

## Answers for 3.1

For use with pages 137–140

### 3.1 Skill Practice

1. inverse operations
2. Division property of equality; to solve  $14x = 35$ , you need to divide each side by 14.
3. 3      4.  $-7$       5. 5
6. 6      7.  $-3$       8.  $-8$
9. 7      10. 12      11. 17
12. 13      13. 4      14.  $-2$
15. C      16. A      17. 4
18.  $-13$       19. 6      20.  $-12$
21.  $-15$       22.  $-11$       23. 15
24. 28      25. 48      26.  $-49$
27. 22      28.  $-42$
29. 3.8 should have been subtracted from both sides;  $x + 3.8 - 3.8 = 2.3 - 3.8$ ,  $x = -1.5$ .
30. Both sides should have been multiplied by 3;  $3 \cdot \frac{x}{3} = 27 \cdot 3$ ,  $x = 81$ .
31. 3.5      32.  $-4.2$       33.  $-1.1$
34.  $-8.3$       35.  $-2.05$       36.  $-6$
37.  $\frac{5}{8}$       38.  $-11.5$       39. 0.06
40. 42      41. 96      42.  $-35$
43. 12      44. 35      45.  $-56$

46.  $\frac{1}{6}$       47.  $\frac{3}{5}$       48.  $-2$

49.  $54 = 12x$ ; 4.5 in.

50.  $72 = \frac{1}{2}(16)x$ ; 9 cm

51.  $-0.5$       52. 49

### 3.1 Problem Solving

53. 1046.6 ft      54. 2.5 mm

55. 11 ft      56. 245 lb

57. a.  $\frac{4}{7}x = 200$

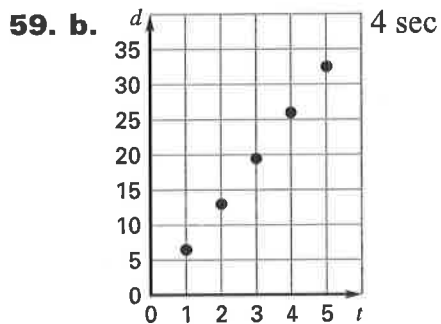
- b. Plants; if you solve the equation in part (a) you find there are 350 species of birds.

58. *Sample answer:* Each member of the drama club needs to sell tickets to the upcoming play. If there are 15 members and you want to sell 135 tickets, how many tickets should each member sell?  $x = 9$ ; each member should sell 9 tickets.

59. a.

$t$	$D$
1	6.5
2	13
3	19.5
4	26
5	32.5

**Answers for 3.1** *continued*  
 For use with pages 137–140



**c.**  $26 = 6.5t$ ; 4 sec

**60. a.**  $18 \text{ ft}^2$       **b.** 6 ft

**61. a.** 171 hits

**b.** 215 hits

**c.** No; if Mueller had less hits than Wells but had a higher batting average, he must have had less at bats than Wells.

**62.**  $47.5 \text{ ft}^2$       **63.** \$2.60

**3.1 Mixed Review**

**64.**  $k + 4$       **65.**  $8x$

**66.**  $\frac{40}{y}$       **67.**  $2w - 10$

**68.**  $y = x + 9$ ; range; 8, 9, 10, 11

**69.**  $y = 3x$ ; range:  $-12, -6, 0, 6$

**70.**  $6x$       **71.**  $x$

**72.** 12      **73.**  $4x + 6$

**74.**  $4.5x$       **75.**  $10.6x$

## Answers for 3.2

For use with pages 144–146

### 3.2 Skill Practice

- like terms
- First, subtract 7 from each side to get  $4x = 8$ , then divide each side by 4 to get  $x = 2$ .
- 4
- 3
- 2
- 8
- 3
- 1
- 6
- 20
- 40
- 12
- 18
- 21
- 4
- 6
- 9
- 6
- 4
- 2
- D
- Unlike terms were combined;  
 $-3x = 5, x = -\frac{5}{3}$
- The division of  $-2x + x$  by  $-2$  is done incorrectly. *Sample answer:* If like terms are combined as the first step, the second line would be  $-x = 10$  and the final result would be  $x = -10$ .
- $y = 3x + 7; -5$
- $y = 2x + 4; -7$
- $y = 10x - 9; 2$
- 4
- 8
- 5
- 10
- 0.5
- 1.5
- 15.9
- 3.5
- 6.9

- 1, 2, 3; 4; the output of each equation is increased by 3 because  $x$  is multiplied by 3, each solution increases by 1.

