CHEMISTRY- Properties of Metals, Nonmetals, and Metalloids

Name:

Due: Fri, Oct 7\textsuperscript{th} (end of class)

Goal: Working individually or in groups of 2, you will gather data (on a separate sheet of paper) on the following properties of a variety of metals and nonmetals:

- Physical property:
  - Conductivity
- Chemical properties:
  - Reaction to hydrochloric acid
  - Reaction to copper (II) chloride
- Appearance
- Malleability/brittleness

The substances you will be working with are:

- Metals:
  - Magnesium
  - Iron
  - Copper
  - Zinc
- Metalloid:
  - Aluminum
- Nonmetals:
  - Carbon
  - Sulfur

Materials:

Keep track of all materials used. List them on a separate sheet of paper.

Procedure:

Wear gloves and goggles throughout the entire lab. You will be working with hydrochloric acid and copper chloride, which would hurt you if you are not careful/

Go to each of the 5 stations and follow the instructions. Write a summary of what you did at each station.
Analysis questions:

1. Write in each element tested on the periodic table below. Summarize the properties of each.

2. What trends do you notice? Summarize the general properties of metals, nonmetals, and metalloids.

3. When you have finished, submit your answers and your data to the ‘Chemistry’ folder.
**STATION 1- APPEARANCE**

Do not remove any of the materials from this station.


Leave this station clean and ready for the next group.

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**STATION 2- BRITTLENESS/MALLEABILITY**

Do not remove any of the materials from this station.

How easily does each substance break/bend (Use the metal rod, if you need to)? Is it brittle? Does it splinter? Does it bend (malleable)? Be thorough.

Leave this station clean and ready for the next group. If any pieces are too small to be used any more, discard them and get new pieces from Mrs. Fu.
STATION 3- CONDUCTIVITY

Do not remove any of the materials from this station.

Use the conductivity tester to test how conductive each substance is. Record your results. Your results should be quantitative. The unit is ‘volts.’

*Do not touch the probes of the conductivity tester together. This could damage the tester**

Leave this station clean and ready for the next group. Turn the conductivity tester off before you move on.
STATION 4- REACTIVITY WITH ACID

Place a small piece of each substance in the well plate. Use a pipette to place a few drops of hydrochloric acid in each well. Observe what happens. Record your results.

Before you move on, pour the contents of your well plate in the beaker by Mrs. Fu and thoroughly clean the well plate (get a lesson from Mrs. Fu if you don’t remember how to do this). Return the clean well plate to the station. Leave this station clean and ready for the next group.
STATION 5- REACTIVITY WITH COPPER (II) CHLORIDE

Place a small piece of each substance in the well plate. Use a pipette to place a few drops of copper (II) chloride in each well. Observe what happens. Record your results.

Before you move on, pour the contents of your well plate in the beaker by Mrs. Fu and thoroughly clean the well plate (get a lesson from Mrs. Fu if you don’t remember how to do this). Return the clean well plate to the station. Leave this station clean and ready for the next group.