

Module 11: Direct and Inverse Variation
Topic 2 Content: Graphing Direct Variation Equations Notes

Introduction



Hi there! I'm so glad you could join me for this lesson in Algebra I, where you will learn how to represent a direct variation graphically.

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Anticipatory Set

The Graph of a Direct Variation

$$y = kx$$

The graph of a direct variation is a line that passes through the origin (0, 0).

The slope of the line is k .

The slope is equal to the constant of proportionality.

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

The Graph of a Direct Variation

$$y = kx$$

The graph of a direct variation is a line that passes through the origin. The slope of the line is k , the constant of proportionality.

Consider the graph of the direct variation equation, $y = \frac{1}{2}x$.

Notice that the line passes through the origin. The value $\frac{1}{2}$ is the slope of the line, as well as the constant of proportionality in the direct variation equation.

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Graphing Direct Variation Equations

GRAPHING DIRECT VARIATION EQUATIONS

Click the Examples Below to Learn More

Example One

Self-Check

Click the examples below to learn more.

- Example One
- Self-Check

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Example One

EXAMPLE 1

Given: Point C is an element of a direct variation.

Identify the locations of two points that are also included in this direct variation.

The graph of a direct variation is a line that passes through the origin $(0, 0)$.

Next

Given: Point C is an element of a direct variation.

Identify the locations of two points that are also included in this direct variation.

The graph of a direct variation is a line that passes through the origin. Therefore, $(0, 0)$ is the location of one point that is included in the given direct variation.

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Example One (continued)

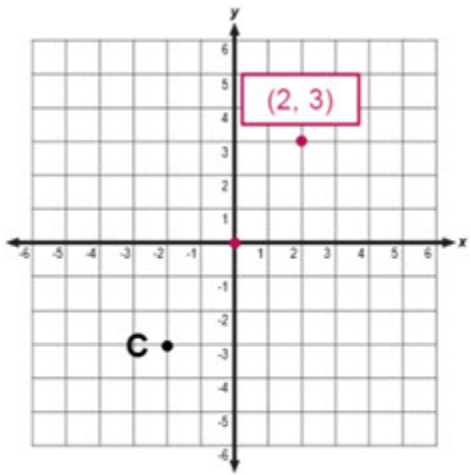
EXAMPLE 1

Given: Point C is an element of a direct variation.

Identify the locations of two points that are also included in this direct variation.

The slope is $\frac{3}{2}$.

The constant of proportionality is $\frac{3}{2}$.



Next

Now, you can determine the constant of proportionality to help you identify a second point. The slope between Point C and the origin is $\frac{3}{2}$. Therefore, the constant of proportionality is $\frac{3}{2}$. Beginning at the origin, move 3 units up and 2 units right. The point where you end is included in the direct variation. This point is located at (2, 3).

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Example One (continued)

EXAMPLE 1

Given: Point C is an element of a direct variation.

Identify the locations of two points that are also included in this direct variation.

The points located at $(0, 0)$ and $(2, 3)$ are included in the given direct variation.


A coordinate plane with x and y axes ranging from -6 to 6. A line passes through the origin (0, 0) and point C at (-2, -3). The line is labeled with a pink box containing the coordinates (2, 3). The origin is also labeled with a pink box containing (0, 0).

[Menu](#)

Your work is complete. The points located at $(0, 0)$ and $(2, 3)$ are included in the given direct variation.

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Self-Check 1

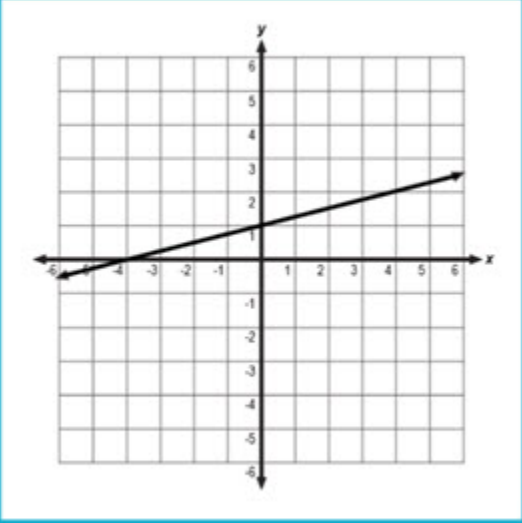
 **Self-Check**

Which of the following graphs represents a direct variation?

