

Ionic Names And Formulas Worksheet

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Part 1: Building a Foundation

What is the charge of a cation?

Hint: Recall the definition of a cation.

- Negative
- Positive
- Neutral
- Variable

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
- Form by sharing electrons
- Usually soluble in water

Define a polyatomic ion and provide two examples.

Hint: Consider the definition and common examples of polyatomic ions.

List the steps to write the chemical formula for an ionic compound.

Hint: Think about the process of combining ions.

1. Step 1

2. Step 2

3. Step 3

Part 2: Comprehension and Application

Which suffix is typically used for the non-metal in a binary ionic compound?

Hint: Think about the naming conventions for ionic compounds.

- ate
- ite
- ide
- ous

When naming an ionic compound with a transition metal, what information is conveyed by the Roman numeral? (Select all that apply)

Hint: Consider the role of Roman numerals in naming.

- The number of atoms
- The charge of the metal ion
- The number of electrons lost
- The oxidation state of the metal

Explain why ionic compounds are typically neutral, and describe how this neutrality is achieved in their chemical formulas.

Hint: Think about the balance of charges in ionic compounds.

What is the correct formula for a compound formed between magnesium ions (Mg^{2+}) and chloride ions (Cl^-)?

Hint: Consider the charges of the ions when writing the formula.

- MgCl
- $MgCl_2$
- Mg_2Cl
- Mg_2Cl_2

Which of the following compounds contain polyatomic ions? (Select all that apply)

Hint: Think about the formulas and identify polyatomic ions.

- NaCl
- $CaCO_3$
- NH_4NO_3
- KBr

Write the name for the compound with the formula Fe_2O_3 , and explain the process you used to determine the name.

Hint: Consider the oxidation states of the elements involved.

Part 3: Analysis, Evaluation, and Creation

Which of the following correctly describes the relationship between the formula and the name of the compound Na_2SO_4 ?

Hint: Think about the components of the compound and their charges.

- Sodium sulfate; sodium ions balance the sulfate ion charge.
- Sodium sulfide; sodium ions balance the sulfide ion charge.
- Sodium sulfate; sulfate ions balance the sodium ion charge.
- Sodium sulfite; sodium ions balance the sulfite ion charge.

Analyze the following formulas and identify which are correctly balanced ionic compounds. (Select all that apply)

Hint: Consider the charges and ratios of the ions in each formula.

- Al_2O_3
- CaCl
- K_2O
- $\text{Mg}(\text{NO}_3)_2$

Compare and contrast the naming conventions for binary ionic compounds and those containing polyatomic ions. Provide examples to support your analysis.

Hint: Think about the differences in naming and the types of ions involved.

Which of the following statements best evaluates the stability of ionic compounds in water?

Hint: Consider how ionic compounds behave when dissolved in water.

- Ionic compounds are unstable in water and decompose.
- Ionic compounds dissolve in water, increasing conductivity.
- Ionic compounds remain unchanged in water.
- Ionic compounds react with water to form covalent compounds.

Create a balanced formula for a compound formed between aluminum ions (Al^{3+}) and phosphate ions (PO_4^{3-}). Which of the following options is correct? (Select all that apply)

Hint: Think about the charges of the ions when writing the formula.

- AlPO_4
- $\text{Al}_3(\text{PO}_4)_2$
- $\text{Al}_2(\text{PO}_4)_3$
- AlPO_{43}

Design a real-world scenario where understanding ionic compounds is crucial. Explain the scenario and how knowledge of ionic compounds would be applied to solve a problem.

Hint: Think about practical applications of ionic compounds.