Names And Formulas Ionic Compounds Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the charge of an ion formed by a metal?

undefined. A) Positive ✓

undefined. B) Negative

undefined. C) Neutral

undefined. D) Variable

Metals typically form positive ions.

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

undefined. A) High melting points ✓

undefined. B) Conduct electricity when dissolved in water ✓

undefined. C) Low boiling points

undefined. D) Typically gaseous at room temperature

Ionic compounds typically have high melting points and conduct electricity when dissolved in water.

Explain why ionic compounds are generally solid at room temperature.

Ionic compounds are solid at room temperature due to the strong electrostatic forces between the oppositely charged ions.

Name the following ions:

1. A) Na^+

Sodium ion

2. B) Cl^-

Chloride ion

3. C) SO_4^{2-}

Sulfate ion

4. D) NH_4^+

Ammonium ion

The ions are sodium, chloride, sulfate, and ammonium.

Part 2: Comprehension and Application

Which suffix is typically added to the root of a nonmetal's name when it forms an anions?

undefined. A) -ate

undefined. B) -ide ✓

undefined. C) -ite

undefined. D) -ous

The suffix '-ide' is commonly used for nonmetal anions.

When naming ionic compounds with transition metals, why are Roman numerals used? (Select all that apply)

undefined. A) To indicate the number of atoms

undefined. B) To show the charge of the metal ion ✓

undefined. C) To denote the compound's melting point

undefined. D) To specify the metal's oxidation state ✓

Roman numerals indicate the charge of the metal ion in compounds with transition metals.

Describe the process of balancing charges when writing the formula for an ionic compound.

Balancing charges involves ensuring that the total positive charge equals the total negative charge in the compound.

What is the correct formula for aluminum sulfate?

undefined. A) $AlSO_4$

undefined. B) $Al_2(SO_4)_3$ ✓
undefined. C) $Al_3(SO_4)_2$
undefined. D) $Al(SO_4)_3$

The correct formula for aluminum sulfate is $Al_2(SO_4)_3$.

Which of the following formulas correctly represent ionic compounds? (Select all that apply)

undefined. A) KCl ✓
undefined. B) Ca_2O ✓
undefined. C) $Mg(NO_3)_2$ ✓
undefined. D) Na_2SO_4 ✓

KCl, Ca_2O, $Mg(NO_3)_2$, and Na_2SO_4 are all correctly represented ionic compounds.

Write the formula for the ionic compound formed between calcium ions and phosphate ions.

The formula for the ionic compound is $Ca_3(PO_4)_2$.

Part 3: Analysis, Evaluation, and Creation

If a compound is named iron(III) chloride, what does the '(III)' indicate?

undefined. A) The number of chloride ions
undefined. B) The charge on the iron ion ✓
undefined. C) The number of iron atoms
undefined. D) The compound's molecular weight

The '(III)' indicates the charge on the iron ion.

Analyze the following compounds and identify which are incorrectly named or formulated. (Select all that apply)

undefined. A) CuO (copper(II) oxide) ✓
undefined. B) $FeCl_2$ (iron(III) chloride)
undefined. C) Na_2O (sodium oxide) ✓
undefined. D) $Pb(NO_3)_4$ (lead(IV) nitrate) ✓

$FeCl_2$ is incorrectly named as iron(III) chloride; it should be iron(II) chloride.

Explain how the properties of ionic compounds relate to their structure and bonding.

The properties of ionic compounds, such as high melting points and electrical conductivity, are due to the strong ionic bonds and the arrangement of ions in a lattice structure.

Which of the following statements best evaluates the conductivity of ionic compounds in different states?

undefined. A) Ionic compounds conduct electricity in solid form.

undefined. B) Ionic compounds conduct electricity when dissolved in water. ✓

undefined. C) Ionic compounds never conduct electricity.

undefined. D) Ionic compounds conduct electricity only when dry.

Ionic compounds conduct electricity when dissolved in water, but not in solid form.

Propose a scenario where the unique properties of ionic compounds could be beneficial. (Select all that apply)

undefined. A) Designing a high-temperature furnace lining ✓

undefined. B) Creating a lightweight gas for balloons

undefined. C) Developing a saltwater battery ✓

undefined. D) Producing a non-conductivity plastic

Ionic compounds can be beneficial in high-temperature applications and energy storage solutions.

Design an experiment to test the solubility of different ionic compounds in water and predict the outcomes based on their chemical structure.

The experiment should involve testing various ionic compounds in water and observing their solubility, which can be predicted based on ionic charge and lattice energy.