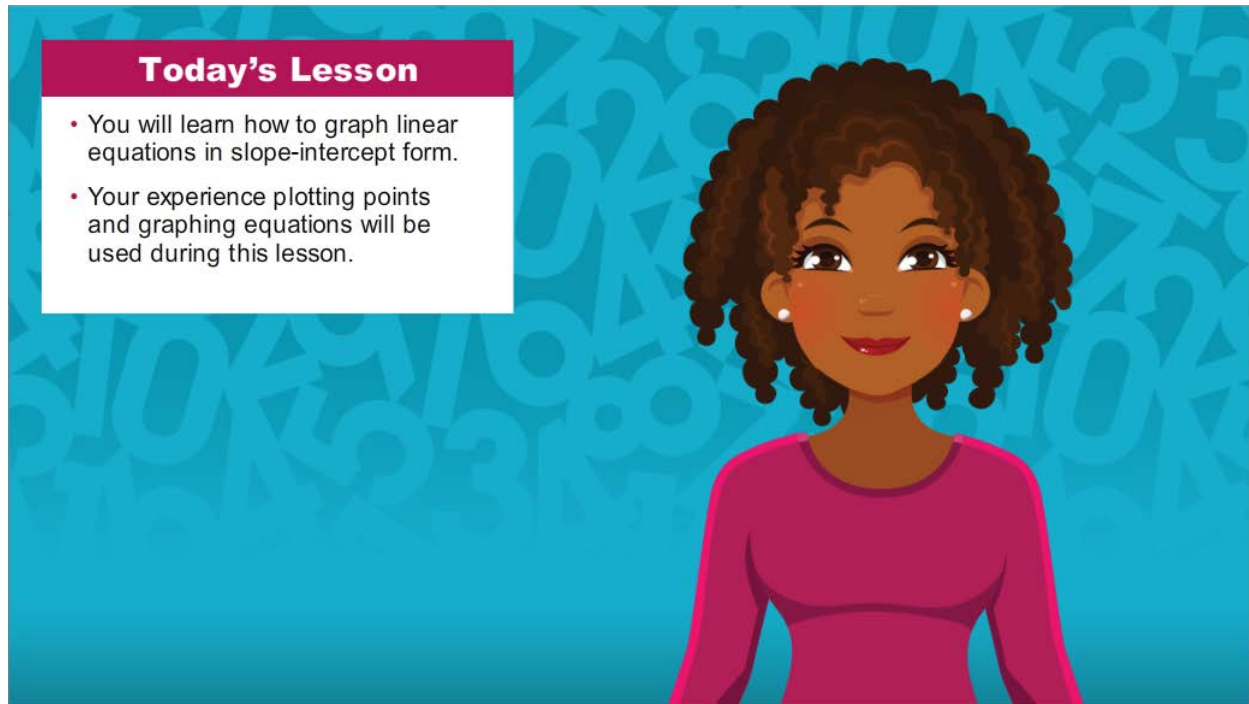


Module 8: Graphing Linear Equations

Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Introduction



Today's Lesson

- You will learn how to graph linear equations in slope-intercept form.
- Your experience plotting points and graphing equations will be used during this lesson.

Hi there! I'm so glad to have you here for this lesson in Algebra I, where you will learn how to graph linear equations in slope-intercept form. Your prior experiences plotting points and graphing equations will prove useful during this lesson.

Module 8: Graphing Linear Equations
Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Graphing Linear Equations in Slope-Intercept Form

