Name: _____ Date: _____ Period: _____

Ionic Compound Puzzle Activity

Introduction

When **metals** and **nonmetals** chemically react, the atoms will tend to form **ions** or *charged atoms*. Ions form because *electrons are either gained or lost*. **Metals will** generally **lose electrons** to form **cations** (positive ions). This is because metals tend to donate electrons in order to achieve a stable octet. **Nonmetals** will **gain electrons** to form **anions** (negative ions), since they tend to accept electrons in order to achieve a full valence shell (stable octet).

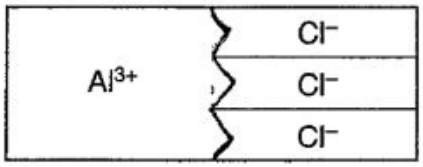
Activity

In this activity you will create *models* of **ionic compounds.** You will use those *models* to write the **chemical formulas** and the **names** of **binary ionic compounds**. You will need at least one **cation** and one **anion** for each compound.

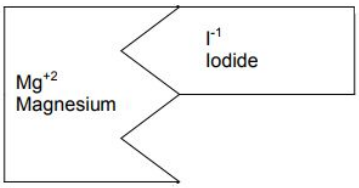
To create an ionic compound:

1. Take out your ionic compound puzzle pieces. Find the ion cards for the compound you want to create.
2. Place the cards together, adding additional cards of the same ion until you have a complete, smooth rectangle.
3. Count the number of each ion needed to make a complete rectangle and record in your table.
4. Write both the **formula** and the **name** for each ionic compound.
5. When you finish the problems listed, **fill out the table with your own ionic compounds**.

Correct Puzzle:



Incorrect:



Cation Name	**# of Cations**	**Anion Name**	**# of Anions**	**Chemical Formula**	**Ionic Compound Name**
Aluminum +3	1	Chloride -1	3	$AlCl_3$	Aluminum Chloride
Magnesium +2		Iodide -1			
Rubidium +1		Oxide -2			
Sodium +1		Chloride -1			
Titanium (IV) +4		Sulfide -2			
Potassium +1		Bromide -1			
Strontium +2		Nitride -3			

Cation Name	**# of Cations**	**Anion Name**	**# of Anions**	**Chemical Formula**	**Ionic Compound Name**
Copper (I) +1		Phosphide -3			
Copper (II) +2		Phosphide -3			

Reflection Questions

1. Do metals form anions or cations? _____

2. Can an ionic compound ever consist of a cation-cation or anion-anion bond? Explain.

_____
_____
_____
_____

3. When naming a binary compound, what ending do you use to represent anions? _____
4. What is the overall charge of ionic compounds? _____
5. Write formulas and names for the following:

   Barium and oxygen : _____

   Sodium and nitrogen : _____

   Beryllium and bromine : _____