

## Chemical Names And Formulas Worksheet

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### Part 1: Building a Foundation

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#### What is the correct chemical formula for water?

Hint: Think about the common name for water.

- H<sub>2</sub>O
- HO<sub>2</sub>
- H<sub>2</sub>O<sub>2</sub>
- OH<sub>2</sub>

#### Which of the following are polyatomic ions? (Select all that apply)

Hint: Look for ions that consist of more than one atom.

- NO<sub>3</sub><sup>-</sup>
- Cl<sup>-</sup>
- SO<sub>4</sub><sup>2-</sup>
- Na<sup>+</sup>

#### Explain the difference between an ionic and a covalent compound.

Hint: Consider the types of bonds and the elements involved.

#### List the chemical formulas for the following compounds:

*Hint: Use the common names to find the formulas.*

1. Sodium chloride

2. Carbon dioxide

3. Ammonium nitrate

**Which prefix is used to indicate two atoms of an element in a covalent compound?**

*Hint: Think about the Greek prefixes used in naming.*

- Mono-
- Di-
- Tri-
- Tet-

## Part 2: Comprehension and Application

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**What is the name of the compound with the formula CO<sub>2</sub>?**

*Hint: Consider the common name for this compound.*

- Carbon monoxide
- Carbon dioxide
- Carbon oxide
- Dicarbon monoxide

**Which of the following are characteristics of ionic compounds? (Select all that apply)**

*Hint: Think about the properties of ionic compounds.*

- High melting points
- Conduct electricity when dissolved in water
- Formulated between non-metals
- Generally soluble in water

**Describe how the charge of a transition metal ion is indicated in its name.**

*Hint: Consider the naming conventions for transition metals.*

**Write the chemical formulas for the following compounds using the given names:**

*Hint: Use the names to determine the correct formulas.*

1. Calcium phosphate

2. Iron (III) chloride

3. Dinitrogen tetroxide

**Given the compound name "sulfur hexafluoride," write its chemical formula and explain the reasoning behind your answer.**

*Hint: Consider the prefixes used in the name.*

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

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**Analyze the compound  $H_2SO_4$  and explain how its name is derived from its components.**

*Hint: Consider the elements and their quantities in the formula.*

**Which of the following statements are true about polyatomic ions? (Select all that apply)**

*Hint: Think about the structure and charge of polyatomic ions.*

- They are composed of multiple atoms.
- They always carry a positive charge.
- They can form ionic compounds.
- They are always anions.

**Which of the following is the correct name for the compound with the formula  $K_2SO_4$ ?**

*Hint: Consider the components of the formula.*

- Potassium sulfide
- Potassium sulfate
- Potassium sulfite
- Dipotassium sulfate

**Evaluate the naming system for acids and propose a method to simplify it for beginners.**

*Hint: Consider the common challenges faced by students.*

**Create a balanced chemical equation for the reaction between hydrochloric acid and sodium hydroxide. List the reactants and products.**

*Hint: Consider the products of an acid-base reaction.*

1. Reactants

2. Products

**Reflect on the importance of chemical nomenclature in scientific communication and propose two ways it could be improved for clarity.**

*Hint: Consider the challenges faced by students and professionals.*

**Which of the following compounds would you expect to have the highest melting point based on its ionic nature?**

*Hint: Consider the properties of ionic compounds.*

- H<sub>2</sub>O
- NaCl
- CO<sub>2</sub>
- CH<sub>4</sub>