

Chapter 12, continued

**Section 2: The Atom** (p. 311)

1. In this section you will learn about the \_\_\_\_\_ that act on the particles inside the atom.

**How Small Is an Atom?** (p. 311)

Each of the following statements is false. Change the underlined word to make the statement true. Write the new word in the space provided.

2. A sheet of aluminum foil is about 500 atoms thick.  
\_\_\_\_\_
3. An Olympic medal contains about twenty thousand billion billion atoms of copper and zinc. \_\_\_\_\_

**What's Inside an Atom?** (p. 312)

Choose the term in Column B that best matches the phrase in Column A, and write the appropriate letter in the space provided.

Column A	Column B
___ 4. particle found in the nucleus that has no charge	a. electron cloud
___ 5. particle found in the nucleus that is positively charged	b. electron
___ 6. atom with an unequal number of protons and electrons	c. amu
___ 7. negatively charged particle found outside the nucleus	d. nucleus
___ 8. size of this determines the size of the atom	e. proton
___ 9. contains most of the mass of an atom	f. ion
___ 10. SI unit used for the masses of atomic particles	g. neutron

**Review** (p. 313)

Now that you've finished the first part of Section 2, review what you learned by answering the Review questions in your ScienceLog.

**How Do Atoms of Different Elements Differ?** (p. 313)

11. The simplest atom is the \_\_\_\_\_ atom. It has one proton and one electron.

**Chapter 12, continued**

- 12.** Neutrons in the atom’s nucleus keep the protons from moving apart. True or False? (Circle one.)
- 13.** To build an atom of \_\_\_\_\_, you need two protons, two neutrons, and two electrons.
- 14.** Each element is composed of atoms with the same number of \_\_\_\_\_. (neutrons or protons)

**Are All Atoms of an Element the Same?** (p. 314)

- 15.** It is NOT true that isotopes of an element
- a. have the same number of protons but different numbers of neutrons.
  - b. are stable when radioactive.
  - c. share most of the same chemical properties.
  - d. share most of the same physical properties.

**How Do You Calculate the Mass of an Element?** (p. 316)

- 16.** The weighted average of the masses of all the naturally occurring isotopes of an element is called \_\_\_\_\_ mass.

**What Forces Are at Work in Atoms?** (p. 317)

Choose the type of force in Column B that best matches the phrase in Column A, and write the corresponding letter in the space provided.

Column A	Column B
___ <b>17.</b> counteracts the electromagnetic force so protons stay together in the nucleus	<b>a.</b> gravity
___ <b>18.</b> depends on the mass of objects and the distance between them	<b>b.</b> electromagnetic force
___ <b>19.</b> plays a key role in neutrons changing into protons in unstable atoms	<b>c.</b> strong force
___ <b>20.</b> holds the electrons around the nucleus	<b>d.</b> weak force

**Review** (p. 317)

Now that you’ve finished Section 2, review what you learned by answering the Review questions in your ScienceLog.