

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

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