## Answers for Lesson 3-1, pp. 122–124 Exercises

**1.** $-10$ **2.** $6$ **3.** $-1$

**4.** $-34$ **5.** $-3$ **6.** $27$

**7.** $-60$ **8.** $-2$ **9.** $96$

**10.** $112$ **11.** $3$ **12.** $4\frac{1}{2}$

**13.** $6\frac{2}{5}$ **14.** $120$ **15.** $45$

**16.** $50$ **17.** $16$ **18.** $-15$

**19.** $-8$ **20.** $-1$

**21.** $2n + 4028 = 51{,}514$; 23,743 books

**22.** $2m + 18 = 60$; 21 min

**23.** $C = 39.95 + 0.35m$; 85 min

**24.** Subtr. Prop. of Eq. Simplify.
Mult. Prop. of Eq. Simplify.

**25.** Add. Prop. of Eq. Simplify.
Mult. Prop. of Eq. Simplify.

**26.** Subtr. Prop. of Eq. Simplify.
Mult. Prop. of Eq. Simplify.

**27.** Subtr. Prop. of Eq. Simplify.
Div. Prop. of Eq. Simplify.

**28.** $4$ **29.** $75$ **30.** $-30$

**31.** $1$ **32.** $0.382$ **33.** $0$

**34.** $8\frac{3}{4}$ **35.** $-6.4$ **36.** $2$

**37.** $2$ **38.** $2.6$ **39.** $2.6$

**40.** $8 + \frac{c}{-4} - 8 = -6 - 8$ Subtr. Prop. of Eq.

$\frac{c}{-4} = -14$ Simplify.

$\frac{c}{-4}(-4) = -14(-4)$ Mult. Prop. of Eq.

$c = 56$ Simplify.

**41.** $7 - 3k - 7 = -14 - 7$ Subtr. Prop. of Eq.

$-3k = -21$ Simplify.

$\frac{-3k}{-3} = \frac{-21}{-3}$ Div. Prop. of Eq.

$k = 7$ Simplify.

**42.** $14 - 6 = 6 - 2p - 6$ Subtr. Prop. of Eq.

$8 = -2p$ Simplify.

$\frac{8}{-2} = \frac{-2p}{-2}$ Div. Prop. of Eq.

$-4 = p$ Simplify.

**43.** $\frac{-y}{2} + 14 = -1$

$\frac{-y}{2} + 14 - 14 = -1 - 14$ Subtr. Prop. of Eq.

$\frac{-y}{2} = -15$ Subtraction

$2(\frac{-y}{2}) = 2(-15)$ Mult. Prop. of Eq.

$-y = -30$ Multiplication

$-1(-y) = -1(-30)$ Mult. Prop. of Eq.

$y = 30$ Multiplication

**44.** A

**45.** $p = 0.8c - 500$; \$6437.50

**46.** $c = 10{,}000d + 128{,}000{,}000$; about 2200 days

**47.** 43 **48.** 5 **49.** 2

**50.** 19 **51.** 25 **52.** 87

**53.** −28 **54.** −34 **55.** 15.5

**56.** 19

**57.** 31.5

**58.** $x$ is the amount he needs to save each week; in 16 weeks he will save $16x$ dollars and have a total of $(40 + 16x)$ dollars. That amount should equal \$129.

**59.** The neg. sign was dropped; $-1$.

**60.** $-12$ was divided by 3 instead of multiplied by 3; $-36$.

**61.** Answers may vary.

**62.** 5; $-1$; 6; $-9$

**63.**

| Fahrenheit | Celsius |
|---|---|
| 212° | 100° |
| 98.6° | 37° |
| 68° | 20° |
| 32° | 0° |
| –40° | –40° |

