Just In Time Quick Check
Standard of Learning (SOL) 8.16b

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

Just in Time Quick Check Teacher Notes

Supporting Resources:
- VDOE Mathematics Instructional Plans (MIPS)
  - 8.16ab - Slope and y-intercept (Word) / PDF Version
- VDOE Algebra Readiness Formative Assessments
  - SOL 8.16b (Word) / PDF
- VDOE Algebra Readiness Remediation Plans
  - Identifying Slope and Y-intercept (Word) / (PDF)
- VDOE Word Wall Cards: Grade 8 (Word) | (PDF)
  - Slope – Definition
  - Slope
  - Linear Function
  - Identifying Slope and y-Intercept
- Desmos Activity
  - Put the Point on the Line
  - Match My Picture
  - Match My Line
  - Land the Plane
  - Investigating T-Shirt Offers
  - Linear Slalom

Supporting and Prerequisite SOL**:** 8.16a, 7.10a, 7.10c, 6.1, 6.8b, 6.12a, 6.12b

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?

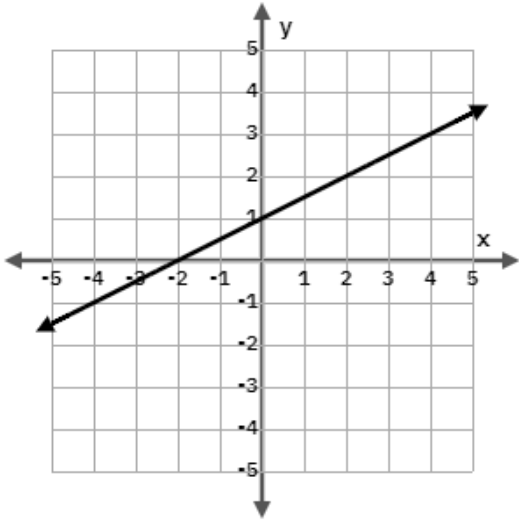|			
$y = -4x + 3$	$y = -\dfrac{3}{4}x + 4$	$y = -3x + 4$	$y = -\dfrac{4}{3}x - 3$

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

3. 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?

|			
$y = -4x + 3$	$y = -\dfrac{3}{4}x + 4$	$y = -3x + 4$	$y = -\dfrac{4}{3}x - 3$

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.

2. Identify the slope and *y*-intercept for the linear function represented in the graph.
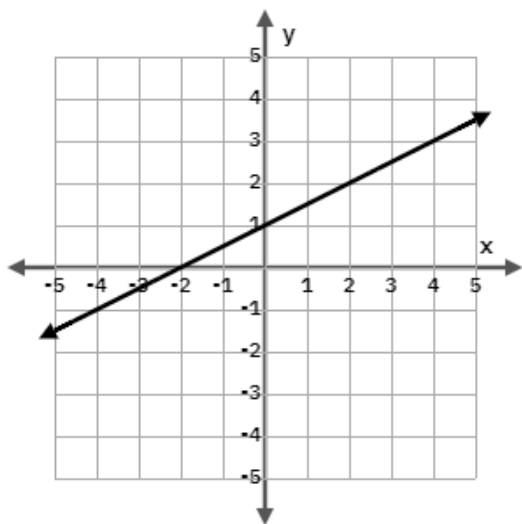
A common error a student may make is writing the slope as 2. This may indicate that the student believes the slope to be $\frac{change\ in\ x}{change\ in\ y}$ instead of $\frac{change\ in\ y}{change\ in\ x}$. This student may benefit from experiences to build conceptual understanding of slope, perhaps 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 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.

3. 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.