Guided Inquiry: Naming Ionic Compounds composed of Main Group elements

**Purpose:** To name ionic compounds composed of Main Group elements.

**Introduction:** The naming of chemical compounds is a very important skill in Chemistry. It allows you to work quickly and safely in the laboratory while making clear the ideas associated with writing chemical formulas. It is a basic form of communication in chemistry, and a necessary skill for anyone working in a chemically oriented environment (such as in labs). In this inquiry exercises you will be introduced to the ideas behind chemical naming by having to examine some chemical names and formulas and identifying your own naming rules. You will start with some examples and work backwards to the naming rules which will give you a better understanding of why the rules take the form that they do.

**Part I: Naming Ionic compounds composed of Main Group Elements.**

In this activity you will focus on the naming rules for ionic compounds composed of two different elements from groups 1A, 2A, 3A, 4A, 5A, 6A, and 7A on the periodic table. These elements are known as the Main Group elements.

**Observation:**

Look at the following group of formulas and their corresponding names. Examine the formulas and names carefully to identify patterns in the naming of these compounds. Use only your periodic table as reference.

**Chemical Formula Compound Name**

 KCl potassium chloride

 CaO calcium oxide

 AlCl3 aluminum chloride

 Li3N Lithium nitride

 Sr3P2 strontium phosphide

**The Rules:**

Using the patterns you saw above construct a set of rules for naming ionic compounds composed of main group elements. Be sure that the rules you decide on can be used to work from the chemical formula to the written form and back.

**Use the rules you came up with above to write the formulas of the ionic compounds listed below. Do these exercises without using any outside resources (other than your periodic table).**

1. sodium bromide 5. beryllium chloride
2. calcium selenide 6. magnesium sulfide
3. aluminum oxide 7. lithium phosphide
4. cesium arsenide 8. gallium selenide

**Use your rules to write the names of the following ionic compounds.**

1. Na2O 5. RbI
2. LiBr 6. CaF2
3. Cs3P 7. MgO
4. Ga2O3 8. AlN

**Analysis: Answer in Complete Sentences!**

1. Compare the rules you developed with the real rules. What were the differences? Did you include all rules? Did you miss any rules or details?
2. Review the real rules, then **Go Back and Check** if your names and formulas are correct. Circle 4 names and 4 formulas that you are confident are correct from EACH part