

15.  $3(x + 5y)$

16.  $a - \frac{a}{2}$

17.  $\left(\frac{2}{z}\right)^2$

18.  $(2q - p)^3$

**<2> Translating Algebraic Expressions**

Use the term *sum*, *difference*, *product*, *quotient*, *square*, or *cube* to translate each algebraic expression into a verbal expression. See Example 2.

19.  $x^2 - a^2$

20.  $a^3 + b^3$

21.  $(x - a)^2$

22.  $(a + b)^3$

23.  $\frac{x - 4}{2}$

24.  $2(x - 3)$

25.  $\frac{x}{2} - 4$

26.  $2x - 3$

27.  $(ab)^3$

28.  $a^3b^3$

Translate each verbal expression into an algebraic expression. Do not simplify. See Example 3.

29. The sum of 8 and  $y$ 30. The sum of  $8x$  and  $3y$ 31. The product of  $5x$  and  $z$ 32. The product of  $x + 9$  and  $x + 12$ 33. The difference of 8 and  $7x$ 34. The difference of  $a^3$  and  $b^3$ 35. The quotient of 6 and  $x + 4$ 36. The quotient of  $x - 7$  and  $7 - x$ 37. The square of  $a + b$ 38. The cube of  $x - y$ 39. The sum of the cube of  $x$  and the square of  $y$ 40. The quotient of the square of  $a$  and the cube of  $b$ 41. The product of 5 and the square of  $m$ 42. The difference of the square of  $m$  and the square of  $n$ 43. The square of the sum of  $s$  and  $t$ 44. The cube of the difference of  $a$  and  $b$ **<3> Evaluating Algebraic Expressions**

Evaluate each expression using  $a = -1$ ,  $b = 2$ , and  $c = -3$ . See Example 4.

45.  $-(a - b)$

46.  $b - a$

47.  $-b^2 + 7$

48.  $-c^2 - b^2$

49.  $c^2 - 2c + 1$

50.  $b^2 - 2b + 4$

51.  $a^3 - b^3$

52.  $b^3 - c^3$

53.  $(a - b)(a + b)$

54.  $(a - c)(a + c)$



55.  $b^2 - 4ac$

56.  $a^2 - 4bc$

57.  $\frac{a - c}{a - b}$

58.  $\frac{b - c}{b + a}$

59.  $\frac{2}{a} + \frac{6}{b} - \frac{9}{c}$

60.  $\frac{c}{a} + \frac{6}{b} - \frac{b}{a}$

61.  $a \div |-a|$

62.  $|a| \div a$

63.  $|b| - |a|$

64.  $|c| + |b|$

65.  $-|-a - c|$

66.  $-|-a - b|$

67.  $(3 - |a - b|)^2$

68.  $(|b + c| - 2)^3$

**<4> Equations**

Determine whether the given number is a solution to the equation following it. See Example 5.

69.  $2, 3x + 7 = 13$



70.  $-1, -3x + 7 = 10$

71.  $-2, \frac{3x - 4}{2} = 5$

72.  $-3, \frac{-2x + 9}{3} = 5$

73.  $-2, -x + 4 = 6$

74.  $-9, -x + 3 = 12$

75.  $4, 3x - 7 = x + 1$



76.  $5, 3x - 7 = 2x + 1$

77.  $3, -2(x - 1) = 2 - 2x$

78.  $-8, x - 9 = -(9 - x)$

79.  $8, \frac{x}{x - 8} = 0$

80.  $3, \frac{x - 3}{x + 3} = 0$

81.  $-6, \frac{x + 6}{x + 6} = 1$

82.  $9, \frac{9}{x - 9} = 0$

Translate each sentence into an equation. See Example 6.

83. The sum of  $5x$  and  $3x$  is  $8x$ .84. The sum of  $\frac{y}{2}$  and 3 is 7.85. The product of 3 and  $x + 2$  is equal to 12.86. The product of  $-6$  and  $7y$  is equal to 13.