Name:_____ Date:_____ Period:_____

CHEMACTIVITY – MODELING IONIC COMPOUNDS

Introduction

Oxidation numbers (charges of ions) give the information needed to write the formulas of many chemical compounds. Only a few guidelines are needed:

1. Ionic compounds are neutral and the positive and negative charges must always balance out to zero.
2. One positive charge cancels out one negative charge.
3. Ions with positive oxidation numbers are always written first then the negative ions come second.
4. Subscripts are used to show the relative numbers of atoms (or ions) in a compound.
5. If you have more than one polyatomic ion in a compound, the formula of the polyatomic ion is enclosed in parenthesis and the subscript follows, for example, $Al_2(SO_4)_3$.

Purpose/Objective:

To use paper models to show how chemical formulas are derived from oxidation numbers then to write the formulas and name the compounds.

Procedure:

1. Cut out the ions squares on the sheet given to you. Make sure you do not lose any because you will need most of them to complete the assignment.
2. Using the ion squares, assemble the ions for each of the pairs given below. Paste them onto a separate piece of paper.
3. Next to the squares, record the formula and name of each compound formed. After you have completed the first 5 compounds, have you teacher check your work to make sure you are doing it correctly.

Compounds to Be Assembled:

Simple Binary (5)	*Polyatomic (6)*	*Transition Metals (4)*
Aluminum and bromine	Aluminum and the nitrate ion	Iron (II) and sulfur
Sodium and oxygen	Potassium and the sulfate ion	Iron (III) and chlorine
Aluminum and oxygen	Ammonium ion and sulfur	Iron (III) and sulfate ion
Magnesium and sulfur	Sodium and phosphate ion	Iron (II) and the phosphate ion
Potassium and chlorine	Ammonium ion and bromine	
	Magnesium and nitrate ion	

Name:_____ Date:_____ Period:_____

CHEMACTIVITY – MODELING IONIC COMPOUNDS

Introduction

Oxidation numbers (charges of ions) give the information needed to write the formulas of many chemical compounds. Only a few guidelines are needed:

1. Ionic compounds are neutral and the positive and negative charges must always balance out to zero.
2. One positive charge cancels out one negative charge.
3. Ions with positive oxidation numbers are always written first then the negative ions come second.
4. Subscripts are used to show the relative numbers of atoms (or ions) in a compound.
5. If you have more than one polyatomic ion in a compound, the formula of the polyatomic ion is enclosed in parenthesis and the subscript follows, for example, $Al_2(SO_4)_3$.

Purpose/Objective:

To use paper models to show how chemical formulas are derived from oxidation numbers then to write the formulas and name the compounds.

Procedure:

1. Cut out the ions squares on the sheet given to you. Make sure you do not lose any because you will need most of them to complete the assignment.
2. Using the ion squares, assemble the ions for each of the pairs given below. Paste them onto a separate piece of paper.
3. Next to the squares, record the formula and name of each compound formed. After you have completed the first 5 compounds, have you teacher check your work to make sure you are doing it correctly.

Compounds to Be Assembled:

Simple Binary (5)	*Polyatomic (6)*	*Transition Metals (4)*
Aluminum and bromine	Aluminum and the nitrate ion	Iron (II) and sulfur
Sodium and oxygen	Potassium and the sulfate ion	Iron (III) and chlorine
Aluminum and oxygen	Ammonium ion and sulfur	Iron (III) and sulfate ion
Magnesium and sulfur	Sodium and phosphate ion	Iron (II) and the phosphate ion
Potassium and chlorine	Ammonium ion and bromine	
	Magnesium and nitrate ion	

Ion Models

Mg^{2+}	Mg^{2+}	O^{2-}	O^{2-}	O^{2-}
Al^{3+}	Al^{3+}	Cl^{-}	Cl^{-}	Cl^{-}
Fe^{2+}	Fe^{2+}	NO_3^{-}	NO_3^{-}	NO_3^{-}
Fe^{3+}	Fe^{3+}	Br^{-}	Br^{-}	Br^{-}
Na^{+}	Na^{+}	Na^{+}	S^{2-}	S^{2-}
K^{+}	K^{+}	SO_4^{2-}	SO_4^{2-}	SO_4^{2-}
NH_4^{+}	NH_4^{+}	PO_4^{3-}	PO_4^{3-}	

Ion Models

Mg^{2+}	Mg^{2+}	O^{2-}	O^{2-}	O^{2-}
Al^{3+}	Al^{3+}	Cl^{-}	Cl^{-}	Cl^{-}
Fe^{2+}	Fe^{2+}	NO_3^{-}	NO_3^{-}	NO_3^{-}
Fe^{3+}	Fe^{3+}	Br^{-}	Br^{-}	Br^{-}
Na^{+}	Na^{+}	Na^{+}	S^{2-}	S^{2-}
K^{+}	K^{+}	SO_4^{2-}	SO_4^{2-}	SO_4^{2-}
NH_4^{+}	NH_4^{+}	PO_4^{3-}	PO_4^{3-}	

Copyright © by the Glencoe Division of Macmillan/McGraw-Hill School Publishing Company

28 CHEMACTIVITY 7