

DEFINING THE ATOM

4.1

13 possible

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. atoms.
- Atoms of any one element are 2. different from those of any other element. Atoms of different elements can form 3. compounds by combining in whole-number ratios. Chemical reactions occur when atoms are 4. rearranged.

Part B True-False

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

- NT 5. Atoms of one element change into atoms of another element during chemical reactions.
- ST 6. Atoms combine in one-to-one ratios to form compounds.
- AT 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

- C 8. atom
- A 9. scanning tunneling microscope
- D 10. John Dalton
- B 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?
whole number i.e. H₂O

13. How many copper atoms would you have to line up side by side to form a line 1 m long?
1 x 10⁸ atoms = 1 cm
or 1 x 10⁸ x 10² = 1 x 10¹⁰ atoms

①