

12. a. phosphorus pentachloride  
 b. sulfur dioxide  
 c. tetraphosphorus decasulfide
13. a.  $\text{CBr}_4$                       b.  $\text{N}_2\text{O}_4$

## Section Review 9.4

### Part A Completion

- |                  |                   |
|------------------|-------------------|
| 1. hydrogen      | 6. hydroxide ions |
| 2. hydrogen ions | 7. ionic          |
| 3. hydrobromic   | 8. cation         |
| 4. nitric        | 9. anion          |
| 5. ionic         |                   |

### Part B True-False

10. ST                      11. NT                      12. NT

### Part C Matching

13. a                      14. c                      15. b

### Part D Questions and Problems

16. a.  $\text{Mg}(\text{OH})_2$                       c.  $\text{H}_3\text{PO}_4$   
 b. HF                                      d. LiOH
17. a. potassium hydroxide  
 b. hydroiodic acid  
 c. sulfuric acid

## Section Review 9.5

### Part A Completion

- |                         |                          |
|-------------------------|--------------------------|
| 1. definite proportions | 9. molecular             |
| 2. proportions          | 10. carbon tetrachloride |
| 3. multiple proportions | 11. acid                 |
| 4. small whole          | 12. elements             |
| 5. acid                 | 13. anion                |
| 6. phosphoric acid      | 14. 4A                   |
| 7. acid                 | 15. lead(II) acetate     |
| 8. binary               |                          |

### Part B True-False

16. ST                      18. NT  
 17. ST                      19. AT

## Part C Questions and Problems

20. a. lead(IV) acetate  
 b. hydrofluoric acid  
 c. diphosphorus pentoxide  
 d. lithium bromide
21. a.  $\text{PCl}_5$   
 b. FeO  
 c.  $\text{HNO}_3$   
 d. KCl  
 e.  $\text{Ca}(\text{NO}_3)_2$

## Practice Problems 9

### Section 9.1

1. a. 2-                      d. 3+  
 b. 1-                      e. 2+  
 c. 1+                      f. 2+
2. a. 3 lost                      d. 2 lost  
 b. 3 gained                      e. 1 gained  
 c. 1 lost                      f. 2 gained
3. a. tin(II) or stannous cation  
 b. cobalt(III) or cobaltic cation  
 c. bromide anion  
 d. potassium cation  
 e. hydride anion  
 f. manganese(II) or manganous cation
4. a.  $\text{CO}_3^{2-}$                       d.  $\text{OH}^-$   
 b.  $\text{NO}_2^{2-}$                       e.  $\text{CrO}_4^{2-}$   
 c.  $\text{SO}_4^{2-}$                       f.  $\text{NH}_4^+$
5. a. cyanide anion  
 b. hydrogen carbonate anion  
 c. phosphate anion  
 d. chloride anion  
 e. calcium cation  
 f. sulfite anion

### Section 9.2

1. a. MgO                      d.  $\text{AlCl}_3$   
 b.  $\text{SnF}_2$                       e.  $\text{Na}_2\text{S}$   
 c. KI                              f.  $\text{FeBr}_3$
2. a.  $\text{BaCl}_2$                       d. KBr  
 b. AgI                              e.  $\text{Al}_2\text{O}_3$   
 c. CaS                              f. FeO
3. a. manganese(II) oxide or manganous oxide  
 b. lithium nitride  
 c. calcium chloride

