Answers for Lesson 5-1, pp. 254–256  Exercises

1–4. Labels may vary. Samples are given.

1. Exercising

```
<table>
<thead>
<tr>
<th>Heart Rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>increases</td>
<td></td>
</tr>
<tr>
<td>levels off</td>
<td></td>
</tr>
<tr>
<td>slows</td>
<td></td>
</tr>
<tr>
<td>levels off</td>
<td></td>
</tr>
<tr>
<td>increases with exercise</td>
<td></td>
</tr>
</tbody>
</table>
```

2. Checking Account

```
<table>
<thead>
<tr>
<th>Balance</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>deposit</td>
<td></td>
</tr>
<tr>
<td>start</td>
<td></td>
</tr>
<tr>
<td>check</td>
<td></td>
</tr>
<tr>
<td>2nd deposit</td>
<td></td>
</tr>
</tbody>
</table>
```

3. Weekend Temperatures

```
<table>
<thead>
<tr>
<th>Temperature</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sat. noon</td>
<td></td>
</tr>
<tr>
<td>Fri. night</td>
<td></td>
</tr>
<tr>
<td>Sat. night</td>
<td></td>
</tr>
<tr>
<td>Sun. night</td>
<td></td>
</tr>
<tr>
<td>Sun. noon</td>
<td></td>
</tr>
</tbody>
</table>
```

4. Hair Length

```
<table>
<thead>
<tr>
<th>Length</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>growth</td>
<td></td>
</tr>
<tr>
<td>haircut</td>
<td></td>
</tr>
</tbody>
</table>
```

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5–8. Graphs may vary. Samples are given.

5. 

[Graph of Hours of Daylight vs. Month with labels: Days lengthen, Days shorten.]

6. 

[Graph of Height vs. Time (minutes).]

7. Pulse Rate During a Scary Movie

[Graph of Pulse Rate vs. Time with labels: credits, previews, scary, plot, parts, climax.]

8. Between Classes

[Graph of Speed vs. Time with labels: Constant rate at the locker, at class.]

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9. C; the temperature increases steadily and then alternates cooling and warming as the oven turns off and on during a cooking cycle.

10. The pressure dropped from 7 A.M. to 3 P.M., stayed about the same until 9 P.M., and then generally rose until 7 A.M. the next day.

11. a. Bottom to Top

```
<table>
<thead>
<tr>
<th>Time</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
```

b. Top to Bottom

```
<table>
<thead>
<tr>
<th>Time</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
```

No; the graphs are different because you have a constant speed traveling up but not down.

12. a. blue; red

b. The baby weighs more at first and gains weight steadily for a number of years. The puppy’s weight levels off at an earlier age.
Answers for Lesson 5-1, pp. 254–256  Exercises (cont.)

13. Answers may vary. Sample:

14. It shows a person bicycling down and then up a hill because speed increases on the way down and decreases on the way up.

15. a.

b. section showing the distance decreasing

c. first 2 sections

16. C

17. a. Check students’ work.

b. A graph of temperatures at the equator would show little change for daily high temperatures.
18. a. Answers may vary. Sample: The student started skating and got to cruising speed. After a while, the student sped up going downhill, lost control, and crashed. After getting up, the student decided not to go as fast.

b. Answers may vary. Sample:

In-Line Skating After School

- I–speeding up;
- II–cruising;
- III–crash;
- IV–slower speed

19. $3

20. $6

21. more than 2 h up to 4 h

22. Answers may vary. Sample: Yes, the line segments make the graph look like steps.
Answers for Lesson 5-2, pp. 259–261  Exercises

1. no  2. no  3. yes
4. no  5. yes  6. no
7. no  8. yes

9. \[
\begin{array}{c|c|c}
 x & x + 7 & f(x) \\
\hline
 1 & 1 + 7 & 8 \\
 2 & 2 + 7 & 9 \\
 3 & 3 + 7 & 10 \\
 4 & 4 + 7 & 11
\end{array}
\]

