

Ionic Compound Formula Writing Worksheet

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Part 1: Building a Foundation

What is the charge of a cation?

Hint: Think about the type of ion that is positively charged.

- Negative
- Positive
- Neutral
- Variable

Which of the following are examples of polyatomic ions?

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

- SO_4^{2-}
- Na^+
- OH^-
- Cl^-

Define an ionic compound and describe its basic structure.

Hint: Consider the types of elements involved and their arrangement.

List two characteristics of ionic compounds.

Hint: Think about their physical properties and behavior in solutions.

1. Characteristic 1

2. Characteristic 2

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

Hint: Consider the naming conventions for ionic compounds.

- ate
- ide
- ite
- ous

Part 2: comprehension and Application

When writing the formula for an ionic compound, what must be true about the total charges?

Hint: Think about how charges balance in ionic compounds.

- They must be equal and opposite.
- They must be positive.
- They must be negative.
- They can be unequal.

Which of the following statements about ionic compounds are true?

Hint: Consider the properties and behaviors of ionic compounds.

- They conduct electricity when dissolved in water.
- They have high melting points.
- They are malleable.
- They are usually formed between metals and non-metals.

Explain why transition metals often require Roman numerals in their names.

Hint: Consider the variable charges of transition metals.

What is the correct formula for magnesium chloride?

Hint: Consider the charges of magnesium and chloride ions.

- MgCl
- MgCl₂
- Mg₂Cl
- Mg₂Cl₃

Identify the correct formulas for the following compounds:

Hint: Match the compounds with their correct formulas.

- Sodium sulfate: Na₂SO₄
- Calcium nitrate: Ca(NO₃)₂
- Potassium oxide: K₂O
- Aluminum phosphate: AlPO₄

Write the formula for a compound formed between aluminum ions (Al³⁺) and sulfate ions (SO₄²⁻).

Hint: Consider the charges of the ions and how they balance.

Part 3: Analysis, Evaluation, and Creation

Which of the following compounds is likely to have the highest melting point?

Hint: Consider the types of bonds and structures in the compounds.

- NaCl
- H₂O
- CO₂
- CH₄

Analyze the following statements and identify which are true for ionic compounds:

Hint: Consider the properties and behaviors of ionic compounds.

- They are brittle.
- They dissolve in non-polar solvents.
- They form crystal lattices.
- They have low boiling points.

Compare and contrast the properties of ionic and covalent compounds.

Hint: Think about their bonding, structure, and physical properties.

Which of the following would be the best method to test the conductivity of an ionic compound?

Hint: Consider how ionic compounds behave in solution.

- Heating it
- Dissolving it in water and using a conductivity meter
- Melting it and observing its behavior
- Crumbling it into a powder

Evaluate the following scenarios and determine which involve ionic bonding:

Hint: Consider the types of elements involved in each formation.

- Formation of NaCl
- Formation of H₂O
- Formation of MgO

Formation of CO₂

Design an experiment to demonstrate the solubility of ionic compounds in water. Include the materials and steps involved.

Hint: Think about how you would set up a simple experiment.

Propose two real-world applications of ionic compounds and explain their significance.

Hint: Consider industries or everyday products that use ionic compounds.

1. Application 1

2. Application 2