

## Polyatomic Worksheet

Use the chart in your notes for all the radical information.

- Write all the possible molecular formulas and names of the molecules formed when the following metals and radicals bond.

Na	Ca	Al	CO <sub>3</sub> <sup>2-</sup>	ClO <sub>3</sub> <sup>-</sup>	PO <sub>4</sub> <sup>3-</sup>
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Formula	Name
Na <sub>2</sub> CO <sub>3</sub>	Sodium carbonate
NaClO <sub>3</sub>	" chlorate
Na <sub>3</sub> PO <sub>4</sub>	" phosphate
CaCO <sub>3</sub>	calcium carbonate
Ca(ClO <sub>3</sub> ) <sub>2</sub>	" chlorate
Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	" phosphate
Al <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub>	Aluminum carbonate
Al(ClO <sub>3</sub> ) <sub>3</sub>	" chlorate
AlPO <sub>4</sub>	" phosphate

- Some of the following molecules do not have the proper ions showing. Determine which are wrong and correct them.

Molecule	Correction
NaOH	Na <sub>1</sub> OH <sub>1</sub> = NaOH = correct
Li <sub>2</sub> NO <sub>3</sub>	Li <sub>1</sub> NO <sub>3</sub> <sub>1</sub> = LiNO <sub>3</sub>
Ca <sub>3</sub> (CrO <sub>4</sub> ) <sub>2</sub>	Ca <sub>2</sub> CrO <sub>4</sub> <sub>2</sub> = CaCrO <sub>4</sub>
BPO <sub>4</sub>	B <sub>3</sub> PO <sub>4</sub> <sub>3</sub> = BPO <sub>4</sub> = correct
Be(PO <sub>4</sub> )	Be <sub>2</sub> PO <sub>4</sub> <sub>3</sub> = Be <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>
MgCO <sub>3</sub>	Mg <sub>2</sub> CO <sub>3</sub> <sub>2</sub> = MgCO <sub>3</sub> = correct
Mg(ClO <sub>3</sub> ) <sub>2</sub>	Mg <sub>2</sub> ClO <sub>3</sub> <sub>1</sub> Mg(ClO <sub>3</sub> ) <sub>2</sub> = correct
H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub> H <sub>1</sub> SO <sub>4</sub> <sub>2</sub> = H <sub>2</sub> SO <sub>4</sub> = correct

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  $\text{Na}_3\text{PO}_4$

C- calcium  $\text{Ca}_3(\text{PO}_4)_2$

B- aluminum  $\text{AlPO}_4$