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

**Activity Series Rxn Lab**

**Introduction**:

One of the most important characteristics of a metal is its activity (reactivity). The activity of a metal is its ability to react with nonmetals. In such a reaction a metal typically loses electrons to the nonmetal to form a cation and the product is an ionic compound.

Different metals have different activities (reactivity). You are tasked with providing your teacher with a *solid piece of metal* (silver**,** potassium**,** cobalt, orcopper) that you produce. You will need to observe the reactivity of the different metals and be able to establish an order of reactivity, from most active to least active, which is called an ‘activity series’. **As you are working make sure you can do the following for each reaction:**

* Construct an explanation to describe the reactants and products in each reaction
* Construct an explanation to defend the claim that a reaction has occurred.
* Analyze your results to construct your reactivity series
* Defend your reactivity series based on evidence you collected

**Objective**: Determine the order of reactivity for metals by conducting various chemical reactions and recording observations in a data table

**Prelab: Create a Data Table Below in the space provided**

**Materials:**

Copper wire

Magnesium ribbon

Aluminum pieces

Zinc pellets

Droppers containing 0.1M Solutions of:

HCl

K2CrO4

CuCl2

Fe(NO3)3

AgNO3

CoCl2

**General Procedure**:

Part 1: You will have a set of well plates and various samples of metals within them.

1. Place a small amount of each solid metal into a dry, clean well.
2. Add a **few** drops of 0.1M HCl solution and observe the well. Record all observations in your data table.
3. Dispose of all waste into properly labeled containers provided by your instructor.

Part 2: Metals and solutions

1. Rinse the well plates from part 1. You do not need to dry the wells.
2. Place a few drops of each solution into your clean well.
3. Place a small piece of each metal into the wells. Record your observations.
4. Dispose of **all waste** into the waste container at the front of the class- **nothing should be emptied into the sink!**

Record any additional procedures below. Things to include are the types of solutions, the provided metals, and **all** reactions written out **and** balanced.

**Data**:

**Post-Lab Questions**:

Answer the following questions on a separate sheet of paper.

1. . What experimental/ procedural errors affected your experiment? What changes would you make to your procedure?
2. Copper, silver, and gold were used for currency in early civilizations; propose a reason why these cultures valued these metals. Why were they so readily available? Use your data to help you with your answer.
3. Using your data, suggest observable trends in metal reactivity based on their location on the periodic table. Are there any noticeable trends? Explain.
4. Using your data and the periodic table as a guide, which metal do you expect to be most reactive in a solution of Pb(NO3)2 (lead (II) nitrate): Iron (Fe) or Platinum (Pt)? Explain.