

## 6.2

## CLASSIFYING THE ELEMENTS

## Section Review

## Objectives

- Describe the information in a periodic table
- Classify elements based on electron configuration
- Distinguish representative elements and transition metals

## Vocabulary

- alkali metals
- noble gases
- transition metals
- alkaline earth metals
- representative elements
- inner transition metals
- halogens

## Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

The periodic table displays the symbols and 1 of \_\_\_\_\_ 1. \_\_\_\_\_  
 the elements along with information about the structures of their \_\_\_\_\_ 2. \_\_\_\_\_  
2. The Group 1A elements are called 3, and the \_\_\_\_\_ 3. \_\_\_\_\_  
 Group 2A elements are called 4. The elements in Groups 1A \_\_\_\_\_ 4. \_\_\_\_\_  
 through 7A are called the 5. The nonmetals of Group 7A \_\_\_\_\_ 5. \_\_\_\_\_  
 are 6, and the 7 make up Group 8A. Between Groups \_\_\_\_\_ 6. \_\_\_\_\_  
 2A and 3A, there are 8 in periods 4 through 7 and 9 \_\_\_\_\_ 7. \_\_\_\_\_  
 in periods 6 and 7. \_\_\_\_\_ 8. \_\_\_\_\_

The atoms of the noble gas elements have their highest occupied \_\_\_\_\_ 9. \_\_\_\_\_  
*s* and 10 sublevels filled. The highest occupied *s* and *p* \_\_\_\_\_ 10. \_\_\_\_\_  
 sublevels of the representative elements are 11. \_\_\_\_\_ 11. \_\_\_\_\_

## Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

\_\_\_\_\_ 12. Group A elements are representative elements.

- \_\_\_\_\_ 13. Chlorine has the electron configuration  $1s^2 2s^2 2p^6 3s^2 3p^7$ .
- \_\_\_\_\_ 14. The element in Group 4A, period 3, is gallium.
- \_\_\_\_\_ 15. There is a relationship between the electron configurations of elements and their chemical and physical properties.

## Part C Matching

Match each description in Column B to the correct term in Column A.

### Column A

### Column B

- |                                  |   |
|----------------------------------|---|
| _____ 16. alkali metals          | a. nonmetals of Group 7A  |
| _____ 17. inner transition metal | b. an element in which the highest occupied <i>s</i> and <i>p</i> sublevels are filled                            |
| _____ 18. representative element | c. Group 2A elements  |
| _____ 19. transition metal       | d. an element whose highest occupied <i>s</i> sublevel and a nearby <i>d</i> sublevel contain electrons           |
| _____ 20. noble gas              | e. an element whose highest occupied <i>s</i> sublevel and a nearby <i>f</i> sublevel generally contain electrons |
| _____ 21. alkaline earth metals  | f. Group 1A elements  |
| _____ 22. halogens               | g. an element whose highest occupied <i>s</i> or <i>p</i> sublevels are partially filled                          |

## Part D Questions and Problems

Answer the following in the space provided.

23. List the electron configurations for the highest occupied energy level of the elements in period 3 from left to right.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
24. List the elements of Group 6A. Tell whether each is a solid, liquid, or gas at room temperature and whether it is a metal, nonmetal, or metalloid.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_