

Answers for 1.4

For use with pages 30–33

1.4 Skill Practice

1. formula
2. Rewrite an equation as an equivalent equation in which the variable is on one side and does not appear on the other side.
3. $l = \frac{A}{w}$; 5 mm
4. $b = \frac{2A}{h}$; 8 in.
5. $h = \frac{2A}{b_1 + b_2}$; 6 cm
6. A
7. $y = 26 - 3x$; 5
8. $y = -\frac{1}{4}x + 6$; 4
9. $y = -\frac{6}{5}x + \frac{31}{5}$; 11
10. $y = -\frac{15}{4}x + \frac{9}{4}$; $13\frac{1}{2}$
11. $y = \frac{3}{2}x - \frac{21}{2}$; -3
12. $y = \frac{5}{9}x - \frac{14}{3}$; $-1\frac{1}{3}$
13. $y = \frac{7}{4}x - \frac{11}{4}$; 6
14. $y = \frac{4}{9}x - \frac{10}{3}$; $\frac{2}{9}$
15. C
16. All of the terms need to be divided by 5; $5y = 7x + 2$,
 $y = \frac{7}{5}x + \frac{2}{5}$.
17. The variable y should only appear on one side of the equation, not both; $4y - xy = 9$, $y(4 - x) = 9$,
 $y = \frac{9}{4 - x}$.
18. $r = \frac{A}{2\pi w}$; about 4.77 ft
19. $h = \frac{S}{\pi r} - k$; about 4.96 cm
20. $c = \frac{3V}{4\pi ab}$; about 1.19 in.
21. $y = \frac{40 + 3x}{x}$; 11
22. $y = \frac{7x + 18}{x}$; $2\frac{1}{2}$
23. $y = \frac{16x + 28}{3x}$; $7\frac{2}{3}$
24. $y = \frac{30}{6x + 9}$; $-1\frac{1}{9}$
25. $y = \frac{15}{1 - 2x}$; 5
26. $y = -\frac{4x}{7 + 5x}$; $-\frac{1}{3}$
27. Method 1: $y = \frac{5}{3}x - 3$,
 $y = \frac{5}{3} \cdot 2 - 3$, $y = \frac{1}{3}$
Method 2: $15 \cdot 2 - 9y = 27$,
 $30 - 9y = 27$, $-9y = -3$, $y = \frac{1}{3}$
Sample answer: Method 1 is more efficient because it is already solved for y .

Answers for 1.4 *continued*

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$$28. y = \frac{x}{x-1} \quad 29. z = \frac{x+y}{xy-1}$$

$$30. y = \frac{x}{x-1} \quad 31. z = \frac{xy}{xy-y-x}$$

$$32. A = \frac{C^2}{4\pi}$$

1.4 Problem Solving

$$33. d = \frac{C}{\pi}; \text{ about 36 in.}$$

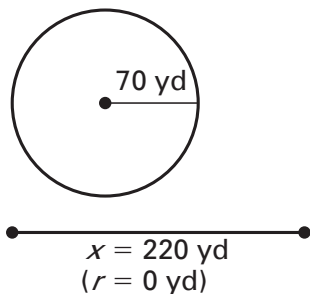
$$34. s = \frac{d}{\sqrt{3}}; \text{ about 8.7 in.}$$

$$35. C = \frac{5}{9}(F - 32); 10^\circ\text{C}$$

$$36. \text{ a. } r = \frac{P - 2x}{2\pi}$$

b. about 46.2 yd, about 38.2 yd,
about 31.8 yd, about 22.3 yd

c. About 70 yd, 0 yd; the greatest value of r occurs when $x = 0$, and the least value is 0 because x must be nonnegative.



$$37. R = 80c + 150d; d = \frac{R - 80c}{150};$$

80 designer tuxedos; 160 designer tuxedos; 240 designer tuxedos

$$38. \text{ a. } R = \frac{V}{2\pi^2 r^2}$$

b. Sample answer:

$$r = 1.5, R = 2.25;$$

$$r = 1.15, R = 3.83$$

$$r = 0.849, R = 7.03$$

$$39. V = \frac{\ell^2 w}{4\pi}; V = \frac{w^2 \ell}{4\pi}$$

1.4 Mixed Review

$$40. 250 + x \quad 41. 12.99x$$

$$42. -10 \quad 43. 12$$

$$44. 8 \quad 45. -4900$$

$$46. 77 \quad 47. -8$$

$$48. -3 \quad 49. 15$$

$$50. 5 \quad 51. 1$$

$$52. 6 \quad 53. 12$$

1.1–1.4 Mixed Review of Problem Solving

1. a. cost per hour \cdot number of hours + annual fee; $8.5h + 50$

b. \$220

2. a. $10x + 15 = 50$

b. 3.5; you have enough money to be admitted to 3 special exhibits.

Answers for 1.4 *continued*
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- 3.** Dave Andreychuk, Tim Taylor, Cory Sarich, Ruslan Fedotenko, Vincent Lecavalier, Martin St. Louis; Martin St. Louis; the team scored the most goals as compared to their opponents when Martin St. Louis was on the ice.
- 4.** $1.8b + c = 45$; 16 lb; since you want equal amounts of each, use the same variable for both amounts and solve the equation.
 $1.8x + x = 45$, $2.8x = 45$, $x \approx 16$.

5. 4.8 h;

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- 6.** *Sample answer:* You have \$78 to spend and would like to buy a variety of hats that cost \$10 each and shirts that cost \$29 each. Write an equation to model this situation.

- 7. a.** $3,577,600 - x$;
 $20(3,577,600 - x)$
- b.** $10x + 20(3,577,600 - x)$
 $= 66,368,000$; 518,400
 \$10 bills and 3,059,200
 \$20 bills
- c.** *Sample answer:* The total value of the \$20 bills was nearly 12 times the total value of the \$10 bills.
- 8.** $E = 20l + 7.5h$. *Sample answer:* Mow 15 lawns and work 0 hours, mow 12 lawns and work 8 hours, or mow 9 lawns and work 16 hours

9. 82 ft;

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10. 13.2 cm;

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