**64.** **a.** 104°F; 30°F; $-50$°F

**b.** Answers may vary. Sample: The formula gives good estimates except for $-40$°C.

**65.** This eliminates the decimals.

**66.** $8 - y$; 5

**67.** $1 - 2y$; 2

**68.** $12 - y$; 7

## Answers for Lesson 3-2, pp. 129–131 Exercises

| | | |
|---|---|---|
| **1.** 9 | **2.** 8 | **3.** $5\frac{4}{7}$ |
| **4.** 3 | **5.** $2\frac{6}{7}$ | **6.** 7 |
| **7.** 4 | **8.** 3 | **9.** $-3$ |

**10.** $x + \frac{1}{2}x = 1725$; \$1150

**11.** $x + 9 + x = 25$; 8 ft by 9 ft

| | | |
|---|---|---|
| **12.** 3 | **13.** 8 | **14.** $-2$ |
| **15.** $\frac{2}{3}$ | **16.** 2 | **17.** 4 |
| **18.** 4 | **19.** $6\frac{4}{5}$ | **20.** $13\frac{2}{5}$ |
| **21.** 11 | **22.** $1\frac{1}{2}$ | **23.** 46 |
| **24.** 7 | **25.** $-26$ | **26.** $33\frac{3}{5}$ |
| **27.** $\frac{3}{14}$ | **28.** $\frac{1}{3}$ | **29.** 3 |
| **30.** 2 | **31.** 21 | **32.** 0.5 |
| **33.** 3.5 | **34.** 9 | **35.** 4.27 |
| **36.** 6 | **37.** 5 | **38.** 28 |
| **39.** 2 | **40.** 9 | **41.** 5 |
| **42.** 20 | **43.** 1 | **44.** $\frac{1}{12}$ |
| **45.** $5\frac{3}{5}$ | **46.** 44 | **47.** 9 |
| **48.** $-0.48$ | **49.** $-3$ | **50.** 3.08 |

**51.** The student forgot to multiply $-1$ by 8.

**52.** Answers may vary. Sample: Combine $-3m$ and $5m$ first to simplify the left side of the equation.

**53.** Answers may vary. Sample: multiply by $-2$ to eliminate fractions.

**54.** 5 **55.** $4\frac{2}{3}$ **56.** 7 h

**57.** 92 mi **58.** 120 min

**59.** Answers may vary. Sample: $3x + 5 - 4x + 9$

**60.** 64 **61.** 25 **62.** 20

**63.** \$11.68 **64.** 5 weeks

**65.** **a.** $3(x - 2) = 6$
**b.** $(4, 6)$
**c.** $3(4 - 2) = 3(2) = 6$

**66.** about 15 gal

**67.** **a.** $\frac{1}{5}; \frac{1}{7}$
**b.** $\frac{1}{5}t$
**c.** $\frac{1}{7}t$
**d.** $\frac{1}{5}t + \frac{1}{7}t = 1; 2\frac{11}{12}$ h

**68.** \$100,000

## Answers for Lesson 3-3, pp. 136–138 Exercises

**1.** 3 **2.** 5 **3.** 7

**4.** 3 **5.** 3 **6.** $-2$

**7.** 7 **8.** $-3$ **9.** 9

**10.** 7

**11.** $16.95 + 0.05m = 22.95 + 0.02m$; 200 min

**12.** $44 + 30m = 99 + 25m$; 11 months

**13.** 4.25 **14.** 2.5

**15.** 0 **16.** $5.\overline{6}$

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

$0: \quad 9 = 9$

$3: \quad -9 = -9$

$-4: \quad 33 = 33$

$-6: \quad 45 = 45$

**b.** identity

**18.** identity **19.** no solution **20.** identity

**21.** identity **22.** no solution **23.** no solution

**24.** no solution **25.** 0 **26.** identity

**27.** 10 **28.** no solution **29.** identity

**30.** $-2\frac{1}{5}$ **31.** 0 **32.** C

**33.** $1200 + 9b = 25b$; 75 bags

**34.** $x = 5, w = 3, y = 2, a = 9$

**35.** $a = 3, b = 6, c = 5, d = \frac{1}{3}$

**36.** The student forgot a negative sign on the left side of the equation; $-5$.

**37.** The student subtracted $y$ from both sides instead of adding $y$ to both sides; 5.3.

**38.** **a–b.** no solution

**c.** The graphing calculator shows parallel links (no intersection), which indicates that there is no solution. Part (b) also shows that there is no solution.

