

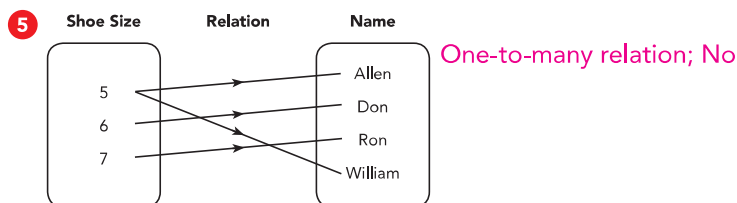
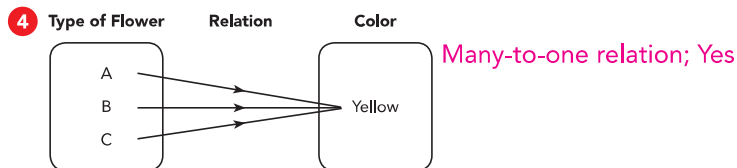
# Chapter Review/Test

## Concepts and Skills

Given the relation described, identify the input and the output.

- Daphne wants to find the area of a circle given its radius.  
**Input: Radius; Output: Area of circle**
- Mr. Reynard wants to find the total cost of the number of items he bought at a store where everything costs one dollar. **Input: Number of items Mr. Reynard bought; Output: Total cost of the items he bought**
- The head of the English department wants to see how each student in Grade 8 does on an English test.  
**Input: Each student's name; Output: Grades for the English test**

Based on the mapping diagrams, state the type of relation. Tell whether each relation is a function.



Tell whether each relation is a function.

**6**

Side Length (cm)	4	5	8	9	<b>Yes</b>
Perimeter (cm)	16	20	32	36	

**7**

Month	Jan	Feb	May	Jul	Sep	Oct	Nov	Dec	<b>Yes</b>
Number of Public Holidays	2	1	1	1	1	1	2	1	

## CHAPTER REVIEW/TEST

### Chapter Assessment

Use the Chapter 6 Test A or B in *Assessments, Course 3* to assess how well students have learned the material in this chapter. These assessments are appropriate for reporting results to adults at home and administrators. Test A is shown on page 293A.

### TEST PREPARATION

For additional test prep

ExamView® Assessment Suite CD-ROM Course 3

Online Assessment System [my.hrw.com](http://my.hrw.com)

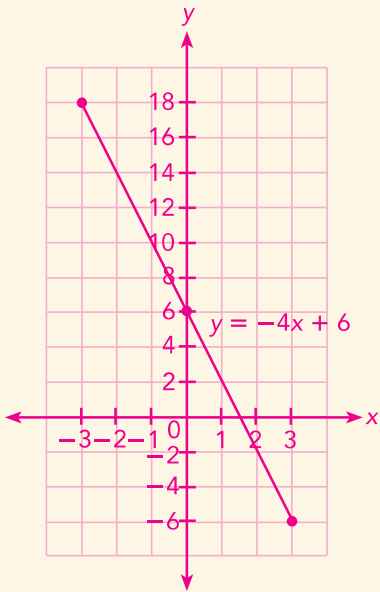


### Intervention and Reteaching Recommendations

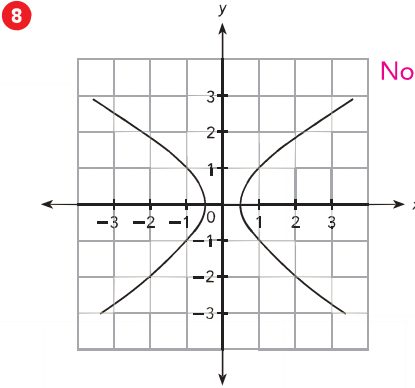
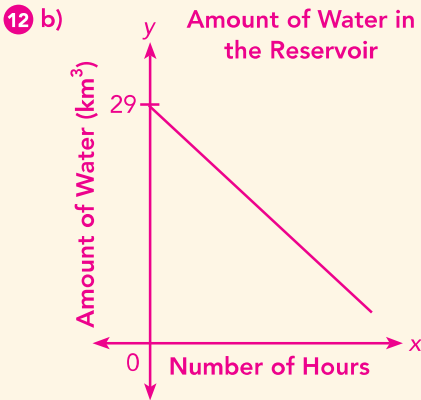
Student Book A Review/Test Items	Assessments Chapter 6 Items	Chapter 6 Objectives	Reteach A Chapter 6
<b>1</b> to <b>3</b>	Test A: 1–2 Test B: 1–2	<b>Objective 1.</b> Identify the input and output of a relation.	Lesson 6.1
<b>4</b> to <b>7</b>	Test A: 3 Test B: 3	<b>Objective 2.</b> Identify whether a relation is a function.	Lesson 6.1

9  $y = -4x + 6$

x	-3	0	3
y	18	6	-6



12 a) See Additional Answers.



Use graph paper. Show your work.

9 Represent the function  $y = -4x + 6$  as a table and as a graph. Use 1 grid square on the horizontal axis to represent 1 unit for the  $x$  interval from  $-3$  to  $3$ , and 1 grid square on the vertical axis to represent 2 units for the  $y$  interval from  $-6$  to  $18$ . See margin.

