

## 4.1

## DEFINING THE ATOM

## Section Review

## Objectives

- Describe Democritus's ideas about atoms
- Explain Dalton's atomic theory
- Describe the size of an atom

## Vocabulary

- atom
- Dalton's atomic theory

## Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

- Elements are composed of tiny particles called   1  . **1.** \_\_\_\_\_
- Atoms of any one element are   2   from those of any **2.** \_\_\_\_\_
- other element. Atoms of different elements can form   3   **3.** \_\_\_\_\_
- by combining in whole-number ratios. Chemical reactions **4.** \_\_\_\_\_
- occur when atoms are   4  .

## Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

- \_\_\_\_\_ 5. Atoms of one element change into atoms of another element during chemical reactions.
- \_\_\_\_\_ 6. Atoms combine in one-to-one ratios to form compounds.
- \_\_\_\_\_ 7. Atoms of one element are different from atoms of other elements.

## Part C Matching

Match each description in Column B to the correct term in Column A.

### Column A

- \_\_\_\_\_ 8. atom
- \_\_\_\_\_ 9. scanning tunneling microscope
- \_\_\_\_\_ 10. John Dalton
- \_\_\_\_\_ 11. Democritus

### Column B

- a. an instrument used to generate images of individual atoms
- b. Greek philosopher who was among the first to suggest the existence of atoms
- c. the smallest particle of an element that retains its identity in a chemical reaction
- d. English chemist and schoolteacher who formulated a theory to describe the structure and chemical reactivity of matter in terms of atoms

## Part D Questions and Problems

Answer the following questions in the space provided.

12. In what type of ratios do atoms combine to form compounds?

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13. How many copper atoms would you have to line up side by side to form a line 1 m long?

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