Chemical Names And Formulas Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the correct chemical formula for water?

undefined. H2O ✓

undefined. HO2

undefined. H2O2

undefined. OH2

The correct chemical formula for water is H2O.

Which of the following are polyatomic ions? (Select all that apply)

undefined. NO3^- ✓

undefined. Cl^-

undefined. SO4^2- ✓

undefined. Na^+

Polyatomic ions include NO3^- and SO4^2-.

Explain the difference between an ionic and a covalent compound.

Ionic compounds are formed by the transfer of electrons between metals and non-metals, while covalent compounds are formed by the sharing of electrons between non-metals.

List the chemical formulas for the following compounds:

1. Sodium chloride

NaCl

2. Carbon dioxide

CO2

3. Ammonium nitrate

NH4NO3

The chemical formulas are NaCl for sodium chloride, CO2 for carbon dioxide, and NH4NO3 for ammonium nitrate.

Which prefix is used to indicate two atoms of an element in a covalent compound?

undefined. Mono-

undefined. Di- ✓

undefined. Tri-

undefined. Tet-

The prefix used to indicate two atoms is 'Di-'.

Part 2: Comprehension and Application

What is the name of the compound with the formula CO2?

undefined. Carbon monoxide

undefined. Carbon dioxide ✓

undefined. Carbon oxide

undefined. Dicarbon monoxide

The name of the compound CO2 is carbon dioxide.

Which of the following are characteristics of ionic compounds? (Select all that apply)

undefined. High melting points ✓

undefined. Conduct electricity when dissolved in water ✓

undefined. Formulated between non-metals

undefined. Generally soluble in water ✓

Ionic compounds typically have high melting points, conduct electricity when dissolved in water, and are generally soluble in water.

Describe how the charge of a transition metal ion is indicated in its name.

The charge of a transition metal ion is indicated by Roman numerals in parentheses following the metal's name.

Write the chemical formulas for the following compounds using the given names:

1. Calcium phosphate

$Ca_3(PO_4)_2$

2. Iron (III) chloride

$FeCl_3$

3. Dinitrogen tetroxide

N_2O_4

The chemical formulas are $Ca_3(PO_4)_2$ for calcium phosphate, $FeCl_3$ for iron (III) chloride, and N_2O_4 for dinitrogen tetroxide.

Given the compound name "sulfur hexafluoride," write its chemical formula and explain the reasoning behind your answer.

The chemical formula for sulfur hexafluoride is SF_6, derived from the prefix 'hexa-' indicating six fluorine atoms.

Part 3: Analysis, Evaluation, and Creation

Analyze the compound H_2SO_4 and explain how its name is derived from its components.

The name sulfuric acid is derived from the presence of sulfur, hydrogen, and oxygen in the compound, with the 'acid' suffix indicating its acidic nature.

Which of the following statements are true about polyatomic ions? (Select all that apply)

undefined. They are composed of multiple atoms. ✓

undefined. They always carry a positive charge.

undefined. They can form ionic compounds. ✓

undefined. They are always anions.

True statements include that polyatomic ions are composed of multiple atoms, can form ionic compounds, and can be anions.

Which of the following is the correct name for the compound with the formula K2SO4?

undefined. Potassium sulfide

undefined. Potassium sulfate ✓

undefined. Potassium sulfite

undefined. Dipotassium sulfate

The correct name for K2SO4 is potassium sulfate.

Evaluate the naming system for acids and propose a method to simplify it for beginners.

The naming system for acids can be simplified by using consistent rules for naming based on the anions present, such as using 'ic' for anions ending in 'ate' and 'ous' for those ending in 'ite'.

Create a balanced chemical equation for the reaction between hydrochloric acid and sodium hydroxide. List the reactants and products.

1. Reactants

HCl and NaOH

2. Products

NaCl and H2O

The balanced equation is HCl + NaOH → NaCl + H2O, with HCl and NaOH as reactants and NaCl and H2O as products.

Reflect on the importance of chemical nomenclature in scientific communication and propose two ways it could be improved for clarity.

Chemical nomenclature is crucial for clear communication in science; improvements could include standardized naming conventions and educational resources that simplify complex terms.

Which of the following compounds would you expect to have the highest melting point based on its ionic nature?

undefined. H2O

undefined. NaCl ✓

undefined. CO_2

undefined. CH_4

The compound with the highest melting point based on ionic nature is NaCl.