10. \[
\begin{array}{c|c|c}
 x & 11x - 1 & y \\
\hline
 1 & 11(1) - 1 & 10 \\
 2 & 11(2) - 1 & 21 \\
 3 & 11(3) - 1 & 32 \\
 4 & 11(4) - 1 & 43
\end{array}
\]

11. \[
\begin{array}{c|c|c}
 x & x^2 & f(x) \\
\hline
 1 & 1^2 & 1 \\
 2 & 2^2 & 4 \\
 3 & 3^2 & 9 \\
 4 & 4^2 & 16
\end{array}
\]

12. \[
\begin{array}{c|c|c}
 x & -4x & f(x) \\
\hline
 1 & -4(1) & -4 \\
 2 & -4(2) & -8 \\
 3 & -4(3) & -12 \\
 4 & -4(4) & -16
\end{array}
\]

13. \[
\begin{array}{c|c|c}
 x & 15 - x & f(x) \\
\hline
 1 & 15 - 1 & 14 \\
 2 & 15 - 2 & 13 \\
 3 & 15 - 3 & 12 \\
 4 & 15 - 4 & 11
\end{array}
\]

14. \[
\begin{array}{c|c|c}
 x & 3x + 2 & y \\
\hline
 1 & 3(1) + 2 & 5 \\
 2 & 3(2) + 2 & 8 \\
 3 & 3(3) + 2 & 11 \\
 4 & 3(4) + 2 & 14
\end{array}
\]

15. \[
\begin{array}{c|c|c}
 x & \frac{1}{4}x & y \\
\hline
 1 & \frac{1}{4}(1) & \frac{1}{4} \\
 2 & \frac{1}{4}(2) & \frac{1}{2} \\
 3 & \frac{1}{4}(3) & \frac{3}{4} \\
 4 & \frac{1}{4}(4) & 1
\end{array}
\]

16. \[
\begin{array}{c|c|c}
 x & -x + 2 & f(x) \\
\hline
 1 & -1 + 2 & 1 \\
 2 & -2 + 2 & 0 \\
 3 & -3 + 2 & -1 \\
 4 & -4 + 2 & -2
\end{array}
\]

17. \{0.5, 53\}

18. \{-8, -2, 18\}

19. \{-27, -7, -2, 8, 48\}

20. \{-4\frac{1}{2}, -\frac{3}{4}, 0\}

21. no

22. no
Answers for Lesson 5-2, pp. 259–261 Exercises (cont.)

23. yes; \{-4, -1, 0, 3\}; \{-4\}

24. Answers may vary. Sample: A relation is not a function if two range values have the same domain value.

25. No; two 4-year-old iguanas may have different lengths.

26. Answers may vary. Sample:

\[
\begin{array}{|c|c|}
\hline
x & y \\
\hline
14 & 60 \\
13 & 58 \\
16 & 60 \\
14 & 63 \\
\hline
\end{array}
\]

Data represent the ages (x) and heights (y) of 4 students.

27. \{-3, 3, 15.8\}

28. \{-13.8, -1, 5\}

29. \{-0.5, 0, 2.7\}

30. \{-0.75, 0, 12.69\}

31. a. \{-300, -210, 0, 72\}

b. Domain is the number of cameras sold, and range is the profit.

32. yes

33. no

34. no

35. yes

36. a. 3,720,000 mi

b. 11,160,000 mi

37. yes

38. no

39. no

40. yes
Answers for Lesson 5-2, pp. 259–261  Exercises (cont.)