**GRAPHING LINEAR EQUATIONS
IN SLOPE-INTERCEPT FORM**

Click the Examples Below to Learn More

Example One

Self-Check

Example Two

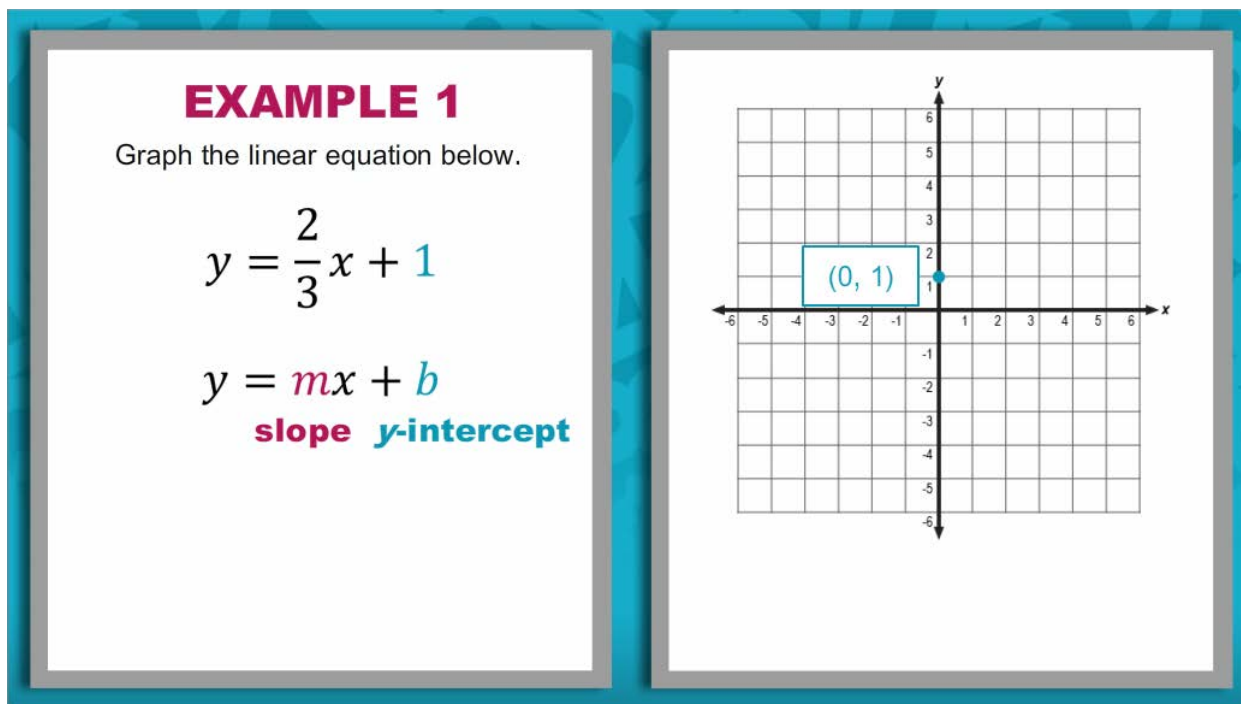
Click the examples below to learn more.

- Example One
- Example Two
- Self-Check

Module 8: Graphing Linear Equations

Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 1



Graph the linear equation below:

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

When an equation is given in slope-intercept form, the **slope is m** , the coefficient of x , and **b is the y -intercept**.

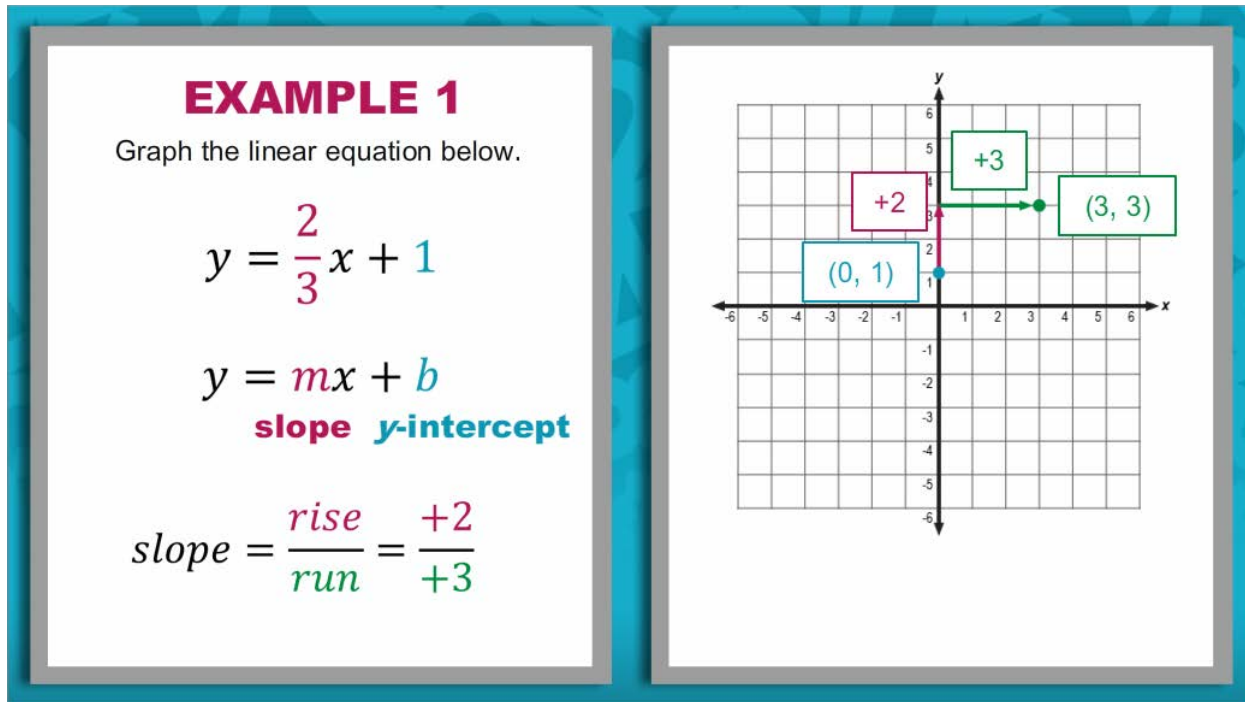
Slope-intercept form: $y = mx + b$
 $y = \frac{2}{3}x + 1$

