Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_

H. Chemistry

Ch. 7 Reading Guide

**7.1 Predicting Whether a Reaction Will Occur**

**Learning Target 1**: List 4 factors that cause reactions to occur.

*Q: List 4 factors that typically cause reactions to occur*.

1.

2.

3.

4.

\*\*Note: These “driving forces” of reactions allow reactions to occur with the lowest possible entropy, or randomness. This is not a concept that we have discussed yet, so for now, it is enough to understand that predictable driving forces exist.

**7.2 Reactions in Which a Solid Forms**

**Learning Target 2**: Name and explain the reactions that occur in aqueous solutions and their distinguishing characteristics.

*Q: Define* ***precipitate*:**

The best way to identify the solid produced in a **precipitation** **reaction** is to consider what products are possible. To do this, we must first understand the nature of the **reactants**.

*Q: What happens when an ionic compound dissolves in water?*

*A:*

*Q: What is a distinct difference between pure water and water containing a dissolved ionic compound?*

*A:*

*Q: Define* ***strong electrolyte:***

*Examples:*

*Q: Finish the following sentence:*

“When ionic compounds dissolve…

*Q: Write the mixing of potassium chromate with barium nitrate in the “usual way” and then as an ionic reaction.*

Usual Way:

Ionic Reaction:

\*\*Note: Now we are ready to make an educated guess as to what products will form in this reaction.

*Q: Why is it best to make an “educated guess” as to what the products of the reaction will be before identifying the products in an experiment?*

*A:*

*Q: List two facts that chemists already know about ionic compounds that will help in predicting which products will form.*

1.

2.

*Q: List the ionic compounds that could be made from this chemical reaction. You may want to recreate the “chemist-T” that the book provided for you as a reference.*

*A:*

\*\*We know that the products cannot be the reactants, or a chemical reaction would not have occurred, so we can eliminate those 2 choices. We can conclude that a chemical reaction occurred because there was the formation of a solid.

\*\*\*An experienced chemist would then use the appearance of the materials to determine which product was the yellow solid and which was the clear liquid.

**Learning Target 3:** Apply solubility rules to reactions.

*Define* ***soluble solid:***

*Define* ***insoluble/slightly soluble solid:***

*List the general rules for solubility of Ionic Compounds in Water at 25 degrees Celsius.*

1.

2.

3.

4.

5.

6.

\*\*\***Read** through Example 7.1 very carefully. These are the types of problems you will be asked to think about in the lab and on tests and quizzes.

\*\*\*\*\*\*\*\*Bottom line: a solid that forms is obviously NOT soluble in water. Therefore, chemists need to understand the general trends of solubility rules in order to determine what a precipitation reaction product may be composed of.

*Complete the Self-Check Exercise 7.1. Explain your reasoning in a step-by-step manner.*

a.

b.

c.