

**Table 1: Writing Chemical Formula's for a Ternary Compound**

Fill in the table with appropriate metal ion, non-metal ion and the chemical formula of the compound.

	Chemical Name	Metal ion (cation)	Polyatomic ion (anion)	Chemical Formula
1	Sodium carbonate	Na <sup>+</sup>	(CO <sub>3</sub> ) <sup>-2</sup>	Na <sub>2</sub> CO <sub>3</sub>
2	Calcium nitrate	Ca <sup>2+</sup>	(NO <sub>3</sub> ) <sup>1-</sup>	Ca(NO <sub>3</sub> ) <sub>2</sub>
3	Manganese (IV) sulfate	Mn <sup>4+</sup>	(SO <sub>4</sub> ) <sup>2-</sup>	Mn(SO <sub>4</sub> ) <sub>2</sub>
4	Aluminum hydrogen carbonate	Al <sup>3+</sup>	(HCO <sub>3</sub> ) <sup>1-</sup>	Al(HCO <sub>3</sub> ) <sub>3</sub>
5	Potassium phosphate	K <sup>1+</sup>	(PO <sub>4</sub> ) <sup>3-</sup>	K <sub>3</sub> PO <sub>4</sub>
6	Beryllium hydroxide	Be <sup>2+</sup>	(OH) <sup>1-</sup>	Be(OH) <sub>2</sub>
7	Gold (I) hydrogen sulfate	Au <sup>1+</sup>	(HSO <sub>4</sub> ) <sup>1-</sup>	AuHSO <sub>4</sub>
8	Ammonium chloride	NH <sub>4</sub> <sup>1+</sup>	Cl <sup>1-</sup>	NH <sub>4</sub> Cl
9	Nickel (II) chlorate	Ni <sup>2+</sup>	(ClO <sub>3</sub> ) <sup>1-</sup>	Ni(ClO <sub>3</sub> ) <sub>2</sub>
10	Mercury (I) hydroxide	Hg <sup>1+</sup>	(OH) <sup>1-</sup>	HgOH
11	Ammonium nitrite	NH <sub>4</sub> <sup>1+</sup>	(NO <sub>2</sub> ) <sup>1-</sup>	NH <sub>4</sub> NO <sub>3</sub>
12	Tin (IV) sulfite	Sn <sup>4+</sup>	(SO <sub>3</sub> ) <sup>2-</sup>	Sn(SO <sub>3</sub> ) <sub>2</sub>

**Table 2: Naming Ternary Ionic Compounds** Fill in the table with the name of the compound.

	Chemical Formula	Non-metal ion (anion)	Calculations	Metal ion (cation)	Chemical Name
1	AuClO <sub>3</sub>	(ClO <sub>3</sub> ) <sup>-1</sup>	1(1+) = 1(1-) Au ClO <sub>3</sub>	Au <sup>1+</sup>	gold (I) chlorate
2	Fe(OH) <sub>2</sub>	(OH) <sup>-1</sup>	1(2+) = 2(1-) Fe OH	Fe <sup>2+</sup>	iron (II) hydroxide
3	CaCO <sub>3</sub>	(CO <sub>3</sub> ) <sup>-1</sup>		Ca <sup>2+</sup>	calcium carbonate
4	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	(SO <sub>4</sub> ) <sup>-1</sup>		(NH <sub>4</sub> ) <sup>1+</sup>	ammonium sulfate
5	Li <sub>2</sub> HPO <sub>4</sub>	(HPO <sub>4</sub> ) <sup>-1</sup>		Li <sup>1+</sup>	lithium hydrogen phosphate
6	Be <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	(PO <sub>4</sub> ) <sup>-1</sup>		Be <sup>2+</sup>	beryllium phosphate
7	Cu(HSO <sub>4</sub> ) <sub>2</sub>	(HSO <sub>4</sub> ) <sup>-1</sup>	1(2+) = 2(1-) Cu HSO <sub>4</sub>	Cu <sup>2+</sup>	copper (II) hydrogen sulfate
8	Sn(CN) <sub>4</sub>	(CN) <sup>-1</sup>	1(4+) = 4(1-) Sn CN	Sn <sup>4+</sup>	Tin (IV) cyanide
9	Na <sub>2</sub> SO <sub>4</sub>	(SO <sub>4</sub> ) <sup>-2</sup>		Na <sup>1+</sup>	Sodium sulfate
10	Hg(NO <sub>3</sub> ) <sub>2</sub>	(NO <sub>3</sub> ) <sup>-1</sup>	1(2+) = 2(1-) Hg NO <sub>3</sub>	Hg <sup>2+</sup>	mercury (II) nitrate
11	W(SO <sub>4</sub> ) <sub>2</sub>	(SO <sub>4</sub> ) <sup>-2</sup>	1(4+) = 2(2-) W SO <sub>4</sub>	W <sup>4+</sup>	tungsten (IV) sulfate
12	Zn(HCO <sub>3</sub> ) <sub>2</sub>	(HCO <sub>3</sub> ) <sup>-1</sup>	1(2+) = 2(1-) Zn HCO <sub>3</sub>	Zn <sup>2+</sup>	zinc hydrogen carbonate