To graph the line $y = \frac{2}{3}x + 1$ begin by plotting the y -intercept. In this example, b equals 1. So plot the ordered pair (0, 1).

Module 8: Graphing Linear Equations

Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 1 (continued)



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

After you have plotted the y -intercept, use the slope to find another point on the line. In this example, the slope is $\frac{2}{3}$. Recall that slope represents a constant rate of change; it is a ratio of the change in y over the change in x . It is often described as $\frac{\text{rise}}{\text{run}}$. To use the slope to plot another point on the line, begin at the y -intercept (0, 1). Then move 2 units up and 3 units to the right. The point where you end is another point on the line: (3, 3).

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Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 1 (continued)

EXAMPLE 1

Graph the linear equation below.

$$y = \frac{2}{3}x + 1$$
$$y = mx + b$$

slope **y-intercept**

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{+2}{+3}$$

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

Lastly, draw a **line** that passes through the two points. Your work is complete. You have graphed the line $y = \frac{2}{3}x + 1$.

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Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2

EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$
$$y = mx + b$$

slope

y-intercept

Determine the slope and y-intercept of the line $y = 2x - 3$.

Enter the correct values below and click submit.

$$m = \boxed{\quad}$$
$$b = \boxed{\quad}$$

Submit

Graph the linear equation below:

$$y = 2x - 3$$

The first step to graphing the line $y = 2x - 3$ is to identify the slope and the y -intercept. Recall that when an equation is in slope-intercept form, $y = mx + b$, the slope is m and b is the y -intercept.

Determine the slope and y -intercept of the line $y = 2x - 3$. Enter the correct values below and click submit.

$$m = \frac{?}{?}$$
$$b = ?$$

Module 8: Graphing Linear Equations

Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$
$$y = mx + b$$

slope **y-intercept**

When an equation is given in slope-intercept form, the slope is m , the coefficient of x and b is the y -intercept.

When the slope is a whole number, write it as a ratio by placing the whole number over 1.

$$m = \frac{2}{1}$$
$$b = -3$$

[Next](#)

$$y = mx + b$$
$$y = 2x - 3$$

When an equation is given in slope-intercept form, the slope is m , the coefficient of x and b is the y -intercept.

When the slope is a whole number, write it as a ratio by placing the whole number over 1.

$$m = \frac{2}{1}$$

The y -intercept is -3 .

$$b = -3$$

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Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

EXAMPLE 2

Graph the linear equation below.

