



Writing Chemical Formulas

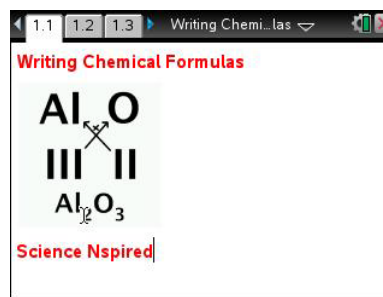
Student Activity

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 clicking . You can also view the directions again by pressing .

In this part of the activity you will write a chemical formula for a given cation and anion pair.

Press and to navigate through the lesson.

Cation = Li Anion = F

Type formula in box:

Answer questions 1–4 here on the activity sheet.

- 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 on the next page.



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

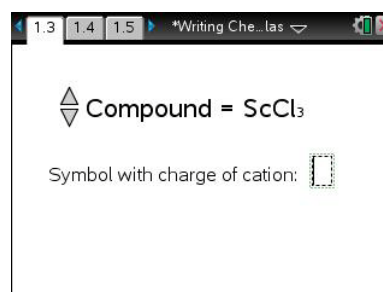
2. Click the up or down arrows to select different cation and anion combinations.

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 clicking . You can also view the directions again by pressing **menu**. 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 $\boxed{\wedge}$ to insert superscript for the charge.

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

Q11. For each given compounds 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							

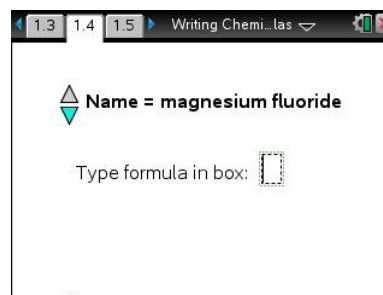
Q12. Explain why you could not use periodic table to determine ionic charge of the metal in these compounds.



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	





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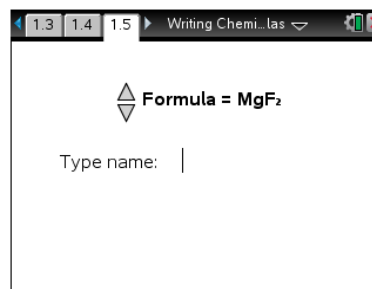
Student Activity

Name _____

Class _____

Move to page 1.5.

7. Review the directions for this part of the activity. You can close the Directions box by clicking . You can also view the directions again by pressing . In this part of the activity you will name the given ionic binary compounds.



Answer questions 14–16 here on the activity sheet.

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 below and on the next page.

Chemical Formula	Cation	Anion	Chemical Name
MgF ₂			
Ba ₃ N ₂			
NaBr			
LiCl			
CaI ₂			
AlI ₃			
CaO			
MgS			
Li ₂ O			
Cs ₃ N ₂			
Al ₂ O ₃			
Li ₃ N			
Ca ₃ N ₂			
Ca ₃ P ₂			
FeCl ₂			
ZnO			
MgBr			



Writing Chemical Formulas

Student Activity

Name _____

Class _____

Chemical Formula	Cation	Anion	Chemical Name
SnS			
SnBr ₄			
Cu ₂ O			
AgBr			
Fe ₂ S ₃			
Ni ₂ S ₃			
MnBr ₂			
Na ₃ N			
HgO			
Hg ₂ O			
SnO ₂			
KI			
K ₃ N			
BaS			
NiO			
MgS			
AlN			
PbS			
PbS ₂			
CdS			
Sn ₃ N ₂			
Sr ₂ S			
Co ₂ O ₃			
BaH ₂			
FeI ₂			
AgCl			

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