

9.1

NAMING IONS

Section Review

Objectives

- Determine the charges of monatomic ions by using the periodic table and write the names of the ions
- Define a polyatomic ion and write the names and formulas of the most common polyatomic ions
- Identify the two common endings for the names of most polyatomic ions.

Vocabulary

- monatomic ions
- polyatomic ions

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.

- Ions that consist of a single atom are called 1 ions. **1.** _____
- Metallic elements tend to 2 electrons. Group 1A ions have a **2.** _____
- 3 charge, whereas Group 2A metals form ions with a 4 **3.** _____
- charge, and Group 3A metals form ions with a 5 charge. **4.** _____
- The charge of a Group A nonmetal ion is determined by **5.** _____
- subtracting 6 from the group number. For example, the **6.** _____
- Group 7A elements form ions with a charge of 7. **7.** _____
- Many of the 8 have more than one common ionic **8.** _____
- charge. These ions are named using either the 9 system **9.** _____
- or the 10 naming system. **10.** _____
- Ions containing more than one atom are called 11 ions. **11.** _____
- The names of most common polyatomic ions end in either **12.** _____
- 12 or 13. **13.** _____

Part B True-False

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

- _____ 14. The names of polyatomic ions end in *-ite* or *-ate*.
- _____ 15. In polyatomic ions for which there is an *-ite/-ate* pair, the *-ite* ending will always indicate one less oxygen atom than the *-ate* ending.
- _____ 16. Polyatomic ions are anions.
- _____ 17. The charge on Group A metal ions is determined by subtracting the group number from 8.
- _____ 18. The Group 6A ions have a charge of 2-.

Part C Matching

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

Column A**Column B**

- | | |
|-----------------------------------|---|
| _____ 19. monatomic ions | a. negatively charged ions |
| _____ 20. polyatomic ions | b. ions formed from single atoms |
| _____ 21. cations | c. a traditional way of naming transition metal cations |
| _____ 22. anions | d. positively charged ions |
| _____ 23. classical naming system | e. ions formed from groups of atoms |

Part D Questions and Problems

Answer the following in the space provided.

24. What is the charge on a typical ion for each of the following groups?
- | | |
|-------------|-------------|
| a. 1A _____ | c. 7A _____ |
| b. 6A _____ | d. 2A _____ |
25. Write the name of each of the following polyatomic ions.
- | | |
|---------------------------|---------------------------|
| a. HCO_3^- _____ | c. MnO_4^- _____ |
| b. NH_4^+ _____ | d. OH^- _____ |
26. How many electrons does the neutral atom gain or lose to form each of the following ions?
- | | |
|---------------------------|---------------------------|
| a. Ca^{2+} _____ | c. I^- _____ |
| b. S^{2-} _____ | d. Mn^{3+} _____ |