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
Most students will know that atoms are the "building blocks" of matter, and some may know that atoms contain subatomic particles.	Based on the title of the section, students may say that they want to learn more about the structure of atoms.	

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

Comparing Subatomic Particles (pages 109–110)

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

a. color
b. location in the atom
c. charge

4. 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

Atomic Number and Mass Number (page 110)

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

6. The _____ number of an element equals the number of protons in an atom of that element.

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

_____

8. The _____ number of an atom is the sum of the protons and neutrons in the nucleus of that atom.

9. Complete the equation in the table below.

Number of neutrons = Mass number − _____

Isotopes (page 112)

Use the words in the box below to fill in the blanks in questions 10–12.

electrons	isotopes
neutrons	protons

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

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

12. _____ are atoms of the same element that have different numbers of neutrons and different mass numbers.

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

a. 8
b. 10
c. 18

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