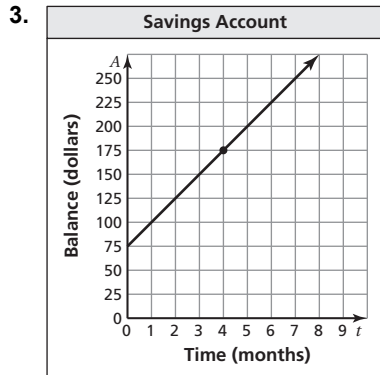


Student Workbook Answers

d. *Sample answer:* The rise is the change in y , or difference in the y -coordinates. The run is the change in x , or difference in the x -coordinates.

e. $m = \frac{y - y_1}{x - x_1}$

f. $y - y_1 = m(x - x_1)$; This result represents the equation of a line with slope m that passes through the point (x_1, y_1) .



$$A - 175 = 25(t - 4)$$

$$A = 25t + 75$$

4. The results are the same. The formula from Activity 2 can be used to write the equations in slope-intercept form.
5. It is the formula that can be used to write the equation of a line given a “point” on the line and the “slope” of the line. The “slope” and the coordinates of the “point” are substituted into the formula to get the equation. It is important because it allows you to write the equation of a line given a point and a slope.
6. Use the point-slope form of the equation of a line, $y - y_1 = m(x - x_1)$. Substitute the slope form and the point for (x_1, y_1) .

Sample answer: Write an equation of the line that passes through the point $(2, -1)$ with slope -2 .

$$y - y_1 = m(x - x_1)$$

$$y - (-1) = -2(x - 2)$$

$$y + 1 = -2(x - 2)$$

$$y + 1 = -2x + 4$$

$$y = -2x + 3$$

So, the equation is $y = -2x + 3$.

3.7 Practice

1. $y = 3x + 4$

2. $y = -\frac{2}{3}x + 2$

3. $y + 2 = \frac{1}{4}(x - 4)$

4. $y - 5 = -\frac{4}{3}(x + 3)$

5. $y - 2 = -(x - 2)$

6. $y + 5 = 4(x + 1)$

7. $y = \frac{1}{3}x - 3$

8. $y = -\frac{5}{2}x + 2$

9. $y = -2x - 4$

10. $y = 5x + 1$

11. a. $V = -150x + 900$ b. \$900 c. \$150

Chapter 4

4.1 Activity

1. a. 2; 4; 6; 8 b. 6; 8; 10; 12

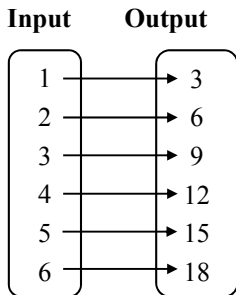
c. $2\pi, 4\pi, 6\pi, 8\pi$ d. 9; 18; 27; 36

2. a. Each input has one output. *Sample answer:* This relationship is possible if the input values represent the jersey numbers of basketball players and the output values represent the number of points each player scored in a basketball game.
- b. Input 10 has two outputs. Input 11 has one output. Input 12 has two outputs. Input 13 has one output. *Sample answer:* This relationship is possible if the input values represent the ages of players on a Little League team and the output values represent the number of homeruns hit.
3. a. As each input increases by 1, the output increases by 2.
14; 16; 18; 20
- b. As each input increases by 1, the output increases by $\frac{1}{3}$.
 $\frac{7}{3}; \frac{8}{3}; 3; \frac{10}{3}$
4. List the inputs and outputs. Draw arrows from the inputs to their outputs. Describe and interpret any patterns.

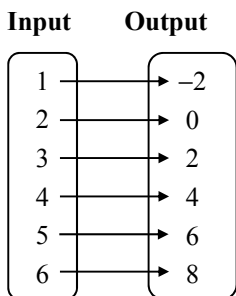
Student Workbook Answers

4.1 Practice

1. As each input increases by 1, the output increases by 3.



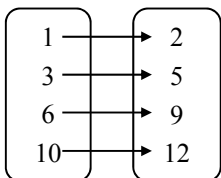
2. As each input increases by 1, the output increases by 2.



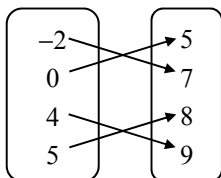
3. (0, 1), (2, 2), (4, 3), (6, 4)

4. (1, 9), (4, 4), (7, -1), (10, -6)

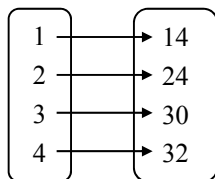
5. Input Output



6. Input Output



7. a. Input Output



- b. Every input has exactly one output. So, the relation is a function.
 c. For each additional ticket purchased, the price per ticket decreases \$2.
 d. \$30
 e. The cost is the same, you should invite two more friends and get 5 tickets rather than 3 tickets.

