

Advanced Chemistry: Chapter 9 Review**SECTION 9.1 Monatomic Ions (pages 253–258)**

1. What are monatomic ions?
2. How is the ionic charge of a Group 1A, 2A, or 3A ion determined?
3. How is the ionic charge of a Group 5A, 6A, or 7A ion determined?
4. Circle the letter of the type of element that often has more than one common ionic charge.
 - a. alkali metal
 - b. alkaline earth metal
 - c. transition metal
 - d. nonmetal
5. The Stock system of naming transition metal cations uses a _____ in parentheses to indicate the numeric value of the ionic charge.
6. Use the periodic table to write the name and formula (including charge) for each ion in the table below.

Element	Name	Formula
Fluorine		
Calcium		
Oxygen		

Polyatomic Ions (pages 257–258)

7. What is a polyatomic ion?
8. Is the following sentence true or false (circle)? The names of polyatomic anions always end in *-ide*.
9. What is the difference between the anions sulfite and sulfate?
10. Look at Table 9.3 on page 257. Circle the letter of a polyatomic ion that is a cation.
 - a. ammonium
 - b. acetate
 - c. oxalate
 - d. phosphate

SECTION 9.2: Naming and Writing Formulas for Ionic Compounds (p260–266)
Binary Ionic Compounds (pages 260–263)

1. What are the formulas for the compounds formed by the following pairs of ions?

a. Fe^{2+} , Cl^- _____

b. Cr^{3+} , O^{2-} _____

c. Na^+ , S^{2-} _____

2. What are the formulas for these compounds?

a. lithium bromide _____

b. copper(II) nitride _____

c. magnesium chloride _____

3. The name of a binary ionic compound is written with the name of the _____ first followed by the name of the _____.

4. Write the names for these binary ionic compounds.

a. PbS _____

b. MgCl_2 _____

c. Al_2Se_3 _____

Compounds with Polyatomic Ions (pages 264–266)

5. Why are parentheses used to write the formula $\text{Al}(\text{OH})_3$?

6. Complete the table for these ionic compounds containing polyatomic ions.

Cation	Anion	Name	Formula
NH_4^+	S^{2-}		
Fe^{3+}		iron(III) carbonate	
	NO_3^-		AgNO_3
		potassium cyanide	KCN

SECTION 9.3 Naming and writing formulas for molecular compounds (pages 268–270) Naming Binary Molecular Compounds (pages 268–269)

- Circle the letter of the type(s) of elements that form binary molecular compounds.
 - two nonmetallic elements
 - a metal and a nonmetal
 - two metals
- Is the following sentence true or false (circle)? Two nonmetallic elements can combine in only one way.
- What method is used to distinguish between different molecular compounds that contain the same elements? _____

For each of the prefixes give the number it indicates.

4. *octa-* *tetra-* *hepta-* *nona-*

- What are the names of the following compounds?
 - BF_3 _____
 - N_2O_4 _____
 - P_4S_7 _____

Writing Formulas for Binary Molecular Compounds (page 270)

- What are the formulas for the following compounds?
 - carbon tetrabromide _____
 - nitrogen triiodide _____
 - iodine monochloride _____
 - tetraiodine nonaoxide _____

SECTION 9.4 NAMING AND WRITING FORMULAS FOR ACIDS AND BASES (p271–273)

- Acids produce _____ ions when dissolved in water.
- What is the formula for hydrochloric acid? _____
- What is the formula for sulfuric acid? _____
- What is the formula for nitric acid? _____

Names and Formulas for Bases (page 273)

- A base is a compound that produces _____ when dissolved in water.
- How are bases named?

Practicing Skills: Naming Chemical Compounds (pages 276–277)

1. Write names of the following compounds.

- a. CsCl _____ binary ionic
- b. SnSe_2 _____ binary ionic charge of ion in Roman Numerals
- c. NH_4OH _____ polyatomic ions
- d. HCl _____ acid
- e. Si_3N_4 _____ molecular

2. Complete the following five rules for writing a chemical formula from a chemical name.

- a. In an ionic compound, the net ionic charge is _____.
- b. An *-ide* ending generally indicates a _____ compound.
- c. An *-ite* or *-ate* ending means there is a _____ ion that includes oxygen in the formula.
- d. _____ in a name generally indicate that the compound is molecular and show the number of each kind of atom in the molecule.
- e. A _____ after the name of a cation shows the ionic charge of the cation.

3. Write the formulas of the following compounds:

- a. potassium silicate _____
- b. phosphorus pentachloride _____
- c. manganese(II) chromate _____
- d. lithium hydride _____
- e. diiodine pentoxide _____