

11. Copy and complete the following chart in your notebook.

	Reactants	Name	Formula
(a)	sodium and nitrogen		
(b)	magnesium and oxygen		
(c)	aluminum and sulfur		
(d)	gallium and fluorine		
(e)	silver and selenium		
(f)	zinc and chlorine		

12. Write the formula for each of the following compounds involving a multivalent metal ion.
- gold(III) fluoride
 - lead(IV) nitride
 - copper(I) iodide
 - nickel(III) sulfide
 - chromium(II) oxide

13. Write the name for each of the following compounds involving a multivalent metal ion. Remember to include the Roman numeral in the metal ion's name.

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|---------------------------|-----------------------------|
| (a) SnCl_4 | (d) Bi_2O_5 |
| (b) Au_3N | (e) FeI_3 |
| (c) PbS_2 | (f) UF_6 |

14. Write the formula for each of the following ionic compounds, which may contain a multivalent metal ion or a polyatomic ion.

- sodium carbonate
- ammonium phosphate
- ammonium nitrate
- iron(III) nitrite
- calcium perchlorate

15. Write the name for each ionic compound.

- | | |
|--|--|
| (a) $\text{Al}_2(\text{SO}_4)_3$ | (d) $\text{Na}_2\text{Cr}_2\text{O}_7$ |
| (b) $\text{NH}_4\text{CH}_3\text{COO}$ | (e) KCN |
| (c) $\text{Fe}_2(\text{CrO}_4)_3$ | (f) $\text{Pb}(\text{HS})_2$ |

16. Write the formula for each covalent compound.

- phosphorus pentachloride
- nitrogen trichloride
- sulfur hexaiodide
- tetraphosphorus decaoxide
- dinitrogen trioxide

17. Write the name of each covalent compound.

- | | |
|----------------------------|--------------------|
| (a) N_2F_4 | (c) NBr_3 |
| (b) PBr_3 | (d) CO_2 |

18. Copy and complete the following chart in your notebook.

	Formula	Ionic or Covalent?	Name of Compound
(a)	CaCl_2		
(b)	CuCl_2		
(c)	SCL_2		
(d)	CoS		

19. List the total number of each type of atoms in the following reactants.

- $2\text{HCl} + \text{Ca}(\text{OH})_2$
- $2\text{Na}_3\text{PO}_3 + 3\text{Ca}(\text{NO}_3)_2$

20. Balance each of the following skeleton equations.

- $\text{KCl} + \text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbCl}_2 + \text{KNO}_3$
- $\text{Na} + \text{F}_2 \rightarrow \text{NaF}$
- $\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- $\text{C}_4\text{H}_{10} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$

Applying Your Understanding

21. Antoine and Marie-Anne Lavoisier did many chemical experiments involving the metal mercury. In one type of experiment, they put liquid mercury in a jar and sealed it in with oxygen gas. Suppose that, in one of these experiments, they observed that 10.0 g of silver-coloured mercury changed into 10.8 g of a red solid. As the solid formed, the pressure of the oxygen gas decreased.

- Why did the pressure drop in the sealed jar?
- What mass of gas was consumed in the reaction?
- What might be the identity of the new substance?

Pause and Reflect

How did reading this chapter change your understanding of the formation of chemical compounds? Create a graphic organizer showing what you knew (or predicted) before you read this chapter and what you know now.