

## IONIC & COVALENT BONDS

Name:

Date:

Period:

An \_\_\_\_\_ is the attraction between two oppositely charged ions. The chemical bond formed when two atoms share electrons is called a \_\_\_\_\_. Covalent bonds usually form between atoms of \_\_\_\_\_ and ionic bonds usually form when a \_\_\_\_\_ combines with a \_\_\_\_\_.

### Activity A: How Do Ions Form?

#### **Procedure:**

1. Place three pairs of checkers (three red and three black) on your desk. The red represent electrons and the black represent protons.
2. Place nine pairs of checkers (nine red and nine black) in a separate group on your desk.
3. Move a red checker from the smaller group to the larger group.
4. Count the number of positive charges (protons) and negative charges (electrons) in each group.
5. Now sort the checkers into a group of four pairs and a group of eight pairs. Repeat Steps 3 and 4, this time moving two red checkers from the smaller group to the larger group.

#### **Think it over**

1. What was the total charge on each group before you moved the red checkers (electrons)?
2. What was the charge on each group after you moved the checkers?
3. Based on this activity what do you think happens to the charge on an atom when it loses electrons?
4. Based on this activity what do you think happens to the charge on an atom when it gains electrons?

### Activity B: Interpreting Data About Ions

#### **Procedure:**

1. Use the periodic table and the chart to the right to identify the charges of the ions in each ionic compound listed below.
2. Write the formulas for each compound.
  - a. sodium bromide:
  - b. lithium oxide:
  - c. magnesium sulfide:
  - d. aluminum fluoride:
  - e. potassium nitrate:
  - f. ammonium chloride

Ions and Their Charges		
Name	Charge	Symbol or Formula
Lithium	1+	Li <sup>+</sup>
Sodium	1+	Na <sup>+</sup>
Potassium	1+	K <sup>+</sup>
Ammonium	1+	NH <sub>4</sub> <sup>+</sup>
Calcium	2+	Ca <sup>2+</sup>
Magnesium	2+	Mg <sup>2+</sup>
Aluminum	3+	Al <sup>3+</sup>
Fluoride	1-	F <sup>-</sup>
Chloride	1-	Cl <sup>-</sup>
Iodide	1-	I <sup>-</sup>
Bicarbonate	1-	HCO <sub>3</sub> <sup>-</sup>
Nitrate	1-	NO <sub>3</sub> <sup>-</sup>
Oxide	2-	O <sup>2-</sup>
Sulfide	2-	S <sup>2-</sup>
Carbonate	2-	CO <sub>3</sub> <sup>2-</sup>
Sulfate	2-	SO <sub>4</sub> <sup>2-</sup>
Phosphate	3-	PO <sub>4</sub> <sup>3-</sup>

#### **Think it over:**

1. How do you know how many of each ion to write in the formula?