41. a. Answers may vary. Sample: The cost appears to be far too little.
   
   b. Answers may vary. Sample: The student failed to convert hours to minutes.
   
   c. $10.80
   
   d. whole numbers; positive numbers

42. a.\[
\begin{array}{c|c|c}
 g & 180−25g & d \\
2 & 180−25(2) & 130 \\
4 & 180−25(4) & 80 \\
6 & 180−25(6) & 30 \\
8 & 180−25(8) & −20 \\
\end{array}
\]

   b. about 7 gallons
   
   c. Domain: More than 0 gallons up to 15 gallons; Since the car would be stuck if there was no gas in it.
   Range: 0 to 180 miles; Since you are 180 miles away and start heading home, 180 is the upper limit. Your distance will be 0 when you arrive at home.

43. 23  
44. 18  
45. 6  
46. 20

47. Yes, it passes the vertical line test; no, it doesn’t pass the vertical line test.

48. a. 0, −1, −2, −6
   
   b. all integers
Answers for Lesson 5-3, pp. 266–267  Exercises

1–9. Tables may vary. Samples are given.

1. \[
\begin{array}{c|c}
  x & f(x) \\
  \hline
  -1 & 3 \\
  0 & 0 \\
  1 & -3 \\
\end{array}
\]

2. \[
\begin{array}{c|c}
  x & f(x) \\
  \hline
  -1 & 4 \\
  0 & 1 \\
  1 & -2 \\
  2 & -5 \\
\end{array}
\]

3. \[
\begin{array}{c|c}
  x & f(x) \\
  \hline
  -2 & 4 \\
  -1 & 1 \\
  0 & -2 \\
  1 & -5 \\
\end{array}
\]

4. \[
\begin{array}{c|c}
  x & y \\
  \hline
  1 & -5 \\
  2 & -3 \\
  3 & -1 \\
\end{array}
\]
Answers for Lesson 5-3, pp. 266–267 Exercises (cont.)

5. \[ \begin{array}{c|c}
  x & f(x) \\
  \hline
  0 & 8 \\
  2 & 6 \\
  4 & 4 \\
  8 & 0 \\
\end{array} \]

6. \[ \begin{array}{c|c}
  x & y \\
  \hline
  -1 & 1 \\
  0 & 5 \\
  1 & 9 \\
\end{array} \]

7. \[ \begin{array}{c|c}
  x & f(x) \\
  \hline
  -2 & -\frac{1}{2} \\
  0 & 0 \\
  2 & \frac{1}{2} \\
  4 & 1 \\
\end{array} \]

8. \[ \begin{array}{c|c}
  x & y \\
  \hline
  -1 & -4 \\
  0 & 0 \\
  1 & 4 \\
\end{array} \]
9. \[
\begin{array}{c|c}
  x & y \\
-3 & 1 \\
-2 & 2 \\
-1 & 3 \\
 0 & 4 \\
 1 & 5 \\
\end{array}
\]

10. a. \( M = 3.5 \text{ h} \)

b–d. Answers may vary. Samples are given.

b. \[
\begin{array}{c|c}
  h & M \\
0 & \$0.00 \\
\frac{1}{2} & \$1.75 \\
1 & \$3.50 \\
2 & \$7.00 \\
3 & \$10.50 \\
\end{array}
\]

c. Money Earned Babysitting

\[
\begin{array}{c|c|c}
\text{Time (h)} & 0 & 1 \ 2 \ 3 \ 4 \ 5 \\
\hline
\text{Money Earned ($)} & 0 & 3 \ 6 \ 9 \ 15 \ 18 \\
\end{array}
\]

d. about 8.5 h

11. a. \[
\begin{array}{c|c}
  \ell & P(\ell) \\
1 & 5 \\
2 & 10 \\
3 & 15 \\
4 & 20 \\
\end{array}
\]

b. \[
\begin{array}{c|c|c}
\text{Side} & 0 \ 2 \ 4 \\
\hline
\text{Perimeter} & 10 \ 20 \\
\end{array}
\]
Answers for Lesson 5-3, pp. 266–267

Exercises (cont.)

