = mx + b$$

Slope

*y-intercept
(where the
graph crosses
y-axis)*

Example 1

move

$$y = \underline{m}x + \underline{b}$$

Graph the equation $y = \frac{2}{3}x + 1$. Name the slope and y-intercept point.

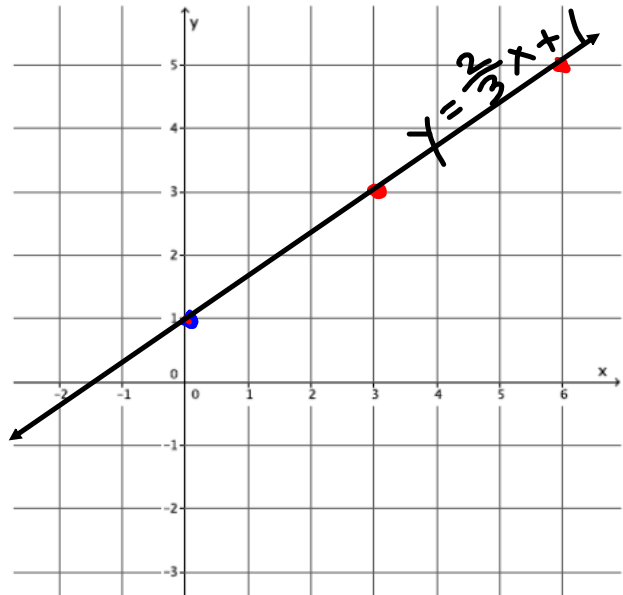
↓

$$m = \frac{2}{3} = \frac{\text{rise}}{\text{run}}$$

↘

$$b = 1 \rightarrow (0, 1)$$

↑
begin



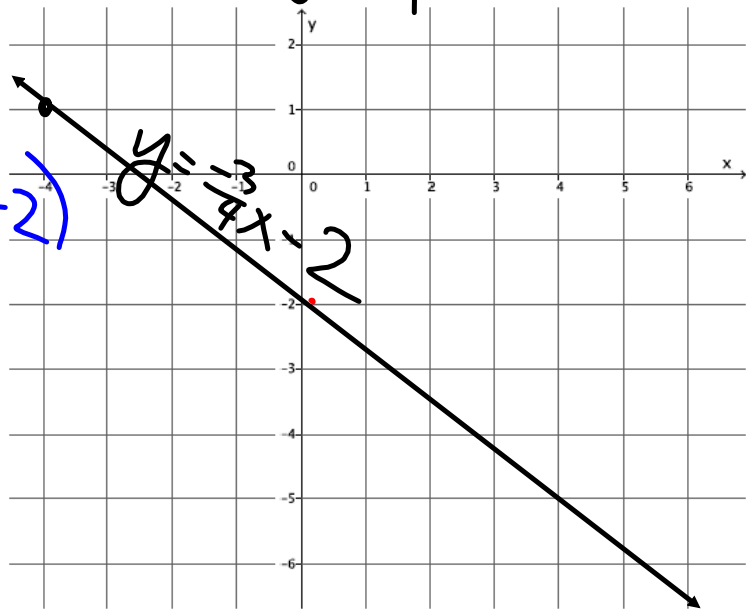
Example 2

Graph the equation $y = -\frac{3}{4}x - 2$. Name the slope and y-intercept point.

