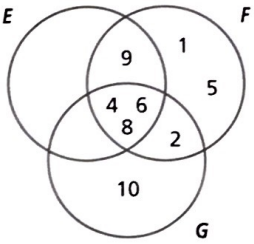
**23.**

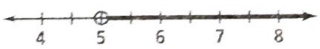



**25.** 10 girls **27.** $\{x|x > -3\} \cap \{x|x < \frac{19}{3}\}$ **29.** $\{w|w \leq -\frac{3}{4}\} \cup \{w|w \geq 1\}$ **31.** $\{x|x < -7\} \cup \{x|x > 21\}$ **33.** $W \cup Y \cup Z = \{0, 2, 3, 4, 5, 6, 7, 8\}$ **35.** $W \cap X \cap Z = \{6\}$ **37.** 62 patients **39.** $A \cap B = A$ **41.** $\{(\pi, 2), (\pi, 4), (2\pi, 2), (2\pi, 4), (3\pi, 2), (3\pi, 4), (4\pi, 2), (4\pi, 4)\}$ **43.** {(reduce, plastic), (reuse, plastic), (recycle, plastic)} **45.** Sometimes; when $A = B = C$, the statement is true. When $A$, $B$, and $C$ are distinct sets the statement is false. **47.** F **49.** $x = 4$ or $x = -4$ **50.** $n = 2$ or $n = -2$ **51.** $f = 2$ or $f = 8$ **52.** $y = \frac{4}{3}$ or $y = -\frac{8}{3}$ **53.** $-5 \leq d \leq 5$ **54.** $x \leq -4$ or $x \geq 10$ **55.** $w < -15$ or $w > 9$ **56.** $x = \frac{4}{3}$ or $x = -\frac{4}{3}$ **57.** yes **58.** no **59.** yes

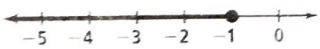
## Chapter Review pp. 222–226

**1.** roster form **2.** union **3.** empty set **4.** solution of an inequality **5.** equivalent inequalities

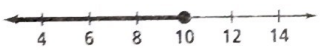
**6.**



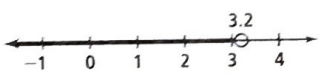

**7.**



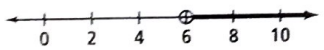

**8.**



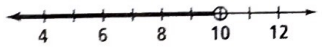

**9.**



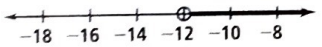

**10.** $x > 5$ **11.** $x \leq -2$ **12.** $x > -5.5$ **13.** $w > 6$



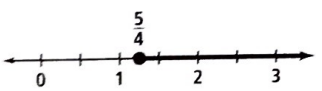

**14.** $v < 10$



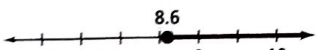

**15.** $-12 < t$




**16.** $n \geq \frac{5}{4}$



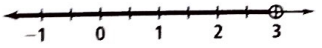

**17.** $8.6 \leq h$



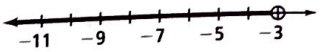

**18.** $q > -2.5$


**19.** $4.25 + x \leq 15.00$; $x \leq 10.75$

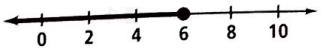
**20.** $x < 3$



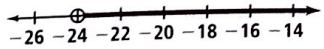

**21.** $t < -3$




**22.** $y \leq 6$

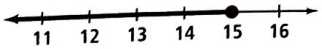



**23.** $h > -24$

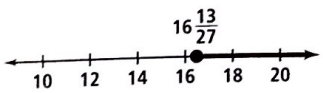



**24.** $g > 4$

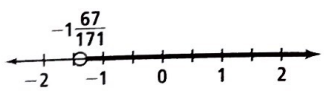

**25.** $n \leq 15$




**26.** $d \geq 16\frac{13}{27}$

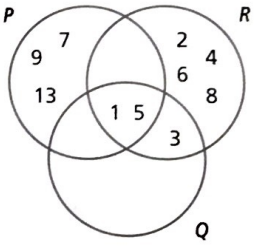



**27.** $m > -1\frac{67}{171}$




**28.** $7.25h \geq 200$; at least 28 full hours **29.** $k \geq -0.5$ **30.** $c < -2$ **31.** $t < -6$ **32.** $y \leq -56$ **33.** $x < 2\frac{2}{3}$ **34.** $x \leq -13$ **35.** $a \leq 5.8$ **36.** $w > 0.35$ **37.** $200 + 0.04s \geq 450$; $s \geq 6250$ **38.** $\{\}$ or $\emptyset$, $\{s\}$, $\{t\}$, $\{s, t\}$ **39.** $\{\}$ or $\emptyset$, {5}, {10}, {15}, {5, 10}, {5, 15}, {10, 15}, {5, 10, 15} **40.** $A = \{0, 2, 4, 6, 8, 10, 12, 14, 16\}$; $A = \{x|x$ is an even whole number less than 18$\}$ **41.** $B' = \{1, 3, 5, 7\}$ **42.** $-2\frac{1}{2} \leq d < 4$ **43.** $-1.5 \leq b < 0$ **44.** $t \leq -2$ or $t \geq 7$ **45.** $m < -2$ or $m > 3$ **46.** $2 \leq a \leq 5$ **47.** $6.5 > p \geq -4.5$ **48.** $65 \leq t \leq 88$ **49.** $y = 3$ or $y = -3$ **50.** $n = 2$ or $n = -6$ **51.** $r = 1$ or $r = -5$ **52.** no solution **53.** $-3 \leq x \leq 3$ **54.** no solution **55.** $x < 3$ or $x > 4$ **56.** $k < -7$ or $k > -3$ **57.** any length between 19.6 mm and 20.4 mm, inclusive **58.** $A \cup B = A$