12. discrete;

<table>
<thead>
<tr>
<th></th>
<th>0.35p</th>
<th>C(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.35(1)</td>
<td>0.35</td>
</tr>
<tr>
<td>2</td>
<td>0.35(2)</td>
<td>0.70</td>
</tr>
<tr>
<td>3</td>
<td>0.35(3)</td>
<td>1.05</td>
</tr>
<tr>
<td>4</td>
<td>0.35(4)</td>
<td>1.40</td>
</tr>
</tbody>
</table>

13. continuous;

<table>
<thead>
<tr>
<th></th>
<th>2n</th>
<th>A(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2(1)</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2(2)</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2(3)</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>2(4)</td>
<td>8</td>
</tr>
</tbody>
</table>

14. discrete;

<table>
<thead>
<tr>
<th></th>
<th>0.75c - 0.42cn</th>
<th>P(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.75 - 0.42(1)</td>
<td>0.33</td>
</tr>
<tr>
<td>2</td>
<td>0.75 - 0.42(2)</td>
<td>0.66</td>
</tr>
<tr>
<td>3</td>
<td>0.75 - 0.42(3)</td>
<td>0.99</td>
</tr>
<tr>
<td>4</td>
<td>0.75 - 0.42(4)</td>
<td>1.32</td>
</tr>
</tbody>
</table>

15. \[2 \quad y \quad 2 \quad O \quad 2 \quad x\]

16. \[4 \quad y \quad 2 \quad O \quad 2 \quad x\]
Answers for Lesson 5-3, pp. 266–267  Exercises (cont.)

17.  

18.  

19.  

20.  

21.  

22.  

23.
Answers for Lesson 5-3, pp. 266–267  Exercises (cont.)

24. a. 55.2 gal

b. Water Use in Shower

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Amount of Water (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
</tr>
</tbody>
</table>

Water Use in Shower: standard shower head, water-saving shower head

c. Check students’ work.

d. Check students’ work.

25. Check students’ work.

26. a. | $\ell$ | $A(\ell)$ |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

b. continuous; length is a continuous measure

c. Area

<table>
<thead>
<tr>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leg</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>
Answers for Lesson 5-3, pp. 266–267  Exercises (cont.)

27. 

28. 

29. 

30. 

31. 

32. 

33. 

34. 

35. 

36. D

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37. a. \[ y = |x| \]
   \[ y = -|x| \]
   b. \( x \)-axis
   c. \( y = -|x| - 1 \)

38. a. Tiles | Perimeter
   | 1 | 4
   | 2 | 6
   | 3 | 8
   | 4 | 10
   b. \( P(t) = 2t + 2 \),

39. a. \( f(x) \)
   b. It changes the \( y \)-intercept.
40. a. 

\[ f(x) \]

b. It makes the graph wider or narrower.

41. a. 1, 1, -1, -1

b. \{-1, 0, 1\}

c. Tables may vary. Sample:

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>-1</td>
</tr>
<tr>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

d. No; \(s(3 + 5) = s(8) = 1\) and \(s(3) + s(5) = 1 + 1 = 2; 1 \neq 2\).
Questions and Answers for Lesson 5-4, pp. 272–274

1. B
2. A
3. C
4. \( f(x) = 3x \)
5. \( f(x) = x - 0.5 \)
6. \( f(x) = 0.5x \)
7. \( f(x) = -3x \)
8. \( y = 4x \)
9. \( y = x^2 \)
10. \( t(c) = 0.79c \)
11. \( d(n) = 45n \)
12. \( f(h) = \frac{1}{12}h \)
13. \( e(n) = 6.37n \)
14. \( A(n) = n^2 \)
15. \( V(n) = n^3 \)
16. \( A(r) = \pi r^2 \)
17. a. \( f(x) = 0.19x \)
   b. $1.52
18. a. \( f(x) = 0.34 + 0.21(x - 1) \)
   b. $.97
19. \( f(x) = 1000x \)
20. \( f(x) = 2.54x \)
21. a. \( C(a) = 10a + 1 \)
   b. $31
   c. 61; the total cost of 12 books
   d. discrete; You cannot buy parts of a book.
22. a. \( C(b) = 6b \)
   b. 72; the total cost of 12 books
   c. about $5.08
   d. Club; $61 is less than $72.
23. Answers may vary. Sample: The input values you need may not be in the table.
24. a. gal of water, number of loads
   b. \( w(n) = 34n \)
   c. 238 gal
   d. 13 loads
25. Answers may vary. Sample: \( f(x) = 60x; f(3) = 180 \) mi in 3 h, the distance you can travel at a constant speed of 60 mi/h

