Writing Ionic Formulas Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the charge of a sodium ion (Na^+)?

undefined. A) -1

undefined. B) +1 ✓

undefined. C) +2

undefined. D) 0

The charge of a sodium ion is +1.

Which of the following are common anions?

undefined. A) Chloride (Cl^-) ✓

undefined. B) Sodium (Na^+)

undefined. C) Oxide (O^{2-}) ✓

undefined. D) Calcium (Ca^{2+})

Common anions include chloride and oxide.

Explain the difference between a cation and an an ion.

A cation is a positively charged ion, while an an ion is a negatively charged ion.

List two examples of polyatomic ions and their charges.

1. Example 1

Sulfate (SO_4^{2-})

2. Example 2

Nitrate (NO_3^-)

Examples include sulfate (SO_4^{2-}) and nitrate (NO_3^-).

Part 2: Understanding and Interpretation

Which of the following best describes the principle of charge balance in ionic compounds?

undefined. A) The total number of atoms must be equal.
undefined. B) The total positive charge must equal the total negative charge. ✓
undefined. C) The compound must contain equal numbers of cations and anions.
undefined. D) The compound must be electrically neutral.

The total positive charge must equal the total negative charge.

Which statements are true about polyatomic ions?

undefined. A) They are made of covalently bonded atoms. ✓
undefined. B) They can have a positive or negative charge. ✓
undefined. C) They are always negatively charged.
undefined. D) They are treated as a single unit in formulas. ✓

Polyatomic ions can have a positive or negative charge and are treated as a single unit in formulas.

Describe how subscripts are used in writing ionic formulas and provide an example.

Subscripts indicate the number of each type of ion in a formula, e.g., in NaCl, there is one sodium and one chloride ion.

Part 3: Application and Analysis

What is the correct formula for a compound formed between aluminum ions (Al^{3+}) and oxide ions (O^{2-})?

undefined. A) AlO
undefined. B) Al_2O_3 ✓
undefined. C) Al_3O_2
undefined. D) AlO_2

The correct formula is Al_2O_3.

Which of the following formulas correctly represent ionic compounds?

undefined. A) NaCl ✓
undefined. B) $Ca(NO_3)_2$ ✓
undefined. C) K_2SO_4 ✓
undefined. D) Mg_2Cl

Correct formulas include NaCl, $Ca(NO_3)_2$, and K_2SO_4.

Write the formula for a compound formed between calcium ions (Ca^{2+}) and phosphate ions (PO_4^{3-}). Explain your reasoning.

The formula is $Ca_3(PO_4)_2$, balancing the charges of the ions.

If a compound is formed between magnesium ions (Mg^{2+}) and sulfate ions (SO_4^{2-}), what can be inferred about the ratio of ions in the compound?

undefined. A) 1:1 ✓
undefined. B) 2:1
undefined. C) 1:2
undefined. D) 3:2

The ratio of ions in the compound is 1:1.

Part 4: Evaluation and Creation

Which of the following statements best evaluates the stability of ionic compounds?

undefined. A) Ionic compounds are stable because they have a high melting point.
undefined. B) Ionic compounds are stable because they are electrically neutral. ✓
undefined. C) Ionic compounds are stable because they dissolve in water.
undefined. D) Ionic compounds are stable because they conduct electricity in solid form.

Ionic compounds are stable because they are electrically neutral.

Evaluate the following statements about ionic compounds and select the correct ones.

undefined. A) Ionic compounds form crystalline structures. ✓

undefined. B) Ionic compounds have high boiling points. ✓

undefined. C) Ionic compounds are good conductors of electricity in solid form.

undefined. D) Ionic compounds are typically soluble in water. ✓

Ionic compounds form crystalline structures, have high boiling points, and are typically soluble in water.

Design a real-world scenario where understanding ionic formulas is crucial. Explain how this knowledge would be applied and why it is important.

Understanding ionic formulas is crucial in fields like medicine, agriculture, and environmental science.