

## Polyatomic Ion Worksheet

1. Write all the possible molecular formulas and names of the molecules formed when the following metals: Na, Ca and Al bond with the radicals:  $\text{CO}_3^{2-}$   $\text{ClO}_3^-$   $\text{PO}_4^{3-}$

Correct Molecular Formula	Name of molecule (use chart in notes)

2. Some of the following molecules have not been properly bonded. Determine which are wrong and re-write them correctly.

Molecule	Correct molecular formula
NaOH (-1)	
$\text{Li}_2\text{NO}_3$ (-1)	
$\text{Ca}_3(\text{CrO}_4)_2$ (-2)	
$\text{BPO}_4$ (-3)	
$\text{Be}(\text{PO}_4)$ (-3)	
$\text{MgCO}_3$ (-2)	
$\text{Mg}(\text{ClO}_3)_2$ (-1)	
$\text{H}_2\text{SO}_4$ (-2)	

3. The formula aluminum oxalate is  $\text{Al}_2(\text{C}_2\text{O}_4)_3$ . In this formula, what is the charge of the radical oxalate,  $\text{C}_2\text{O}_4$ ?
- A) 1-                      B) 2-                      C) 3-                      D) 6-
4. Given that the radical  $\text{AsO}_4$  has charge of  $3^-$ , determine with the help of the periodic table, the formula of the compound resulting from its combination with magnesium.
- A)  $\text{MgAsO}_4$               B)  $\text{Mg}_3(\text{AsO}_4)_2$               C)  $\text{Mg}_3\text{AsO}_4$               D)  $\text{Mg}(\text{AsO}_4)_3$
5. Among the following chemical formulas, which contains two radicals?
- A)  $\text{H}_2\text{SO}_4$               B)  $\text{NH}_4\text{OH}$               C)  $\text{NaNO}_3$               D)  $\text{CaCO}_3$
6. Among the following chemical formulas, which contains a radical with a -3 charge?
- A)  $(\text{NH}_4)\text{SO}_4$               B)  $\text{NaNO}_3$               C)  $\text{Ca}_3(\text{PO}_4)_2$               D)  $\text{MgCO}_3$
7. Each statement below indicates the electric charge on the polyatomic ion in a given compound. Which of the following statements is true?
- A) In the compound  $\text{Ca}(\text{NO}_3)_2$ , the electric charge on the  $\text{NO}_3$  ion is 2-
- B) In the compound  $\text{Al}_2(\text{CrO}_4)_3$ , the electric charge on the  $\text{CrO}_4$  ion is 2-
- C) In the compound  $\text{K}_2\text{SO}_4$ , the electric charge on the  $\text{SO}_4$  ion is 1-
- D) In the compound  $\text{NH}_4\text{Cl}$ , the electric charge on the  $\text{NH}_4$  ion is 1-
8. What is the molecular formula of the compound formed by combining the phosphate ion  $\text{PO}_4^{3-}$  with the magnesium ion?
- A)  $\text{MgPO}_4$               B)  $\text{Mg}_3\text{PO}_4$               C)  $\text{Mg}_2(\text{PO}_4)_3$               D)  $\text{Mg}_3(\text{PO}_4)_2$
9. The molecular formula for barium silicate is  $\text{BaSiO}_3$ . In this formula, what is the charge of the polyatomic ion silicate  $\text{SiO}_3$ ?
- A) 1+                      B) 1-                      C) 2+                      D) 2-
10. Among the following chemical formulas, which contains a radical with a -3 charge?
- A)  $(\text{NH}_4)_2\text{SO}_4$               B)  $\text{Ca}_3(\text{PO}_4)_2$               C)  $\text{NaNO}_3$               D)  $\text{MgCO}_3$
11. Which of the following is the correct formula for the compound aluminum cation and anion  $\text{Cr}_2\text{O}_7^{2-}$ ?
- A)  $\text{AlCr}_2\text{O}_7$               B)  $\text{Al}_3(\text{Cr}_2\text{O}_7)_2$               C)  $\text{Al}_2\text{Cr}_2\text{O}_7$               D)  $\text{Al}_2(\text{Cr}_2\text{O}_7)_3$
12. The molecular formula for magnesium chromate is  $\text{MgCrO}_4$ . In this formula, what is the charge of the polyatomic ion chromate  $\text{CrO}_4$ ?
- A) 1+                      B) 1-                      C) 2+                      D) 2-
13. Write the chemical formula for the compound formed between the anion  $\text{PO}_4^{3-}$  and each of the following cations.

A- sodium \_\_\_\_\_              C- calcium \_\_\_\_\_

B- aluminum \_\_\_\_\_