

# Chemistry CP

Name: \_\_\_\_\_

Lab: Chemical Names and Formulas

Section: \_\_\_\_\_

Chemical substances are described not only by unique names but also by chemical formulas. A chemical name will describe a unique chemical formula and a chemical formula will have a unique chemical name. We use this language to communicate about chemistry.

All ions, of which some substances are made, have unique chemical names, as well. Most transition metals and the representative elements tin and lead form two or more cations. To distinguish between different cations of the same element, a Roman numeral is used in the name to indicate the numerical value of the charge.

Cations and anions combine in a ratio that makes all ionic compounds electrically neutral. Formulas for ionic compounds are written so that the positive charge contributed by the cations exactly balances the negative charge contributed by the anions. For example, the formula for the ionic compound formed from  $\text{Na}^+$  cations and  $\text{O}^{2-}$  anions is  $\text{Na}_2\text{O}$ . The formula for the cation is always written first. The subscript, 2, refers to two  $\text{Na}^+$  ions that exactly balance the 2- charge on one  $\text{O}^{2-}$  ion. To name an ionic compound, state the name of the cation and the name of the anion. Don't forget to use a Roman numeral to specify the numerical value of the positive charge of those atoms that form more than one cation.

In this lab, you will observe and describe the colors and textures of various ionic compounds. Either the names or the formulas of these compounds will be given. If the name is given, you will write its formula, and if the formula is given, you will write its name.

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## Objectives

- Write the chemical names and formulas of common chemical compounds.
- Describe the colors and textures of common ionic compounds.
- Synthesize chemical compounds, and write their names and formulas.

## Materials

Micro-scale stirring rods  
micropipettes  
Small-scale reaction surface  
Solutions of various ionic compounds

## Roles

Project Manager \_\_\_\_\_  
Materials Manager \_\_\_\_\_  
Quality Control Manager \_\_\_\_\_

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## Procedure

### Part I

1. Place one drop of each of the indicated compound on a small-scale reaction surface on top of the Experimental Page. Allow the water to evaporate.
2. Observe the solid compounds on the Experimental Page. Write the color and any other descriptive information. If the name is given, write the formula, If the formula is given, write the name. Record your results in Table 1.



Part II: Prepare the reaction mixtures as described in your lab handout in the indicated spaces below. Prepare an appropriate data table in your notebook to record your observations and names of formulas of the products.

NOTE: This is NOT your data table for part II; in your final report, you should create a table that closely resembles Table 1.

	AgNO <sub>3</sub> Ag <sup>+</sup>	Pb(NO <sub>3</sub> ) <sub>2</sub> Pb <sup>2+</sup>			
FeCl <sub>3</sub> (Cl <sup>-</sup> )					
KI (I <sup>-</sup> )			CuSO <sub>4</sub> Cu <sup>2+</sup>	MgSO <sub>4</sub> Mg <sup>2+</sup>	FeCl <sub>3</sub> Fe <sup>3+</sup>
NaOH (OH <sup>-</sup> )					
Na <sub>2</sub> CO <sub>3</sub> (CO <sub>3</sub> <sup>2-</sup> )					
Na <sub>3</sub> PO <sub>4</sub> (PO <sub>4</sub> <sup>3-</sup> )					

### Part I Experimental Sheet

Potassium iodide	Sodium chloride	Magnesium sulfate
Copper (II) sulfate	$\text{NaHCO}_3$	$\text{AgNO}_3$
$\text{NaNO}_2$	KF	Sodium carbonate
Lead (II) nitrate	Ammonium chloride	Sodium phosphate
Calcium hydroxide	Tin (IV) chloride	Potassium bromide
$\text{CaCl}_2$	$\text{FeCl}_3$	$\text{Na}_2\text{HPO}_4$