56. \( \frac{52(V - v)}{\pi} ; \quad V = 38.3, \quad v = -6.7, \quad \text{and} \quad g = 9.8 \)

57. \( ar^{n+1} ; \quad a = 2.14, \quad r = 3.7, \quad \text{and} \quad n = 4 \)

58. \( ar^{n-1} ; \quad a = -8.0, \quad r = 0.35, \quad \text{and} \quad n = 6 \)

59. \( \frac{a - ar^n}{1 - r} ; \quad a = 42.98, \quad r = 0.26, \quad \text{and} \quad n = 3 \)

60. \( \frac{a - ar^n}{1 - r} ; \quad a = 6.3, \quad r = -0.85, \quad \text{and} \quad n = 6 \)

Evaluate the following expressions for the volumes and surface areas of some common solids. Use the approximation 3.14 for \( \pi \).

61. a. Volume of a sphere: \( \frac{4}{3} \pi r^3 \), for \( r = 1.2 \) meters
   b. Surface area of a sphere: \( 4\pi r^2 \), for \( r = 0.7 \) centimeters

62. a. Volume of a rectangular prism (or box): \( lwb \), for \( l = 12.3 \) inches, \( w = 4 \) inches, and \( b = 7.3 \) inches
   b. Surface area of a box: \( 2lw + 2lh + 2wb \), for \( l = 6.2 \) feet, \( w = 5.8 \) feet, and \( b = 2.6 \) feet

63. a. Volume of a right circular cylinder: \( \pi r^2h \), for \( r = 6 \) meters and \( h = 23.7 \) meters
   b. Surface area of a right circular cylinder: \( 2\pi r^2 + 2\pi rh \), for \( r = 13.3 \) inches and \( h = 4.5 \) inches

64. a. Volume of a right circular cone: \( \frac{1}{3} \pi r^2h \), for \( r = 4.6 \) feet and \( h = 8.1 \) feet
   b. Surface area of a right circular cone: \( \pi r^2 + \pi rs \), for \( r = 16 \) centimeters and \( s = 42 \) centimeters

For Problems 65–70 see Example 7.

65. The perimeter of a rectangle is given by twice its length plus twice its width.
   a. Choose variables to represent the length and width of a rectangle. Write an algebraic expression for its perimeter.
   b. Determine the perimeter of a rectangle of length 16 centimeters and width 12 centimeters.

66. The area of a trapezoid is given by the product of half its height times the sum of its bases.
   a. Choose variables to represent the height of a trapezoid and each of its bases. Write an algebraic expression for the area of the trapezoid.
   b. Determine the area of a trapezoid with bases of 10 and 12 centimeters and height of 14 centimeters.

67. The pressure exerted by a gas is given by a constant \( k \) times the temperature of the gas, divided by the volume it occupies.
   a. Choose variables to represent the temperature and volume of a gas. Write an algebraic expression for the pressure it exerts.
   b. Determine the pressure in pounds per square inch exerted by 700 cubic inches of a gas at 400° Kelvin if the value of the gas constant is 20.