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Writing Ionic Formulas Worksheet

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Part 1: Building a Foundation

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

Hint: Recall the charge of sodium ions.

◯ A) -1
◯ B) +1
◯ C) +2
◯ D) 0

Which of the following are common anions?

Hint: Identify the negatively charged ions.

☐ A) Chloride (Cl^-)
☐ B) Sodium (Na^+)
☐ C) Oxide (O^{2-})
☐ D) Calcium (Ca^{2+})

Explain the difference between a cation and an an ion.

Hint: Consider the charges of the ions.

List two examples of polyatomic ions and their charges.

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Hint: Think of common polyatomic ions.

1. Example 1

2. Example 2

Part 2: Understanding and Interpretation

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

Hint: Consider the overall charge of the compound.

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

Which statements are true about polyatomic ions?

Hint: Consider the properties of polyatomic ions.

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

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

Hint: Think about how subscripts indicate the number of ions.

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Part 3: Application and Analysis

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

Hint: Consider the charges of the ions when balancing.

○ A) AlO
○ B) Al_2O_3
○ C) Al_3O_2
○ D) AlO_2

Which of the following formulas correctly represent ionic compounds?

Hint: Identify the correct ionic formulas.

☐ A) $NaCl$
☐ B) $Ca(NO_3)_2$
☐ C) K_2SO_4
☐ D) Mg_2Cl

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

Hint: Consider the charges of the ions when determining the formula.

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?

Hint: Consider the charges of the ions.

○ A) 1:1
○ B) 2:1
○ C) 1:2
○ D) 3:2

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Part 4: Evaluation and Creation

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

Hint: Consider the properties that contribute to stability.

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

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

Hint: Identify the true statements regarding ionic compounds.

☐ A) Ionic compounds form crystalline structures.
☐ B) Ionic compounds have high boiling points.
☐ C) Ionic compounds are good conductors of electricity in solid form.
☐ D) Ionic compounds 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.

Hint: Think about applications in chemistry or industry.

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