

Name: _____ Period: _____ Date: _____

Ms. Randall/Mr. Palermo

Due date: _____

Lab Activity: Metal, Nonmetal, or Metalloid?

Background: The periodic table can be classified into metals, nonmetals and metalloids. The characteristics of these groups vary greatly. Metals tend to be ductile, malleable, have a metallic luster and are conductors of heat and electricity. Nonmetals tend to be non-lustrous, brittle and poor conductors of heat and electricity. Ductile means that an element has the ability to be drawn into a wire. Copper is used in wiring because it is both ductile and conductive. Malleable means that an element has the ability to be hammered into thin sheets while luster means the element is shiny. Silver and gold are both malleable and lustrous, excellent properties for using these elements in jewelry. Metalloids share some characteristics of both metals and nonmetals. For example, silicon has luster and looks like a metal but does not conduct heat or electricity like a metal. Silicon is classified as a semi-conductor since it will conduct electricity better than a nonmetal. The properties of silicon make it an excellent choice for use in electronic devices.

Purpose: To investigate several properties of six elements and based on those properties identify each element as metal, nonmetal, or metalloid.

Materials: Seven elements, Conductivity tester, Hammer, 1M HCl,

Procedure:

1. At each lab table a different element is located. You will perform the same tests and/or observations at each station. You will move at the direction of the teacher.
2. **Appearance:** Observe and record the appearance of each element, including physical properties such as color, luster, and form.
3. **Conductivity:** You will test the conductivity of each element. An element is either a conductor or a nonconductor.
4. **Crushing:** Gently tap each element with your hammer. Each element is either brittle (shatters when struck) or malleable (flattens in a thin sheet).
5. **Reactivity with acid:** Place a small piece of the element in a well place with 15-20 drops of 1M HCl. Remember the indicators of a chemical reaction.

Indicators of a chemical reaction

1. **Bubbles of gas appear.**
2. **A precipitate forms.**
3. **A color change occurs.**
4. **The temperature changes.**