26. C

27. \[
\begin{array}{c|c}
  x & y \\
  \hline
  -1 & 3 \\
  0 & 2 \\
  1 & 1 \\
  2 & 0 \\
  3 & -1 \\
\end{array}
\]

\( y = -x + 2 \)

28. \[
\begin{array}{c|c}
  x & y \\
  \hline
  -2 & -2 \\
  -1 & -1.5 \\
  0 & 1 \\
\end{array}
\]

29. \[
\begin{array}{c|c}
  x & y \\
  \hline
  -4 & -3 \\
  -2 & 0 \\
  0 & 3 \\
\end{array}
\]

\( y = \frac{3}{2}x + 1 \) \quad \( y = \frac{3}{2}x + 3 \)

30. a. \[
\begin{array}{c|c|c}
  \text{Cost} & \text{Process} & \text{Amount Left} \\
  \hline
  $12 & 45 - [12 + 0.15(12)] & $31.20 \\
  $18 & 45 - [18 + 0.15(18)] & $24.30 \\
  $24 & 45 - [24 + 0.15(24)] & $17.40 \\
  $28 & 45 - [28 + 0.15(28)] & $12.80 \\
\end{array}
\]

b. \( A(c) = 45 - (c + 0.15c) \)

c. 

![Graph of the function](image)

Cost of Meal ($) \quad Amount Left ($)

10 \quad 30 \\
14 \quad 20 \\
18 \quad 10 \\
22 \quad 0 \\
26 \quad -10 \\
30 \quad -20
Answers for Lesson 5-4, pp. 272–274  Exercises (cont.)

31. a. \( h \) | Process | \( A(h) \)  
    |-------|-------|
    | 1  | \( 1 \times 3 \frac{1}{2} \) | \( \frac{3}{2} = 1 \frac{1}{2} \)  
    | 2  | \( 2 \times 3 \frac{1}{2} \) | 3  
    | 3  | \( 3 \times 3 \frac{1}{2} \) | \( \frac{9}{2} = 4 \frac{1}{2} \)  

b. \( A(h) = \frac{3}{2}h \)  
c. discrete; The figures represent tiles, which usually counted in whole units.

d.

32. \( f(x) = x^3 \)  
33. \( f(x) = -x^3 \)  
34. \( f(x) = -x^3 - 1 \)

35. a. \( c(m) = 44 + 0.38m \)  
b. $70.60, $89.60  
c. 38 mi  
d. $202

36. a. \( B(v) = 6.93v \)  
b. \( B(w) = \frac{7}{10}w \)
### Answers for Lesson 5-5, pp. 280–282

