Chapter 1 Supplementary Problems

Write *true* or *false* for each statement.

1. $6 + 3 = 18$

2. $2 \cdot 6 = 12$

3. $\frac{40}{8} = 32$

4. $25 - 13 = 38$

5. $21 \div 3 = 7$

Classify each expression, name the operation, and identify any variables.

6. $20 + 4$

7. $8y$

8. $2d - 14$

9. $n \div 3$

10. $4 \cdot 6$

Find the absolute value.

11. $|5|$

12. $|-22|$

13. $|+18|$

14. $|-16|$

15. $|25|$

Find each sum.

16. $-8 + 15$

17. $9 + 12$

18. $-5 + (-11)$

19. $3 + (-10)$

20. $-4 + 7$

Find each difference.

21. $5 - (-6)$

22. $7 - 9$

23. $-3 - 4$

24. $-2 - (-8)$

25. $+10 - 1$

Find each product.

26. $(7)(4)$

27. $(6)(-5)$

28. $(-3)(-9)$

29. $(11)(-3)$

30. $(-12)(2)$

Find each quotient.

31. $36 \div (-6)$

32. $-72 \div (-9)$

33. $27 \div 3$

34. $-80 \div 10$

35. $-49 \div (-7)$

Simplify each expression.

36. $3n + n$

37. $4v - 14 + 12v$

38. $-5x + 3 + 10x$

39. $b + 4b - 8$

40. $6g + (-8g) - 18$

Combine like terms to simplify each expression.

41. $2y + 3y + 4 + 6c$

42. $7r - 4f + 8 + 6r - 3f$

43. $t + 4t - 9 + 2b - 4b$

44. $3x + (-5b) + (-2x) + 15 + 5b$

45. $6 + d - 8s - 4d + 5$

Simplify each expression.

46. $a^5 \cdot a^4$

47. $c^7 \cdot c \cdot c^3$

48. $m^{10} \div m^5$

49. $z^9 \cdot z \cdot z^5 \cdot z^3$

50. $\frac{y^{15}}{y^2}$

Solve each problem using a formula.

51. Perimeter formula for a square: $P = 4s$. Find the perimeter, when $s = 12$ cm.

52. Perimeter formula for a regular nonagon: $P = 9s$. Find the perimeter, when $s = 13$ m.

53. Perimeter formula for a regular decagon: $P = 10s$. What is the length of each side, when the perimeter is 120 km?

54. Perimeter formula for an equilateral triangle: $P = 3s$. What is the length of each side, when the perimeter is 72 dm?

55. Perimeter formula for a triangle: $P = a + b + c$. What is the length of side b, when the perimeter is 132 mm, $a = 38$ mm, and $c = 59$ mm?

Chapter 2 Supplementary Problems

Find each sum using expanded notation.

1. $6y + 9y$

2. $15a - 2a$

3. $x + 4x$

4. $13n + 21n$

5. $7j + 7j$

Rewrite each expression showing the commutative property of multiplication.

6. mq

7. $(2s)(5c)$

8. $3(6t)$

9. $(7k)(10e)$

10. $(12v)(i)$

Rewrite each expression showing the associative property of addition.

11. $(5 + 4z) + 3$

12. $(3d + f) + 7$

13. $25g + (2w + 14)$

14. $(8 + r) + k$

15. $6b + (9c + 11e)$

Copy the problems. Find the products by multiplying the factors in parentheses first.

16. $(4 \cdot 25)3 = 4(25 \cdot 3)$

17. $40(2 \cdot 5) = (40 \cdot 2)5$

18. $(9 \cdot 2)50 = 9(2 \cdot 50)$

19. $6\,(2 \cdot 10) = (6 \cdot 2)10$

20. $5(5 \cdot 4) = (5 \cdot 5)4$

Use the distributive property to simplify each expression.

21. $3(x - j)$

22. $4(7w + -5)$

23. $-6(2 + z)$

24. $8(-f + -g)$

25. $-2(-k + 4)$

Use the distributive property to factor each expression.

26. $15m + 5y$

27. $-9n - 7n$

28. $mc - mh$

29. $qy^4 + qs^2$

30. $-wr - wh^3$

Copy and fill in the missing number or letter.

31. $6 + \blacksquare = 0$

32. $9 - \blacksquare = 0$

33. $-c^3 + \blacksquare = 0$

34. $u + \blacksquare = 0$

35. $-2 + \blacksquare = 0$

What is the reciprocal of each term? Check by multiplying.

36. 4

37. $\frac{1}{p}$

38. m^5

39. $\frac{1}{h}$

40. 15

Use your calculator to find the square root of each term.

41. $\sqrt{5.0625}$

42. $\sqrt{985.96}$

43. $\sqrt{335.9889}$

44. $\sqrt{320.41}$

45. $\sqrt{27.3529}$

Use your calculator to simplify each term.

46. $(3u)^4$

47. $(-5y)^3$

48. $(2a)^6$

49. $(-16d)^2$

50. $(-11n)^3$

Use the order of operations to simplify.

51. $4x + 3x(4)$

52. $3h(4 + 7) - 6h$

53. $10s - s(4) + 7s$

54. $g^3 + 6(g^3 + 2g^3)$

55. $5m^2 + (3m)(2m)$

Chapter 3 Supplementary Problems

Find the root of each equation by writing T (true) or F (false) for each value.