**39.** No; an equation with a solution of 0 *has* a solution. An equation with no solution is not true for any value of the variable.

**40.** **a.** no

**b.** 1 and 3; at 3, $4 - 3(x + 1)$ is less than $5(x - 3)$, while at 1 the opposite is true. The values must be the same for some value of $x$ between 1 and 3.

**c.** for values of $x$ greater than 2

**41.** Answers may vary. Sample: $3x = 12x$

**42.** Answers may vary. Sample: $4x + 4 = 3x + 7$

**43.** Answers may vary. Sample: $-\frac{x}{2} + 4 = 2x + 7$

**44.** Answers may vary. Sample: $3x + 1 = 3(x + \frac{1}{3})$

**45.** Answers may vary. Sample: $14x - 12 = 7(2x + 3)$

**46.** Answers may vary. Sample: $7x - 2 = 5x$

**47.** 18 units

**48.** rectangle: 6 units, 2 units, 4 units, 4 units

## Answers for Lesson 3-4, pp. 145–148 Exercises

1. \$9.50/h
2. \$.40/lb
3. 131 cars/week
4. 400 cal/h
5. \$0.24/oz; \$0.22/oz; 12-oz.
6. Mario
7. a. \$0.97/mile
   $c = 0.97m$
   b. \$1164
   c. 845 miles
8. a. \$0.25 mi/mm; $d = 0.25m$
   b. 48 min

9. A
10. A
11. B
12. A
13. 480
14. 1.2
15. 10,800
16. 7.5
17. 11.25
18. 5
19. 25.2
20. 7.5
21. 6
22. $-20$
23. 14.4
24. 700
25. 105.6 km
26. 0.5
27. $8\frac{11}{12}$
28. $7\frac{1}{3}$
29. $-3\frac{1}{2}$
30. 8
31. 165
32. 12.5
33. 18.75
34. 14.60
35. 18.25
36. 504
37. 2520
38. 20 mi/h
39. 15 mi/h
40. 12 mi/h
41. 1 mi/h
42. 1 mi/h
43. about 0.28 mi/h
44. 3
45. $5.\overline{3}$
46. $-16$
47. 10.5 mm
48. 246.4 ft/s
49. about 646 students
50. about 750 students
51. about 1000 students

**52.** Answers may vary. Sample: Multiply the numerator of each side by the denominator of the other side. Set the products equal to each other and solve the equation.

$\frac{7}{5} = \frac{x}{15}$, $(7)(15) = 5x, x = 21$

**53.** A

**54.** 5 people/mi$^2$, 2775 people/mi$^2$, 84 people/mi$^2$

**55.** Check students' work.

**56.** Bonnie: \$56.00, Tim: \$32.00

**57.** 48 V

**58.** $-7.5$

**59.** 9

**60.** $-32$

**61.** **a.** 5.47 min/mi

**b.** 5.37 min/mi

## Answers for Lesson 3-5, pp. 152–155 Exercises

1. $\overline{AB}$ and $\overline{PQ}$, $\overline{BC}$ and $\overline{QR}$, $\overline{CA}$ and $\overline{RP}$, $\angle A$ and $\angle P$, $\angle B$ and $\angle Q$, $\angle C$ and $\angle R$

2. $\overline{ED}$ and $\overline{JH}$, $\overline{DF}$ and $\overline{HK}$, $\overline{FE}$ and $\overline{KJ}$, $\angle D$ and $\angle H$, $\angle E$ and $\angle J$, $\angle F$ and $\angle K$