### 3.2 Problem Solving

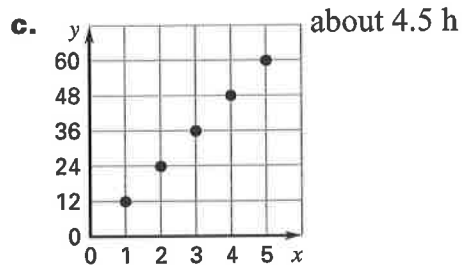
- 28 classes
- 1.5 h
- 5 half-side advertisements
- B
- Yes; the equation  $\$542 = \$50 + 6x$  gives the monthly cost of a guitar that costs \$542. Solving the equation gives  $x = \$82$  per month, so you can afford the guitar.
- $y = 2,896,112 + 1600x$
  - 1163 days
  - Sample answer:* Estimate the number of days to be about 1200;  
 $3,000,000 + 1600(1200) = 3,000,000 + 1,920,000 = 4,920,000$  so the solution makes sense.

**Answers for 3.2** *continued*  
 For use with pages 144–146

**43. a.**  $y = 12x$

**b.**

$x(h)$	Marissa	Ryan	Total
1	5	7	12
2	10	14	24
3	15	21	36
4	20	28	48
5	25	35	60



**44.** 5 days; the restaurant serves  $400 + 120 = 520$  customers each day, use the equation  $2600 = 520x$  to find  $x = 5$ .

**45.** 200 sec

**3.2 Mixed Review**

**46.** 8      **47.**  $-20$       **48.**  $-5$

**49.** 1      **50.**  $-9a^3$       **51.**  $48t$

**52.**  $18z + 8$

**53.**  $-15b + 24$

**54.**  $-10k + 35$

**55.**  $-7$       **56.** 3      **57.** 30

**58.**  $-8$       **59.** 40      **60.** 72

## Answers for 3.3

For use with pages 150–153

### 3.3 Skill Practice

1.  $\frac{5}{3}$
2. Use the distributive property to get  $12y - 21 = 6$ , then add 21 to each side to get  $12y = 27$ , divide each side by 12 to get  $y = 2.25$ .
3. 3      4. 3      5. 6
6. -5      7. -2      8. -5
9. -8      10. -7      11. -8
12. 2      13. 4      14. 3
15. -9      16. 5      17. -19
18. C
19. 12      20. 1      21. -2
22. 5      23. -9      24. 22
25. -3 times -6 is 18, not -18;  
 $5x - 3x + 18 = 2$ ,  $2x + 18 = 2$ ,  
 $2x = -16$ ,  $x = -8$ .
26. Multiply each side by 2, not  $\frac{1}{2}$ ;  
 $2x - 10 = 8$ ,  $2x = 18$ ,  $x = 9$ .
27. 2      28. 0.5      29. 3
30. 0.1      31. -5      32. 1.2
33. 2      34.  $5\frac{1}{3}$
35. 9.5 in., 6 in.; if you use the perimeter formula  $P = 2\ell + 2w$  and substitute  $3.5 + w$  for  $\ell$ , the solution is  $w = 6$ .

36. You should divide each side of the equation by the number outside the parentheses when the number is a factor of the number on the other side of the equal sign or it is a fraction.

a. 12      b. 2.5

37. 16, 18, 20

### 3.3 Problem Solving

38. 6 tickets

39. 0.75 ft

40. 8 min

41. a. 34 months

b. 307 ft per month

c. After the work crews merged; before the work crews merged they were working at a rate of  $117 + 137 = 254$  feet per month, and after merging at a rate of 307 feet per month.

42. a.  $y = 74.5x + 750$ ; 21 squares

b.

