Answers for 3.5

For use with pages 165–167

3.5 Skill Practice

1. ratios

2. *Sample answer:* $\frac{2}{5}$, 2 : 5, 2 to 5

3. no; 7 to 9 **4.** yes

5. yes **6.** no; 7 to 8

7. $\frac{6}{5}$ **8.** 64 **9.** 22

10. 6 **11.** 48 **12.** 5

13. 15 **14.** 4 **15.** 40

16. 48 **17.** 12 **18.** 56

19. C **20.** B

21. Multiply each side by 6, not $\frac{1}{6}$; $6 \cdot \frac{3}{4} = 6 \cdot \frac{x}{6}$, $4\frac{1}{2} = x$.

22. Multiply each side by 10, not one side by 10 and the other side by 20; $10 \cdot \frac{m}{10} = 10 \cdot \frac{50}{20}$, $m = 25$.

23. $\frac{3}{8} = \frac{x}{32}$; 12 **24.** $\frac{5}{7} = \frac{a}{49}$; 35

25. $\frac{x}{4} = \frac{8}{16}$; 2 **26.** $\frac{y}{20} = \frac{9}{5}$; 36

27. $\frac{b}{10} = \frac{7}{2}$; 35 **28.** $\frac{4}{12} = \frac{n}{3}$; 1

29. $\frac{12}{18} = \frac{d}{27}$; 18 **30.** $\frac{t}{21} = \frac{40}{28}$; 30

31. 1.8 **32.** 3.3 **33.** 2.4

34. 2 **35.** 4 **36.** 6

37. 4 **38.** 4 **39.** 2

40. 19 **41.** 3.5 **42.** 4

43. Yes. *Sample answer:* $\frac{3}{6} = \frac{4}{8}$

44. Yes; multiply each side by b to get the equation $a = \frac{cb}{d}$, then divide each side by c to get $\frac{a}{c} = \frac{b}{d}$.

3.5 Problem Solving

45. $\frac{2}{145}$ **46.** $\frac{7}{8}$

47. $\frac{2}{5}$ **48.** $\frac{3}{5}$ **49.** $\frac{1}{2}$

50. 21 pages **51.** 45 goals

52. a. *Sample answer:* $\frac{1.85}{1} = \frac{x}{38}$, 70.3 ft

b.

Width (ft)	Length (ft)
20	37
25	46.25
30	55.5
35	64.75
40	74

53. a. $\frac{10}{23}$

b. 110 lift tickets

c. 40 snowboarders

Answers for 3.5 *continued*

For use with pages 165–167

54. a. *Sample answer:* $\frac{10}{3} = \frac{x}{11}$

b. *Sample answer:* $\frac{5}{2} = \frac{x}{14}$

c. Your friend; you will wait in line for $36\frac{2}{3}$ minutes and your friend will wait only 35 minutes.

55. 37.5 mi, 22.5 mi

3.5 Mixed Review

56. not a function

57. function

58. $y = \frac{1}{2}x + 1$; domain: 0, 2, 4, and 6, range: 1, 2, 3, and 4

59. $y = x - 1$; domain: 2, 3, 4, 5, and 6, range: 1, 2, 3, 4, and 5

60. $y = x + 2$; domain: 0, 1, 2, and 3, range: 2, 3, 4, and 5

61. -9 **62.** 2 **63.** 3

64. -6 **65.** 20 **66.** 7

Answers for 3.6

For use with pages 171–173

3.6 Skill Practice

1. cross product

2. Measure the distance in centimeters in the drawing and then substitute the value in the proportion, $\frac{1}{3} = \frac{\text{distance in drawing}}{\text{actual distance}}$.

3. 6 **4.** 7 **5.** 24

6. 6 **7.** 1 **8.** 6

9. −49 **10.** 7 **11.** 2

12. 27 **13.** 12 **14.** 26

15. B **16.** D

17. Use the cross products property to multiply 4 by x and 16 by 3; $4 \cdot x = 3 \cdot 16$, $4x = 48$, $x = 12$.

18. Distribute the 14 to both b and 2; $18b = 14b + 28$, $4b = 28$, $b = 7$.

19. 15 **20.** 2 **21.** 10

22. 22 **23.** 5.5 **24.** −2.5

25. −3.4 **26.** 5.2 **27.** 4.2

28. 7.4 **29.** −5.9 **30.** −7.1

31. a. Multiplication property of equality

b. Multiply

c. Simplify

32. Decreases; as k gets larger, the value of $\frac{k}{14}$ increases, so for the value of $\frac{5}{h}$ to increase, h must decrease.