- Graph A
- Graph B
- Graph C
- Graph D

SUBMIT

Graph A

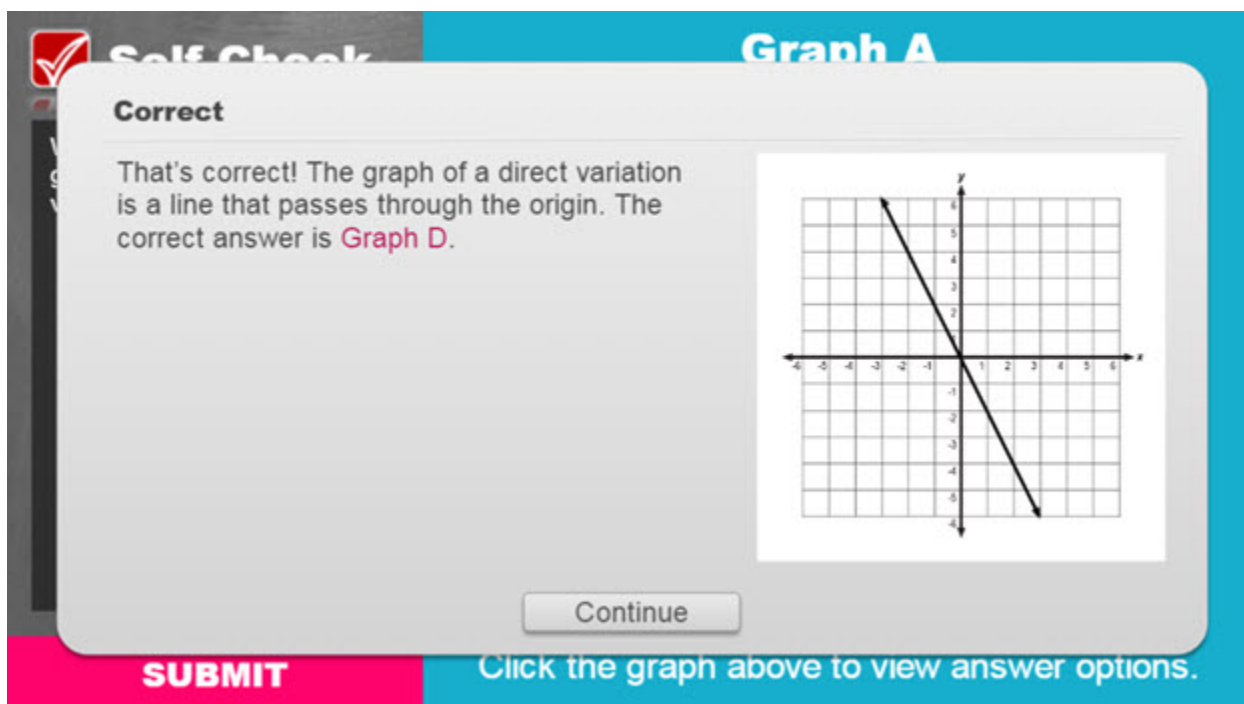


Click the graph above to view answer options.

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

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Self-Check 1: Answer




The screenshot shows a digital interface for a self-check. At the top left, there is a red checkmark icon and the text "Self Check". To the right, the text "Graph A" is visible. The main content area is a grey box with the word "Correct" in bold. Below this, the text reads: "That's correct! The graph of a direct variation is a line that passes through the origin. The correct answer is **Graph D**." To the right of this text is a coordinate plane with x and y axes ranging from -6 to 6. A black line is graphed, passing through the origin (0,0) and the points (-2, 4) and (2, -4). Below the graph is a "Continue" button. At the bottom left of the interface is a pink "SUBMIT" button, and at the bottom right is a blue area with the text "Click the graph above to view answer options."

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

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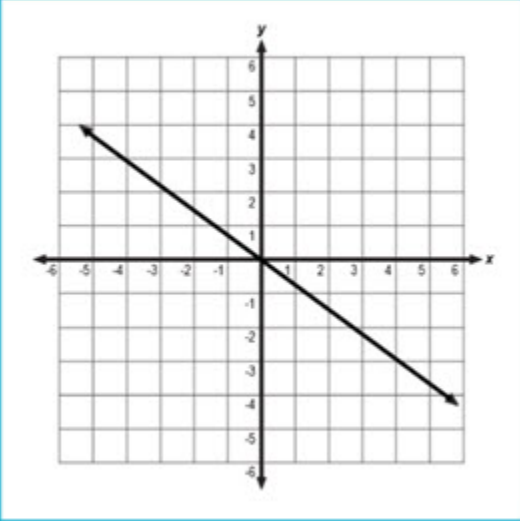
Self-Check 2

 **Self-Check**

What is the constant of proportionality of the direct variation modeled by the graph?

- 3
- 0
- $\frac{3}{4}$
- $-\frac{4}{3}$

SUBMIT



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

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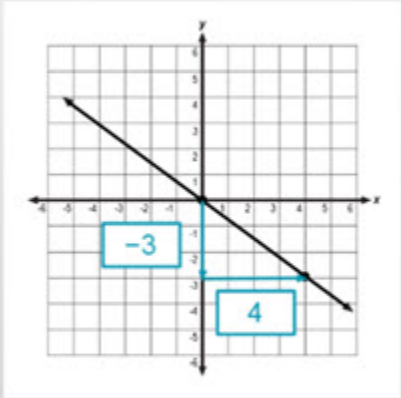
Self-Check 2: Answer

Correct

That's correct! In the graph of a direct variation, the constant of proportionality is the slope of the line.

The slope of the given line is $-\frac{3}{4}$.

Therefore, the constant of proportionality is $-\frac{3}{4}$.




