Writing Chemical Formulas

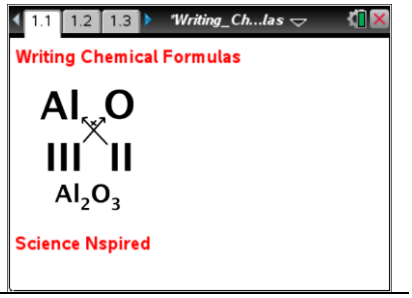
Student Activity

Name _____

Class _____

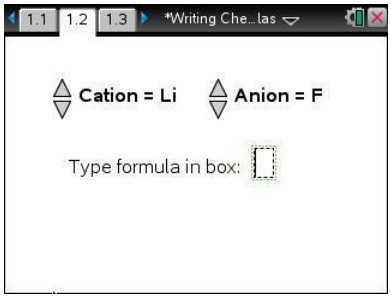
Open the TI-Nspire document *Writing_Chemical_Formulas.tns.*

In this activity you will practice writing chemical formulas for ionic binary compounds.



Move to page 1.2.

1. Review the directions for this part of the activity. You can close the directions box by selecting ☒. In this part of the activity you will write a chemical formula for a given cation and anion pair.



Answer questions 1 – 4 here on the activity sheet.

Tech Tip: To access the Directions again, select menu or **Document Tools ( ) > Writing Chemical Formulas > Directions.**

Tech Tip: To access the Directions again, select > **Directions.**

Q1. Using the Periodic table, determine the valence of Li and F and record it in the table on the next page in the corresponding boxes. Explain your answer.

Q2. What are ionic charges of the given cation and anion, Li and F? Why?

Q3. What is the simplest ratio of positive and negative ions that is needed to produce a neutral compound?

Q4. Determine the chemical formula for the Li and F compound. Check your answer by typing the formula in the ChemBox on page 1.2. Then write correct formula in the corresponding box in the table below.

	Anions -	F	Cl	Br	O	S	N	P
Cations +								
Li								
Na								
K								
Mg								
Ca								
Sr								
Al								

2. Click the up or down arrows to select different cation and anion combinations.

Answer questions 5 – 7 here on the activity sheet.

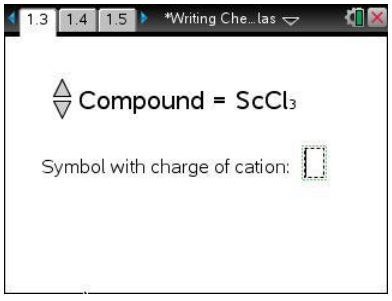
Q5. Determine the valence of the cation and anion and record them in the table above in the corresponding boxes. Explain your answers.

Q6. Determine the chemical formula for each cation and anion combination. Check your answer by typing the formula in the ChemBox on page 1.2. Then write correct formula in the corresponding box in the table above.

Q7. Explain how to choose the subscripts in a chemical formula of an ionic compound given the valences of the anion and cation.

Move to page 1.3.

3. Review the directions for this part of the activity. You can close the directions box by selecting ☒. In this part of the activity, you will determine the charge of the transition metal in the given compound.



Answer questions 8 – 12 here on the activity sheet.

Q8. Given the correct chemical formula for a compound containing transition metal, how can you determine the charge of the metal cation?

Q9. What is the ionic charge of the anion in the given compound $ScCl_3$? Explain your answer.

Q10. What is the ionic charge of the cation in the given compound $ScCl_3$? Explain your answer

4. In order to check your answer, type it in the ChemBox on page 1.3. Make sure to use [^] to insert superscript for the charge.

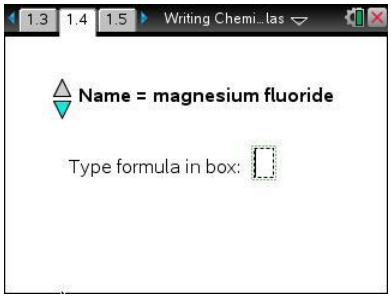
5. Click the up or down arrows to select all available compounds.