**Table 3: A Mixture of Binary and Ternary Ionic Compounds**

Part A: State if the compound is a binary compound (B) or a ternary compound (T). Write the cation, and anion, and the chemical formula for each of the following ionic compounds.

	Chemical Name	B or T	Cation	Anion	Chemical Formula
1	Sodium phosphate	T	$\text{Na}^{+1}$	$(\text{PO}_4)^{-3}$	$\text{Na}_3\text{PO}_4$
2	Silver carbonate	T	$\text{Ag}^{+1}$	$(\text{CO}_3)^{2-}$	$\text{Ag}_2\text{CO}_3$
3	Ammonium chlorate	T	$\text{NH}_4^{+1}$	$(\text{ClO}_3)^{1-}$	$\text{NH}_4\text{ClO}_3$
4	Antimony (III) nitride	B	$\text{Sb}^{3+}$	$\text{N}^{3-}$	$\text{SbN}$
5	Uranium (II) oxide	B	$\text{U}^{2+}$	$\text{O}^{2-}$	$\text{UO}$
6	Strontium iodide	B	$\text{Sr}^{2+}$	$\text{I}^{1-}$	$\text{SrI}_2$
7	Magnesium phosphate	T	$\text{Mg}^{2+}$	$(\text{PO}_4)^{3-}$	$\text{Mg}_3(\text{PO}_4)_2$
8	Zinc cyanide	T	$\text{Zn}^{2+}$	$(\text{CN})^{1-}$	$\text{Zn}(\text{CN})_2$
9	Platinum (IV) hydroxide	T	$\text{Pt}^{4+}$	$(\text{OH})^{1-}$	$\text{Pt}(\text{OH})_4$
10	Lithium nitrite	T	$\text{Li}^{+1}$	$(\text{NO}_2)^{1-}$	$\text{LiNO}_2$
11	Mercury (I) phosphate	T	$\text{Hg}^{+1}$	$(\text{PO}_4)^{3-}$	$\text{Hg}_3\text{PO}_4$
12	Zirconium hydroxide	T	$\text{Zr}^{4+}$	$\text{OH}^{1-}$	$\text{Zr}(\text{OH})_4$

**Table 4:** Part B: State if the compound is a binary compound (B) or a ternary compound (T). State if the metal cation is regular monovalent (R) or multivalent (M), and write the chemical name for each compound.

	Chemical Formula	B or T	R or M	Chemical name
1	$\text{Mg}_3\text{P}_2$	B	R	Magnesium phosphide
2	$\text{Fe}_2\text{O}_3$	B	M	iron (III) oxide
3	$\text{Co}_2(\text{SO}_4)_3$	T	M	Cobalt (III) sulfate
4	$\text{Al}(\text{OH})_3$	T	R	aluminum hydroxide
5	$\text{CaCO}_3$	T	R	calcium carbonate
6	$\text{VCl}_5$	B	M	vanadium (V) chloride
7	$\text{Mn}(\text{CO}_3)_2$	T	M	manganese (IV) carbonate
8	$(\text{NH}_4)_3\text{PO}_4$	T	R	ammonium phosphate
9	$\text{Ni}(\text{CN})_2$	T	M	nickel (II) cyanide
10	$\text{K}_3\text{As}$	B	R	potassium arsenide
11	$\text{BeSO}_3$	T	R	beryllium sulfate
12	$\text{Sn}(\text{ClO}_3)_4$	T	M	tin (IV) chlorate