Continue

SUBMIT

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

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Self-Check 3

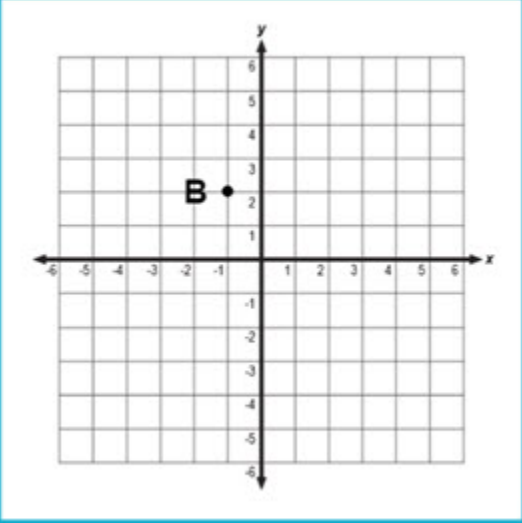
 **Self-Check**

Given: Point B is an element of a direct variation.

Which of the following does not represent the location of a point included in this direct variation?

- (4, -2)
- (0, 0)
- (1, -2)
- (2, -4)

SUBMIT



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

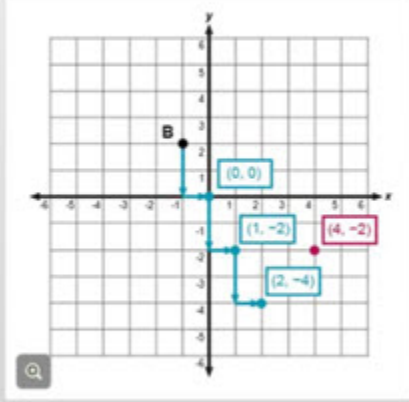
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Self-Check 3: Answer

Correct

That's correct! Notice that for all of the points, with the exception of the point located at $(4, -2)$, the constant of proportionality is $-\frac{2}{1}$, or more simply -2 .

Therefore, the point located at $(4, -2)$ is *not* included in the direct variation.



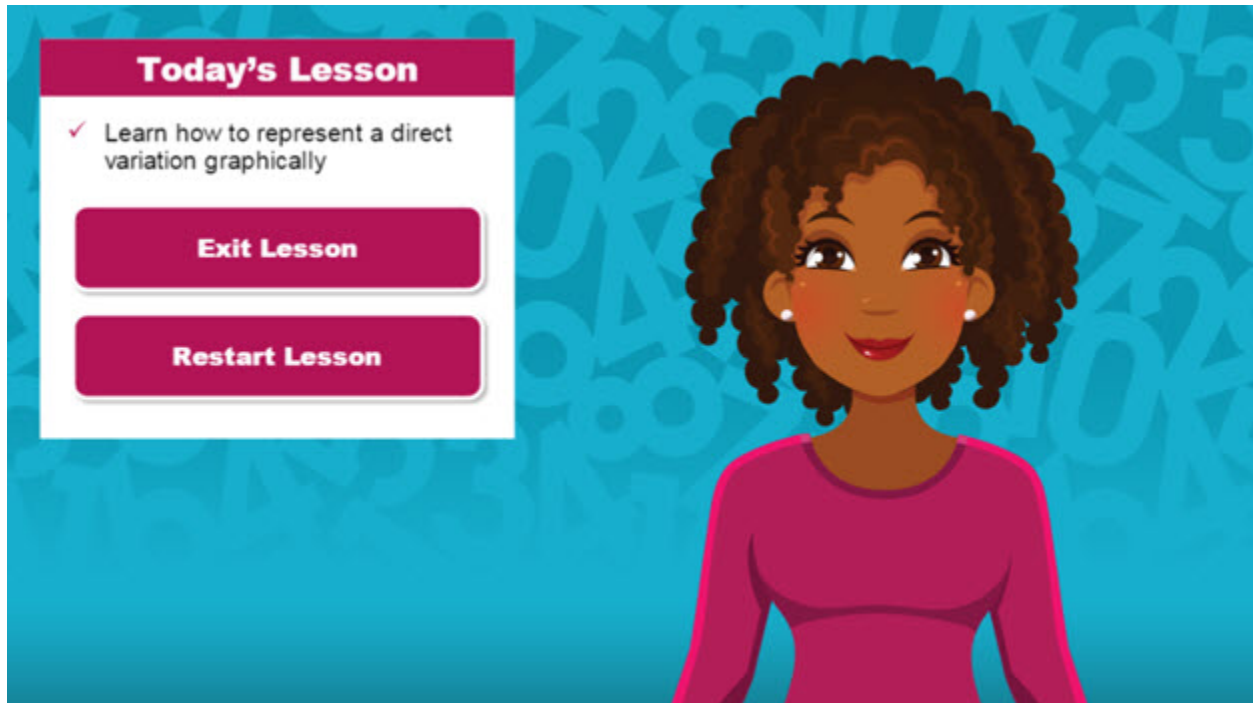
Continue

SUBMIT

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

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Conclusion



You have reached the conclusion of this lesson, where you learned how to represent a direct variation graphically.