**59.**




**60.** $N \cap P = \{x|x$ is a multiple of 6$\}$ **61.** 5 cats

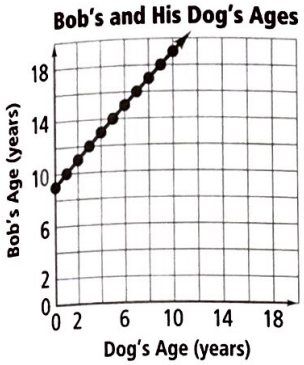
# Chapter 4

## Get Ready! p. 231

**1.** −7 **2.** −18 **3.** 2 **4.** −1

**5.**

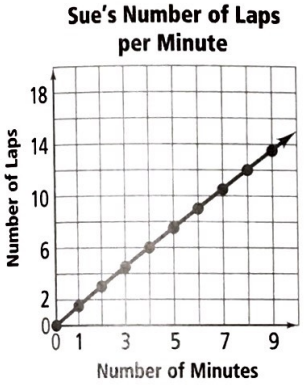
| Bob's and His Dog's Ages (years) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dog's Age | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Bob's Age | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |




$B = 9 + d$, where $B$ is Bob's age and $d$ is his dog's age.

**6.**

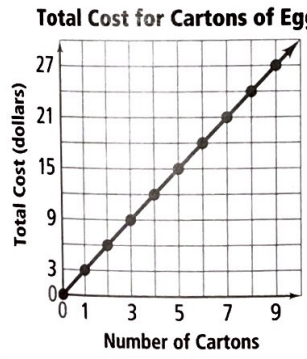
| Sue's Number of Laps per Minute | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of Minutes | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Number of Laps | 0 | 1.5 | 3 | 4.5 | 6 | 7.5 | 9 | 10.5 | 12 | 13.5 |




$\ell = 1.5m$, where $m$ is the number of minutes and $\ell$ is the number of laps.

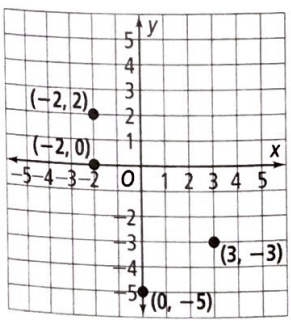
**7.**

| Total Cost for Cartons of Eggs | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of Cartons | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Total Cost (dollars) | 0 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 |




$C = 3n$, where $C$ is the cost and $n$ is the number of cartons.

**8–11.**

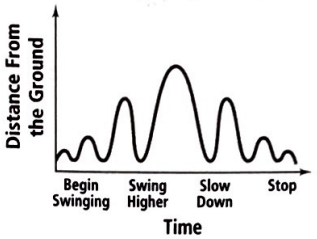



**12.** −3 **13.** 66 **14.** 6 **15.** 4 **16.** 0, −4 **17.** 3, 7 **18.** no solution **19.** $\frac{11}{2}, \frac{3}{2}$ **20.** Its value is based on the first value. **21.** 4 **22.** There are no breaks in the graph.

## Lesson 4-1 pp. 234–239

**Got It? 1a.** Time, length; the length of the board remains constant for a time before another piece is cut off. **b.** Time, cost; the cost remains constant for a certain number of minutes. **2.** C

**3a.** Answers may vary. Sample:

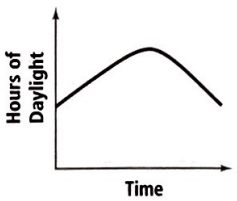



**b.** The end of the graph would decrease sharply.

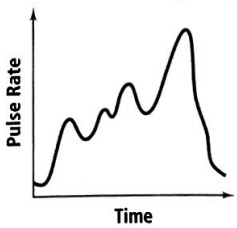
**Lesson Check 1.** Car weight, fuel used; the heavier the car, the more fuel is used. **2.** The temperature rises slightly in the first 2 h and then falls over the next 4 h. **3.** rising slowly: B; constant: C; falling quickly: D **4.** Answers may vary. Sample: the depth of water in a stream bed over time

**Exercises 5.** Number of pounds, total cost; as the number of pounds increases, the total cost goes up, at first quickly and then more slowly. **7.** Area painted, paint in can; the more you paint, the less paint left in the can. You are using the paint at a constant rate. **9.** A

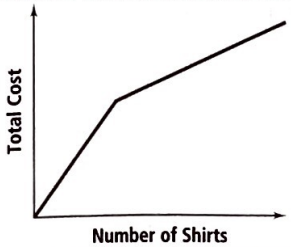
**11.** Answers may vary. Sample:




**13.** Answers may vary. Sample:

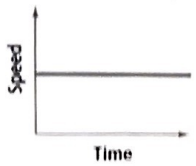



**15.** The graph shown represents the relationship between the number of shirts and the cost per shirt, not the total cost.