1. $5p = 25$ $\quad p = 4, 5, 8, 20$

2. $7n = 42$ $\quad n = 6, 10, 25, 42$

3. $3x = 12$ $\quad x = 1, 3, 4, 9$

4. $8k = 40$ $\quad k = 2, 3, 4, 5$

5. $6y = 18$ $\quad y = 2, 3, 12, 18$

Find the solution for each equation.

6. $a - 3 = 15$

7. $p - 20 = 39$

8. $w - (-6) = 5$

9. $f - 13 = 20$

10. $n - (-8) = 6$

11. $g + 15 = 23$

12. $y + 2.4 = 8$

13. $u + (-6) = 17$

14. $c + 16.9 = 29.7$

15. $t + (-13) = 42$

16. $5h = 35$

17. $2q = 48$

18. $-8.6v = 77.4$

19. $-19.3i = -115.8$

20. $7.6d = 60.8$

21. $\frac{3}{4}j = 6$

22. $\frac{8}{9}j = 16$

23. $-\frac{2}{5}c = -10$

24. $\frac{7}{16}m = -21$

25. $\frac{1}{8}b = 2$

26. $3f - 2 = 13$

27. $2y - 10 = 14$

28. $\frac{5}{7}r + (-6) = 29$

29. $8t + 0 = 0$

30. $\frac{2}{3}m - (-4) = 8$

31. $P = 5s$ for s

32. $V = lwh$ for l

33. $C = 2\pi r$ for r

34. $s = \frac{P}{10}$ for P

35. $A = \frac{1}{2}(bh)$ for h

Use the Pythagorean theorem to solve each problem.

36. $a = 6, b = \blacksquare, c = 10$

37. $a = 15, b = 20, c = \blacksquare$

38. $a = \blacksquare, b = 40, c = 50$

39. $a = 18, b = \blacksquare, c = 30$

40. $a = \blacksquare, b = 28, c = 35$

Graph each of the equalities or inequalities on a number line.

41. $x > 0$

42. $x \leq 2$

43. $-2 \leq x \leq 2$

44. $x \geq -4$

45. $x \neq 1$

Solve each inequality.

46. $b + 3 < 6$

47. $\frac{3}{5}e \geq 9$

48. $t + (-9) > -3$

49. $-4m < 16$

50. $-\frac{1}{5}g \leq 3$

Chapter 4 Supplementary Problems

Write an equation and solve each question.

1. Five times a number decreased by 4 is 26. What is the number?
2. The sum of two consecutive integers is –21. What are the integers?
3. The sum of three consecutive odd integers is 51. What are the integers?
4. Sixty subtracted from eight times some number is 4. What is the number?

Use the 1% solution to solve each problem.

5. Aaron earns $3,000 a month. He invests $45 a month in a mutual fund. What percent of his income is invested in a mutual fund?
6. Sarah wants to buy a CD player that costs $300. She has already saved $231. What percent of the total has she saved?
7. Juan has an annual income of $42,000. He saves 4% of his income. How much does he save?
8. Linda has 24 classical music CDs in her collection. 12% of her CDs are classical music. How many CDs does she have in her collection?

Find the percent of each number.

9. 26% of 88
10. 37% of 950
11. 64% of 25
12. 81% of 515

Solve each problem using kilometers or miles.

13. Michelle rides her bike for $3\frac{1}{3}$ hours at a speed of $15\frac{1}{2}$ kilometers per hour. How far does she travel?
14. DeNorris drives $162\frac{1}{2}$ miles in $2\frac{1}{2}$ hours. What is his average speed?
15. Maria and Patty jog for $1\frac{3}{4}$ hours at a rate of 18 kilometers per hour. How many kilometers do they jog?
16. Eliza and Mike walk at a rate of 4 miles per hour for $1\frac{1}{2}$ hours and 6 miles per hour for $\frac{1}{2}$ hour. What is their average speed?

Use your calculator to tell how many nickels and dimes are in each problem.

17. $1.75, three times more dimes than nickels

18. $3.00, three times more nickels than dimes

19. $11.25, four times more dimes than nickels

20. $1.20, six times more nickels than dimes

Find the interest, principal, or rate of interest. ($I = prt$)

21.	Principal: $2,500	Rate: 6%	Time: 2 years	Interest: ■
22.	Principal: ■	Rate: 8%	Time: 4 years	Interest: $200
23.	Principal: $900	Rate: ■	Time: 3 years	Interest: $135
24.	Principal: $800	Rate: 13%	Time: 5 years	Interest: ■

Solve each problem.

25. Cashews cost $3 per pound and peanuts cost $2.50 a pound. Three pounds of cashews and three pounds of peanuts are mixed. What is the cost for one pound of the mixture?

26. Walnuts cost $6 per pound and peanuts cost $3.50 a pound. Four pounds of walnuts and three pounds of peanuts are mixed. What is the cost for one pound of the mixture?

27. A mixture of peanuts and walnuts sells for $3.00 per pound. How many pounds of peanuts at $1.50 per pound should be mixed with 12 pounds of walnuts at $4.00 per pound?

28. The price for one pound of a mixture of cashews and walnuts is $5.75. The total cost of the mixture is $34.50. What is the total number of pounds in the mixture?

Find the missing term in each proportion

29. $\frac{3}{x} = \frac{18}{24}$

30. $\frac{6}{9} = \frac{14}{y}$

31. $\frac{m}{8} = \frac{20}{32}$

32. $\frac{4}{7} = \frac{32}{w}$

33. $\frac{z}{20} = \frac{6}{12}$

34. $\frac{12}{c} = \frac{24}{64}$

35. $\frac{6}{18} = \frac{b}{36}$