- f. If the pattern continued, the cost for 8 tickets would be \$0.

4.2 Activity

1. a. 2; 4; 6; 8; $A = 2x$ b. 3; 6; 9; 12; $A = 3x$

2. a.

Input, x	1	2	3	4
Output, A	1	3	5	7

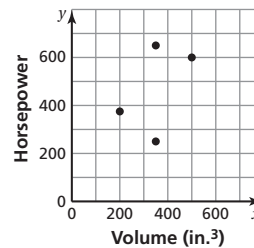
$A = 2x - 1$; Figure 41

b.

Input, x	1	2	3	4
Output, A	1	4	9	16

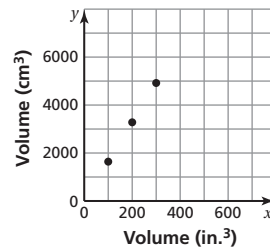
$A = x^2$; Figure 9

3. a. Race Car Engine



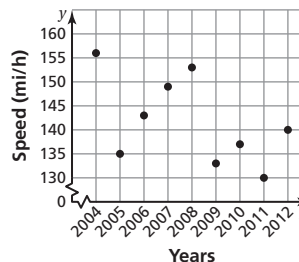
false

- b. Race Car Engine



$y = 16.4x$

4. Daytona 500 Winners' Average Speeds



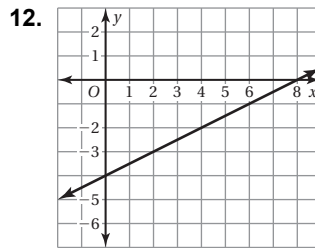
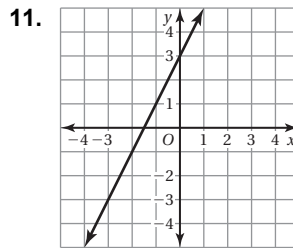
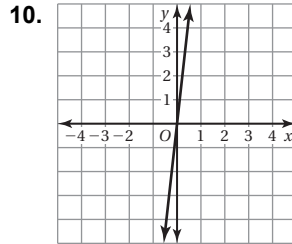
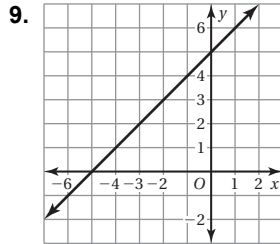
no; There is no pattern in the data.

5. You can represent a function with mapping diagrams, equations, tables, and graphs.

Student Workbook Answers

4.2 Practice

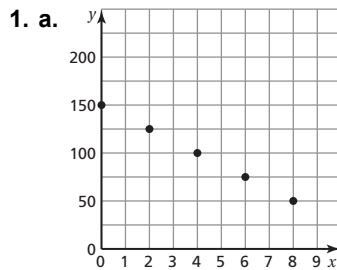
1. $y = x + 10$
2. $y = 3x$
3. $y = x - 8$
4. $y = 2x$
5. $y = -3$
6. $y = 24$
7. $y = 39$
8. $y = 3$



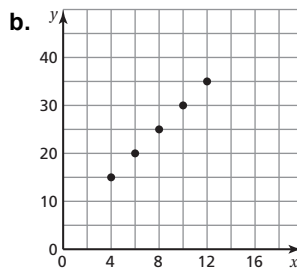
13. a. $d = 6h$ b. $d = 12$ miles

14. a. $s = a - 4$ b. $s = \$3.50$ c. $a = \$6$

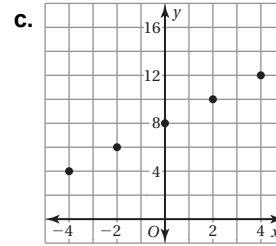
4.3 Activity



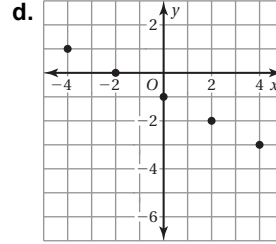
$$y = -\frac{25}{2}x + 150$$



$$y = \frac{5}{2}x + 5$$

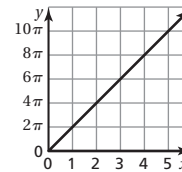


$$y = x + 8$$

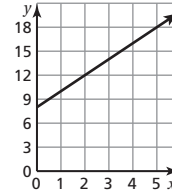


$$y = -\frac{1}{2}x - 1$$

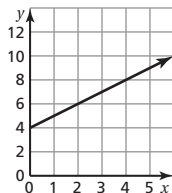
2. a. $y = 2\pi x$; x is the radius; y is the circumference



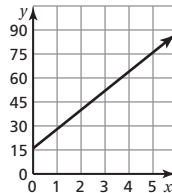
- b. $y = 2x + 8$; x is the width of the rectangle; y is the perimeter



- c. $y = x + 4$; x is the length of one of the bases; y is the area



- d. $y = 12x + 16$; x is the width of the prism; y is the surface area



Student Workbook Answers

3. *Sample answer:* A function helps you to see the relationship between x and y . The slope shows the rate at which y is changing for each increase of 1 in x .