- d. strontium bromide
  - e. nickel chloride
  - f. potassium sulfide
  - g. copper(II) chloride or cupric chloride
  - h. tin(IV) chloride or stannic chloride
4. a.  $\text{Na}_3\text{PO}_4$                       d. KCN  
    b.  $\text{MgSO}_4$                       e.  $\text{NH}_4\text{Cl}$   
    c. NaOH                          f.  $\text{K}_2\text{Cr}_2\text{O}_7$
  5. a.  $(\text{NH}_4)_2\text{SO}_4$                   c.  $\text{Ba}(\text{OH})_2$   
    b.  $\text{KNO}_3$                         d.  $\text{Li}_2\text{CO}_3$
  6. a. sodium cyanide  
    b. iron(III) chloride or ferric chloride  
    c. sodium sulfate  
    d. potassium carbonate  
    e. copper(II) hydroxide or cupric hydroxide  
    f. lithium nitrate
  7. a. sodium cation,  $\text{Na}^+$   
    b. nickel cation,  $\text{Ni}^{2+}$   
    c. calcium cation,  $\text{Ca}^{2+}$   
    d. potassium cation,  $\text{K}^+$   
    e. iron(III) cation,  $\text{Fe}^{3+}$   
    f. copper(I) cation,  $\text{Cu}^+$

### Section 9.3

1. a. phosphorous pentachloride  
    b. carbon tetrachloride  
    c. nitrogen dioxide  
    d. dinitrogen difluoride  
    e. tetraphosphorous hexoxide  
    f. xenon difluoride  
    g. silicon dioxide  
    h. dichlorine heptoxide
2. a.  $\text{NBr}_3$                           c.  $\text{SO}_2$   
    b.  $\text{Cl}_2\text{O}$                         d.  $\text{N}_2\text{F}_4$

### Section 9.4

1. a. nitrous acid                    c. hydrofluoric acid  
    b. sulfuric acid                  d. carbonic acid
2. a.  $\text{Ca}(\text{OH})_2$                     c.  $\text{Al}(\text{OH})_3$   
    b.  $\text{NH}_4\text{OH}$                       d. LiOH

### Section 9.5

1. a.  $\text{K}_2\text{S}$                             g.  $\text{N}_2\text{O}_5$   
    b.  $\text{SnCl}_4$                         h.  $\text{Fe}_2(\text{CO}_3)_3$   
    c.  $\text{H}_2\text{S}$                           i.  $\text{SF}_6$   
    d. CaO                            j.  $\text{MgCl}_2$   
    e. HBr                            k.  $\text{H}_3\text{PO}_4$   
    f.  $\text{AlF}_3$                          l.  $\text{HNO}_3$

2.

	$\text{SO}_4^{2-}$	$\text{NO}_3^-$	$\text{OH}^-$	$\text{PO}_4^{3-}$
$\text{Ca}^{2+}$	$\text{CaSO}_4$	$\text{Ca}(\text{NO}_3)_2$	$\text{Ca}(\text{OH})_2$	$\text{Ca}_3(\text{PO}_4)_2$
$\text{Al}^{3+}$	$\text{Al}_2(\text{SO}_4)_3$	$\text{Al}(\text{NO}_3)_3$	$\text{Al}(\text{OH})_3$	$\text{AlPO}_4$
$\text{Na}^+$	$\text{Na}_2\text{SO}_4$	$\text{NaNO}_3$	NaOH	$\text{Na}_3\text{PO}_4$
$\text{Pb}^{4+}$	$\text{Pb}(\text{SO}_4)_2$	$\text{Pb}(\text{NO}_3)_4$	$\text{Pb}(\text{OH})_4$	$\text{Pb}_3(\text{PO}_4)_4$

3. a. potassium phosphate  
    b. aluminum hydroxide  
    c. sodium hydrogen sulfate  
    d. mercury(II) oxide or mercuric oxide  
    e. dinitrogen pentoxide  
    f. nitrogen tribromide  
    g. phosphorous triiodide  
    h. ammonium sulfate
4. The law of definite proportions states that samples of any compound will always contain the constituent elements in the same proportions. The law of multiple proportions states that in two compounds containing the same two elements, the masses of one element that combines with a given mass of the other element will be in the ratio of small whole numbers.

### Interpreting Graphics 9

1. 2A                                      8. 10
2. two                                    9. 10
3. 12                                     10. 10
4. 10                                     11. a. 18
5. 7A                                    b. 18
6. one                                    c. 18
7. nine                                   d. 18