3.6 Problem Solving

33. 5 c **34.** 18 min

35. 90 km **36.** 48 km

37. 7.5 km **38.** 70.5 km

39. 17.728 m

40. a. 213.75 ft

b.

Shell diameter (ft)	Burst diameter (ft)
2	90
3	135
4	180
5	225
6	270

41. 80 yd; find the actual length of the field by using the ratio 1 in. : 20 yd, then use the number to find the width of the soccer field by using the ratio 3 : 2.

42. a. 4.5 moles

b. 3.4 moles

c. Nearly equal. *Sample answer:* The ratio of moles of hydrogen to moles of carbon is about 1.33 to 1, the ratio of moles of hydrogen to moles of oxygen is about 1.32 to 1. The two ratios are nearly the same.

43. 45,000 males, 30,000 females

3.6 Mixed Review

44. 20	**45.** 18	**46.** −15
47. 35	**48.** 14	**49.** 27
50. −5	**51.** 60	**52.** 1
53. −9	**54.** 12	**55.** 8

Answers for 3.7

For use with pages 179–181

3.7 Skill Practice

1. percent: 15, base: 360, part: 54

2. $\frac{28}{80} = \frac{35}{100}$; the statement identifies 28 as part of 80 so 28 is the part, a, and 80 is the base, b; 35 is p because it is a percent.

3. 36% **4.** 55% **5.** 28

6. 51 **7.** 150 **8.** 21

9. 70% **10.** 44% **11.** 6%

12. 27 **13.** 69 **14.** 176.3

15. 25 **16.** 210 **17.** 95

18. 137.5 **19.** B

20. $p\%$ should be multiplied by 95; $19 = p\% \cdot 95$, $p\% = 20\%$.

21. 76.5% needs to be changed to 0.765; $153 = 0.765 \cdot b$, $b = 200$.

22. 85% **23.** 96%

24. 33.8 **25.** 150

26. 16% **27.** 6%

28. 72% **29.** 30%

30. *Sample answer:* Percent equation; you just need to multiply the percent by the base to find the part.

31. No. *Sample answer:* The area of the smaller square would be 16% of the area of the larger square because the percent needs to be squared.

32. $5y$

3.7 Problem Solving

33. 8% **34.** 200 laps

35. a. 90 listeners

b. 35 listeners

36. 1880; 395; 20%

37. 59.3%; 16.5%; 13.2%; 11%

38. *Sample answer:* You want to leave a 15% tip at a restaurant. If the bill came to \$75, what tip should you leave? $x = 11.25$; you should leave \$11.25 for a tip.

39. a. \$48

b. \$66.25

c. The bicycle in part (a); it will cost \$192, the bicycle in part (b) will cost \$198.75.

40. \$45.10

3.7 Mixed Review

41. 120 cm^2 **42.** 143 $in.^2$

43.

x	y
−5	−12
−2	−9
1	−6
4	−3

−12, −9, −6, −3

44.

x	y
−6	−2
−4	0
−2	2
0	4

−2, 0, 2, 4

45.

x	y
−1	−3
1	9
3	21
5	33

−3, 9, 21, 33

46.

x	y
−2	−15
−1	−10
0	−5
1	0

−15, −10, −5, 0

47. −92 **48.** −25 **49.** 45.5

50. 111.5 **51.** −91 **52.** 63

Answers for 3.8

For use with pages 187–190

3.8 Skill Practice

1. literal equation

2. Divide each side by pr to get $\frac{I}{pr} = t$.

3. $x = \frac{c}{b-a}$; -2

4. $x = \frac{c}{a} - b$; 3.5

5. $x = bc - a$; 9

6. $x = \frac{ab}{c}$; 3

7. $x = a(c - b)$; 28

8. $x = \frac{b+d}{c-a}$; 2

9. b should have been subtracted from both sides, not added; $ax = b$, $x = \frac{-b}{a}$.

