

Chemical Formula Writing Worksheet

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Part 1: Building a Foundation

What is the chemical symbol for Sodium?

Hint: Think about the periodic table.

- A) S
- B) Na
- C) N
- D) So

Which of the following are polyatomic ions?

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

- A) NH_4^+
- B) Cl^-
- C) SO_4^{2-}
- D) O^{2-}

Explain the difference between a cation and an anion.

Hint: Consider the charge of each type of ion.

List the chemical symbols for the following elements: Hydrogen, Oxygen, Calcium.

Hint: Refer to the periodic table for symbols.

1. Hydrogen

2. Oxygen

3. Calcium

Which of the following is the correct formula for water?

Hint: Consider the elements that make up water.

- A) H_2O
- B) HO_2
- C) H_2O_2
- D) OH

Part 2: Comprehension and Application

What is the charge on a sulfate ion (SO_4)?

Hint: Consider the common charges of sulfate.

- A) 1^-
- B) 2^-
- C) 1^+
- D) 2^+

Which of the following correctly describe ionic compounds?

Hint: Think about how ionic compounds are formed.

- A) They are formed by the transfer of electrons.
- B) They are usually formed between metals and non-metals.
- C) They are formed by sharing electrons.
- D) They have high melting and boiling points.

Describe how to determine the formula of an ionic compound from its constituent ions.

Hint: Consider the charges of the ions involved.

What is the correct formula for aluminum oxide, given that aluminum forms a 3^+ ion and oxide forms a 2^- ion?

Hint: Think about the charges and how they balance.

- A) AlO
- B) Al_2O_3
- C) Al_3O_2
- D) AlO_2

Identify the correct formulas for compounds formed between the following ions: Ca^{2+} and Cl^- , Na^+ and SO_4^{2-} .

Hint: Consider how the charges of the ions balance.

- A) CaCl
- B) $CaCl_2$
- C) $NaSO_4$
- D) Na_2SO_4

Write the chemical formula for a compound formed between magnesium ions (Mg^{2+}) and nitrate ions (NO_3^-).

Hint: Consider the charges of the ions involved.

Part 3: Analysis, Evaluation, and Creation

Which of the following compounds is covalent?

Hint: Think about the types of bonds formed.

- A) NaCl
- B) CO₂
- C) MgO
- D) KBr

Analyze the following statements and select those that are true about covalent compounds:

Hint: Consider the properties of covalent compounds.

- A) They conduct electricity when dissolved in water.
- B) They have low melting and boiling points.
- C) They are formed by sharing electrons.
- D) They are usually formed between non-metals.

Explain why ionic compounds tend to have higher melting points than covalent compounds.

Hint: Consider the forces holding the compounds together.

Which of the following best explains why water (H₂O) is a polar molecule?

Hint: Think about the shape and electron distribution in the molecule.

- A) It has a linear shape.
- B) It has a bent shape and an unequal distribution of electrons.
- C) It is made of hydrogen and oxygen.
- D) It is a covalent compound.

Evaluate the following scenarios and identify which describe a chemical reaction:

Hint: Consider the changes that occur during a chemical reaction.

- A) Ice melting into water.
- B) Iron rustling.
- C) Salt dissolving in water.
- D) Baking soda reacting with vinegar.

Design a simple experiment to demonstrate the formation of an ionic compound from its elements. Describe the materials and procedure you would use.

Hint: Think about the elements you would choose and how they react.