**Lab #38: Oxidation-Reduction Reactions of Metals and Metal Ions (Investigation 15C) FOLLOW UP ACTIVITY**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Ions | | | | |
| Metals | AgNO3 | Zn(NO3)2 | Cu(NO3)2 | Sn(NO3)2 | Fe(NO3)2 |
| Zn | RXN | NR | RXN | RXN | RXN |
| Cu | RXN | NR | NR | NR | NR |
| Fe | RXN | NR | RXN | RXN | NR |
| Sn | RXN | NR | RXN | NR | NR |

RXN= Reaction NR= No Reaction

1. Using the data table above, place the elements in order of **most** easily oxidized to **least** easily oxidized (reactive).
2. Lead (Pb) falls between copper (Cu) and Tin (Sn) on the activity series. Which ions from the data table above would you expect Lead to react with? (Hint: look horizontally on the table)
   1. Ag+ only
   2. Zn 2+only
   3. Ag+ and Cu2+
   4. Zn2+ and Fe2+
   5. Ag3+, Cu2+, and Sn2+

**The following are examples of single replacement reactions. A single replacement reaction is an oxidation-reduction reaction. Directions:**

1. Balance each equation below.
2. Write out the oxidation and reduction half reactions for each equation.
3. Determine which element in each reaction is **oxidized** and which element is **reduced**. Show the electrons on the proper side of the arrow. If there is a **spectator ion**, label it as well.

|  |
| --- |
| \_\_\_\_ Na(s) + \_\_\_\_ Cl2(g) \_\_\_\_ NaCl(s) |
| \_\_\_\_ K (s) + \_\_\_\_ Na2O (aq) \_\_\_\_ Na (s) + \_\_\_\_ K2O(aq) |
| \_\_\_\_ H2 (g) + \_\_\_\_ O2 (g) \_\_\_\_ H2O(l) |
| \_\_\_\_ F2 (g) + \_\_\_\_ HCl (aq) \_\_\_\_ Cl2 (g) + \_\_\_\_ HF(aq) |
| \_\_\_\_ Zn (s) + \_\_\_\_ Pb(NO3)2(aq) \_\_\_\_ Pb (s) + \_\_\_\_ Zn(NO3)2(aq)  Hint: Charges of the metals in this reaction:  **Zn2+**  **Pb2+** |
| \_\_\_\_ FeBr3 (s) \_\_\_\_ Fe (s) + \_\_\_\_ Br2(l)  Hint: Charges of the metals in this reaction:  **Fe3+** |