Just In Time Quick Check

[Standard of Learning (SOL) 8.16b](https://www.doe.virginia.gov/home/showpublisheddocument/3112/637982466075270000)

| Strand: Patterns, Functions, and Algebra |
| --- |
| Standard of Learning (SOL) 8.16b***The student will identify the slope and y-intercept of a linear function given a table of values, a graph, or an equation in y = mx + b form.*** |
| Grade Level Skills: * Given a table of values for a linear function, identify the slope and *y*-intercept. The table will include the coordinate of the *y*-intercept.
* Given a linear function in the form *y* = *mx* + *b*, identify the slope and *y*-intercept.
* Given the graph of a linear function, identify the slope and *y*-intercept. The value of the *y*-intercept will be limited to integers. The coordinates of the ordered pairs shown in the graph will be limited to integers.
 |
| [**Just in Time Quick Check**](#quick) |
| [**Just in Time Quick Check Teacher Notes**](#teacher) |
| Supporting Resources: * VDOE Mathematics Instructional Plans (MIPS)
	+ [8.16ab - Slope and y-intercept](https://www.doe.virginia.gov/home/showpublisheddocument/17534/638039310967830000) (Word) / [PDF Version](https://www.doe.virginia.gov/home/showpublisheddocument/17536/638039310973130000)
* VDOE Algebra Readiness Formative Assessments
	+ [SOL 8.16b](https://www.doe.virginia.gov/home/showpublisheddocument/31098/638046559057630000) (Word) / [PDF](https://www.doe.virginia.gov/home/showpublisheddocument/31100/638046559062170000)
* VDOE Algebra Readiness Remediation Plans
	+ [Identifying Slope and Y-intercept](https://www.doe.virginia.gov/home/showpublisheddocument/30636/638046509953300000) (Word) / ([PDF](https://www.doe.virginia.gov/home/showpublisheddocument/30638/638046509958630000))
* VDOE Word Wall Cards: Grade 8 [(Word)](https://www.doe.virginia.gov/home/showpublisheddocument/18668/638046222773600000)  |  [(PDF)](https://www.doe.virginia.gov/home/showpublisheddocument/18666/638046223434500000)
	+ Slope – Definition
	+ Slope
	+ Linear Function
	+ Identifying Slope and y-Intercept
* Desmos Activity
	+ [Put the Point on the Line](https://teacher.desmos.com/activitybuilder/custom/57f3dd9dcf3c849008d81007)
	+ [Match My Picture](https://teacher.desmos.com/activitybuilder/custom/596e77c7c9345c220753b55d)
	+ [Match My Line](https://teacher.desmos.com/activitybuilder/custom/5605bb5f00701ed10fb09314)
	+ [Land the Plane](https://teacher.desmos.com/activitybuilder/custom/582b81f4bf3030840aacf265)
	+ [Investigating T-Shirt Offers](https://teacher.desmos.com/activitybuilder/custom/5670acf05a543a6007737ea8)
	+ [Linear Slalom](https://teacher.desmos.com/activitybuilder/custom/5acb9f0aba225a49b31cc66e)
 |
| Supporting and Prerequisite SOL**:** [8.16a](https://www.doe.virginia.gov/home/showpublisheddocument/25320/638045435980470000), [7.10a](https://www.doe.virginia.gov/home/showpublisheddocument/25172/638045413935900000), [7.10c](https://www.doe.virginia.gov/home/showpublisheddocument/25180/638045413961200000), [6.1](https://www.doe.virginia.gov/home/showpublisheddocument/24990/638079060775598899), [6.8b](https://www.doe.virginia.gov/home/showpublisheddocument/25076/638045394337100000), [6.12a](https://www.doe.virginia.gov/home/showpublisheddocument/25084/638045401949670000), [6.12b](https://www.doe.virginia.gov/home/showpublisheddocument/25088/638045401959530000) |

SOL 8.16b - Just in Time Quick Check

1. Which is the equation for a line with a slope of -3 and a *y*-intercept of 4?

$$y=- 4x+3$$

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

$$y= -3x+4$$

$$y=-\frac{4}{3}x-3$$

1. Identify the slope and *y*-intercept for the linear function represented in the graph.



1. What are the slope and *y*-intercept for the linear function represented in the table?

| ***x*** | ***y*** |
| --- | --- |
| 3 | 0 |
| 0 | -2 |
| -3 | -4 |

Describe how you determined each.

SOL 8.16b - Just in Time Quick Check Teacher Notes

**Common Errors/Misconceptions and their Possible Indications**

1. Which is the equation for a line with a slope of -3 and a *y*-intercept of 4?

$$y=- 4x+3$$

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

$$y= -3x+4$$

$$y=-\frac{4}{3}x-3$$

*A common misconception is for students to reverse the y-intercept and the slope and incorrectly represent the equation as* $y=4x-3$*. These students would benefit from revisiting the Linear Function card in the VDOE Word Wall Cards: Grade 8 to review that the function of a linear equation is written in the form* $y=mx+b$ *where m represents the slope and b represents the y-intercept.*

1. Identify the slope and *y*-intercept for the linear function represented in the graph.



*A common error a student may make is writing the slope as 2. This may indicate that the student believes the slope to be* $\frac{change in x}{change in y}$ *instead of* $\frac{change in y}{change in x}$*. This student may benefit from experiences to build conceptual understanding of slope, perhaps through the use of slope triangles. A teacher may want to refer to the Algebra Readiness Remediation Plan -* [*Slope – Rate of Change in a Proportional Relationship*](http://www.doe.virginia.gov/instruction/mathematics/middle/algebra_readiness/ari-remediation-plans/pfa/slope-rate-ch-prop-rel-7-10ab.pdf) *which provides opportunities to develop the concept of slope in a proportional relationship connecting graphs, scenarios, and ratio tables to illustrate the ratio* $\frac{change in y}{change in x}$*. The student may also benefit from opportunities to match the slope and y-intercept to the graph, refer to the VDOE MIP 8.16ab - Slope and y-intercept for a matching activity.*

1. What are the slope and *y*-intercept for the linear function represented in the table?

| ***x*** | ***y*** |
| --- | --- |
| 3 | 0 |
| 0 | -2 |
| -3 | -4 |

Describe how you determined each.

*A common error is for students to identify the y-intercept as 3 (using the coordinate (3,0) from the table) instead of the y-intercept of -2. This indicates that the student is looking for a zero value in the table and does not have a strong understanding of the concept of a y-intercept. It may also indicate that the student believes since it is called a y-intercept, the y-value should be zero. These students could benefit from graphing the ordered pairs in the table to see which point lies on the y-axis. These students would also benefit from writing the ordered pairs for several points on the y-axis and then looking for a pattern to notice that all points that lie on the y-axis have an ordered pair of the form (0, b).*

*Another common error is for students to write the slope as -2, since the* y*-values in the table are decreasing by 2 in each row. This may indicate that students assume the change in x is 1, if their experiences have only included tables that show the x-values increasing by 1. These students would benefit from graphing the points from the table on a coordinate grid and using slope-triangles to find the ratio of the vertical change to the horizontal change. Providing opportunities for students to determine slope from a variety of tables, including those where the change in x-values is not 1 as well as those where the change in x-values is not consistent throughout the table would also benefit students.*