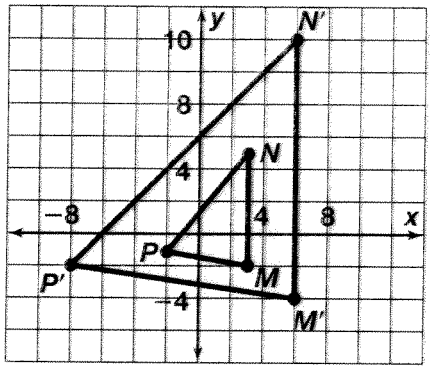
3. 3.125 ft

4. $13.3\overline{3}$ cm

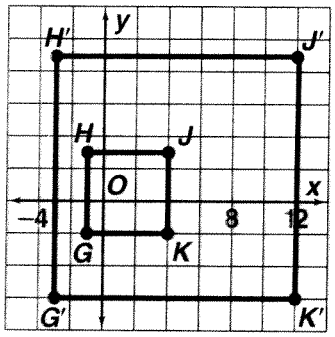
5. 80 in.

6. 40 m

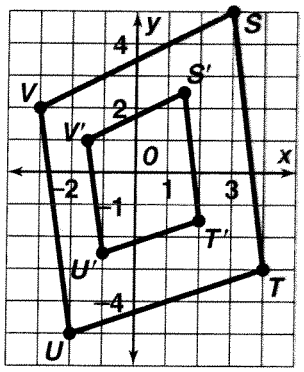
7.




8.




9.




10. 4.8 ft

11. 10.8 in.

12. 87.5 mi

13. 145.25 mi

14. 325.5 mi

15. 350 mi

16. a. Lincoln to San Paulo = 16 mi
Lincoln to Duncanville = 26 mi
San Paulo to Duncanville = 18 mi

b. 26 mi roundtrip

17. 1 cm : 8 km

18. 4 in. by 6 in.

19. $2\frac{2}{3}$ in. by 4 in.

20. 2 in. by 3 in.

21. 3.2 in. by 4.8 in.

22. 33.75 in.

**23.** 22.5 ft by 27 ft

**24.** **a.** Answers may vary. Sample: $GK$ and $RQ$ are not corresponding sides.

**b.** $\frac{GH}{PQ} = \frac{HL}{RQ}$

**25.** 1 in. : 12 ft

**26.** 9 ft by 12 ft

**27.** 3 ft

**28.** 216 $ft^2$

**29.** yes; because it is 6 ft wide and 9 ft long

**30.** no; $\frac{JH}{DC} \neq \frac{FG}{AB}$

**31.** Check students' work.

**32.** 48 cm, 20 cm

**33.** C

**34.** $a = 8$ cm, $b = 6$ cm, $c = 10$ cm

**35.** about 1 in. : 30.5 mi

**36.** 400,400 km

**37.** **a.** $\frac{8}{8 + x} = \frac{5}{7}$

**b.** 3.2

**c.** 11.2 in.

**d.** 39.2 $in.^2$

## Answers for Lesson 3-6, pp. 162–165 Exercises

**1.** **a.** Let $w$ = width.

**b.** $\ell = w + 3$

**c.** $2w + 2(w + 3) = 30$; 6

**d.** 9 in.

**2.** 2 in.; 10 in.

**3.** 9 cm; 18 cm

**4.** 5 yd; 13 yd

**5.** 304, 305, 306

**6.** **a.** Let $n$ = the first integer.

**b.** 2

**c.** $n + 2$

**d.** $n + n + 2 = 118$; 58, 60

**7.** −148, −150

**8.** **a.** Let $n$ = the first integer.

**b.** 2

**c.** $n + 2$

**d.** $n + n + 2 = 56$; 27, 29

**9.** **a.** Let $t$ = time for the moving van.

**b.** $t - \frac{1}{2}$

**c.**

| Vehicle | Rate | Time | Distance Traveled |
|---|---|---|---|
| Moving van | **40** | **t** | **40t** |
| Car | **60** | $\mathbf{t - \frac{1}{2}}$ | $\mathbf{60\,(t - \frac{1}{2})}$ |

**d.**

| $t$ | van | car |
|---|---|---|
| 1 | 40 | 30 |
| $1\frac{1}{2}$ | 60 | 60 ✔ |

$t = 1\frac{1}{2}$
$t - \frac{1}{2} = 1$
The car catches the van after traveling 1 hour.