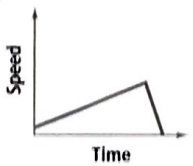


**17.** No, they are not the same. Your speed on the ski lift is constant. Your speed going downhill is not.

**a.**




**b.**



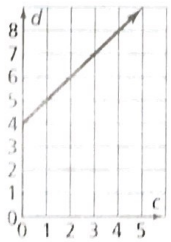

**19.** The three runners start at the same time. At time A, one runner has a fast start, and the other two are a little slower. At B, the second-place runner catches up to the first-place runner and passes the first-place runner in order to win at time C. At C, the runner that was in third place catches up to the original first-place runner to finish second. At D, only the original first-place runner remains in the race. **21.** B **23.** $\frac{9.35 - 8.50}{8.50} = 0.10$, or a 10% increase. Another 10% increase would bring your hourly wage to $1.1(9.35) = 10.285$, or \$10.29. One further 10% increase would bring your rate to $1.1(10.29) = 11.3135$, or \$11.32.

**24.** $\{-3, -1, 1, 3, 4, 5, 7, 9\}$ **25.** $\{1\}$

**26.** $\{-1, 1, 3, 4, 5, 7, 9, 12\}$ **27.** $\{1, 4\}$

**28.**

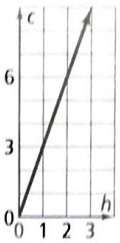
| Connie's Age | Donald's Age |
|---|---|
| 0 | 4 |
| 1 | 5 |
| 2 | 6 |
| 3 | 7 |




$d = c + 4$

**29.**

| Time (hours) | Number of Cards |
|---|---|
| 0 | 0 |
| 1 | 3 |
| 2 | 6 |
| 3 | 9 |



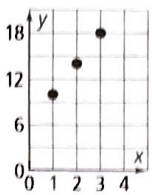

$c = 3h$

## Lesson 4-2 pp. 240–245

**Got It? 1a.**

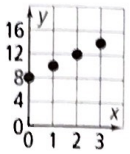
| Number of Triangles | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Perimeter | 10 | 14 | 18 | 22 |

Multiply the number of triangles by 4 and add 6; $y = 4x + 6$.




**b.** Add 4. **c.** The $4x$ part of the equation means that for each triangle the perimeter is increased by 4. If you know the perimeter of $n$ triangles, then the perimeter when 1 more triangle is added will increase by 4.

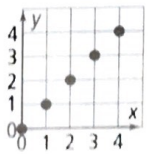
**2a.** Yes; the value of y is 8 more than twice the value of x; $y = 2x + 8$.




**b.** No; the input value 1 has more than one output value.

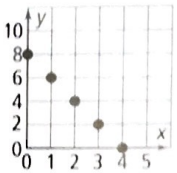
### Lesson Check

**1a.**



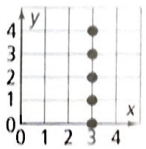

$y$ increases by 1 for each increase of 1 for $x$.

**b.**




For each increase of 1 in $x$, $y$ decreases by 2.

**c.**




$x$ is 3 for any value of $y$.

**2.**

| Number of Squares | 1 | 2 | 3 | 4 | 10 | 30 | $n$ |
|---|---|---|---|---|---|---|---|
| Perimeter | 4 | 6 | 8 | 10 | 22 | 62 | $2n + 2$ |

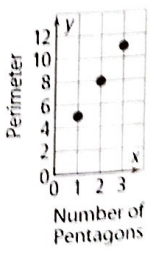
**3.** independent: number of times you brush your teeth; dependent: amount of toothpaste **4.** $a$ and $b$ are functions because for each input there is a unique output, but $c$ is not a function because there is more than one output value for the input value 3. **5.** No; the graph is not a line.

### Exercises

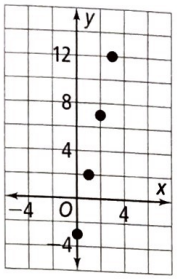
**7.**

| Number of Pentagons | 1 | 2 | 3 |
|---|---|---|---|
| Perimeter | 5 | 8 | 11 |

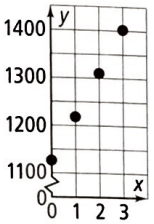
Multiply the number of pentagons by 3 and add 2; $y = 3x + 2$.



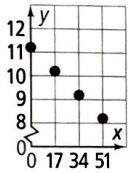
**9.** Start with $-3$ and add 5 for each increase of 1 for $x$; $y = 5x - 3$.



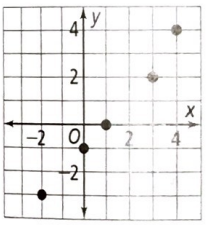

**11.** Yes; for each additional hour of climbing, you gain 92 ft of elevation; $y = 92x + 1127$.




**13.** Yes; for every 17 mi traveled, the amount of gas in your tank goes down by 1 gallon; $y = -\frac{1}{17}x + 11.2$.




**15.**

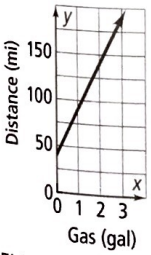



No; all points are not on a straight line.

