

56. $\frac{32(V - v)^2}{g}$; $V = 38.3$, $v = -6.7$, and $g = 9.8$
57. ar^{n-1} ; $a = 2.14$, $r = 3.7$, and $n = 4$
58. ar^{n-1} ; $a = -8.0$, $r = 0.35$, and $n = 6$
59. $\frac{a - ar^n}{1 - r}$; $a = 42.98$, $r = 0.26$, and $n = 3$
60. $\frac{a - ar^n}{1 - r}$; $a = 6.3$, $r = -0.85$, and $n = 6$

■ Evaluate the following expressions for the volumes and surface areas of some common solids. Use the approximation 3.14 for π .

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): lwh , for $l = 12.3$ inches, $w = 4$ inches, and $h = 7.3$ inches
 b. Surface area of a box: $2lw + 2lh + 2wh$, for $l = 6.2$ feet, $w = 5.8$ feet, and $h = 2.6$ feet
63. a. Volume of a right circular cylinder: $\pi r^2 h$, for $r = 6$ meters and $h = 23.2$ meters
 b. Surface area of a right circular cylinder: $2\pi r^2 + 2\pi r h$, for $r = 15.3$ inches and $h = 4.5$ inches
64. a. Volume of a right circular cone: $\frac{1}{3}\pi r^2 h$, for $r = 4.6$ feet and $h = 8.1$ feet
 b. Surface area of a right circular cone: $\pi r^2 + \pi r s$, 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. *2l + 2w*
- 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 200 cubic inches of a gas at 400° Kelvin if the value of the gas constant is 20.