4. *Sample answer:* After plotting the points, you can find the slope between the points. Then, you can draw a line through the points to find the y -intercept and write the function.

4.3 Practice

1. $y = -2x + 1$; decreasing

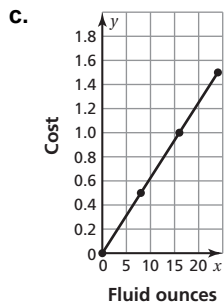
2. $y = \frac{3}{2}x$; increasing

3. $y = -3x$; decreasing

4. $y = \frac{x}{5}$; increasing

5. a. independent variable: x
dependent variable: y

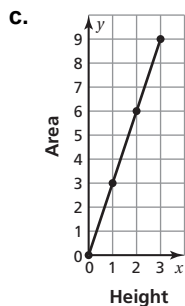
b. $y = \frac{1}{16}x$; It costs about \$0.06 for 1 fluid ounce of brewed coffee.



d. \$2

6. a. independent variable: x
dependent variable: y

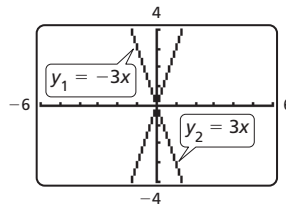
b. $y = 3x$



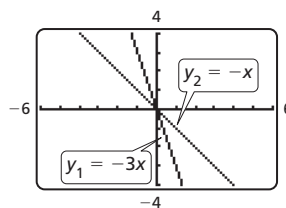
d. 6 ft

4.3 Extension Practice

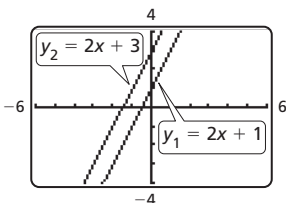
1. The graphs have the same y -intercept, 0, and slopes that are opposites. The graph of y_2 rises from left to right, while the graph of y_1 falls from left to right.



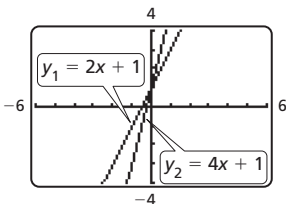
2. The graphs have the same y -intercept, 0, and different slopes. The graph of y_2 is not as steep as the graph of y_1 .



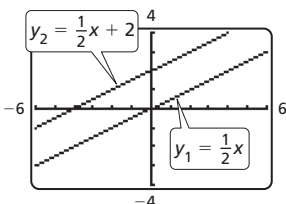
3. The graphs have the same slope, 2, and different y -intercepts. The graph of y_2 is shifted up from the graph of y_1 .



4. The graphs have the same y -intercept, 1, and different slopes. The graph of y_2 is steeper than the graph of y_1 .

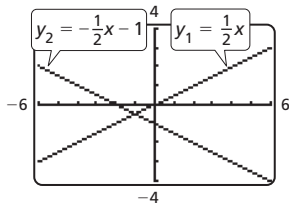


5. The graphs have the same slope, $\frac{1}{2}$, and different y -intercepts. The graph of y_2 is shifted up from the graph of y_1 .

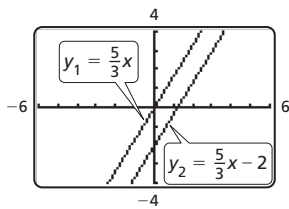


Student Workbook Answers

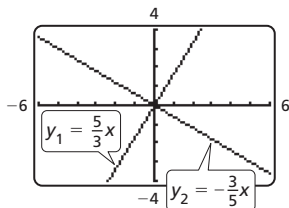
6. The graphs have different y -intercepts and slopes that are opposites. The graph of y_2 falls from left to right, while the graph of y_1 rises from left to right.



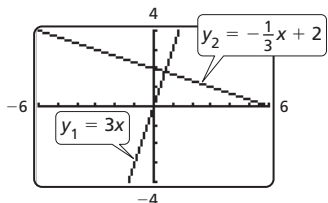
7. The graphs have the same slope, $\frac{5}{3}$, and different y -intercepts. The graph of y_2 is shifted down from the graph of y_1 .



