

Writing Ionic Compound Formulas Worksheet

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Part 1: Building a Foundation

Which of the following is a cation?

Hint: Remember that cations are positively charged ions.

- A) Cl^-
- C) Na^+
- D) NO_3^-
- C) SO_4^{2-}

Which of the following is a cation?

Hint: Recall the definitions of cations and anions.

- A) Cl^-
- C) Na^+
- D) NO_3^-
- C) SO_4^{2-}

Select all the polyatomic ions from the list below:

Hint: Polyatomic ions consist of more than one atom.

- A) NH_4^+
- C) CO_3^{2-}
- D) K^+
- C) O^{2-}

Select all the polyatomic ions from the list below:

Hint: Remember that polyatomic ions consist of multiple atoms.

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- C) CO_3^{2-}
- D) K^+
- C) O^{2-}

Explain why ionic compounds are electrically neutral.

Hint: Consider the charges of the ions involved.

Explain why ionic compounds are electrically neutral.

Hint: Consider the balance of positive and negative charges.

List two examples each of monatomic cations and anions.

Hint: Think of common elements and their charges.

1. Monatomic cations:

2. Monatomic anions:

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

Hint: Recall the common charges of sulfate.

- A) 1-

- C) 1+
- D) 2+
- C) 2-

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Hint: Recall the common charges of polyatomic ions.

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- C) 1+
- D) 2+
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Part 2: Understanding and Application

What is the correct name for the compound with the formula K_2O ?

Hint: Consider the naming conventions for ionic compounds.

- A) Potassium oxide
- C) Dipotassium oxide
- D) Potassium monoxide
- C) Potassium dioxide

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Which of the following statements are true about ionic compounds?

Hint: Think about the properties and behaviors of ionic compounds.

- A) They are formed by the transfer of electrons.
- C) They are always soluble in water.
- D) They conduct electricity when dissolved in water.
- C) They have high melting points.

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Hint: Consider how Roman numerals indicate oxidation states.

Which formula represents the compound formed between aluminum ions (Al^{3+}) and sulfate ions (SO_4^{2-})?

Hint: Balance the charges of the ions to find the correct formula.

- A) AlSO_4
- C) $\text{Al}_3(\text{SO}_4)_2$
- D) $\text{Al}(\text{SO}_4)_3$
- C) $\text{Al}_2(\text{SO}_4)_3$

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Given the ions Mg^{2+} and Cl^- , which of the following formulas are correct for the resulting compound?

Hint: Consider the charges of the ions when forming the compound.

- A) MgCl
 C) Mg_2Cl
 D) Mg_2Cl_2
 C) MgCl_2

Given the ions Mg^{2+} and Cl^- , which of the following formulas are correct for the resulting compound?

Hint: Consider the charges of the ions to determine the formula.

- A) MgCl
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Write the formula for the ionic compound formed between calcium ions and nitrate ions. Explain your reasoning.

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Part 3: Analysis, Evaluation, and Creation

Analyze the following statements and select those that correctly describe the formation of ionic compounds:

Hint: Consider the nature of ionic bonding.

- A) Ionic compounds are formed by sharing electrons.
- C) Ionic compounds can contain both monatomic and polyatomic ions.
- D) Ionic compounds always contain metals.
- C) Ionic compounds are formed by the attraction between oppositely charged ions.

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Evaluate the following scenarios and select the ones where ionic compounds are likely to be used:

Hint: Think about the applications of ionic compounds.

- A) Conductin electricity in a circuit.
- C) Form strong, durable materials.
- D) Creating flexible materials.
- C) Building lightweight structures.

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Design a simple experiment to demonstrate the conductivity of ionic compounds in solution. Describe the materials and procedure you would use.

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Hint: Consider how you would set up the experiment to test conductivity.