Q11. For each given compound, complete the table below and determine the ionic charge of the metal in the compound. Check your answer by typing the ion formula in the ChemBox on page 1.3.

Compound	Anion			Cation			
	Ionic Charge	Number of Elements	Total Charge	Total Charge	Number of Elements	Ionic Charge	Formula
$ScCl_3$							
CoF_2							
VCl_4							
$CrBr_3$							
$MnCl_2$							
$FeCl_2$							
Cu_2O							
ZnF_2							
$FeCl_3$							
$MnCl_4$							
$MnBr_4$							
CrP_2							
MnS_5							
Mn_2O_7							
$CuCl_2$							

Q12. Explain why you could not use periodic table to determine ionic charge of the metal in these compounds.

Move to page 1.4.



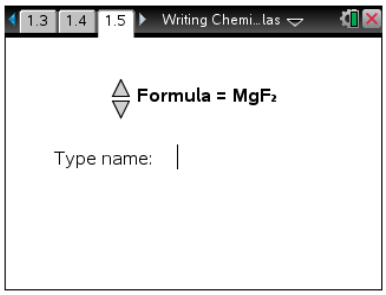
6. Review the directions for this part of the activity. In this part of the activity you will write the chemical formula given the name of a compound.

Q13. Determine the chemical formula for each compound given in the table below. Record your formula in the table. Check your work by typing the formula in the ChemBox.

Magnesium fluoride	Barium nitride	Sodium bromide	Lithium chloride
Calcium iodide	Aluminum iodide	Calcium oxide	Magnesium sulfide
Lithium oxide	Cesium nitride	Aluminum oxide	Lithium nitride
Calcium nitride	Aluminum chloride	Calcium phosphide	Iron (II) chloride
Zinc (II) oxide	Magnesium bromide	Tin (II) sulfide	Tin (IV) bromide
Copper (I) oxide	Silver (I) bromide	Iron (III) sulfide	Nickel (III) sulfide
Manganese (II) bromide	Sodium nitride	Mercury (II) oxide	Mercury (I) oxide
Tin (IV) oxide	Potassium iodide	Potassium nitride	Barium sulfide
Nickel (II) oxide	Aluminum nitride	Lead (II) sulfide	Lead (IV) sulfide
Cadmium sulfide	Tin (II) nitride	Strontium sulfide	Cobalt (III) oxide
Barium hydride	Iron (II) iodide	Silver (I) chloride	

Move to page 1.5.

7. Review the directions for this part of the activity. You can close the directions box by selecting ☒. In this part of the activity you will name the given ionic binary compounds.



Answer questions 14 – 16 here on the activity sheet.

Tech Tip: The names of compounds should be entered in small case letters with a single space between each word. For transition metals use Roman numerals in parentheses to indicate the charge.

Q14. How many elements are in binary ionic compounds? What are they?

Q15. For each given formula, record the names of the metal element, non-metal element, and the chemical name of the compound. Check your answer by typing the name of the compound at the cursor next to “Type name:” Then complete the table on the following pages.

Name _____

Class _____

Chemical Formula	Cation	Anion	Chemical Name
MgF_2			
Ba_3N_2			
NaBr			
LiCl			
CaI_2			
AlI_3			
CaO			
MgS			
Li_2O			
Cs_3N_2			
Al_2O_3			
Li_3N			
Ca_3N_2			
Ca_3P_2			
$FeCl_2$			
ZnO			
MgBr			

Name _____

Class _____

Chemical Formula	Cation	Anion	Chemical Name
SnS			
$SnBr_4$			
Cu_2O			
AgBr			
Fe_2S_3			
Ni_2S_3			
$MnBr_2$			
Na_3N			
HgO			
Hg_2O			
SnO_2			
KI			
K_3N			
BaS			
NiO			
MgS			
AlN			
PbS			
PbS_2			
CdS			
Sn_3N_2			
Sr_2S			
Co_2O_3			
BaH_2			
FeI_2			
AgCl			

Q16. What is the general rule for naming binary chemical compounds?