

## Skills Worksheet

# Directed Reading A

## Section: The Atom

### HOW SMALL IS AN ATOM?

- \_\_\_\_\_ 1. Which of the following statements is true?
- A penny has about 20,000 atoms.
  - A penny has more atoms than Earth has people.
  - Aluminum is made up of large-sized atoms.
  - Aluminum atoms have a diameter of about 3 cm.

### WHAT IS AN ATOM MADE OF?

Match the correct description with the correct term. Write the letter in the space provided.

- |   |                           |
|---|---------------------------|
| _____ 2. particle of the nucleus that has no electrical charge    | a. electron               |
| _____ 3. particle found in the nucleus that is positively charged | b. atomic mass unit (amu) |
| _____ 4. particle with an unequal number of protons and electrons | c. nucleus                |
| _____ 5. negatively charged particle found outside the nucleus    | d. proton                 |
| _____ 6. contains most of the mass of an atom                     | e. ion                    |
| _____ 7. SI unit used to express the masses of atomic particles   |                           |

### HOW DO ATOMS OF DIFFERENT ELEMENTS DIFFER?

8. The simplest atom is the \_\_\_\_\_ atom. It has one \_\_\_\_\_ and one \_\_\_\_\_.
9. Neutrons in the atom's \_\_\_\_\_ keep two or more protons from moving apart.
10. If you build an atom using two protons, two neutrons, and two electrons, you have built an atom of \_\_\_\_\_.
11. An atom does not have to have equal numbers of \_\_\_\_\_ and \_\_\_\_\_.

## Directed Reading A *Continued*

12. The number of protons in the nucleus of an atom is the \_\_\_\_\_ of that atom.

### ISOTOPES

- \_\_\_\_\_ 13. Isotopes always have  
 a. the same number of protons.  
 b. the same number of neutrons.  
 c. a different atomic number.  
 d. the same mass.
- \_\_\_\_\_ 14. Which of the following is NOT true about unstable atoms?  
 a. They are radioactive.  
 b. They have a nucleus that always remains the same.  
 c. They give off energy as they fall apart.  
 d. They give off smaller particles as they fall apart.
- \_\_\_\_\_ 15. What is the mass number of an isotope that has 5 protons, 6 neutrons, and 5 electrons?  
 a. 1  
 b. 11  
 c. 10  
 d. 16
- \_\_\_\_\_ 16. If carbon has an atomic number of 6, how many neutrons does carbon-12 have?  
 a. 12  
 b. 8  
 c. 6  
 d. 18
17. Most elements contain a mixture of two or more \_\_\_\_\_.
18. The weighted average of the masses of all the naturally occurring isotopes of an element is the \_\_\_\_\_.

### FORCES IN ATOMS

**Match the correct definition with the correct term. Write the letter in the space provided.**

- |  |                          |
|--|--------------------------|
| _____ 19. helps protons stay together in the nucleus | a. gravitational force   |
| _____ 20. pulls objects toward one another           | b. electromagnetic force |
| _____ 21. an important force in radioactive atoms    | c. strong force          |
| _____ 22. holds the electrons around the nucleus     | d. weak force            |