

# Ionic Compound Formula Writing Worksheet Answer Key PDF

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## Part 1: Building a Foundation

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**What is the charge of a cation?**

undefined. Negative

**undefined. Positive ✓**

undefined. Neutral

undefined. Variable

A cation has a positive charge.

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

**undefined.  $\text{SO}_4^{2-}$  ✓**

undefined.  $\text{Na}^+$

**undefined.  $\text{OH}^-$  ✓**

undefined.  $\text{Cl}^-$

Polyatomic ions are ions made up of two or more atoms.

**Define an ionic compound and describe its basic structure.**

**An ionic compound is formed from the electrostatic attraction between cations and anions, typically consisting of metals and non-metals.**

**List two characteristics of ionic compounds.**

1. Characteristic 1

**High melting and boiling points.**

2. Characteristic 2

**They conduct electricity when dissolved in water.**

Ionic compounds are typically solid at room temperature and have high melting points.

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

undefined. -ate

**undefined. -ide ✓**

undefined. -ite

undefined. -ous

The suffix -ide is used for the non-metal in binary ionic compounds.

## Part 2: comprehension and Application

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

**undefined. They must be equal and opposite. ✓**

undefined. They must be positive.

undefined. They must be negative.

undefined. They can be unequal.

The total charges must be equal and opposite to ensure neutrality.

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

**undefined. They conduct electricity when dissolved in water. ✓**

**undefined. They have high melting points. ✓**

undefined. They are malleABLE.

**undefined. They are usually formed between metals and non-metals. ✓**

Ionic compounds conduct electricity when dissolved in water, have high melting points, and are formed between metals and non-metals.

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

Transition metals can have multiple oxidation states, so Roman numerals indicate the specific charge of the metal in the compound.

What is the correct formula for magnesium chloride?

undefined. MgCl

undefined. **MgCl<sub>2</sub>** ✓

undefined. Mg<sub>2</sub>Cl

undefined. Mg<sub>2</sub>Cl<sub>3</sub>

The correct formula for magnesium chloride is MgCl<sub>2</sub>.

Identify the correct formulas for the following compounds:

undefined. **Sodium sulfate: Na<sub>2</sub>SO<sub>4</sub>** ✓

undefined. **Calcium nitrate: Ca(NO<sub>3</sub>)<sub>2</sub>** ✓

undefined. **Potassium oxide: K<sub>2</sub>O** ✓

undefined. **Aluminum phosphate: AlPO<sub>4</sub>** ✓

The correct formulas are Na<sub>2</sub>SO<sub>4</sub>, Ca(NO<sub>3</sub>)<sub>2</sub>, K<sub>2</sub>O, and AlPO<sub>4</sub>.

Write the formula for a compound formed between aluminum ions (Al<sup>3+</sup>) and sulfate ions (SO<sub>4</sub><sup>2-</sup>).

The formula for the compound is Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>.

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

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

undefined. **NaCl** ✓

undefined. H<sub>2</sub>O

undefined. CO<sub>2</sub>

undefined. CH<sub>4</sub>

NaCl is likely to have the highest melting point due to its ionic bonding.

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

**undefined. They are brittle. ✓**

undefined. They dissolve in non-polar solvents.

**undefined. They form crystal lattices. ✓**

undefined. They have low boiling points.

Ionic compounds are brittle, dissolve in polar solvents, and form crystal lattices.

**Compare and contrast the properties of ionic and covalent compounds.**

**Ionic compounds typically have high melting points and conduct electricity in solution, while covalent compounds have lower melting points and do not conduct electricity.**

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

undefined. Heating it

**undefined. Dissolving it in water and using a conductivity meter ✓**

undefined. Melting it and observing its behavior

undefined. Crumbling it into a powder

Dissolving it in water and using a conductivity meter is the best method to test conductivity.

**Evaluate the following scenarios and determine which involve ionic bonding:**

**undefined. Formation of NaCl ✓**

undefined. Formation of H<sub>2</sub>O

**undefined. Formation of MgO ✓**

undefined. Formation of CO<sub>2</sub>

The formation of NaCl and MgO involves ionic bonding.

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

**An experiment could involve mixing various ionic compounds with water and observing their solubility.**

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

1. Application 1

**Used in batteries for energy storage.**

2. Application 2

**Table salt (NaCl) is essential for human health.**

Ionic compounds are used in batteries and as table salt, both of which are essential in daily life.