**17.**

| Gas Used, $x$ | Distance, $y$ |
|---|---|
| 0 | 40 |
| 1 | 90 |
| 2 | 140 |
| 3 | 190 |

$y = 50x + 40$



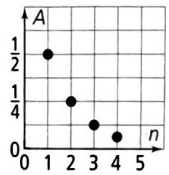

Either distance or gas could be the independent variable, depending on what information is supplied and what is to be calculated.

**19.** graph of a line that goes through (0, 0); (1, 6), (2, 12); the horizontal axis is labeled Distance and the vertical axis is labeled Time.

## Lesson 4-3 pp. 246–251

### Got It?

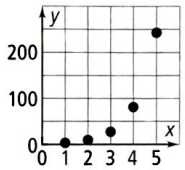
**1a.**




nonlinear

**b.** No; you can always multiply a number by $\frac{1}{2}$. The denominator of the fraction will get larger and larger, so the value of the fraction will approach 0 but never reach it.

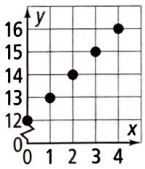
**2.** The number of branches is 3 raised to the $x$th power; $y = 3^x$; 81, 243.




**3.** $y = x^2$

### Lesson Check

**1.**

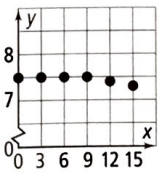



linear

**2.** $y = 3x - 2$ **3.** C **4a.** linear function **b.** nonlinear function **5.** Only the first two pairs fit this rule. The rule that fits all the pairs is $y = x^2 + 1$.

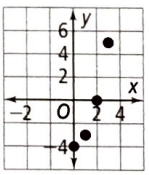
### Exercises

**7.**



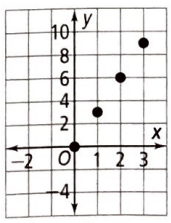

nonlinear

**9.**




nonlinear

**11.**




linear

**13.** $y = 4x^2$ **15.** $y = 2x^3$ **17.** Independent: $r$, dependent: $V$; volume depends on the length of the radius. **19.** Let $y$ = number of bags, and $y = 6\pi r^2$; 3 bags; 4 bags; 5 bags. **21.** $y = x^2 + \frac{2}{19}$; the value of $y$ is $\frac{2}{19}$ more than the square of $x$. **23.** B **25.** [2] $\frac{\$.89}{15}$ oz is nearly $.0593, $\frac{\$1.69}{29}$ oz is nearly $.0583; the 29-oz can has the lower cost per ounce. [1] one minor computational error

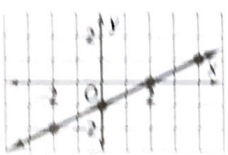
**26.** The value of $y$ is 3 more than twice $x$; $y = 2x + 3$.


**27.** −24, −3, 14.5 **28.** −11, 1, 11 **29.** −18, 0, −12.5

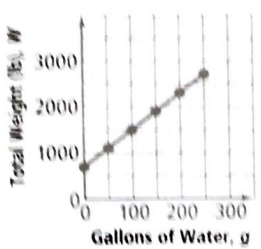
## Lesson 4-4 pp. 253–259

### Got It?

**1.**

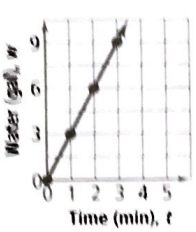



**2a.**



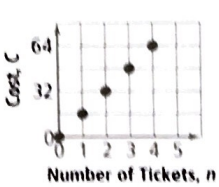

**b.** 700 lb; when $g = 0$, the spa is empty, and $W = 700$.

**3a.**




continuous because you can have any amount of water

**b.**

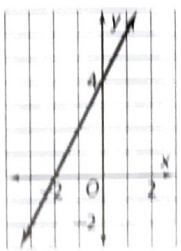



discrete because you can only have a whole number of tickets

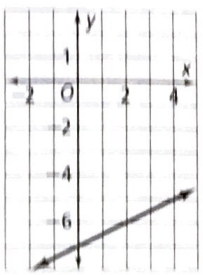
**4.**


### Lesson Check

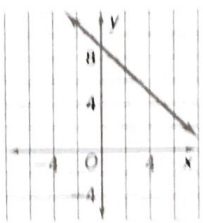
**1.**



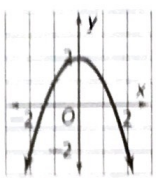

**2.**




**3.**



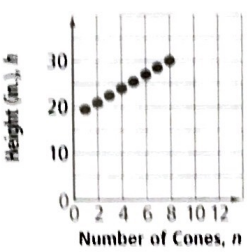

**4.**




**5a.**

| $n$ | $h$ |
|---|---|
| 1 | 19.5 |
| 2 | 21 |
| 3 | 22.5 |
| 4 | 24 |
| 5 | 25.5 |
| 6 | 27 |
| 7 | 28.5 |
| 8 | 30 |

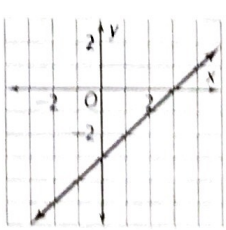
**b.**



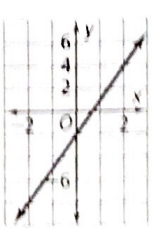

**6.** discrete **7.** continuous **8.** The graph should not be discrete; connect the points with a line so the graph is continuous.

