Prelab Assignment: Types of Reactions

1. Many of the reactions use 1 mL of solution. How can you estimate this volume?

2. Do you need to dry the test tubes before using them for the reactions in this experiment? Why or why not?

3. The following reactions are performed, and the results are shown below. Use these results to determine the relative activities of the two elements involved in each reaction next to that reaction. Then place the elements gold, hydrogen, zinc and tin in an activity series in order of decreasing activity.

   Sn (s) + HCl (aq) → H₂ (g) + SnCl₂ (aq)  \[ \text{_____} > \text{_____} \]
   Au (s) + Sn(NO₃)₂ (aq) → NR  \[ \text{_____} > \text{_____} \]
   Au (s) + HCl → NR  \[ \text{_____} > \text{_____} \]
   Zn (s) + Sn(NO₃)₂ (aq) → Zn(NO₃)₂ (aq) + Sn (s)  \[ \text{_____} > \text{_____} \]

   most active > most easily oxidized > least active

   Now use the above results to write products for the reactions below. Write NR if no reaction is expected.

   Sn (s) + Zn(NO₃)₂ (aq) →

   Zn (s) + Au(NO₃)₃ (aq) →
4. Suppose that each of the following pairs of aqueous solutions is combined. For those where a reaction is expected, write a balanced formula equation, with state labels, for the reaction that occurs. If no reaction is expected, indicate this and explain why no reaction is expected.

a. Barium chloride + potassium sulfate

b. Aluminum nitrate + sodium chloride

c. Sodium hydroxide + phosphoric acid