

# CHAPTER REVIEW

For more practice, go to the Problem Bank in Appendix D.

## Scientific Method

### SECTION 1 REVIEW

1. How does quantitative information differ from qualitative information?
2. What is a hypothesis?
3. a. What is a model in the scientific sense?  
b. How does a model differ from a theory?

## Units of Measurement

### SECTION 2 REVIEW

4. Why is it important for a measurement system to have an international standard?
5. How does a quantity differ from a unit? Use two examples to explain the difference.
6. List the seven SI base units and the quantities they represent.
7. What is the numerical equivalent of each of the following SI prefixes?
  - a. kilo-
  - b. centi-
  - c. mega-
  - d. micro-
  - e. milli-
8. Identify the SI unit that would be most appropriate for expressing the length of the following.
  - a. width of a gymnasium
  - b. length of a finger
  - c. distance between your town and the closest border of the next state
  - d. length of a bacterial cell
9. Identify the SI unit that would be most appropriate for measuring the mass of each of the following objects.
  - a. table
  - b. coin
  - c. a 250 mL beaker
10. Explain why the second is not defined by the length of the day.
11. a. What is a derived unit?  
b. What is the SI-derived unit for area?
12. a. List two SI-derived units for volume.  
b. List two non-SI units for volume, and explain how they relate to the cubic centimeter.

13. a. Why are the units used that are to express the densities of gases different from those used to express the densities of solids or liquids?  
b. Name two units for density.  
c. Why is the temperature at which density is measured usually specified?
14. a. Which of the solids listed in **Table 4** will float on water?  
b. Which of the liquids will sink in milk?
15. a. Define *conversion factor*.  
b. Explain how conversion factors are used.

### PRACTICE PROBLEMS

16. What is the volume, in cubic meters, of a rectangular solid that is 0.25 m long, 6.1 m wide, and 4.9 m high?
17. Find the density of a material, given that a 5.03 g sample occupies 3.24 mL. (Hint: See Sample Problem A.)
18. What is the mass of a sample of material that has a volume of 55.1 cm<sup>3</sup> and a density of 6.72 g/cm<sup>3</sup>?
19. A sample of a substance that has a density of 0.824 g/mL has a mass of 0.451 g. Calculate the volume of the sample.
20. How many grams are in 882 µg? (Hint: See Sample Problem B.)
21. Calculate the number of milliliters in 0.603 L.
22. The density of gold is 19.3 g/cm<sup>3</sup>.
  - a. What is the volume, in cubic centimeters, of a sample of gold that has a mass of 0.715 kg?
  - b. If this sample of gold is a cube, what is the length of each edge in centimeters?
23. a. Find the number of kilometers in 92.25 m.  
b. Convert the answer in kilometers to centimeters.

## Using Scientific Measurements

### SECTION 3 REVIEW

24. Compare accuracy and precision.
25. a. Write the equation that is used to calculate percentage error.