max
↓
 $M = -\frac{3}{4}$

begin
↑
 $b = -2 \rightarrow (0, -2)$

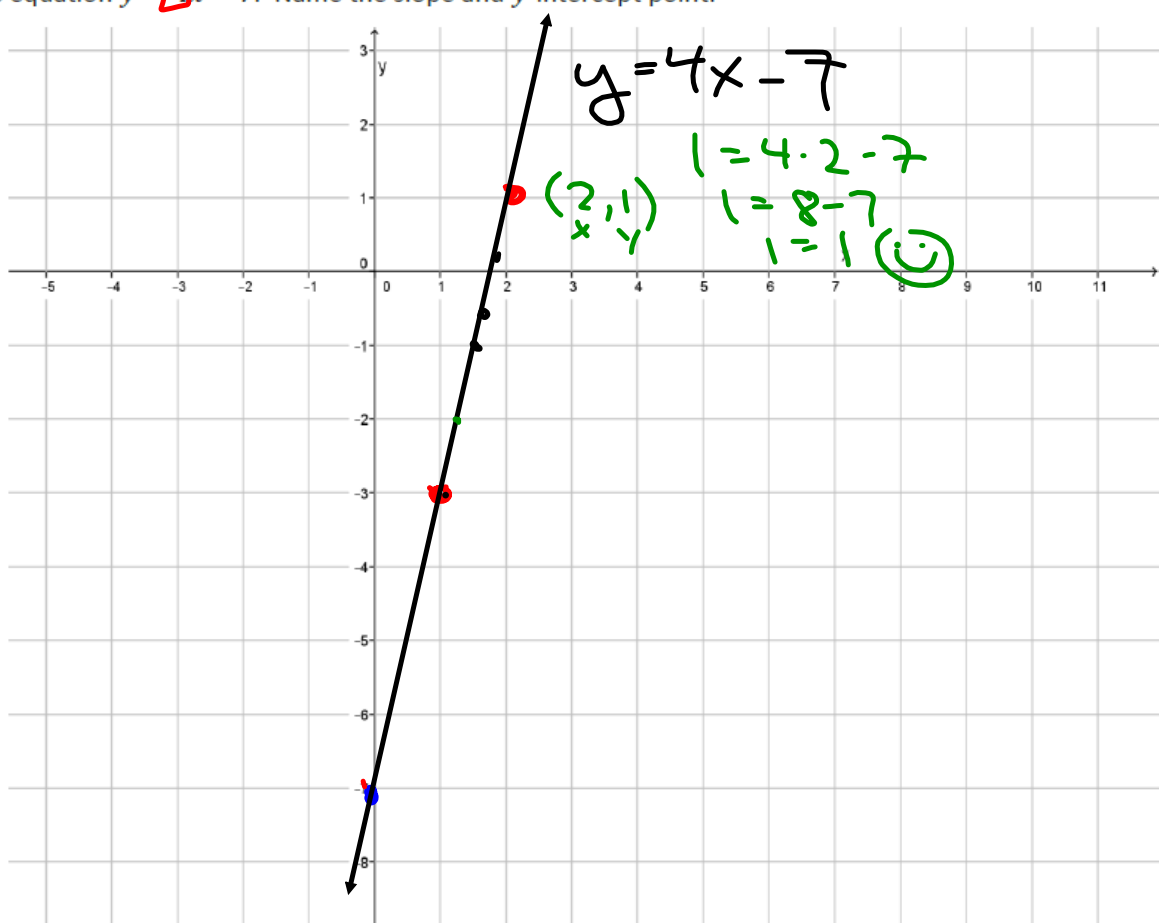
$y = mx + b$
 $y = -\frac{3}{4}x - 2$



Example 3

$m = 4$
 $b = -7$
 $(0, -7)$

Graph the equation $y = 4x - 7$. Name the slope and y-intercept.

