# Classifying Elements Laboratory Name:_____

This lab exercise will investigate how physical and chemical properties can be used to place elements into groups.

**Materials:**

well plate forceps conductivity tester hammer element samples

**Cautions:**

While most of the elements are not necessarily considered hazardous, you should handle them with forceps if possible to practice good laboratory techniques.

**Procedure:**

1. Record the labels from each element sample. Make sure that observations for each element are recorded under the proper sample label.
2. Observe each element sample. Record visual observations (color, luster, etc). You may want to scratch the surface with your forceps.
3. Test each element sample with the conductivity tester. Record results.
4. Strike each element sample with the hammer. Determine if each sample is malleable or brittle.
5. Clean up the rest of your lab area before returning to your seats. Do not forget to wash your hands!

**For your report:**

1. Create a data table of all information collected during the lab.
2. Group your elements according to the properties you observed:
    1. Create a list of malleable elements, and one of brittle elements
    2. Create a list of shiny elements, and one of dull elements
    3. Create a list of conductive elements and one of insulator elements

3. Combine your list from the above question so that the members of the combined groups are alike in most areas. You should have at least two different combined groups, possibly a third if there are one or two elements that do not fit into one of the two main groups.

4. Describe the criteria needed to be in each of your combined groups (you should have 2 criteria descriptions if you had two main groups, 3 if you had three groups)

5. Using your understanding of the properties of metals, nonmetals and metalloids, identify each of your main groups a being metals, nonmetals or metalloids.

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**Questions:**

1. How did Mendeleev arrange the periodic table?

2. Where are most of the metals found on the periodic table?

3. Where are most of the nonmetals found on the periodic table?

4. Name three metalloids that we discussed in class.

5. If an element conducts electricity well, what would you expect it to do (conduct or insulate) with energy (heat) and explain why.

6. Which property investigated today was the most difficult to determine and why?