Name: _____

Title: Metals, Non-Metals, and Metalloids

Purpose: In this lab we will be investigating the physical and chemical properties of several different elements in order to classify each as either a Metal, a Non-Metal, or a Metalloid.
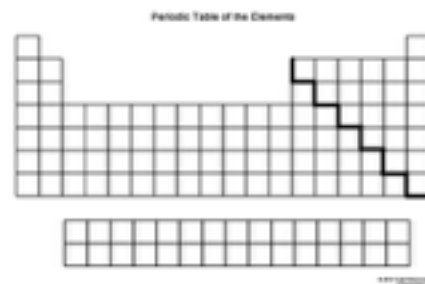
Introduction: Elements in the periodic table can be divided into three categories: metals, nonmetals, and metalloids. Metals make up approximately 75% of the elements on the periodic table and have the following physical properties: **lustrous** (have a metallic shine), **malleable** (can be hammered, pounded, or pressed into different shapes without breaking), **ductile** (can be stretched into thin wires without breaking),and are **good conductors** (can easily transfer heat and electricity). The 17 nonmetal elements have the opposite physical properties: **dull** (rarely have a luster), **brittle** (solids at room temperature cannot be hammered or stretched without breaking), and **are poor conductors**.

In addition to being separated by their physical properties, metals and non-metals tend to have opposite chemical properties. For example, metals often react with acids as seen in the production of gas bubbles, while non-metals show no reaction.

Warm Up: Read the Introduction above and complete the information below.

Metals: Elements with METALLIC qualities, characteristics, and properties.

On the Periodic Table, metals are found to the **LEFT** and **BELOW** the Staircase *(except _____)*. Shade them in on the PT to the right.
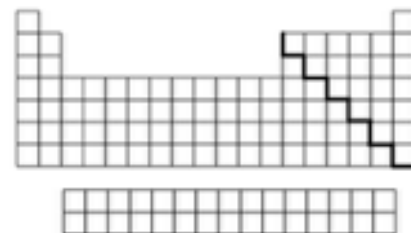

Define the **FOUR** key physical properties used to identify Metals:

    i.   **Malleable:**

         _____

    ii. **Ductile:** _____

    iii. **Lustrous:** _____

    iv. **Good Conductors:** _____

Non-Metals: Elements with NO metallic qualities, characteristics, or properties.

On the Periodic Table, Non-Metals are found to the **RIGHT** and **ABOVE** the Staircase (plus _____).Shade them in on the PT to the right.

In general, Non-Metals have the opposite properties as Metals: _____, _____, and _____ _____.

What do you think a **Metalloid** is?
_____

    i.   Using your Periodic Table, predict at least 2 physical properties(ex: dull/shiny) of the following elements:

      i.   Selenium

     ii.   Calcium

    iii.   Cobalt

    iv.   Phosphorus

ii.   A shiny element is ductile. Where is this element likely to be located on the Periodic Table?

iii.   For each of the following element, list two other elements with similar Chemical Properties?
      i.   Iodine
     ii.   Barium
    iii.   Iron

iv.   An unknown element has chemical behavior similar to that of silicon and lead. This element has an atomic mass greater than that of sulfur, but less than that of silver. Use your Periodic Table to determine the identify of the unknown element. Classify it as a metal, non-metal, or metalloid.