

Grade 9 Unit 5 Quiz: Chemical Language

Formulas, names, charge balance, and molar mass

Name: _____

Date: _____

Time: 25–30 minutes. **Tools:** calculator permitted. Use the supplied classroom masses: H 1.008, C 12.01, N 14.01, O 16.00, Ca 40.08, Cl 35.45, Fe 55.85 g/mol.

1. In $3\text{H}_2\text{O}$, what does the coefficient 3 change, and what does the subscript 2 change? [1 pts]

2. Write the neutral formula made from Mg^{2+} and Cl^- . Explain how charge is balanced. [2 pts]

3. Write the formula for calcium nitrate, using Ca^{2+} and NO_3^- . [2 pts]

4. Name Fe_2O_3 . Explain why the Roman numeral is needed. [2 pts]

5. Name N_2O_5 using molecular prefixes. [1 pts]

6. Name the acid $\text{HNO}_3(\text{aq})$. [1 pts]

7. Name $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$. [1 pts]

8. Calculate the molar mass of CO_2 . Show the mass contribution from each element. [2 pts]

9. Calculate the molar mass of CaCl_2 . [2 pts]

10. A student says $\text{Al}_2(\text{SO}_4)_3$ contains three sulfur atoms and four oxygen atoms. Correct the atom count and explain the role of parentheses. [2 pts]

11. Two samples each contain 18.0 g of material: one is water and one is carbon dioxide. Explain why equal mass does not mean equal number of molecules. [2 pts]

12. An unlabeled white solid conducts electricity when melted but not as a solid. Give a cautious classification hypothesis and two pieces of additional evidence you would seek before naming it. [2 pts]