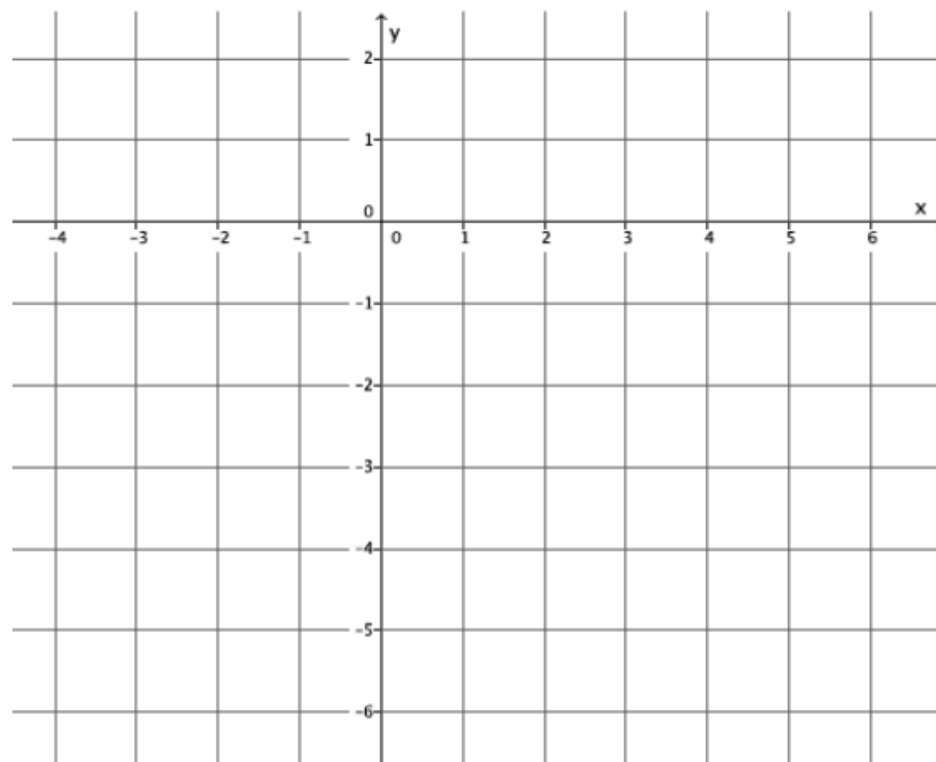


Exercises

1. Graph the equation $y = \frac{5}{2}x - 4$.

a. Name the slope and the y -intercept point.

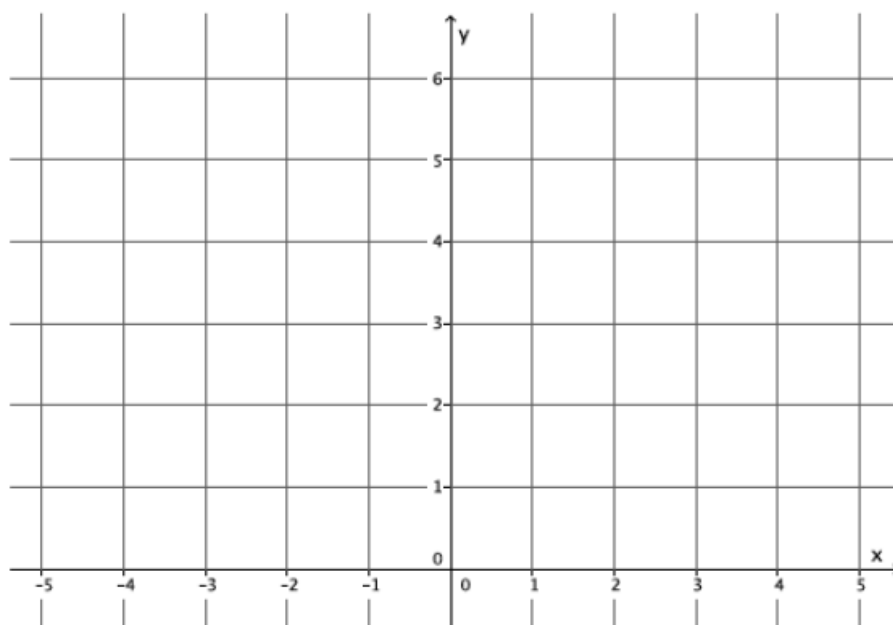
b. Graph the known point, and then use the slope to find a second point before drawing the line.



