

## TEST A

**4** Matter (Test Review)**A. Multiple Choice**

Select the word, number, or phrase that best completes each statement and write its letter in the answer space at the left.

- \_\_\_\_\_ 1. The properties of a substance that relate to its ability to form new substances are labeled
- a. intensive.
  - b. extensive.
  - c. chemical.
  - d. physical.
- \_\_\_\_\_ 2. The percentage of oxygen by mass in water is
- a. greatest when water is a solid.
  - b. greatest when water is a liquid.
  - c. greatest when water is a vapor.
  - d. the same in all phases.
- \_\_\_\_\_ 3. Generally, when a solid substance is heated its volume increases. The effect of increased temperature on the density of the substance then is
- a. to leave the density unchanged.
  - b. to increase the density.
  - c. to decrease the density.
  - d. impossible to predict.
- \_\_\_\_\_ 4. The ratio of the mass of a sample of matter to its volume is its
- a. buoyancy.
  - b. weight.
  - c. density.
  - d. specific gravity.
- \_\_\_\_\_ 5. All of the following are examples of extensive properties except
- a. temperature.
  - b. volume.
  - c. weight.
  - d. mass.
- \_\_\_\_\_ 6. Properties used to identify substances are usually those that are
- a. associated with the general properties of all matter.
  - b. dependent on the amount of the substance.
  - c. independent of the state of matter of the substance.
  - d. recognized by direct observation.
- \_\_\_\_\_ 7. Which of the following groups would include more than one substance?
- a. elements
  - b. compounds
  - c. mixtures
  - d. none of the above
- \_\_\_\_\_ 8. Any mixture of two substances, such as salt and sugar, would
- a. have the same properties throughout the mixture.
  - b. have to be separated by chemical means.
  - c. have new properties different from those of salt and sugar.
  - d. retain the properties of the original substances.
- \_\_\_\_\_ 9. A compound differs from a mixture in all of the following characteristics except
- a. the components are chemically combined.
  - b. the ratio of components present is constant.
  - c. they can be broken down by chemical means.
  - d. the components have different properties than when they are separated.
- \_\_\_\_\_ 10. Matter is classified by chemists into three groups—elements, compounds, and mixtures. Which of these categories could be described as including only substances?
- a. elements and compounds
  - b. compounds and mixtures
  - c. elements and mixtures
  - d. all of the above



Name \_\_\_\_\_

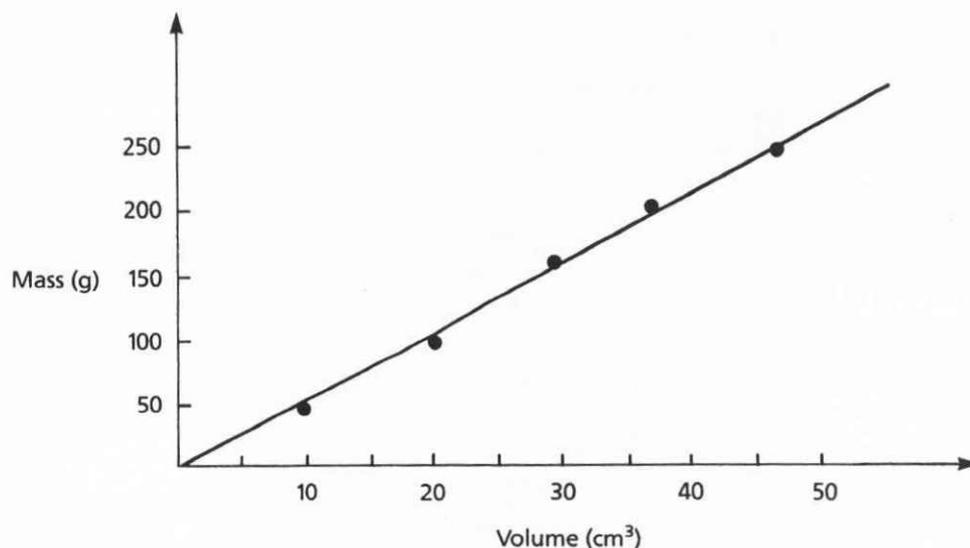
TEST A

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## 4 Matter (continued)

22. What is the density of a metal if a  $2.00 \text{ cm}^3$  sample of the metal has a mass of  $15.8 \text{ g}$ ?

23. The volumes and masses of several different size samples of an unknown mineral are measured. The values are plotted on a mass vs. volume graph as shown below. What is the approximate density of the mineral as shown by the graph?



### C. Essay Question

24. What clues could you use to determine whether a change is a physical change or a chemical change?

**4 Matter** (continued)**A. Multiple Choice**

Write the letter of the best answer in the space at the left.

- \_\_\_\_\_ 25. Which of the following kinds of matter can be either homogeneous or heterogeneous?
- a. elements
  - b. compounds
  - c. mixtures
  - d. all of the above
- \_\_\_\_\_ 26. The variation of the mass with the volume of a substance is
- a. directly proportional to the volume.
  - b. inversely proportional to the volume.
  - c. equal to the volume.
  - d. unrelated to the volume.
- \_\_\_\_\_ 27. When magnesium burns in air the magnesium combines with 64 g of oxygen to form 161.2 g of magnesium oxide. How much magnesium is burned in the reaction?
- a. 40.0 g                      b. 48.6 g                      c. 64.0 g                      d. 97.2 g

**B. Problems**

Solve the following problems in the spaces provided. Show all your work.

28. What volume of water will a 81.0 g sample of aluminum displace? The density of aluminum is 2.70 g/cm<sup>3</sup>.

29. An 8.0 cm<sup>3</sup> sample of silver has a mass of 84.0 g. What is the mass of a 164 cm<sup>3</sup> sample of silver?

**C. Essay Question**

30. Lavoisier's conclusion "that mass is not created nor destroyed in chemical changes" had a large impact on understanding chemical reactions. Give examples of two applications from this that can be made to chemical reactions.