

## Chapter 5 Practice

### 5.1 Lewis Symbols and the Octet Rule

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1. Draw Lewis symbols for the following atoms:



2. Draw Lewis symbols for the following ions:



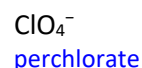
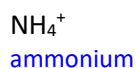
### 5.2 Ions

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3. Name the following monatomic ions:



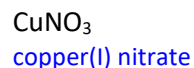
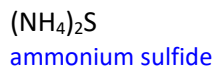
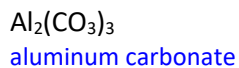
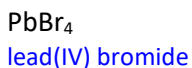
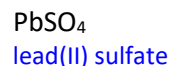
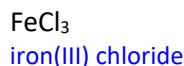
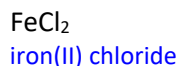
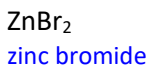
4. Name the following polyatomic ions:



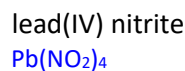
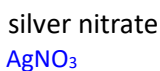
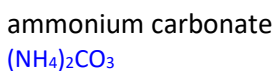
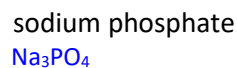
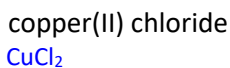
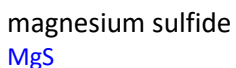
### 5.3 Ionic Bonds and Compounds

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5. Name the following ionic compounds:



6. Write formulas for the following ionic compounds:



## 5.4 Covalent Bonding

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7. Name the following covalent compounds:

$P_2O_5$   
diphosphorus pentoxide

$NCl_3$   
nitrogen trichloride

$N_2O_4$   
dinitrogen tetroxide

$BBr_3$   
boron tribromide

$CO_2$   
carbon dioxide

$CO$   
carbon monoxide

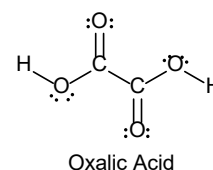
$SiCl_4$   
silicon tetrachloride

$SO_3$   
sulfur trioxide

8. Write the empirical formula and the molecular formula for the covalent compound shown:

molecular formula:  $C_2H_2O_4$

empirical formula:  $CHO_2$



## 5.5 Distinguishing Ionic and Covalent Compounds

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9. Identify each compound as ionic or covalent. Name each compound.

$ZnO$   
ionic  
zinc oxide

$SCl_2$   
covalent  
sulfur dichloride

$Fe_2O_3$   
ionic  
iron(III) oxide

$PBr_5$   
covalent  
phosphorus pentabromide

## 5.6 Aqueous Solutions: How Ionic and Covalent Compounds Differ

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10. Indicate whether the following compounds are likely to dissociate in an aqueous solution. How can you tell?

$KCl$   
yes

$CaBr_2$   
yes

$CO_2$   
no

$C_2H_6O$   
no

Ionic compounds dissociate when they dissolve in water. Covalent compounds generally do not.

## 5.7 Acids—An Introduction

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11. Write the ions that each acid would form in aqueous solution:

$HCl$   $H^+$  and  $Cl^-$

$HNO_3$   $H^+$  and  $NO_3^-$

$HClO_4$   $H^+$  and  $ClO_4^-$

$HBr$   $H^+$  and  $Br^-$

12. Name each of the following acids:

$HF$   
hydrofluoric acid

$HNO_3$   
nitric acid

$HNO_2$   
nitrous acid

$H_3PO_4$   
phosphoric acid

$HBrO_4$   
perbromic acid

$HBrO_3$   
bromic acid

$HBrO_2$   
bromous acid

$HBrO$   
hypobromous acid