

Atoms and Bonding ▪ *Guided Reading and Study***Elements and Atoms**

This section describes elements and atoms. It also explains how atomic theory developed and changed.

Use Target Reading Skills

As you read the section, complete the outline about elements and atoms. Use the red headings for the main ideas and the blue headings for the supporting ideas.

Elements and Atoms	
I. The building blocks of matter	
A. Elements, compounds, and mixtures	
B.	
II. Atomic theory and models	
A.	
B.	

The Building Blocks of Matter

1. The simplest pure substances are called _____.

2. Why are elements often called the building blocks of matter?

3. Complete the table about combinations of elements.

Type of Combination	What Is Combined?	Combined Chemically (Yes/No)
Compound	a.	Yes
b.	Elements, compounds, or both	c.

4. Is the following sentence true or false? Sodium chloride is an example of a compound. _____

Atoms and Bonding ▪ *Guided Reading and Study*

Elements and Atoms *(continued)*

5. Circle the letter of each choice that is an example of a mixture.

a. air	b. soil
c. gasoline	d. oxygen
6. The smallest particle of an element is a(n) _____.

Atomic Theory and Models

7. Why do scientists use models to help them understand atoms?

8. Circle the letter of each sentence that is part of John Dalton's atomic theory.
 - a. All elements are composed of atoms.
 - b. No two atoms of the same element are exactly alike.
 - c. An atom of one element cannot be changed into an atom of a different element.
 - d. Atoms cannot be created or destroyed in any chemical changes.
9. Is the following sentence true or false? With only a few changes, Dalton's atomic theory is still accepted today. _____
10. Who described the atom as negative charges scattered through a ball of positive charge? _____
11. What experiment convinced Ernest Rutherford that the atom has a small, positively charged nucleus? _____
12. The term Rutherford gave to the positively charged particles in the nucleus of an atom was _____.
13. The atomic model of _____ resembled planets orbiting the sun.
14. A region around the nucleus in which electrons of the same energy are likely to be found is called a(n) _____.
15. What particle did Chadwick discover in 1932 that was hard to detect because it had no electrical charge? _____
16. Is the following sentence true or false? Since the 1930s, the model of the atom has changed a great deal. _____
17. Circle the letter of each sentence that we now know to be true about atoms.
 - a. Most of the mass of atoms is due to electrons.
 - b. Atoms have no overall electrical charge.
 - c. Atoms of different elements have the same number of protons.
 - d. Most of the volume of atoms consists of protons and neutrons.