Chemistry 20
Lessons 1 to 8 Review

Fill in the following table:

Chemical Formula	**Name of Compound**	**Molecular or Ionic (M or I)**
$NaCl_{(s)}$		
	sodium hydrogen sulfate	
	sodium hydroxide	
$CaCO_{3\,(s)}$		
$P_2O_{5\,(s)}$		
	magnesium sulfate heptahydrate	
	carbon dioxide	
Na_2SiO_3		
N_2O		
$Ca(HCO_3)_2$		
	sodium thiosulfate pentahydrate	
	potassium hypochlorite	
	oxygen	
	potassium nitrate	
$Ca(OH)_{2\,(s)}$		
	aluminum oxide	
	iodine	
$Na_2CO_{3\,(s)}$		
	potassium hydroxide	
SO_3		
	carbon monoxide	
Fe_2O_3		
	ammonium hydrogen phosphate	
SnF_2		
	calcium oxide	
CS_2		
$CaCl_{2\,(s)}$		
$NO_{(g)}$		
	ammonium phosphate	
Cu_2O		

Moles and masses

1. Determine the molar mass of each of the following substances.
   (a) MgI_2 (b) $Al(OH)_{3\,(s)}$

   (c) $(NH_4)_2CO_3$ (d) $CoCl_2 \cdot 6H_2O$

2. Convert each of the following masses into an amount in moles of the given substance.
   (a) 8.40 g of NaOH

   (b) 4.2 kg of H_2O

3. Convert each of the following amounts into a mass in grams of the given substance.
   (a) 0.456 mol of $Al_2(SO_4)_3$

   (b) 0.518 mmol of $CuSO_4 \cdot 5H_2O$

Chemical equations

Complete the following chemical equations:

1. Iron pipes are strongly attacked and corroded by sulfuric acid. (iron (II) sulfate is one product)
   Balanced reaction:

   Reaction type:

2. Octane (C_8H_{18}) undergoes complete combustion.
   Balanced reaction:

   Reaction type:

3. Copper metal reacts in a solution of zinc nitrate.
   Balanced reaction:

   Reaction type:

4. When a current is run through water, hydrogen gas and oxygen gas are released.
   Balanced reaction:

   Reaction type:

5. A precipitate forms when sodium chloride is mixed with lead (II) acetate.
   Balanced reaction:

   Reaction type:

6. Nitric acid may be neutralized with barium hydroxide.
   Balanced reaction:

   Reaction type:

7. Calcium reacts vigorously with hydrochloric acid.
   Balanced reaction:

   Reaction type:

8. Aluminum metal reacts with hot water. (Hint: Treat water as HOH.)
   Balanced reaction:

   Reaction type:

9. Chlorine gas reacts with a solution of potassium iodide.
   Balanced reaction:

   Reaction type:

Stoichiometry

Calculate the following:

1. If a solution containing 14.3 g of calcium nitrate reacts with a sufficient quantity of sodium carbonate solution, what mass of calcium carbonate would be produced?

2. What mass of calcium carbonate forms when 24.5 g of potassium carbonate is mixed in a concentrated solution of calcium nitrate.

3. 43.7 g of propane (C_3H_8) is burned in oxygen. What mass of products would be produced?

4. 24.0 g of sodium chloride and some water are products of a neutralization reaction. What masses of reactants were required?

5. Lithium reacts with the air to form its oxide. What mass of lithium oxide is formed when 3.57 g of lithium undergoes this reaction?

6. Cesium reacts violently with water. If 15.0 g of cesium are used, how much hydrogen gas will be produced?