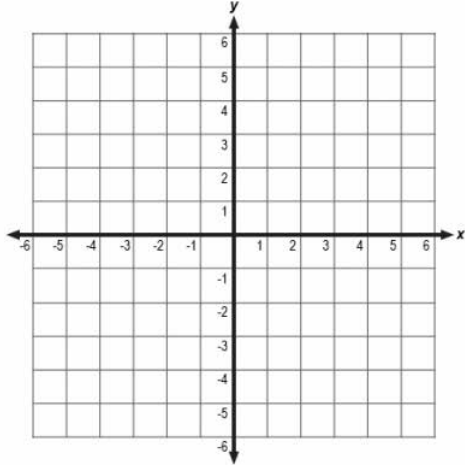
$$y = 2x - 3$$

The y -intercept is -3 .
Where should you plot the first point?

(0, -3)

(-3, 0)

(-3, -3)



$$y = 2x - 3$$

Now it's time to begin graphing the line $y = 2x - 3$.

The y -intercept is -3 .

Where should you plot the first point?

- A) (0, -3)
- B) (-3, 0)
- C) (-3, -3)

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Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

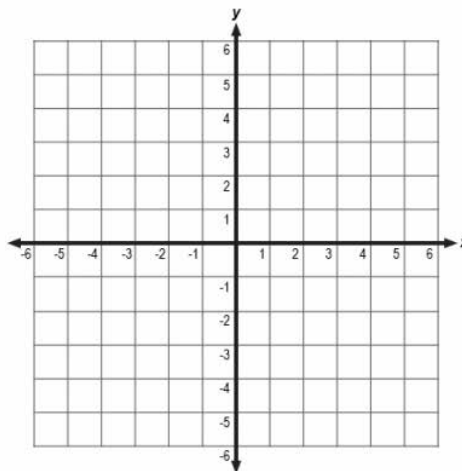
EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$

The y -intercept is -3 , therefore, you should plot the point at $(0, -3)$.

$(0, -3)$



$$y = 2x - 3$$

The y -intercept is -3 . Therefore, you should plot a point at $(0, -3)$.

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Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

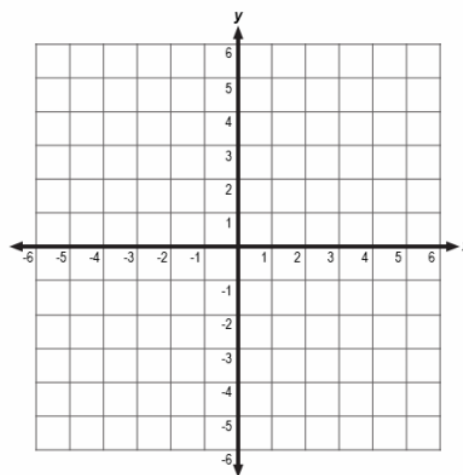
EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$

The y -intercept is -3 , therefore, you should plot the point at $(0, -3)$.

$(0, -3)$



Plot the point $(0, -3)$ by clicking the appropriate spot on the graph above.

$$y = 2x - 3$$

Plot the point $(0, -3)$ by clicking the appropriate spot on the graph above.

Module 8: Graphing Linear Equations

Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$

You have correctly plotted the y -intercept.

$(0, -3)$

Next

$$y = 2x - 3$$

You have correctly plotted the y -intercept $(0, -3)$.

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Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$

The slope of the line is $\frac{2}{1}$.

Therefore, you should start at the y -intercept and move...

2 units right and 1 unit up

2 units up and 1 unit right

2 units up and 1 unit down

$$y = 2x - 3$$

Next, use the slope to plot a second point.

Recall that slope can be described as $\frac{\text{rise}}{\text{run}}$.

The slope of the line is $\frac{2}{1}$. Therefore, you should start at the y -intercept and move...

- A) 2 units right and 1 unit up
- B) 2 units up and 1 unit right
- C) 2 units up and 1 unit down

Module 8: Graphing Linear Equations

Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

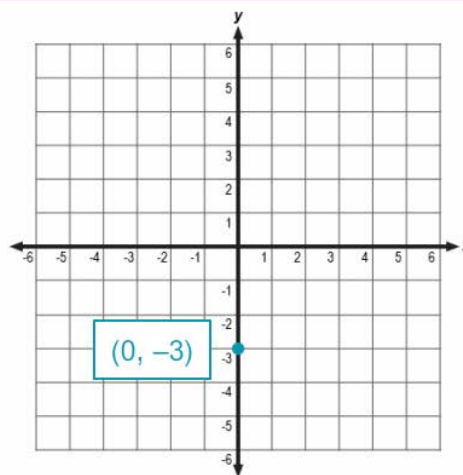
EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$

Because the slope is $\frac{2}{1}$, you should begin at the y -intercept and move 2 units up and 1 unit right.

