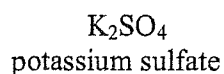
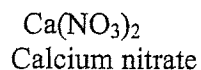


Writing Formulas for Ternary Ionic Compounds

Ternary ionic compounds contain atoms of three different elements. Usually these compounds contain one or more polyatomic ions.

Follow the same procedure for writing the formula of a ternary compound as a binary compound.



Whenever more than a single polyatomic ion is needed to balance a formula, parentheses must be used. This is the only time they are used.

Write the formulas for these compounds:

potassium hydroxide

magnesium perchlorate

iron(III) silicate

ammonium oxalate

copper(I) chromate

lead(II) sulfide

Write formulas for these ternary ionic compounds.

a. Barium sulfate

b. aluminum hydrogen carbonate

c. sodium hypochlorite

d. lead(IV) chromate

e. mercury(II) bromide

f. ammonium dichromate

g. lithium hydrogen sulfate

h. chromium(III) nitrite

Write names for these compounds.

a. $\text{Cr}(\text{NO}_3)_2$

b. $\text{Mg}_3(\text{PO}_4)_2$

c. Cu_2HPO_4

d. Li_2CrO_4

e. K_3AsO_4

f. SnS_2O_3

g. LiSCN

h. $\text{CH}_3\text{NH}_3\text{F}$

Name _____ Class _____ Date _____

Skillsheet 3-3

Writing Chemical Formulas

The tables below list some common ions. Some ions are made of single atoms that have gained or lost electrons. Others are made of groups of atoms that are joined together but have gained or lost electrons. The charge of each ion is given in the upper right corner of the symbol.

Positive Ions			
Name	Symbol	Name	Symbol
aluminum	Al^{3+}	lead	Pb^{2+}
ammonium	NH_4^+	potassium	K^+
calcium	Ca^{2+}	silver	Ag^+
copper	Cu^{2+}	sodium	Na^+
iron	Fe^{3+}	zinc	Zn^{2+}

Negative Ions			
Name	Symbol	Name	Symbol
acetate	$\text{C}_2\text{H}_3\text{O}_2^-$	iodide	I^-
carbonate	CO_3^{2-}	nitrate	NO_3^-
chlorate	ClO_3^-	oxide	O^{2-}
chloride	Cl^-	phosphate	PO_4^{3-}
hydroxide	OH^-	sulfate	SO_4^{2-}

Ionic compounds are a combination of positive and negative ions. The total charge in the compound must be zero. The formula for the compound shows the minimum number of each kind of ion needed to cancel the positive and negative charges.

For example, calcium nitrate is made from Ca^{2+} and NO_3^- ions. There must be two NO_3^- ions for each Ca^{2+} ion. The formula for calcium nitrate is $\text{Ca}(\text{NO}_3)_2$.

Write correct formulas (total charge equals zero) for the following compounds.

- | | |
|-----------------------------|------------------------------|
| 1. ammonium nitrate _____ | 11. ammonium phosphate _____ |
| 2. calcium chloride _____ | 12. calcium carbonate _____ |
| 3. aluminum nitrate _____ | 13. aluminum oxide _____ |
| 4. sodium carbonate _____ | 14. sodium phosphate _____ |
| 5. zinc sulfate _____ | 15. zinc hydroxide _____ |
| 6. potassium chlorate _____ | 16. potassium iodide _____ |
| 7. iron iodide _____ | 17. iron chlorate _____ |
| 8. lead acetate _____ | 18. lead sulfate _____ |
| 9. copper sulfate _____ | 19. copper chloride _____ |
| 10. silver nitrate _____ | 20. silver sulfate _____ |