Purpose: To examine various elements and compounds and to record their properties.

Materials: The materials required to complete this lab are:

- a number of elements – safety goggles will be provided at stations where required
- a number of compounds
- containers for any compounds or elements as needed
- index cards for labels
- a periodic table of elements (use the one in your textbook – page 54)

Method: Students will work in groups of two or as individuals. Each pure substance will be at a work station with a labeled index card and a container if necessary. Students will rotate through each work station and will record the pertinent information in the tables provided. Care should be given when working around any substance where the card is labeled with a DANGER sign. Goggles will be worn by students at these stations.

Results: Record all information from one of three sources: Index card, observation of sample, or from the periodic table in your book. (Note: **Luster**: see definition in glossary).

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Element or compound</th>
<th>Chemical formula</th>
<th>Colour &amp; Luster (shiny or not shiny)</th>
<th>State (liquid, solid, or gas)</th>
</tr>
</thead>
</table>
Discussion: Answer the following questions.

1. List all the elements in the table below. Get the information from the periodic table.

<table>
<thead>
<tr>
<th>Element</th>
<th>Ion charge</th>
<th>Atomic Number</th>
<th>Atomic Mass</th>
<th>Metal, metalloid, or non-metal</th>
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2. Answer the following questions:

a) What state were the metals in at room temperature? ________________

b) Were all the non-metals in the same state at room temperature? ______________

c) If you were examining an element and it was in a gaseous state at room temperature, would it be a metal, a metalloid, or a non-metal? ______________

d) Use the glossary in your book and the table on page 22. A dictionary may also be useful.

   i  malleable: _________________________________________________________________

   ii  ductile: ________________________________________________________________

   iii element: ________________________________________________________________

   iv  compound: ______________________________________________________________
v) luster: ________________________________________________________________

vi) atomic number: ________________________________________________________

e) If you were examining an element and it had a shiny luster and also had malleable and ductile qualities, would it more likely be a metal, a metalloid, or a non metal? ________________

f) A diatomic element is an element in which it exists only in the chemical formula $X_2$, where the $X$ is the element’s chemical symbol. Name three diatomic elements and give their formulas.

i) ___ ______________ ii) ___ _________________ iii) ___ _________________

g) When you look at the chemical makeup of a substance, how can you tell if it is an element or a compound? Be specific and use examples. (2 marks)

______________________________________________________________________________

______________________________________________________________________________

h) Explain why an element’s atomic number is a quantitative property. ______________________

______________________________________________________________________________

i) Explain why the colour of a substance is a qualitative property. ______________________

______________________________________________________________________________

Discussion: Write a paragraph in the space below which sums up what you learned in the lab. Be sure to use the terms which are underlined above to get full marks. 10 marks.

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