

# Download File PDF Polyatomic Ions Pogil Answer Key

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15. Resonance forms polyatomic ions with structures similar to those of chlorite. Using the chlorite family of polyatomic ions as a model, predict the name of the  $\text{BrO}_2^-$  ion.  
 *$\text{ClO}_2^-$  is perchlorate, chlorate,  $\text{BrO}_2^-$  is perbromate.*

16. Identify the polyatomic ions in each of these ionic compounds. Write out the name and formula of the ions including their charges.

a.  $\text{CaCO}_3$  *Calcium carbonate*  $\text{Ca}^{+2}$   $\text{CO}_3^{-2}$   
b.  $\text{Mg(OH)}_2$  *magnesium hydroxide*  $\text{Mg}^{+2}$   $\text{OH}^{-1}$   
c.  $\text{NH}_4\text{Cl}$  *ammonium chloride*  $\text{NH}_4^{+1}$   $\text{Cl}^{-1}$

### Model 3 – Ternary Ionic Compounds

Compound Name	Ion Symbols and Charges	Chemical Formula
Ammonium phosphate	$\text{NH}_4^+$ $\text{PO}_4^{3-}$	$(\text{NH}_4)_3\text{PO}_4$
Barium nitrate	$\text{Ba}^{2+}$ $\text{NO}_3^-$	$\text{Ba}(\text{NO}_3)_2$
Ammonium sulfate	$\text{NH}_4^+$ $\text{SO}_4^{2-}$	$(\text{NH}_4)_2\text{SO}_4$
Aluminum carbonate	$\text{Al}^{3+}$ $\text{CO}_3^{2-}$	$\text{Al}_2(\text{CO}_3)_3$
Iron(III) hydroxide	$\text{Fe}^{3+}$ $\text{OH}^-$	$\text{Fe}(\text{OH})_3$
Potassium nitrate	$\text{K}^+$ $\text{NO}_3^-$	$\text{KNO}_3$

17. How are ternary ionic compounds in Model 3 different from binary ionic compounds (NaCl, Mg<sup>2+</sup>Cl<sup>-2</sup>, etc.) that you've seen previously? If not, consider the meaning of the word "ternary".

*Ternary ionic compounds contain more than two elements. Binary ionic compounds contain only two elements.*

18. Consider the compound iron(III) hydroxide in Model 3.

a. How many hydroxide ions ( $\text{OH}^-$ ) are combined with an iron(III) ion ( $\text{Fe}^{3+}$ )?  
*There are three hydroxide ( $\text{OH}^-$ ) for every one iron(III) ( $\text{Fe}^{3+}$ ) ion.*

b. Is there evidence to put a subscript on iron(III) and hydroxide (the  $\text{OH}^-$ ) ions in the name? Explain.  
*Yes. The ratio of three  $\text{Fe}^{3+}$  and three  $\text{OH}^-$  is the only ratio that can balance the charge of the two ions.*

19. Consider the compound barium nitrate in Model 3.

a. What does the subscript "2" inside the parentheses of the chemical formula tell you about the compound?  
*The "2" inside the parentheses indicates that there are two oxygen atoms in the nitrate ( $\text{NO}_3^-$ ) polyatomic ion.*

Key