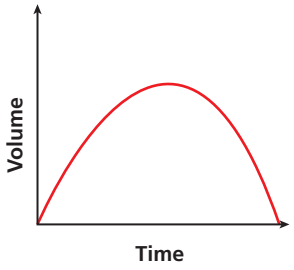
Chapter 4 ■ Skills Practice

Lesson 4-1

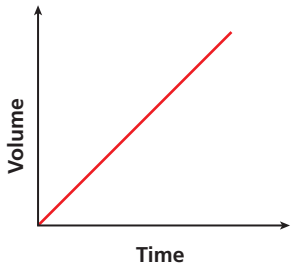
Choose the graph that best represents each situation.

1. A person blows up a balloon with a steady airstream.
2. A person blows up a balloon steadily and then lets it deflate.
3. A person blows up a balloon slowly at first and then uses more and more air.

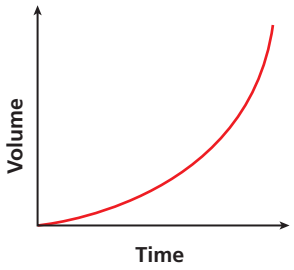
Graph A



Graph B



Graph C



Lesson 4-2

Express each relation as a table, as a graph, and as a mapping diagram.

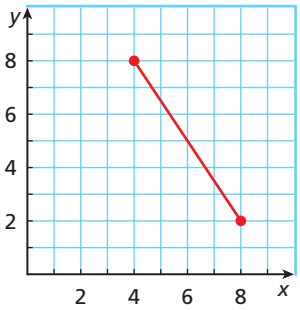
4. $\{(0, 2), (-1, 3), (-2, 5)\}$
5. $\{(2, 8), (4, 6), (6, 4), (8, 2)\}$

Give the domain and range for each relation. Tell whether the relation is a function. Explain.

6. $\{(3, 4), (-1, 2), (2, -3), (5, 0)\}$
7. $\{(5, 4), (0, 2), (5, -3), (0, 1)\}$
8.

x	2	0	1	2	−1
y	1	0	−1	−2	−3

9.



Lesson 4-3

Determine a relationship between the x- and y-variables. Write an equation.

10. $\{(1, 3), (2, 6), (3, 9), (4, 12)\}$
11.

x	1	2	3	4
y	1	4	9	16

Identify the independent and dependent variables. Write a rule in function notation for each situation.

12. A science tutor charges students $15 per hour.
13. A circus charges a $10 entry fee and $1.50 for each pony ride.

Evaluate each function for the given input values.

14. For $f(a) = 6 - 4a$, find $f(a)$ when $a = 2$ and when $a = -3$.
15. For $g(d) = \frac{2}{5}d + 3$, find $g(d)$ when $d = 10$ and when $d = -5$.
16. For $h(w) = 2 - w^2$, find $h(w)$ when $w = -1$ and when $w = -2$.
17. Complete the table for $f(t) = 7 + 3t$.

t	0	1	2	3
$f(t)$				

18. Complete the table for $h(s) = 2s + s^3 - 6$.

s	−1	0	1	2
$h(s)$				

Lesson 4-4

Graph each function for the given domain.

19. $2x - y = 2$; D: $\{-2, -1, 0, 1\}$

20. $f(x) = x^2 - 1$; D: $\{-3, -1, 0, 2\}$

Graph each function.

21. $f(x) = 4 - 2x$

22. $y + 3 = 2x$

23. $y = -5 + x^2$

24. Use a graph of the function $f(x) = \frac{5}{2} - 2x$ to find the value of $f(x)$ when $x = \frac{1}{2}$. Check your answer.

25. Find the value of x so that $(x, 4)$ satisfies $y = -x + 8$.

26. Find the value of y so that $(-3, y)$ satisfies $y = 15 - 2x^2$.

For each function, determine whether the given points are on the graph.

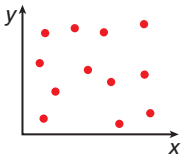
27. $y = \frac{x}{3} + 4$; $(-3, 3)$ and $(3, 5)$

28. $y = x^2 - 1$; $(-2, 3)$ and $(2, 5)$

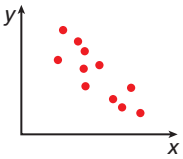
Lesson 4-5

Describe the correlation illustrated by each scatter plot.

29.



30.



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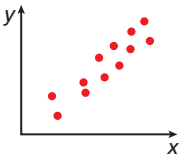


Identify the correlation you would expect to see between each pair of data sets. Explain.

32. the number of chess pieces captured and the number of pieces still on the board

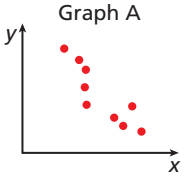
33. a person's height and the color of the person's eyes

Choose the scatter plot that best represents the described situation.

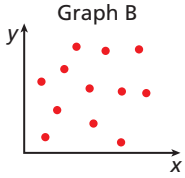
34. the number of students in a class and the grades on a test

35. the number of students in a class and the number of empty desks

Graph A



Graph B



Lesson 4-6

Determine whether each sequence appears to be an arithmetic sequence. If so, find the common difference and the next three terms.

36. $-10, -7, -4, -1, \ldots$

37. $8, 5, 1, -4, \ldots$

38. $1, -2, 3, -4, \ldots$

39. $-19, -9, 1, 11, \ldots$

Find the indicated term of each arithmetic sequence.

40. 15th term: $-5, -1, 3, 7, \ldots$

41. 20th term: $a_1 = 2$; $d = -5$

42. 12th term: $8, 16, 24, 32, \ldots$

43. 21st term: $5.2, 5.17, 5.14, 5.11, \ldots$

Find the common difference for each arithmetic sequence.

44. $0, 7, 14, 21, \ldots$

45. $132, 121, 110, 99, \ldots$

46. $\frac{1}{4}, 1, \frac{7}{4}, \frac{10}{4}, \ldots$

47. $1.4, 2.2, 3, 3.8, \ldots$

48. $-7, -2, 3, 8, \ldots$

49. $7.28, 7.21, 7.14, 7.07, \ldots$

Find the next four terms in each arithmetic sequence.

50. $-3, -6, -9, -12, \ldots$

51. $2, 9, 16, 23, \ldots$

52. $-\frac{1}{3}, \frac{1}{3}, 1, \frac{5}{3}, \ldots$

53. $-4.3, -3.2, -2.1, -1, \ldots$

Extra Practice