Section 4.2 The Structure of an Atom

(pages 108–112)

This section compares the properties of three subatomic particles. It also discusses atomic numbers, mass numbers, and isotopes.

Reading Strategy (page 108)

Monitoring Your Understanding Before you read, list in the table shown what you know about atoms and what you would like to learn. After you read, list what you have learned. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

What I Know About Atoms	What I Would Like to Learn	What I Have Learned

Properties of Subatomic Particles (pages 108–109)

1. What are three subatomic particles?

a. _____ b. _____ c. _____

2. Circle the letter that identifies a subatomic particle with a positive charge.

a. nucleus b. proton

c. neutron d. electron

3. Why did Chadwick conclude that the particles produced by his experiment were neutral in charge? _____

_____

_____

Comparing Subatomic Particles (pages 109–110)

4. Circle the letters of properties that vary among subatomic particles.

a. color b. mass

c. charge d. location in the atom

5. Circle the letter of the expression that accurately compares the masses of neutrons and protons.

a. mass of 1 neutron = mass of 1 proton

b. mass of 2000 neutrons = mass of 1 proton

c. mass of 1 electron = mass of 1 proton

d. mass of 1 neutron = mass of 1 electron

Atomic Number and Mass Number (page 110)

6. Is the following sentence true or false? Two atoms of the same element can have different numbers of protons. _____

7. What is an atomic number? _____

_____

_____

8. Circle the letters that identify quantities that are always equal to an element's atomic number.

a. number of nuclei

b. number of protons

c. number of neutrons

d. number of electrons

9. Is the following sentence true or false? Two different elements can have the same atomic number. _____

10. What is the mass number of an atom? _____

_____

_____

11. Complete the equation in the table below.

Number of neutrons = _____ − _____

Isotopes (page 112)

12. Every atom of a given element has the same number of _____ and _____.

13. Every atom of a given element does not have the same number of _____.

14. What are isotopes? _____

_____

_____

15. All oxygen atoms have 8 protons. Circle the letter of the number of neutrons in an atom of oxygen-18.

a. 8 b. 9

c. 10 d. 18

16. Is the following sentence true or false? Isotopes of oxygen have different chemical properties. _____

17. Water that contains hydrogen-2 atoms instead of hydrogen-1 atoms is called _____.