### Exercises

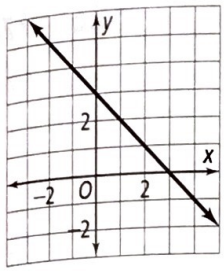
**9.**



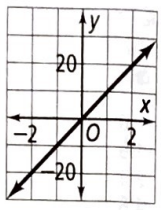

**11.**



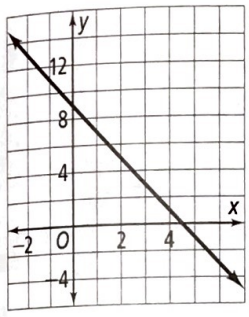
**13.**



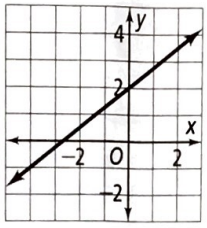

**15.**



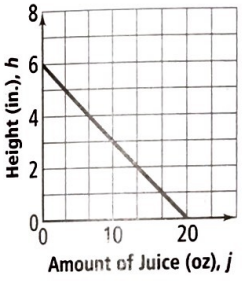

**17.**




**19.**

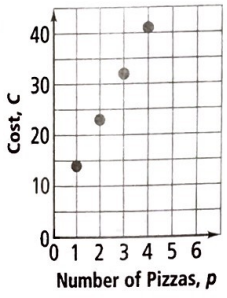



**21.**



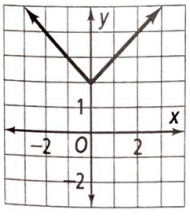

After you drink 20 oz of juice, the height is 0, so the interval $0 \le j \le 20$ makes sense. The height goes from $0 \le h \le 6$; continuous, because you can have juice in any amount.

**23.**

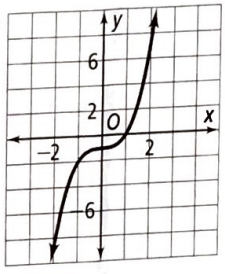



The number of pizzas can be any whole number, except zero, so $0 < p$. 1 pizza costs \$14, so $14 \le C$.

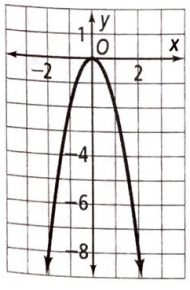
**25.**



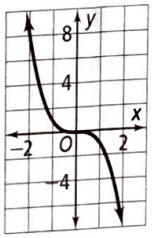

**27.**




**29.**

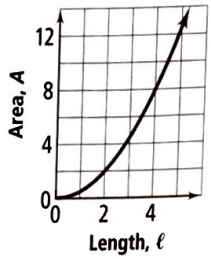



**31.**




**33.** No; the graph is still continuous over the appropriate values of $d$ and $t$.

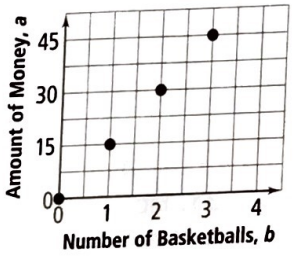
**35.**




Continuous; lengths and areas can be any number.

**37a.**

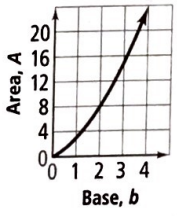
| b | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| a | 0 | 15 | 30 | 45 |




Discrete; you can only have whole numbers of basketballs. **b.** 8 **39.** between 2 and 3 s **41.** Table for $y = 2x$ has $x$ values $-1$, 0, 1, 2, 3 and corresponding $y$-values $-2$, 0, 2, 4, 6; graph of the line $y = 2x$; graph passes through (0, 0) and (1, 2). Table for $y = 2x^2$ has $x$ values $-1$, 0, 1, 2, 3 and corresponding $y$-values $-2$, 0, 2, 8, 18; graph of $y = 2x^2$ is U-shaped going through $(-1, -2)$, (0, 0), (1, 2), (2, 8).

## Lesson 4-5 pp. 262–267

**Got It? 1.** $W = 50{,}000 + 420m$
**2a.** $C = 12 + 15n$; \$162 **b.** No; making the stay shorter only halves the daily charge, not the bath charge.
**3a.** $A = b^2 + 2b$; 288 in.$^2$
**b.**




The graph is not a line.

**Lesson Check 1.** $C = 3.57p$ **2.** $f = \frac{h}{12}$
**3.** $y = x + 2$ **4.** $V = (d + 1)^3$ **5.** dependent, $a$; independent, $b$ **6.** You can't add holes and minutes. The correct rule is $t = 15n$. **7.** Continuous; side length and area can be any positive real numbers.