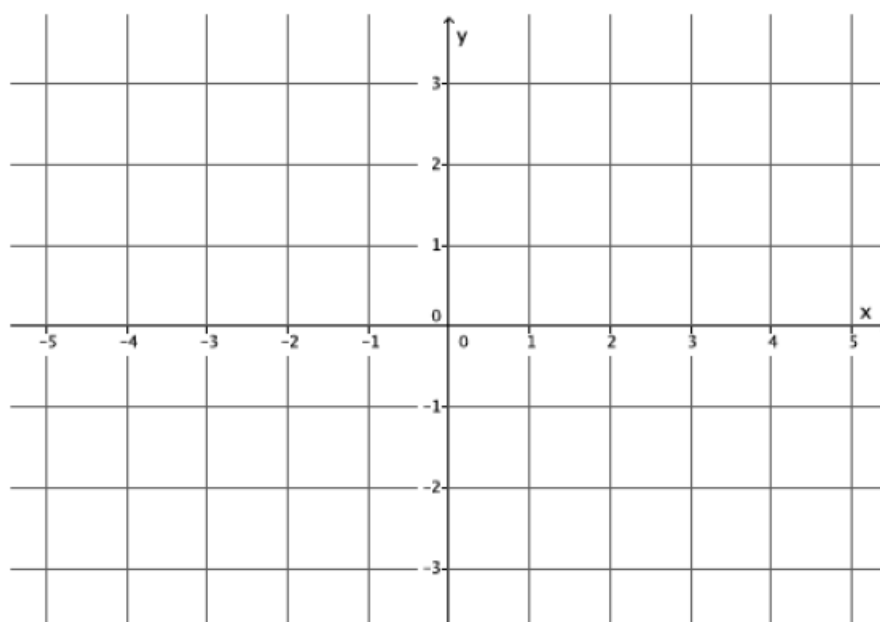
2. Graph the equation $y = -3x + 6$.

a. Name the slope and the y -intercept point.

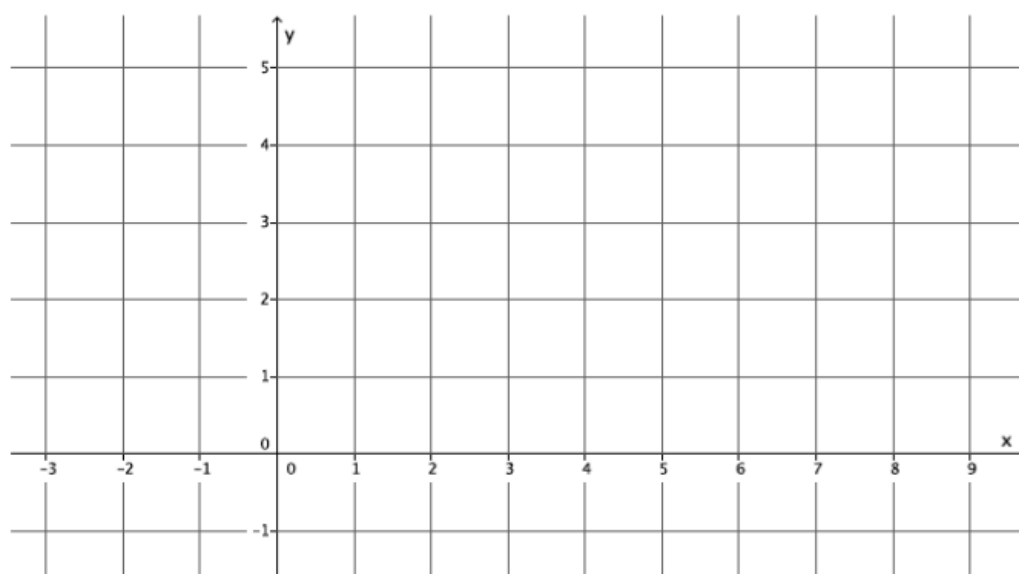
b. Graph the known point, and then use the slope to find a second point before drawing the line.



3. The equation $y = 1x + 0$ can be simplified to $y = x$. Graph the equation $y = x$.
- Name the slope and the y-intercept point.
 - Graph the known point, and then use the slope to find a second point before drawing the line.



4. Graph the point $(0, 2)$.



a. Find another point on the graph using the slope, $m = \frac{2}{7}$.

b. Connect the points to make the line.

