Name: _____

Academic Chem Chapter 10 Review
Unit 5 Equations and Reaction Types

1. What fundamental law of chemistry requires that equations be balanced? Explain its meaning.

2. What do the following symbols mean in a chemical equation?

   (g) _____ (s) _____

   (l) _____ (aq) _____

3. Fill in the table to remind you of how to recognize a type of reaction based on just the reactants.

When the Reactants Are:	It Means the Reaction is:	Example:
a hydrocarbon and oxygen	**Combustion**	$2\ C_2H_6 + 7\ O_2 \rightarrow 4\ CO_2 + 6\ H_2O$
	Synthesis	
	Decomposition	
	Single Displacement	
	Double Displacement	

4. What type of reaction(s) requires the use of the activity series when predicting its products?

5. What type of reaction(s) requires the use of your solubility rules when writing its products?

6. List the seven diatomic elements.

7. Balance the following equations by adding coefficients. Identify the type of each reaction.

   a) _____$Ca(OH)_2$ + _____$HBr \rightarrow$ _____$CaBr_2$ + _____H_2O **Type:**_____

   b) _____Mg + _____$AlI_3 \rightarrow$ _____MgI_2 + _____Al **Type:**_____

   c) _____C_3H_8 + _____$O_2 \rightarrow$ _____CO_2 + _____H_2O **Type:**_____

   d) _____$AgOH \rightarrow$ _____Ag_2O + _____H_2O **Type:**_____

   e) _____Cl_2 + _____$Fe \rightarrow$ _____$FeCl_3$ **Type:**_____

   f) _____$Ba(NO_3)_2$ + _____$Al_2(SO_4)_3 \rightarrow$ _____$Al(NO_3)_3$ + _____$BaSO_4$ **Type:**_____

8. Write a **balanced** chemical equation. Include the states of matter. Use Solubility Rules when necessary!

a) Copper metal will react with liquid bromine to make solid copper (I) bromide.

b) Cyclohexane, $C_6H_{12\,(l)}$, burns in the presence of oxygen to give carbon dioxide and water vapor.

c) Solid calcium carbonate decomposes upon heating to form solid calcium oxide and a gas.

d) Aqueous sodium carbonate reacts with aqueous silver nitrate to make silver carbonate and sodium nitrate.

e) Zinc will react with aqueous lead (IV) bromide to make lead and zinc bromide.

f) Hydrochloric acid reacts with aqueous magnesium hydroxide to make magnesium chloride and water.

9. Given the reactants and the type of reaction, write a balanced equation.

a) _____$CaCl_2$ + _____$AgNO_3$ → **Type:** Double Replacement

b) _____N_2 + _____Mg → **Type:** Synthesis

c) _____Zn + _____$CuNO_3$ → **Type:** Single Replacement

d) _____C_5H_{12} + _____O_2 → **Type:** Combustion

e) _____$Sr(OH)_2$ + _____H_2SO_4 → **Type:** Double Replacement

f) _____$Cu(OH)_2$ → **Type:** Decomposition

10. Identify as either a physical (P) property or a chemical (C) property:

a) _____ Hardness
b) _____ Density
c) _____ Aluminum reacts with hydrochloric acid to form hydrogen gas.
d) _____ Ethanol boils at 78.4ºC.
e) _____ Vinegar is volatile.
f) _____ Table salt is composed of Na and Cl.
g) _____ Sugar dissolves in water.

11. Identify as examples of Physical Changes (P) or Chemical Changes (C):

a) _____ glass breaking
b) _____ spoiling food
c) _____ mixing lemonade powder into water
d) _____ bleaching your hair
e) _____ fireworks exploding
f) _____ frying an egg
g) _____ cream being whipped
h) _____ freezing chocolate covered bananas