2 units up and 1 unit right



$$y = 2x - 3$$

Because the slope is $\frac{2}{1}$, you should begin at the y -intercept and move 2 units up and 1 unit right.

Module 8: Graphing Linear Equations

Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

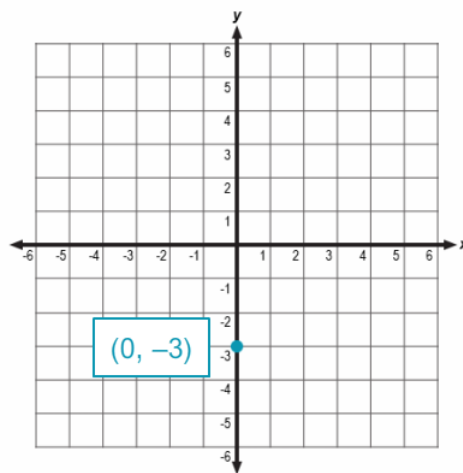
EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$

Because the slope is $\frac{2}{1}$, you should begin at the y -intercept and move 2 units up and 1 unit right.

2 units up and 1 unit right



On the graph above, move 2 units up and 1 unit right from the y -intercept. Then, click to plot the second point.

$$y = 2x - 3$$

On the graph above, move 2 units up and 1 unit right from the y -intercept. Then, click to plot the second point.

Module 8: Graphing Linear Equations
Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$

You have correctly plotted a second point on the line.

Next

$$y = 2x - 3$$

You have correctly plotted a second point of the line $(1, -1)$.

Module 8: Graphing Linear Equations

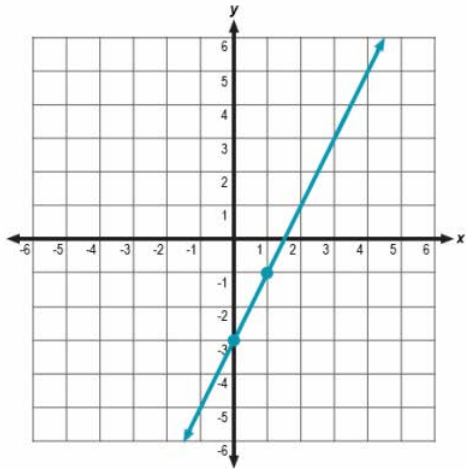
Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Example 2 (continued)

EXAMPLE 2

Graph the linear equation below.

$$y = 2x - 3$$



[Menu](#)


$$y = 2x - 3$$

The last step is to draw the line that passes through the two points you plotted. Your work is complete. You have graphed the line $y = 2x - 3$.

Module 8: Graphing Linear Equations

Topic 1 Content: Graphing Linear Equations in Slope-Intercept Form

Self-Check

 **Self-Check**

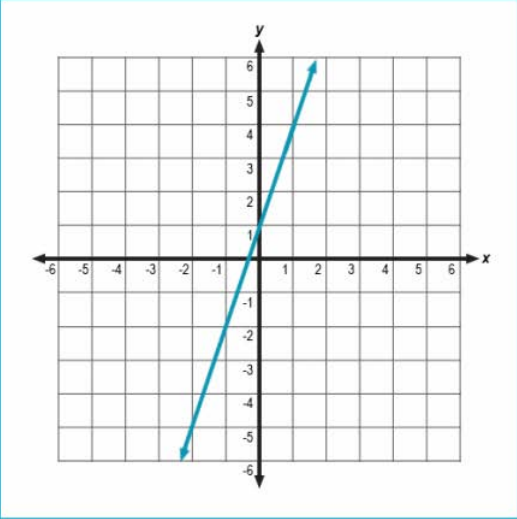
Which of the graphs represents the linear equation below? Use graph paper to graph the line, and then choose your answer.

$y = -3x + 1$

- Graph A
- Graph B
- Graph C

SUBMIT

Graph A



Click the graph above to view additional options.

Solve the problem in the image above to check your understanding of the content.