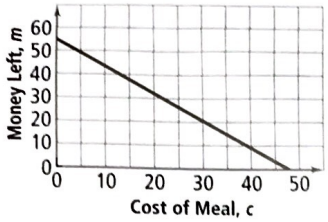
**Exercises 9.** $C = 8 + \frac{1}{2}n$ **11.** $\frac{h}{3} + 2.5 = w$
**13.** $p = 6.95 + 0.95t$ **15.** $a = 8 - \frac{1}{6}b$
**17.** $d = -10 - 50t$; $-160$ ft **19.** $A = \frac{3}{2}h + \frac{5}{2}h^2$; 99 cm$^2$ **21.** $A = 3w^2 - 2w$; 8 ft$^2$ **23.** Answers may vary. Sample: The rule covers all values, whereas the table only represents some of the values.
**25.** $d = -3.5 - 108m$; $-435.5$ m

**27a.**

| Cost of Meal | $15 | $21 | $24 | $30 |
|---|---|---|---|---|
| Money Left | $37.75 | $30.85 | $27.40 | $20.50 |

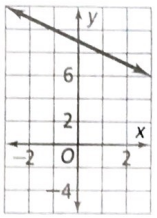
**b.** $m = 55 - 1.15c$

**c.**

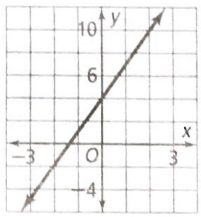



**29a.** $d = 1.8w$ **b.** No; the room is not wide enough. **c.** $6\frac{2}{3}$ ft **31.** Table has $x$-values $-4, -3, -2, -1, 0, 1, 2, 3, 4$ and corresponding $y$-values $7, 6, 5, 4, 3, 2, 1, 0, -1$; the graph is a line that passes through $(0, 3)$ and $(3, 0)$; the function rule is $y = -x + 3$ **33.** B **35.** C

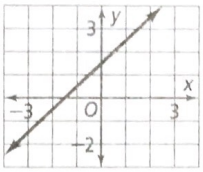
**37.**



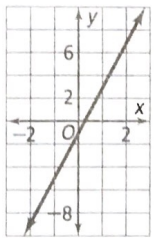

**38.**



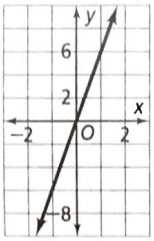

**39.**



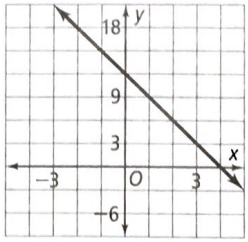

**40.**




**41.**



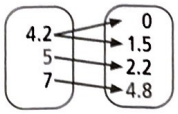

**42.**




**43.** 132 oz **44.** 4.5 m **45.** 51 ft **46.** 1.5 min **47.** 9 days **48.** 9500 m **49.** −36 **50.** 21 **51.** 111.6 **52.** −9 **53.** 14 **54.** 1 **55.** $\frac{5}{3}$ **56.** $\frac{21}{16}$

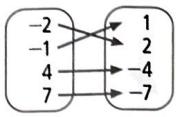
## Lesson 4-6 pp. 268–273

**Got It? 1a.** domain: {4.2, 5, 7}; range: {0, 1.5, 2.2, 4.8}




not a function

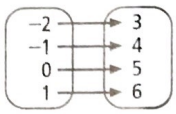
**b.** domain: $\{-2, -1, 4\ 7\}$; range: $\{1, 2, -4, -7\}$




function

**2a.** function **b.** not a function **3.** 1500 words **4.** $\{-8, 0, 8, 16\}$ **5a.** domain: $0 \le q \le 7$, range: $0 \le A(q) \le 700$ **b.** The least amount of paint you can use is 0 quarts. The greatest amount you can use is 3 quarts.

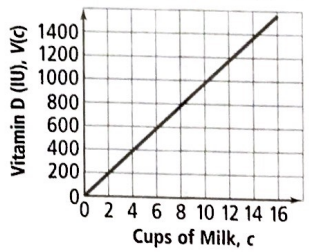
**Lesson Check 1.** domain: $\{-2, -1, 0, 1\}$, range: {3, 4, 5, 6}




function

**2.** yes **3.** 9 **4.** $\{-2, -1, 0, 1, 2\}$ **5.** $f(x) = 2x + 7$ **6.** Answers may vary. Sample: Both methods can be used to determine whether there is more than one output for any given input. A mapping diagram does not represent a function if any domain value is mapped to more than one range value. A graph does not represent a function if it fails the vertical line test. **7.** No; there exists a vertical line that intersects the graph in more than one point, so the graph does not represent a function.

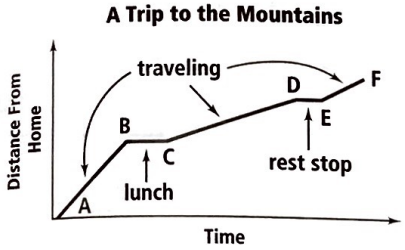
**Exercises 9.** domain {1, 5, 6, 7}, range $\{-8, -7, 4, 5\}$; yes **11.** domain {0, 1, 4}, range $\{-2, -1, 0, 1, 2\}$; no **13.** not a function **15.** function **17.** $11 **19.** $\{-39, -7, 1, 5, 21\}$ **21.** $\{-7, -2, -1, 3\}$ **23.** $0 \le c \le 16$, $0 \le D(c) \le 1568$




**25.** function; domain: $\{-4, -1, 0, 3\}$, range: $\{-4\}$ **27.** 5; if $f(a) = 26$, then $6a - 4 = 26$ and $a = 5$. **29a.** $c$ is the independent variable and $p$ is the dependent variable. **b.** Yes; for each value of $c$, there is a unique value of $p$. **c.** $p = 5c - 34$ **d.** $0 \le c \le 40$, $0 \le p \le 166$ **31.** function **33.** not a function **35.** A horizontal line is a function because each value of $x$ has a unique value of $y$; a

vertical line is not a function because the $x$-value has more than one $y$-value associated with it. **37.** 23 **39.** 6 **41.** 5.25 **43.** 11 stamps **45.** $E = 5h + 7$ **46.** $a = 4.5s + 10$ **47a.** time and distance

