■ a. *Estimate the result of each computation using scientific notation.*
   b. *Compute with the aid of a calculator. See Example 12.*

89. $\dfrac{0.6 \times 0.00082 \times 0.091}{0.00019 \times 0.00028}$

90. $\dfrac{0.0054 \times 0.05 \times 300}{0.0016 \times 0.27 \times 8200}$

91. $\dfrac{4,200,000 \times 0.0017 \times 61,000}{0.0028 \times 12,000,000 \times 23}$

92. $\dfrac{0.004 \times 27,000 \times 620,000}{2700 \times 0.0001 \times 0.009}$

93. The speed of light is approximately 300,000,000 meters per second.

   a. Express this number in scientific notation.
   b. Express the speed of light in inches per second (1 inch equals 2.54 centimeters, and 1 meter equals 100 centimeters).

94. In 1985 the public debt of the United States was $1,823,103,000,000.

   a. Express this number in scientific notation.
   b. If the population of the United States in 1985 was 238,631,000, what was the per capita debt for that year?

95. One light-year is the number of miles traveled by light in 1 year (365 days), and the speed of light is approximately 186,000 miles per second.

   a. Express in scientific notation the number of miles in 1 light-year.
   b. The star nearest to the sun is Proxima Centauri, at a distance of 4.3 light-years. How long would it take the *Pioneer 10* (the first space vehicle to achieve escape velocity from the solar system), traveling at 32,114 miles per hour, to reach Proxima Centauri?

96. Lake Superior has an area of 31,700 square miles and an average depth of 483 feet.

   a. Find the approximate volume of Lake Superior in cubic feet.
   b. If 1 cubic foot of water is equivalent to 7.48 gallons, how many gallons of water are in Lake Superior?

97. On November 6, 1923 the circulation of Reichsbank marks in Germany was 400,338,326,350,700,000,000.

   a. Express this number in scientific notation.
   b. Assume that each note is approximately 15 square inches in area. How large an area, in square feet, would that many one-mark notes cover?
   c. The total surface area of the earth is 196,937,400 square miles. How many times could you paper the earth with that many one-mark notes?

98. The mass of the earth is 6,585,600,000,000,000,000,000 tons, and its volume is 259,875,300,000 cubic miles.

   a. Express these numbers in scientific notation.
   b. Find the average density of the earth in tons per cubic mile. (Density is defined to be mass per unit volume.)
   c. Find the density of the earth in pounds per cubic foot.