

Naming Chemical Compounds Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What is the charge of a cation?

Hint: Consider the definition of cations.

- Negative
- Positive ✓
- Neutral
- Variable

■ Cations are positively charged ions.

What is the charge of a cation?

Hint: Recall the definition of a cation.

- Negative
- Positive ✓
- Neutral
- Variable

■ A cation has a positive charge.

Which of the following are examples of polyatomic ions?

Hint: Look for ions that consist of multiple atoms.

- NO_3^- ✓
- CO_3^{2-} ✓
- Na^+
- Cl^-

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

Which of the following are examples of polyatomic ions?

Hint: Consider ions that consist of multiple atoms.

- NO_3^- ✓
- CO_3^{2-} ✓
- Na^+
- Cl^-

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

Explain the difference between ionic and covalent compounds in terms of their composition and bonding.

Hint: Consider how the atoms are held together in each type of compound.

Ionic compounds are formed by the transfer of electrons, while covalent compounds are formed by the sharing of electrons.

Explain the difference between ionic and covalent compounds in terms of their composition and bonding.

Hint: Consider the types of elements involved and how they bond.

Ionic compounds consist of metals and nonmetals, while covalent compounds consist of nonmetals bonded together.

List the prefixes used for the numbers 1 to 4 in naming covalent compounds.

Hint: Think about the common prefixes used in chemistry.

1. 1

mono-

2. 2

di-

3. 3

tri-

4. 4

tetra-

The prefixes are mono-, di-, tri-, and tetra-.

Part 2: Understanding and Interpretation

What is the correct name for the compound NaCl?

Hint: Consider the naming conventions for ionic compounds.

- Sodium chlorine
- Sodium chloride ✓
- Sodium chlorate
- Sodium chlorite

NaCl is named sodium chloride.

What is the correct name for the compound NaCl?

Hint: Consider the common name for this compound.

- Sodium chlorine
- Sodium chloride ✓
- Sodium chlorate
- Sodium chlorite

The correct name is sodium chloride.

Which of the following statements are true about transition metals?

Hint: Think about the properties of transition metals.

- They always have a fixed oxidation state.
- They can have multiple oxidation states. ✓
- They are typically non-metals.
- Their oxidation state is indicated by Roman numerals in compound names. ✓

Transition metals can have multiple oxidation states and are indicated by Roman numerals.

Which of the following statements are true about transition metals?

Hint: Think about the properties of transition metals.

- They always have a fixed oxidation state.
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Transition metals can have multiple oxidation states and are indicated by Roman numerals.

Describe how you would name a binary ionic compound formed between a metal and a non-metal.

Hint: Consider the rules for naming ionic compounds.

You name the metal first followed by the non-metal with an -ide suffix.

Describe how you would name a binary ionic compound formed between a metal and a non-metal.

Hint: Consider the rules for naming ionic compounds.

You name the metal first followed by the non-metal with its ending changed to '-ide'.

Part 3: Application and Analysis

What is the correct name for the compound $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$?

Hint: Consider the naming conventions for hydrates.

- Copper(II) sulfate pentahydrate ✓**
- Copper sulfate hydrate
- Copper(II) sulfate monohydrate
- Copper sulfate dihydrate

The correct name is copper(II) sulfate pentahydrate.

What is the correct name for the compound $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$?

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■ The correct name is copper(II) sulfate pentahydrate.

Given the compound FeCl_3 , which of the following are correct interpretations?

Hint: Think about the oxidation states of iron and chloride.

- Iron(III) chloride ✓**
- Iron(II) chloride
- The iron ion has a +3 charge. ✓**
- The chloride ion has a -1 charge. ✓**

■ FeCl_3 is iron(III) chloride, indicating the iron ion has a +3 charge.

Given the compound FeCl_3 , which of the following are correct interpretations?

Hint: Think about the oxidation state of iron.

- Iron(III) chloride ✓**
- Iron(II) chloride
- The iron ion has a +3 charge. ✓**
- The chloride ion has a -1 charge. ✓**

■ FeCl_3 is iron(III) chloride, indicating a +3 charge on iron.

Write the chemical formula for carbon tetrachloride.

Hint: Consider the number of chlorine atoms in the compound.

The chemical formula for carbon tetrachloride is CCl₄.

Write the chemical formula for carbon tetrachloride.

Hint: Consider the elements involved in the compound.

The chemical formula for carbon tetrachloride is CCl₄.

Analyze the compound H₂SO₄. Which of the following statements are true?

Hint: Consider the composition and properties of H₂SO₄.

- It is a binary compound.
- It contains a polyatomic ion. ✓**
- It is an acid. ✓**
- It is named sulfuric acid. ✓**

H₂SO₄ contains a polyatomic ion and is classified as an acid.

Analyze the compound H₂SO₄. Which of the following statements are true?

Hint: Consider the structure and properties of H₂SO₄.

- It is a binary compound.
- It contains a polyatomic ion. ✓**
- It is an acid. ✓**
- It is named sulfuric acid. ✓**

H₂SO₄ is not a binary compound; it contains a polyatomic ion and is an acid.

Explain how the naming of acids differs from the naming of other types of compounds.

Hint: Consider the specific rules for naming acids.

Acids are named based on their anions, with specific rules for those containing oxygen.

Explain how the naming of acids differs from the naming of other types of compounds.

Hint: Consider the rules specific to acids.

Acids are named based on their anions, with specific rules for -ate and -ite ions.

Part 4: Evaluation and Creation

Which of the following compounds is likely to be ionic?

Hint: Consider the types of elements involved in the compounds.

- CO₂
- Na₂O ✓
- H₂O
- CH₄

Na₂O is likely to be ionic due to the presence of a metal and a non-metal.

Which of the following compounds is likely to be ionic?

Hint: Consider the types of elements involved in the compounds.

- CO₂
- Na₂O ✓
- H₂O
- CH₄

Na₂O is likely to be ionic due to the presence of a metal and a non-metal.

Create a name for the compound with the formula Al₂(SO₄)₃. Which of the following names are correct?

Hint: Consider the naming conventions for compounds with polyatomic ions.

- Aluminum sulfate ✓
- Aluminum sulfide
- Aluminum(III) sulfate ✓
- Dialuminum trisulfate

The correct names are aluminum sulfate and aluminum(III) sulfate.

Create a name for the compound with the formula Al₂(SO₄)₃. Which of the following names are correct?

Hint: Consider the naming conventions for compounds with polyatomic ions.

- Aluminum sulfate ✓
- Aluminum sulfide
- Aluminum(III) sulfate ✓
- Dialuminum trisulfate

The correct names are aluminum sulfate and aluminum(III) sulfate.

Evaluate the following compound name: Iron(II) oxide. Provide the correct chemical formula and explain your reasoning.

Hint: Consider the oxidation state of iron in the compound.

The correct chemical formula is FeO, as iron has a +2 charge in this compound.

Evaluate the following compound name: Iron(II) oxide. Provide the correct chemical formula and explain your reasoning.

Hint: Consider the oxidation state of iron.

The correct formula is FeO, as iron has a +2 oxidation state.