10. Both sides should have been divided by $(a - b)$, not multiplied; $x = \frac{c}{a-b}$.

11. $y = 7 - 2x$ **12.** $y = \frac{5}{2} - \frac{5}{4}x$

13. $4 - 3x = y$ **14.** $y = -13 + 9x$

15. $2 + \frac{6}{7}x = y$ **16.** $y = x - \frac{5}{8}$

17. $\frac{9}{5}x - 6 = y$ **18.** $2 - \frac{3}{2}x = y$

19. $y = \frac{1}{2}x + \frac{1}{3}$ **20.** $w = \frac{V}{\ell h}$

21. $h = \frac{S - 2B}{P}$ **22.** $f = \frac{\ell}{24}$

23. C **24.** $y = 2.1x - 8.4$

25. $y = 18 - 5x$ **26.** $y = -\frac{1}{2}x + \frac{5}{2}$

27. $\ell = \frac{S}{\pi r} - r$; 13.03 cm

28. $p = \frac{A}{4\pi w}$; 8.01 ft

29. *Sample answer:* You want to find how long it will take to drive 150 miles if you drive at an average rate of 55 miles per hour.

30. $a = \frac{b+c}{bx-1}$ **31.** $a = \frac{by}{y-bx}$

3.8 Problem Solving

32. a. $n = \frac{d+2}{4}$

b. 1.75 in., 3.5 in., 4.5 in., 5.5 in.

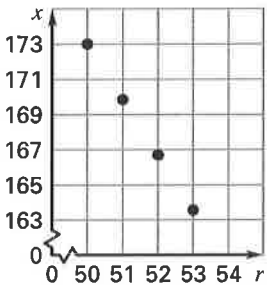
33. a. $x = \frac{C - 25}{12}$

b. 10 league nights;
13 league nights;
15 league nights

34. a. $x = \frac{P - 2\pi r}{2}$

b.

r	x
50	173
51	169.86
52	166.72
53	163.58

34. c. 

160.44 ft

35. Divide each side by the total bill, b, to get $\frac{a}{b} = p\%$.

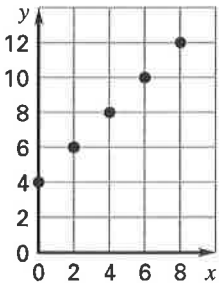
36. a. $r = \frac{C}{2\pi}$

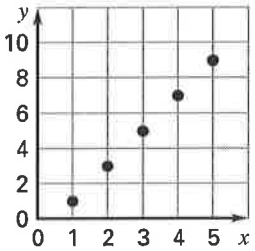
b. 1.1 ft; 1.3 ft; 1.4 ft

c. Solve for r using $\frac{C}{2\pi} = r$, then substitute r into the equation $A = \pi r^2$.

37. $g = \frac{11t}{4}$

3.8 Mixed Review

38. 

39. 

40. $6x + 9$ **41.** $-2x - 10$

42. $-15x + 25$ **43.** $14x + 12$

44. 80% **45.** 114

3.5–3.8 Mixed Review of Problem Solving

1. a. *Sample answer:* $\frac{7}{31} = \frac{x}{1209}$

b. 273 students

2. a. $\frac{5}{9}$

b. 120 females

3. \$70. *Sample answer:* Use the proportion $\frac{7}{154} = \frac{x}{700}$ to find that you will need about 35 gallons of gas. Multiply 35 by \$2 per gallon.

4. Solve $Q = \frac{3}{r}$ for r to ger $r = \frac{3}{Q}$; substitute $\frac{3}{Q}$ for r in the formula $d = 2r$ to get $d = \frac{6}{Q}$.

5. 140 attempts;

	1	4	0
⊘	⊘	⊘	
⊙	⊙	⊙	⊙
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

6. a. $12,480

b. $12,300

c. 0.6%; find that $1230 is 10% of $12,300, then find $1230 is what percent of $205,000.

7. Multiply each side by 2 and divide each side by d_2 to get $d_1 = \frac{2A}{d_2}$.

8. *Sample answer:* Increase the length, 16 feet by 4 feet.