**b.**



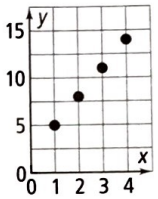

**48.** 9, 12, 15, 18 **49.** 8, 15, 22, 29
**50.** 0.4, −2.6, −5.6, −8.6

## Lesson 4-7 pp. 274–281

**Got It? 1a.** Add 6 to the previous term; 29, 35. **b.** Multiply each previous term by $\frac{1}{2}$; 25, 12.5. **c.** Multiply each previous term by −2; 32, −64. **d.** Add 4 to the previous term; 1, 5. **2a.** not an arithmetic sequence **b.** arithmetic sequence; 2 **c.** arithmetic sequence; −6 **d.** not an arithmetic sequence **3a.** $A(n) = A(n-1) + 6$; $A(9) = 51$ **b.** $A(n) = A(n-1) + 12$; $A(9) = 119$ **c.** $A(n) = A(n-1) + 0.5$; $A(9) = 11.3$ **d.** $A(n) = A(n-1) - 9$; $A(9) = 25$ **e.** Answers may vary. Sample answer: It depends on which term you are trying to find. If you are trying to find the 2nd or 3rd term, then yes, a recursive formula is useful. If you are trying to find the 100th term, then no, a recursive formula is not useful. **4a.** $A(n) = 100 - (n-1)1.75$; \$73.75 **b.** 57 **5a.** $A(n) = 21 + (n-1)(2)$ **b.** $A(n) = 2 + (n-1)(7)$ **6a.** $A(n) = A(n-1) + 10$ **b.** $A(n) = A(n-1) + 3$

**Lesson Check 1.** Add 8 to the previous term; 35, 43. **2.** Multiply the previous term by −2; 48, −96. **3.** not an arithmetic sequence **4.** arithmetic sequence; 9 **5.** $A(n) = A(n-1) - 2$, $A(1) = 9$; $A(n) = 9 - 2(n-1)$ **6.** −6; the pattern is "add −6 to the previous term." **7.** Evaluate $A(n) = 4 + (n-1)8$ for $n = 10$; $A(10) = 4 + (10-1)8 = 76$. **8.** Yes; $A(n) = A(1) + (n-1)d = A(1) + nd - d$ by the Distributive Property.

**Exercises 9.** Add 7 to the previous term; 34, 41. **11.** Add 4 to the previous term; 18, 22. **13.** Add −2 to the previous term; 5, 3. **15.** Add 1.1 to the previous term; 5.5, 6.6. **17.** Multiply the previous term by 2; 72, 144. **19.** not an arithmetic sequence **21.** not an arithmetic sequence **23.** yes; 1.3 **25.** not an arithmetic sequence **27.** yes; −0.5 **29.** not an arithmetic sequence **31.** $A(n) = A(n-1) - 11$, $A(1) = 99$ **33.** $A(n) = A(n-1) - 3$; $A(1) = 13$ **35.** $A(n) = A(n-1) + 0.1$; $A(1) = 4.6$ **37.** $A(n) = 50 - 3.25(n-1)$; \$11 **39.** $A(n) = 7.3 + (n-1)(3.4)$ **41.** $A(n) = 0.3 + (n-1)(-0.3)$ **43.** $A(n) = A(n-1) - 5$, $A(1) = 3$ **45.** $A(n) = A(n-1) + 1$, $A(1) = 4$ **47.** 2, 12, 47 **49.** 17, 33, 89 **51.** −2, 8, 43 **53.** −3.2, −5.4, −13.1 **55.** Yes; the common difference is −4; $A(n) = A(n-1) - 4$, $A(1) = -3$; $A(n) = -3 + (n-1)(-4)$. **57.** No; there is no common difference. **59.** Yes; the common difference is −0.8; $A(n) = A(n-1) - 0.8$, $A(1) = 0.2$; $A(n) = 0.2 + (n-1)(-0.8)$. **61.** 10, 11.2, 12.4; $A(n) = 8.8 + (n-1)(1.2)$ **63.** −2, −4, −6; $A(n) = (n-1)(-2)$ **65.** Answers may vary. Sample: $A(n) = 15 + 2(n-1)$ **67.** 350, 325, 300, 275, 250, 225; you owe \$225 at the end of six weeks. **69a.** 1, 6, 15, 20, 15, 6, 1 **b.** 1, 2, 4, 8, 16; 64 **71a.** 11, 14 **b.**

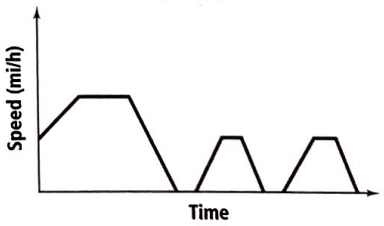



**c.** The points all lie on a line.

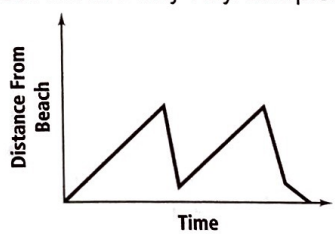
**73.** $x$; $4x + 4$ **75a.** The next figure is a drawing of a blue pentagon. **b.** Blue. The colors rotate red, blue, and purple. Every third figure is purple, so the 21st figure is purple. The figure just before that is blue. **c.** 10 sides; figure 23 is in the 8th group of three figures; the number of sides in each group of three figures is $3 + (n-1)$; substitute 8 for $n$.