Squares	Cost (dollars)
5	1122.50
10	1495
15	1867.50
20	2240
25	2612.50

43. 6 quarters and 13 dimes

## Answers for 3.3 *continued*

For use with pages 150–153

### 3.3 Mixed Review

- |                  |                 |                 |
|------------------|-----------------|-----------------|
| <b>44.</b> $-9$  | <b>45.</b> $1$  | <b>46.</b> $0$  |
| <b>47.</b> $9$   | <b>48.</b> $5$  | <b>49.</b> $-9$ |
| <b>50.</b> $-3$  | <b>51.</b> $-8$ | <b>52.</b> $15$ |
| <b>53.</b> $-35$ | <b>54.</b> $3$  | <b>55.</b> $-4$ |
| <b>56.</b> $35$  |                 |                 |

## Answers for 3.4

For use with pages 157–161

### 3.4 Skill Practice

- identity
- A number plus 3 can't be equal to itself plus 1. If you solve the equation, you get  $0 = 2$ .
- 2      4. 1      5. -4
6. 3      7. -7      8. -6
9. 8      10. 3      11. -4
12. 5      13. -3      14. 7
15. C      16. D
- Sample answer:* Distribute the 3 to get  $6z - 15 = 2z + 13$ , then subtract  $2z$  from each side to get  $4z - 15 = 13$ , next add 15 to each side to get  $4z = 28$ , finally divide each side by 4 to get  $z = 7$ .
- no solution      19. 2
- no solution      21. -7
- 33      23. no solution
- identity      25. no solution
- identity
- The 3 was not distributed to both terms;  $3x + 15 = 3x + 15$ ,  $15 = 15$ , so the equation is an identity.

- When the equation is  $0 = 0$ , it means that it is true for all values of  $y$ , not just 0; the solution is an identity.
  - Sample answer:*  $5x + 4 = 5x$ ; the number  $5x$  cannot be equal to 4 more than itself.
  - $-\frac{1}{2}$       31. 2
  - no solution      33. -4
  - 10      35. 6      36. 6
  - identity      38. 3
  - 2      40. -24      41. 10
  - 4      43. identity
  - $28x - 20$       45.  $16x + 12$
  - $14x + 10$       47. 4
  - 5
- ### 3.4 Problem Solving
- 9 nights
  - 4 months
  - about 4 yr

**Answers for 3.4** *continued*  
For use with pages 157–161

**52. a.**  $360 + 4x = 16x$ ; 30 visits

**b.**

Visits	Members' cost (dollars)	Non-members' cost (dollars)
5	380	80
10	400	160
15	420	240
20	440	320
25	460	400
30	480	480
35	500	560

**53. a.**  $23.4t = 24(t - 0.3)$ ; 12 sec

**b.** about 4.4 sec

**c.** No; it would take 12 seconds for the sheepdog to catch up to the collie and it only takes 4.4 seconds for the collie to complete the last leg.

**54.** 20, 8

**55.** 11, 5

**3.4 Mixed Review**

**56.**  $\frac{1}{3}$                       **57.**  $\frac{5}{6}$

**58.**  $\frac{2}{7}$                       **59.**  $\frac{3}{8}$

**60.** 18                      **61.** 36

**62.** -44                      **63.** -108

**64.** 264 rushing yards

**3.1–3.4 Mixed Review of Problem Solving**

**1. a.**  $C = 0.25 + 0.07(t - 1)$

**b.** 26 min

**2.** 13 lb;

		1	3
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	0	0	0
①	①	<input checked="" type="checkbox"/>	①
②	②	②	②
③	③	③	<input checked="" type="checkbox"/>
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨

**3. a.** 4 games

**b.** 3 games

**c.** Yes; if Paul bowls only 3 games, he will have \$3.75 left over.

**4.** 4;

			4
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	0	0	0
①	①	①	①
②	②	②	②
③	③	③	③
④	④	④	<input checked="" type="checkbox"/>
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨



**Answers for 3.4** *continued*  
For use with pages 157–161

5. 30 min; if you make 40 cranes in an hour, it will take 2.5 hours to make 100 cranes, so you spent 30 minutes not making cranes.
6. 4 visits; use an equation to find when the cost of skiing with a pass is the same as skiing without a pass. Solve  $90 + 22.50x = 45x$  to find that  $x = 4$ .
7. 9677 ft; if you add 1313 feet to the current elevation, you will get the elevation before the eruption.
8. a. 40 daffodil bulbs  
b. 9 in.  
c. 20 daffodil bulbs. *Sample answer:* If she plants bulbs 6 inches apart she will need  $360 \text{ inches} \div 6 \text{ inches} = 60$ , so she needs  $60 - 40 = 20$  more bulbs.
9. *Sample answer:* You want to buy a video game for \$47, if you have \$15 and plan on saving money from a paper route each week for 4 weeks, how much money should you save each week?  $x = 8$ ; you need to save \$8 each week for 4 weeks to have enough money to buy the video game.