Tell whether each function is linear or nonlinear. Then tell whether the function is increasing or decreasing.

10

Input, $x$	2	3	5	6
Output, $y$	1,500	600	150	60

Nonlinear and decreasing function

11 The area of a square,  $A$  square centimeters, is a function of its side length,  $s$  centimeters, where  $A = s^2$ . Nonlinear and increasing function

### Problem Solving

Describe the function. Sketch a graph for the function.

12 A large region has experienced heavy rains. Government officials decide to open a floodgate to release water from the reservoir at a constant rate of 1 cubic kilometer per hour. Before they open the gate, there are 29 cubic kilometers of water in the reservoir. The amount of water in the reservoir,  $y$  cubic kilometers, is a function of the number of hours the floodgate has been opened,  $x$  hours.

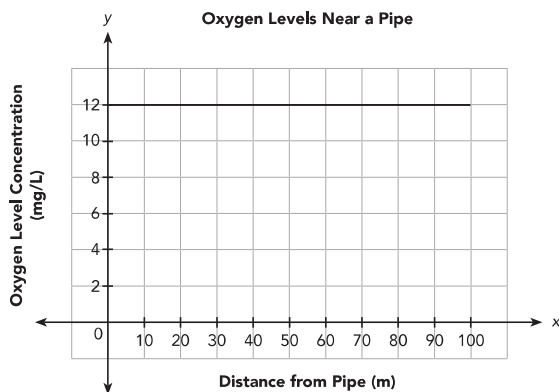
- Give the least possible input value and the corresponding output value. Tell whether the function is linear or nonlinear. Then tell whether the function is increasing or decreasing. Explain. See margin.
- Sketch a graph for the function. Identify the  $y$ -intercept of the graph. See margin for graph; 29

### RtI Intervention and Reteaching Recommendations

Student Book A Review/Test Items	Assessments Chapter 6 Items	Chapter 6 Objectives	Reteach A Chapter 6
8	Test A: 4 Test B: 4	<b>Objective 2.</b> Identify whether a relation is a function.	Lesson 6.1
9 to 11	Test A: 5–6 Test B: 5–6	<b>Objective 3.</b> Identify and represent linear and nonlinear functions, and decide whether the function is increasing or decreasing.	Lesson 6.3
12	Test A: 7–9 Test B: 7–9	<b>Objective 4.</b> Solve real-world problems involving functions represented in various ways.	Lessons 6.2, 6.3, 6.4

**Solve. Show your work.**

- 13** The student council orders T-shirts with the school logo from an online company. The cost for each T-shirt is \$2, and the shipping charge for all the shirts is \$25. The student council wants to find out the total amount of money they pay,  $y$  dollars, for the number of T-shirts they order,  $x$ .
- Write an algebraic equation to represent the function.  $y = 25 + 2x$
  - Use graph paper. Graph the relationship between  $x$  and  $y$ . Use 1 unit on the horizontal axis to represent 1 T-shirt for the  $x$  interval from 0 to 10, and 1 unit on the vertical axis to represent \$2 for the  $y$  interval from 25 to 45. *See margin.*
  - Identify whether the function is linear or nonlinear. *It is linear.*
  - Identify whether the function is increasing or decreasing. Explain. *It is increasing because as the values of  $x$  increase, the corresponding values of  $y$  also increase.*
- 14** A scientist is checking to see whether pollutants are causing a decrease in oxygen levels in a river near a pipe that drains into the river. She notices that the distance downstream from the pipe, in meters, and the concentration of oxygen in the water, in milligrams per liter, can be described by the function  $y = 2 + 0.1x$ , where  $y$  is the concentration of oxygen and  $x$  is the distance from the pipe. The scientist also tested oxygen levels upstream from the pipe. The graph shows a function that represents this upstream oxygen level concentration.



- Copy the graph shown. Then graph the function  $y = 2 + 0.1x$  on the same coordinate plane. *See margin.*
- Use a verbal description to compare the two functions. Give a possible reason for the difference in oxygen levels upstream and downstream from the pipe. *See margin.*

- 13** b), **14** a) *See Additional Answers.*
- 14** b) The oxygen level upstream from the pipe is always at 12 mg/L regardless of the distance from the pipe. However, the oxygen level in the river downstream from the pipe is 2 mg/L when the distance from the pipe is 0 m, and it increases as the distance from the pipe increases. Because the concentration of oxygen increases at a rate of 0.1 mg/L, the rate of change of the function is constant. So, it is an increasing linear function; One possible reason is that the river is polluted downstream from the pipe.

**RtI Intervention and Reteaching Recommendations**

Student Book A Review/Test Items	Assessments Chapter 6 Items	Chapter 6 Objectives	Reteach A Chapter 6
<b>13</b> to <b>14</b>	Test A: 7–9 Test B: 7–9	<b>Objective 4.</b> Solve real-world problems involving functions represented in various ways.	Lessons 6.2, 6.3, 6.4