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>no</td>
</tr>
<tr>
<td>2.</td>
<td>no</td>
</tr>
<tr>
<td>3.</td>
<td>yes; (-\frac{2}{10})</td>
</tr>
<tr>
<td>4.</td>
<td>no</td>
</tr>
<tr>
<td>5.</td>
<td>yes; (\frac{5}{6})</td>
</tr>
<tr>
<td>6.</td>
<td>yes; (\frac{7}{3})</td>
</tr>
<tr>
<td>7.</td>
<td>yes; (-\frac{1}{10})</td>
</tr>
<tr>
<td>8.</td>
<td>yes; 0.5</td>
</tr>
<tr>
<td>9.</td>
<td>yes; (-\frac{3}{2})</td>
</tr>
<tr>
<td>10.</td>
<td>(y = 5x)</td>
</tr>
<tr>
<td>11.</td>
<td>(y = \frac{1}{5}x)</td>
</tr>
<tr>
<td>12.</td>
<td>(y = -\frac{5}{4}x)</td>
</tr>
<tr>
<td>13.</td>
<td>(y = \frac{9}{5}x)</td>
</tr>
<tr>
<td>14.</td>
<td>(y = -\frac{3}{2}x)</td>
</tr>
<tr>
<td>15.</td>
<td>(y = \frac{1}{6}x)</td>
</tr>
<tr>
<td>16.</td>
<td>(y = -\frac{4}{3}x)</td>
</tr>
<tr>
<td>17.</td>
<td>(y = -\frac{4}{3}x)</td>
</tr>
<tr>
<td>18.</td>
<td>(y = -\frac{4}{3}x)</td>
</tr>
<tr>
<td>19.</td>
<td>(y = 2x)</td>
</tr>
<tr>
<td>20.</td>
<td>(y = -\frac{2}{3}x)</td>
</tr>
<tr>
<td>21.</td>
<td>(y = \frac{1}{5}x)</td>
</tr>
<tr>
<td>22.</td>
<td>(P(\ell) = 8\ell)</td>
</tr>
<tr>
<td>23.</td>
<td>(E(h) = 7.10h)</td>
</tr>
<tr>
<td>24.</td>
<td>yes; (y = 1.8x)</td>
</tr>
<tr>
<td>25.</td>
<td>no</td>
</tr>
<tr>
<td>26.</td>
<td>yes; (y = -1.5x)</td>
</tr>
</tbody>
</table>
| 27.      | a. \(\frac{50}{50} \text{ or } 0.4\)  
           | b. \(f = 0.4w, 52 \text{ lb}\) |
| 28.      | \(d = 0.3t, 9 \text{ mi}\) |
| 29.      | \(y = \frac{1}{6}x\) |
| 30.      | \(y = -20x\) |
| 31.      | \(y = -\frac{36}{25}x\) |
| 32.      | \(y = 6x\) |
| 33.      | \(y = 9x\) |
| 34.      | \(y = -\frac{1}{32}x\) |
| 35.      | \(y = -\frac{15}{52}x\) |
| 36.      | \(y = \frac{7}{64}x\) |
| 37.      | a. The ratio \(\frac{y}{x}\) is the same for each pair of values.  
           | b. A line through the origin that is neither vertical nor horizontal is the graph of a direct variation. |
| 38.      | True; a line that is neither horizontal nor vertical can pass through \((0, 0)\) and \((-2, 4)\). |
| 39.      | False; the line through \((0, 3)\) and \((0, 0)\) is vertical, so it is not a function and is therefore not a direct variation. |
| 40.      | True; for the equation \(y = kx\), if one side is multiplied by 3, then the other side must be multiplied by 3. |
Answers for Lesson 5-5, pp. 280–282  Exercises (cont.)

41. \[ y = \frac{5}{2}x \]

42. \[ y = -\frac{5}{2}x \]

43. \[ y = -\frac{5}{2}x \]

44. \[ y = \frac{5}{2}x \]
Answers for Lesson 5-5, pp. 280–282 Exercises (cont.)

45. a. \( \frac{1}{32} \)
   
   b. \( b = \frac{1}{32}w \)
   
   c. Check students’ work.

46. a. 48 volts
   
   b. 0.75 ohms

47. Check students’ graphs.
   
   a. The graphs get steeper for increasing, positive values of the constant of variation.
   
   b. It would appear less steep than \( y = x \).