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Self-Check: Answer

Correct

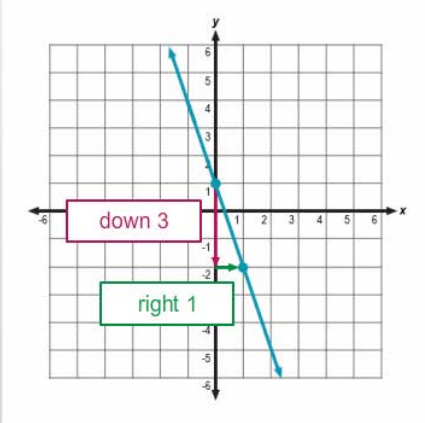
That's correct! The correct answer is Graph C.

The linear equation $y = -3x + 1$ has a slope of $-\frac{3}{1}$ and a y-intercept of 1.

Graph the line by first plotting the y-intercept (0, 1).

Then, starting from the y-intercept, move down 3 units and right 1 unit.

Finally, plot the second point at (1, -2) and graph the line.



Continue

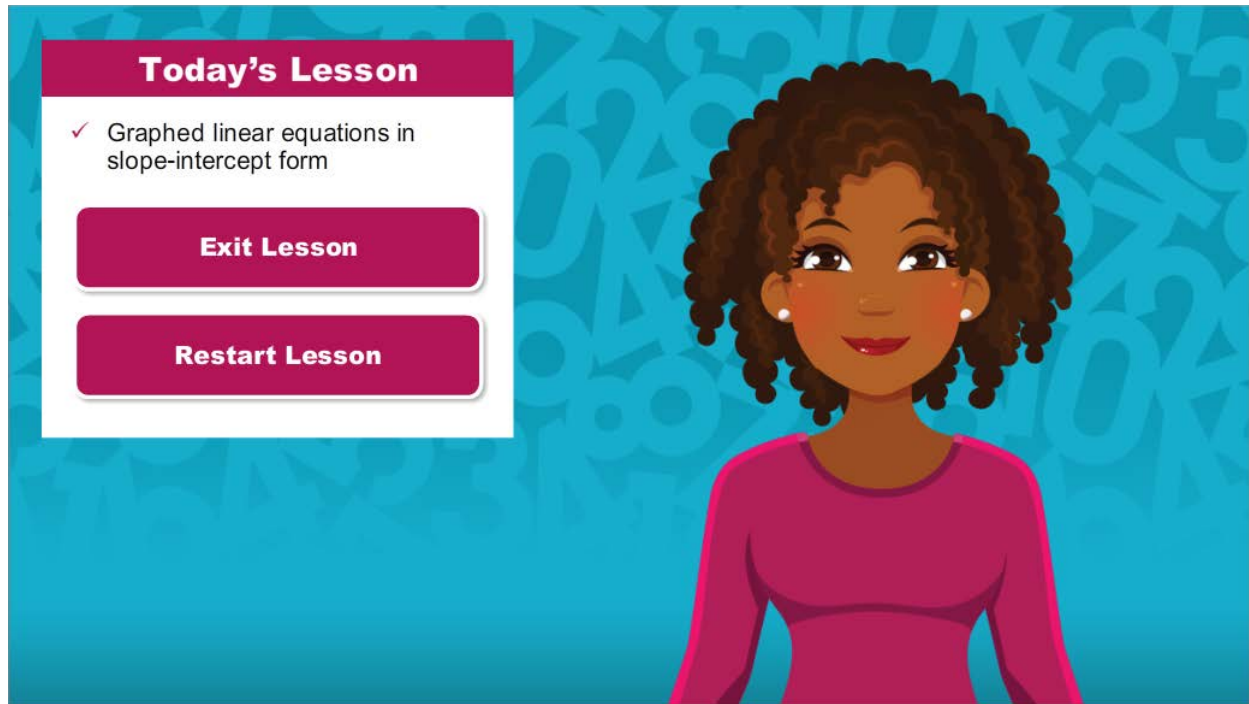
SUBMIT Click the graph above to view additional options.

For your reference, the image above shows the correct solution to the self-check problem.

Module 8: Graphing Linear Equations

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Conclusion



You have reached the conclusion of this lesson where you learned how to graph linear equations in slope-intercept form.