**10.** $1\frac{17}{30}$ h

**11.** **a.** $x$; $2\frac{1}{4} - x$

**b.** $22x = 32(2\frac{1}{4} - x)$; $1\frac{1}{3}$ h

**12.** **a.** $x$; $3 - x$

**b.** $320x = 280(3 - x)$; $1\frac{2}{5}$ h

**13.** **a.** $x$; $x - 20$

**b.** $4x + 4(x - 20) = 250$; $41\frac{1}{4}$ mi/h; $21\frac{1}{4}$ mi/h

**14.** 15mi/h; 20mi/h

**15.** $-31$, $-29$, $-27$

**16.** **a.** $1.5 + 2x + x$

**b.** 15.5 ft

**c.** $3x + 1.5 = 15.5$; $10\frac{5}{6}$ ft or 10 ft 10 in.

**17.** 12:30 P.M.

**18.** 3:45

**19.** **a.** II.

**b.** They are all multiples of three.

**20.** 2:30 P.M.

**21.** 175 mi/h; 375 mi/h

**22.** **a.** 4 P.M.

**b.** the distance traveled

**23.** 1993, 1994, 1995

**24.** Answers may vary. Sample: Define a variable to represent the first integer. Use this variable to write expressions for the other integers. Write an equation that describes how the integers are related. Solve this equation to find the integers.

**25.** Answers may vary. Sample: Jeff and Anne both left school for the city at the same time. Jeff drove 35 mi/h and Anne drove 20 mi/h. Jeff arrived 1 h before Anne. How long did each drive?

**26.** **a.** $n + n + 1 + n + 2 = 126$; 41, 42, 43

**b.** Yes; if $n$ is the middle integer, $n - 1$ is the previous integer and $n + 1$ is the next integer. The three integers would be consecutive.

**27.** 6 6-V; 4 12-V

**28.** $x + 2x - 65 + x - 10 = 165$; 60; 55 cm, 60 cm, 50 cm

**29.** **a.** $\frac{5}{6}$ h

**b.** 10:15 A.M.

**30.** $-9, -7, -5, -3, -1$

## Answers for Chapter Test, p. 194

**1.** $-3$ **2.** 41 **3.** 1

**4.** $\frac{3}{5}$ **5.** 11

**6.** $2x - 4 = -7$

$2x - 4 + 4 = -7 + 4$ Add. Prop. of Eq.

$2x = -3$ Simplify.

$\frac{2x}{2} = \frac{-3}{2}$ Div. Prop. of Eq.

$x = \frac{-3}{2}$ Simplify.

**7.** $m + 25 = 453.5$; \$428.50

**8.** $55 + 0.2m = 80$; 125 mi

**9.** $a + 3(a - 2) = 20$; \$6.50

**10.** 15 **11.** 7.5 **12.** 2.4

**13.** 20 **14.** identity **15.** $-8$

**16.** $-2$ **17.** no solution **18.** $11.\overline{1}\%$; incr.

**19.** 25%; decr. **20.** 10%; decr. **21.** $33.\overline{3}\%$; incr.

**22.** 2.24 **23.** $\frac{1}{6}$ **24.** 3080

**25.** 1 **26.** 162.5 mi

**27.** **a.** $c = 1.85 + 0.4m$
**b.** \$14.65

**28.** $1.2, -1.2$ **29.** $40, -40$ **30.** $\frac{2}{3}, -\frac{2}{3}$

**31.** $0.63, -0.63$

**32.** Let $n$ = Sue's age. $n + n + 1 + n + 2 = 57$
Sue is 18, Jan is 19, and Bill is 20.

## Answers for Chapter Test, p. 194 (cont.)

**33.** Let $t$ = time for family car.
$40t + 60(t - 2) = 380$; 5:00 P.M.

**34.** 5 and 6

**35.** 11 and 12

**36.** 18 and 19

**37.** $-2$ and $-3$

**38.** yes

**39.** no

**40.** no

**41.** yes

**42.** 57.8 cm

**43.** 15 mi