48. 12
49. −8
50. 8

51. −6
52. 5
53. 2

54. a. \( c = 1.83g; \) yes
   
   b. \( c = \frac{1.83}{24}m \) or \( c = 0.07625m \)
<table>
<thead>
<tr>
<th>Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. $xy = 18$</td>
</tr>
<tr>
<td>4. $xy = 1.5$</td>
</tr>
<tr>
<td>7. $xy = 2$</td>
</tr>
<tr>
<td>10. 8</td>
</tr>
<tr>
<td>13. 7</td>
</tr>
<tr>
<td>16. 12</td>
</tr>
<tr>
<td>19. 2</td>
</tr>
<tr>
<td>22. 3 h</td>
</tr>
<tr>
<td>24. Direct variation; $y = 0.5x$</td>
</tr>
<tr>
<td>25. Inverse variation; $xy = 60$</td>
</tr>
<tr>
<td>26. Inverse variation; $xy = 72$</td>
</tr>
<tr>
<td>27. Direct variation; the ratio $\frac{\text{cost}}{\text{pound}}$ is constant at $1.79$.</td>
</tr>
<tr>
<td>28. Inverse variation; the total number of slices is constant at 8.</td>
</tr>
<tr>
<td>29. Inverse variation; the product of the length and width remains constant with an area of 24 square units.</td>
</tr>
<tr>
<td>30. 32; $xy = 32$</td>
</tr>
<tr>
<td>33. 1; $ab = 1$</td>
</tr>
<tr>
<td>36. Direct variation; the ratio of the perimeter to the side length is constant at 3.</td>
</tr>
<tr>
<td>37. Inverse variation; the product of the rate and the time is always 150.</td>
</tr>
<tr>
<td>38. Direct variation; the ratio of the circumference to the radius is constant at $2\pi$.</td>
</tr>
<tr>
<td>39. 121 ft</td>
</tr>
<tr>
<td>40. 2.4 days</td>
</tr>
</tbody>
</table>
41. direct variation; \( y = 0.4x; 8 \)
42. direct variation; \( y = 70x; 0.9 \)
43. inverse variation; \( xy = 48; 0.5 \)
44. a. greater
   b. greater
   c. less
45. a. 16 h; 10 h; 8 h; 4 h
   b. hr worked, rate of pay
   c. \( rt = 80 \)
46. Check students’ work.
47. A
48. \( p: y = 0.5x; q: xy = 8 \)
49. a. \( y \) is doubled.
   b. \( y \) is halved.
50. \( 4; s\left(\frac{1}{2}d\right)^2 = \frac{1}{4}sd^2 = k \), so \( s = 4\frac{k}{d^2} \).
51. a. \( x^4y = k \)
   b. \( \frac{x^4y}{z} = k \)
Answers for Lesson 5-7, pp. 294–296  Exercises

1. “Add 2 to the previous term”; 12, 14.
2. “Multiply the previous term by $1\frac{1}{2}$”; $20\frac{1}{4}$, $30\frac{3}{8}$.
3. “Add 2 to the first term, 3 to the second term and continue, adding 1 more each time”; 18, 24.
4. “Add 0.04 to the previous term”; 3.16, 3.20.
5. “Multiply the previous term by 1.1”; 4.3923, 4.83153.
7. “Add 1.1 to the previous term”; 5.5, 6.6.
8. “Multiply the previous term by 10”; 10, 100.
9. “Multiply the previous term by 4”; 512, 2048.
10. “Square the reciprocals of consecutive integers”; $\frac{1}{25}$, $\frac{1}{36}$.
12. “Multiply the previous term by 5”; 937.5, 4687.5.

13. 3
14. $-4$
15. $-11$
16. 13
17. $-\frac{1}{6}$
18. 0.8
19. $-2$
20. 12
21. 5
22. 5, 14, 26
23. $-3$, 15, 39
24. $-3$, 9, 25
25. 17, 44, 80
26. 3.5, 12.5, 24.5
27. 2, 23, 51
28. 3, $-15$, $-39$
29. $-7.1$, $-22.1$, $-42.1$
30. 58, 37, 9
31. 17, 5, $-11$
32. $-8$, $-17$, $-29$
33. $-0.8$, $-3.8$, $-7.8$
34. $-4$, $-10$
Answers for Lesson 5-7, pp. 294–296  Exercises (cont.)

