

## Chemistry Formula Writing Worksheet Answer Key PDF

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### Part 1: Building a Foundation

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**What is the chemical symbol for Sodium?**

undefined. S

**undefined. Na ✓**

undefined. Sn

undefined. N

The chemical symbol for Sodium is Na.

**Which of the following are polyatomic ions?**

**undefined.  $\text{SO}_4^{2-}$  ✓**

**undefined.  $\text{NO}_3^-$  ✓**

undefined. Cl

**undefined.  $\text{NH}_4^+$  ✓**

Polyatomic ions include  $\text{SO}_4^{2-}$ ,  $\text{NO}_3^-$ , and  $\text{NH}_4^+$ .

**Explain the difference between a cation and an anion.**

**A cation is a positively charged ion, while an anion is a negatively charged ion.**

**List the chemical symbols for the following elements:**

1. Oxygen

**O**

2. Calcium

**Ca**

3. Iron

**Fe**

The chemical symbols are O for Oxygen, Ca for Calcium, and Fe for Iron.

**Which of the following compounds is ionic?**

undefined.  $\text{CO}_2$

undefined.  $\text{H}_2\text{O}$

**undefined. NaCl ✓**

undefined.  $\text{CH}_4$

NaCl is an ionic compound.

## Part 2: Comprehension and Application

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**What does the subscript '2' indicate in the chemical formula  $\text{H}_2\text{O}$ ?**

undefined. Two molecules of water

**undefined. Two atoms of hydrogen ✓**

undefined. Two atoms of oxygen

undefined. Two ions of hydrogen

The subscript '2' indicates there are two atoms of hydrogen.

**Which of the following statements are true about covalent compounds?**

**undefined. They involve the sharing of electrons. ✓**

undefined. They are typically formed between metals and nonmetals.

**undefined. They can have prefixes like mono-, di-, and tri-. ✓**

**undefined. They are always neutral. ✓**

True statements include that they involve sharing of electrons, can have prefixes, and are always neutral.

**Describe how the charges of ions are balanced in an ionic compound.**

The charges of cations and anions balance to create a neutral compound.

Which formula correctly represents calcium nitrate?

undefined.  $\text{CaNO}_3$

undefined.  $\text{Ca}(\text{NO}_3)_2$  ✓

undefined.  $\text{Ca}_2\text{NO}_3$

undefined.  $\text{Ca}_3(\text{NO}_3)_2$

The correct formula for calcium nitrate is  $\text{Ca}(\text{NO}_3)_2$ .

Identify the correct formulas for compounds containing the sulfate ion.

undefined.  $\text{Na}_2\text{SO}_4$  ✓

undefined.  $\text{K}_2\text{SO}_4$  ✓

undefined.  $\text{MgSO}_4$  ✓

undefined.  $\text{Al}_2(\text{SO}_4)_3$  ✓

Correct formulas include  $\text{Na}_2\text{SO}_4$ ,  $\text{K}_2\text{SO}_4$ ,  $\text{MgSO}_4$ , and  $\text{Al}_2(\text{SO}_4)_3$ .

Write the chemical formula for a compound formed between aluminum and oxygen. Explain your reasoning.

The formula is  $\text{Al}_2\text{O}_3$ , formed by balancing the charges of  $\text{Al}^{3+}$  and  $\text{O}^{2-}$ .

### Part 3: Analysis, Evaluation, and Creation

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Which of the following compounds has a transition metal with a variable charge?

undefined.  $\text{FeCl}_3$  ✓

undefined.  $\text{NaCl}$

undefined.  $\text{MgO}$

undefined.  $\text{CO}_2$

$\text{FeCl}_3$  has iron, a transition metal with a variable charge.

Analyze the following compounds and select those that are correctly balanced.

undefined.  $K_2O$  ✓

undefined.  $AlCl_3$  ✓

undefined.  $CaCl_2$  ✓

undefined.  $Na_2O_2$

Correctly balanced compounds include  $K_2O$ ,  $AlCl_3$ , and  $CaCl_2$ .

Analyze the compound  $Fe_2O_3$  and explain the oxidation state of iron in this compound.

In  $Fe_2O_3$ , the oxidation state of iron is +3.

Which of the following best explains why water ( $H_2O$ ) is a covalent compound?

undefined. It contains a metal and a nonmetal.

undefined. It involves the transfer of electrons.

undefined. It involves the sharing of electrons between hydrogen and oxygen. ✓

undefined. It forms a crystal lattice structure.

Water is a covalent compound because it involves the sharing of electrons between hydrogen and oxygen.

Evaluate the following statements and identify which are true about ionic compounds.

undefined. They conduct electricity when dissolved in water. ✓

undefined. They have high melting and boiling points. ✓

undefined. They are formed by the sharing of electrons.

undefined. They are typically soluble in nonpolar solvents.

True statements include that they conduct electricity when dissolved in water and have high melting and boiling points.

Design a new compound using the elements potassium and sulfur. Write its chemical formula and explain the process of balancing the charges.

The formula is  $K_2S$ , formed by balancing the +1 charge of potassium with the -2 charge of sulfur.