

Ionic Compounds Naming Worksheet

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Part 1: Foundational Knowledge

Which of the following is a characteristic of ionic compounds?

Hint: Think about the properties of ionic compounds.

- A) They are formed between two non-metals.
- B) They have high melting and boiling points.
- C) They are poor conductors of electricity.
- D) They are composed of molecules.

Which of the following are common cations found in ionic compounds? (Select all that apply)

Hint: Consider the common ions that form positive charges.

- A) Na^+
- B) Cl^-
- C) Ca^{2+}
- D) O^{2-}

Explain why ionic compounds are electrically neutral, even though they are composed of charged ions.

Hint: Consider the balance of positive and negative charges.

List the chemical formulas for the following polyatomic ions: sulfate, nitrate, and hydroxide.

Hint: Recall the common polyatomic ions and their formulas.

1. Sulfate

2. Nitrate

3. Hydroxide

Part 2: Comprehension

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

Hint: Consider the naming conventions for ionic compounds.

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

Which of the following statements about transition metals in ionic compounds are true? (Select all that apply)

Hint: Think about the properties of transition metals.

- A) They always have a fixed oxidation state.
- B) Their oxidation state is indicated by Roman numerals.
- C) They can form multiple types of cations.
- D) They do not form ionic compounds.

Describe the process of naming a binary ionic compound and provide an example.

Hint: Consider the rules for naming ionic compounds.

Part 3: Application and Analysis

Which of the following is the correct formula for aluminum sulfate?

Hint: Consider the charges of aluminum and sulfate ions.

- A) $\text{Al}_2(\text{SO}_4)_3$
- B) AlSO_4
- C) Al_2SO_4
- D) $\text{Al}_3(\text{SO}_4)_2$

Given the compound FeCl_3 , which of the following are true? (Select all that apply)

Hint: Think about the naming and composition of the compound.

- A) The compound is called iron(III) chloride.
- B) The iron ion has a charge of +2.
- C) The compound contains three chloride ions.
- D) The compound is called iron(II) chloride.

Write the chemical formula for calcium phosphate, ensuring the charges are balanced.

Hint: Consider the charges of calcium and phosphate ions.

Part 4: Evaluation and Creation

Which of the following best explains why ionic compounds tend to be brittle?

Hint: Think about the structure and forces within ionic compounds.

- A) Their ions are tightly packed.
- B) They have strong covalent bonds.
- C) When stressed, like charges repel each other, causing the structure to shatter.
- D) They have weak intermolecular forces.

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

Hint: Consider the bonding types in each compound.

- A) CO_2
- B) NaCl
- C) H_2O
- D) MgO

Compare and contrast the properties of ionic and covalent compounds, focusing on their bonding and physical properties.

Hint: Think about the differences in bonding types and their effects.

Which of the following would most likely increase the solubility of an ionic compound in water?

Hint: Consider the effects of temperature and agitation on solubility.

- A) Decreasing the temperature
- B) Increasing the pressure
- C) Stirring the solution
- D) Adding a non-polar solvent

Evaluate the following scenarios and determine which could result in the formation of an ionic compound. (Select all that apply)

Hint: Think about the reactions that typically form ionic bonds.

- A) Mixing sodium metal with chlorine gas
- B) Combining hydrogen gas with oxygen gas
- C) Reacting magnesium with sulfur
- D) Mixing carbon with oxygen

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

Hint: Consider the setup and materials needed for the experiment.