35. $3\frac{1}{4}, 3\frac{1}{2}$
36. 26, 37
37. $\frac{4}{27}, \frac{4}{81}$
38. 35, 48
39. 31, 40
40. 2.5, 1.25
41. 8, $8\frac{1}{4}$
42. $\frac{4}{27}$, $-\frac{4}{81}$

43. a. Answers may vary. Sample: Inductive reasoning is making conclusions based on patterns, while deductive reasoning is making conclusions based on given facts.
   b. Answers may vary. Check students’ work.

44. 5 min

45. Answers may vary. Sample: $A(n) = 2 - 4n$

46. 7 lb 4 oz, 7 lb 9 oz, 7 lb 14 oz, 8 lb 3 oz, 8 lb 8 oz; the baby’s weight at the end of the 4th week

47. $4500, 4350, 4200, 4050, 3900$; the balance after 4 payments

48. a. $\begin{array}{c} 1 \\ 2 \\ 4 \\ 7 \end{array}$
   b. $\frac{2}{1} = 2; \frac{4}{2} = 2; 8$
   c. When there are more than three terms you can test the pattern to make sure it is reasonable.

49. No; there is no common difference.

50. Yes; the common difference is $-4$.

51. No; there is no common difference.

52. No; there is no common difference.

53. Yes; the common difference is $-15$.

54. Yes; the common difference is $-0.8$.

55. a. 1, 5, 10, 10, 5, 1
b. 1, 2, 4, 8, 16; 32

56. \(11\frac{1}{3}, 12, 13\frac{1}{3}\)

57. 4.5, -4.5, -22.5

58. -2, -5.2, -11.6

59. 1, 2\frac{3}{5}, 5\frac{4}{5}

60. a. 11, 14

b. The points lie on a line.

c. The points lie on a line.

61. a. Yes; for each input there is only one output value.

b. For every increase of 7 in the key position, the frequency doubles.

62. a. 21

b. 89

b. Answers may vary. Sample: 3, 3, 6, 9, 15, 24, 39

63. value of new term = value of previous term + 6

64. value of new term = value of previous term \cdot 1.5

65. value of new term = value of previous term - 2.5
Answers for Lesson 5-7, pp. 294–296  Exercises (cont.)

66. value of new term = value of previous term + 4
67. value of new term = value of previous term ÷ 7
68. value of new term = value of previous term · (−2.5)
69. \(x; 4x + 4\)
70. \(3a + 2b; 10a + 7b + c\)
71. a. 10
   b. −6
   c. \(A(n) = 10 + (n - 1)(-6)\)
72. a. Blue
   b. Blue; the colors rotate red, blue, and purple. Every third figure is purple. Since 21 is divisible by 3, the 21st figure is purple. The figure just before a purple figure is blue.
   c. 12 sides; the figures show this pattern for number of sides.

<table>
<thead>
<tr>
<th>Figure</th>
<th>Number of Sides</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–3</td>
<td>3</td>
</tr>
<tr>
<td>4–6</td>
<td>4</td>
</tr>
<tr>
<td>7–9</td>
<td>5</td>
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<td>10–12</td>
<td>6</td>
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<td>13–15</td>
<td>7</td>
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<td>16–18</td>
<td>8</td>
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<td>19–21</td>
<td>9</td>
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<td>22–24</td>
<td>10</td>
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<tr>
<td>25–27</td>
<td>11</td>
</tr>
<tr>
<td>28</td>
<td>12</td>
</tr>
</tbody>
</table>
73. a. −5
   b. 6
   c. \(A(n) = -5 + (n - 1)(6)\)