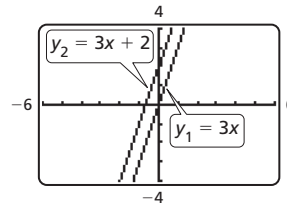
8. The graphs have the same y -intercept, 0, and different slopes. The graph of y_2 falls from left to right, while the graph of y_1 rises from left to right. The lines are perpendicular because the product of their slopes is -1 .



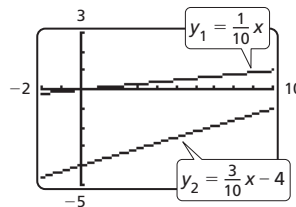
9. The graphs have different y -intercepts and different slopes. The graph of y_2 falls from left to right, while the graph of y_1 rises from left to right. The lines are perpendicular because the product of their slopes is -1 .



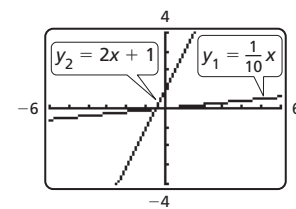
10. The graphs have the same slope, 3, and different y -intercepts. The graph of y_2 is shifted up from the graph of y_1 .



11. The graphs have different y -intercepts and different slopes. The graph of y_2 is steeper than the graph of y_1 .



12. The graphs have different y -intercepts and different slopes. The graph of y_2 is steeper than the graph of y_1 .



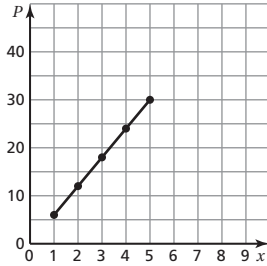
13. a. The graph of $y = -3x + 8$ becomes more horizontal.
 b. The graph of $y = -3x + 8$ will shift down.
 c. The graph of $y = -3x + 8$ will change from a line that falls from left to right to a line that rises from left to right.
14. a. The graph of $y = 0.75x - 4$ becomes more vertical and will shift up.
 b. The graph of $y = 0.75x - 4$ becomes more horizontal and will shift down.
 c. The graph of $y = 0.75x - 4$ becomes more vertical and will shift up.
15. a. *Sample answer:* Change the slope from a negative value to a positive value.
 b. *Sample answer:* Change the y -intercept from 0 to a positive value.

Student Workbook Answers

4.4 Activity

1. a.

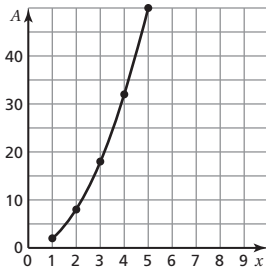
x	1	2	3	4	5
P	6	12	18	24	30



linear

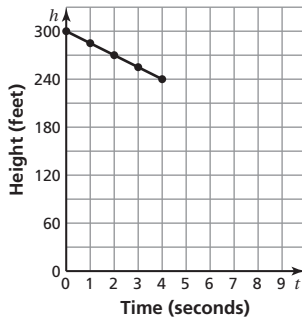
b.

x	1	2	3	4	5
A	2	8	18	32	50



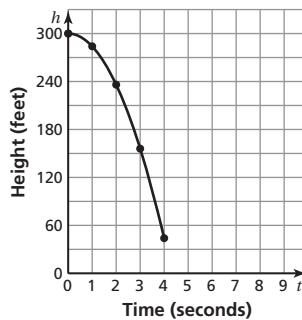
nonlinear

2. a.



linear

b.



nonlinear

The bowling ball has an increasing speed.

3. If the rate of change is constant, the pattern is linear.

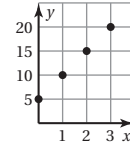
Sample answer:

linear: area of a triangle with a base of 6 and a height of x

nonlinear: height and age

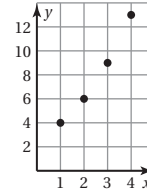
4.4 Practice

1.



linear

2.



nonlinear

3. nonlinear; The graph is not a line.

4. linear; The graph is a line.

5. nonlinear; The rate of change is not constant.

6. linear; The rate of change is constant.

7. nonlinear; The rate of change is not constant.

8. a. *Sample answer:* 1

b. 1.5

c. $y = 0.25x - 0.5$; It costs \$0.25 for 1 ounce of cereal.

Chapter 5

5.1 Activity

1.

Side Length (meters)	1	2	3	4	5
Area (square meters)	1	4	9	16	25

Side Length (meters)	6	7	8	9	10
Area (square meters)	36	49	64	81	100

2. b. $s = \sqrt{361} = 19$ mi

c. $s = \sqrt{2.89} = 1.7$ in.

d. $s = \sqrt{\frac{4}{9}} = \frac{2}{3}$ ft