Unit 4 – Lesson 18

Name: _____

Date: _____ Period:

Graphing Lines in Slope-Intercept Form

Focus
Standards:8.EE.B.5Graph proportional relationships, interpreting the unit rate as the
slope of the graph. Compare two different proportional
relationships represented in different ways. For example, compare a
distance-time graph to a distance-time equation to determine which
of two moving objects has greater speed.8.EE.B.6Use similar triangles to explain why the slope m is the same
between any two distinct points on a non-vertical line in the
coordinate plane; derive the equation for a line through the origin
and the equation for a line intercepting the vertical axis at .

Student Outcomes

- Students graph equations in the form of y = mx + b using information about slope and yintercept.
- Students know that if they have two straight lines with the same slope and a common point, the lines are the same.

Opening Exercise

Examine each of the graphs and their equations below. 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.





Example 1

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



Example 2

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



Example 3

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				-7											
				-8	1										
				-9	1										

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.
 - 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.
 - 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.
 - a. Name the slope and the y-intercept.
 - b. 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. 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. So far, they have driven **120** miles. They continue their trip and drive at a constant rate of **50** miles per hour.
 - a. Let y represent the total distance traveled in x hours. Write an equation to represent the total number of miles driven in x hours.
 - b. Identify the slope and the *y*-intercept. 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.



Problem Set

Graph each equation on a separate pair of x- and y-axes.

For each problem,

a. name the slope and the y-intercept.

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

1.	Graph the equation $y = \frac{4}{5}x - 5$.	slope:	y-intercept:
2.	Graph the equation $y = x + 3$.	slope:	y-intercept:
3.	Graph the equation $y = -\frac{4}{3}x + 4$. slope:	γ-intercept:
4.	Graph the equation $y = \frac{5}{2}x$.	slope:	y-intercept:
5.	Graph the equation $y = 2x - 6$.	slope:	y-intercept:
6.	Graph the equation $y = -5x + 9$.	slope:	y-intercept:
7.	Graph the equation $y = \frac{1}{3}x + 1$.	slope:	y-intercept:
8.	Graph the equation $5x + 4y = 8$.	(Hint: Transform the equation	on so that it is of the form $y = mx + b$.)
		slope:	y-intercept:

9. Graph the equation -2x + 5y = 30. slope: ______y-intercept: ______