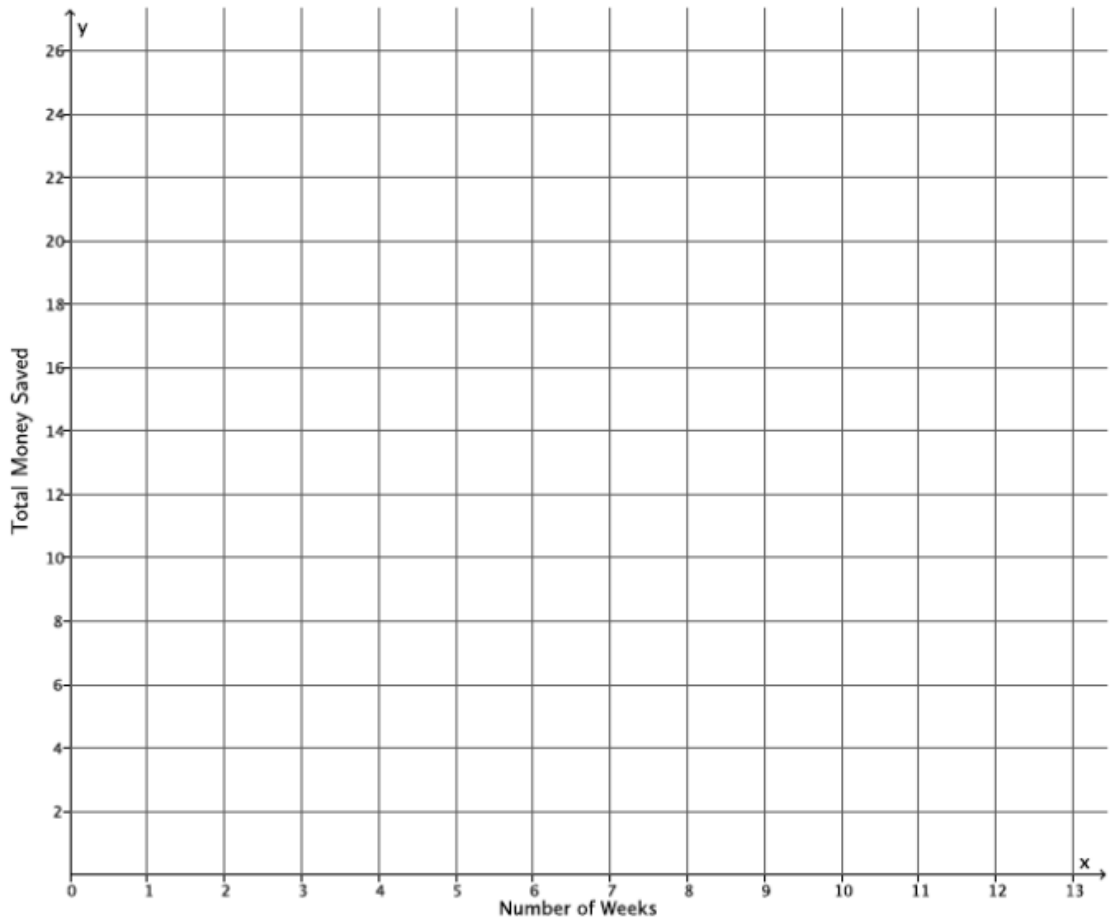
c. Draw a different line that goes through the point $(0, 2)$ with slope $m = \frac{2}{7}$. What do you notice?

5. A bank put \$10 into a savings account when you opened the account. Eight weeks later, you have a total of \$24. Assume you saved the same amount every week.

a. If y is the total amount of money in the savings account and x represents the number of weeks, write an equation in the form $y = mx + b$ that describes the situation.

b. Identify the slope and the y -intercept point. What do these numbers represent?

c. Graph the equation on a coordinate plane.



d. Could any other line represent this situation? For example, could a line through point $(0,10)$ with slope $\frac{7}{5}$ represent the amount of money you save each week? Explain.

6. A group of friends are on a road trip. After 120 miles, they stop to eat lunch. They continue their trip and drive at a constant rate of 50 miles per hour.
- Let y represent the total distance traveled, and let x represent the number of hours driven after lunch. Write an equation to represent the total number of miles driven that day.

b. Identify the slope and the y -intercept point. What do these numbers represent?

c. Graph the equation on a coordinate plane.

d. Could any other line represent this situation? For example, could a line through point $(0, 120)$ with slope 75 represent the total distance the friends drive? Explain.