## Chapter Review pp. 283–286

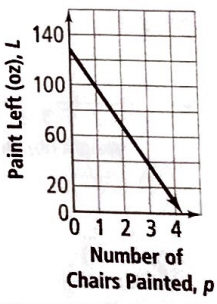
**1.** independent variable **2.** linear **3.** range
**4.** Answers may vary. Sample:



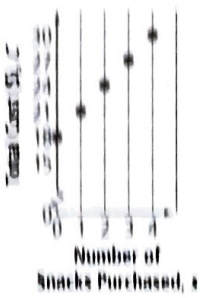

**5.** Answers may vary. Sample:



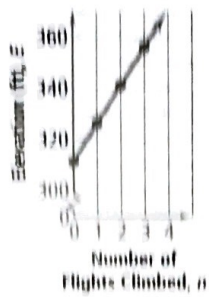

**6.** Chairs painted, paint left; each time $p$ increases by 1, $L$ decreases by 30; $L = 128 - 30p$.



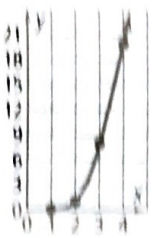
**7.** Snacks purchased, total cost; for each additional snack, total cost goes up by 3; $c = 18 + 3s$




**8.** Independent $n$, dependent $E$; the elevation is 311 more than 15 times the number of flights climbed; $E = 15n + 311$




**9.**

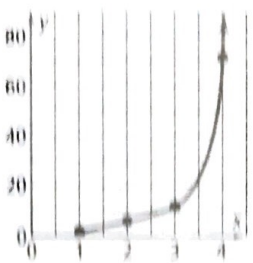


nonlinear

**10.**

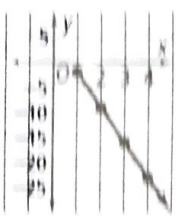
linear

**11.**



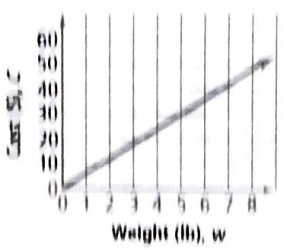
nonlinear

**12.**



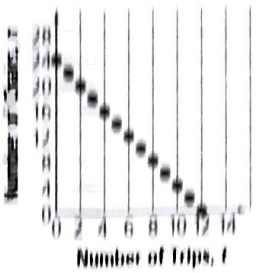
linear

**13.**



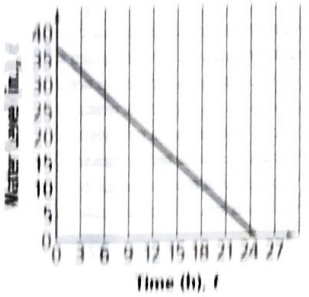

continuous because $w$ can take on any nonnegative value

**14.**



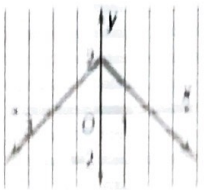

discrete because the number of trips must be a whole number

**15.**




continuous because $t$ can take on any nonnegative value

**16.**



**17.** $V = 24t - 0.25$ **18.** $C = 200 + 45h$ **19.** not a function **20.** function **21.** $-4, 6$ **22.** $53, 33$ **23.** $\{7.2, 1.12, -4.2, -34.6\}$ **24.** $A(n) = A(n-1) + 5$, $A(1) = 3$; $A(n) = 3 + (n-1)(5)$ **25.** $A(n) = A(n-1) - 3$, $A(1) = -2$; $A(n) = -2 + (n-1)(-3)$ **26.** $A(n) = A(n-1) + 2.5$, $A(1) = 4$; $A(n) = 4 + (n-1)(2.5)$ **27.** $A(n) = A(n-1) - 7$, $A(1) = 18$; $A(n) = 18 + (n-1)(-7)$ **28.** $A(n) = 4 + (n-1)(3)$ **29.** $A(n) = 13 + (n-1)(11)$ **30.** $A(n) = 19 + (n-1)(-1)$ **31.** $A(n) = 5 + (n-1)(-2)$

# Chapter 5

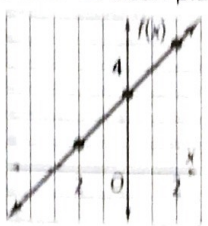
## Get Ready!

p. 291

**1.** yes **2.** no **3.** yes **4.** $y = \frac{1}{2}x + 2$ **5.** $y = 3x - 2$ **6.** $y = -x - 2$ **7.** boat **8.** bean plant

**9.**

| $x$ | $f(x)$ |
|---|---|
| $-2$ | 1 |
| 0 | 3 |
| 2 | 5 |




**10.**

| $x$ | $f(x)$ |
|---|---|
| $-1$ | 2 |
| 0 | 0 |
| 1 | 2 |