LESSON 2-3

Success for English Language Learners

Graphing Linear Functions

Steps for Success

Step I To begin, make sure all students understand the text in the lesson opener by using the following procedures.

- Have students discuss the definitions of the vocabulary words *linear function, slope,* y-*intercept,* x-*intercept,* and *slope-intercept form*. Have them compare the English words and definitions to those in their native languages.
- Students should learn to recognize linear graphs. Use a string or other flexible material to have students make linear and nonlinear figures on command. Tell students that the graphs they draw today will all be linear.

Step II Make sure students understand the important concepts of the lesson by using the following procedures.

- Have students create a web, focusing on the phrase *linear function*. Students can add illustrations, sample functions, and any useful notes as nodes of the web. Nodes may include vocabulary words as well.

Step III Ask English Language Learners to complete the worksheet for this lesson.

- Point out that Example 1A in the student textbook is supported by Problem 1 on the worksheet. Help students see that the change from one ordered pair to another should be proportional, referring back to Lesson 2-2.
- Think and Discuss supports the problems on the worksheet.

Making Connections

- Have volunteers act out a football interception. As students watch the role-play explain that the person *intercepts* the football, just like the *y*-axis *intercepts* the line.

Name _____ Date _____ Class _____

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Problem 1

Determine whether the data set could represent a linear function.

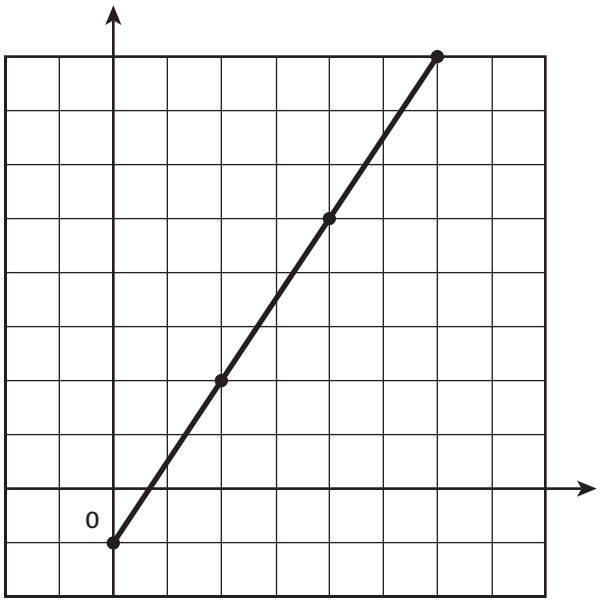
For a *linear* function, $\frac{\text{change in } f(x)}{\text{change in } x}$ is constant.

$\frac{\text{change in } f(x)}{\text{change in } x} = \frac{3}{2} = \frac{6}{4} = 1.5$

$2 - 0 = 2$ $\quad$ $6 - 2 = 4$

x	0	2	4	6
$f(x)$	−1	2	5	8

$2 - -1 = 3$ $\quad$ $8 - 2 = 6$



The graph of the points also shows that they are on a *line*, and that the function is *linear*.

Think and Discuss

1. What method would you use to graph Problem 1?

_____

2. What would happen if you used a different point from the table in Problem 1?

_____

Answer Key

CHAPTER 1

Lesson 1-1

1. $0.\overline{6}$, $\sqrt{2}$, 0, $-\frac{5}{2}$, and 0.5129
2. $0.\overline{6}$, $\sqrt{2}$, 0, and 0.5129
3. $0 \in \mathbb{R}$, $\mathbb{Q}$, $\mathbb{Z}$, and W

Lesson 1-2

1. -9 because $-9 + 9 = 0$.
2. 9 because $\frac{1}{9} \cdot 9 = 1$.
3. \$6.20

Lesson 1-3

1. Go through the list of squares or work "outside in."
2. They have equivalent expressions under the radical symbol.
3. Like radicals are similar to like terms and can be combined.

Lesson 1-4

1. altogether, combine groups
2. equal groups, per, fraction
3. Follow the order of operations.

Lesson 1-5

1. $(4x)(4x)(4x)(4x)(4x)$
2. Add 2 to the exponent.
3. Subtract 1 from the exponent.

Lesson 1-6

1. 2
2. Yes. Each input has only one output.
3. Because each input has only one output.

Lesson 1-7

1. x
2. The output is the dependent variable.
3. $b = 7$

Lesson 1-8

1. $(4, 2)$
2. $(5, 1)$
3. The x-coordinate.
4. The y-coordinate.

Lesson 1-9

1. It has the same shape as the data points.
2. The y-value of -3 appears to be about 4.5.
3. Not necessarily. The model is an approximation and the unknown data may not match it.

CHAPTER 2

Lesson 2-1

1. Substitute my answer into the equation and evaluate.
2. Do the same except use the inequality symbol from the equation instead of the equals sign.
3. I should get the same answer if I distribute the 5 then solve.

Lesson 2-2

1. I can check it by substitution.
2. The variable would be in the numerator.
3. Answers may vary.

Lesson 2-3

1. Answers may vary.
2. You would get the same rate of change.
3. Because the problem says it is a line.

Lesson 2-4

1. All equations that represent the line are equivalent.
2. You would get another equivalent equation.