

Name \_\_\_\_\_

Honors Chem: Chemical composition and Nomenclature

1. Briefly state each of these laws.

- a). Conservation of mass
- b). Constant composition
- c). Multiple proportion

2. Determine the number of atoms of each element in the following chemical formulas.

- a)  $\text{Mg}(\text{OH})_2$
- b)  $\text{PCl}_5$
- c)  $\text{C}_{33}\text{H}_{32}\text{N}_4\text{O}_4\text{Fe}$

3. Complete the following table.

Fundamental Particle	Charge	Mass (g)
Electron		
Proton		
Neutron		
Alpha particle		

4. Identify the location of electrons, protons and neutrons in an atom.

5. Define the terms *isotope*, *atomic number* and *mass number*.

6. Given the following elements determine the number of electrons, protons and neutrons.

- a)  ${}_{47}^{109}\text{Ag}$
- b)  ${}_{12}^{24}\text{Mg}$
- c)  ${}_{13}^{24}\text{Al}$
- d)  ${}_{47}^{107}\text{Ag}^+$

7. List the name and chemical formula for each of the elements that exist as diatomic elements.

Name	Formula	Name	Formula

8. List the rules for naming the common binary ionic compounds. Name the compounds listed.

NaCl \_\_\_\_\_ CaBr<sub>2</sub> \_\_\_\_\_  
 K<sub>2</sub>S \_\_\_\_\_ Cu<sub>3</sub>N<sub>2</sub> \_\_\_\_\_

9. List the rules for naming the common polyatomic cations and anions. Name the ionic compounds listed.

NH<sub>4</sub>NO<sub>3</sub> \_\_\_\_\_ NaCN \_\_\_\_\_  
 KNO<sub>2</sub> \_\_\_\_\_ BaSO<sub>4</sub> \_\_\_\_\_  
 Ca(ClO<sub>4</sub>)<sub>2</sub> \_\_\_\_\_ Hg<sub>2</sub>O \_\_\_\_\_  
 CuCO<sub>3</sub> \_\_\_\_\_ NaHCO<sub>3</sub> \_\_\_\_\_

10. List the general rules for naming binary covalent compounds. Name the compounds listed.

NO \_\_\_\_\_ SO<sub>3</sub> \_\_\_\_\_  
 NO<sub>2</sub> \_\_\_\_\_ P<sub>4</sub>O<sub>10</sub> \_\_\_\_\_  
 N<sub>2</sub>O<sub>4</sub> \_\_\_\_\_ NF<sub>3</sub> \_\_\_\_\_

11. Many familiar substances have common, unsystematic names. In each of the following cases, give the correct systematic name:

- a) saltpeter ( $\text{KNO}_3$ ) \_\_\_\_\_
- b) soda ash ( $\text{Na}_2\text{CO}_3$ ) \_\_\_\_\_
- c) lime ( $\text{CaO}$ ) \_\_\_\_\_
- d) baking soda ( $\text{NaHCO}_3$ ) \_\_\_\_\_
- e) lye ( $\text{NaOH}$ ) \_\_\_\_\_
- f) muriatic acid ( $\text{HCl}$ ) \_\_\_\_\_
- g) milk of magnesia ( $\text{Mg}(\text{OH})_2$ ) \_\_\_\_\_
- h) dry ice ( $\text{CO}_2$ ) \_\_\_\_\_
- i) ammonia ( $\text{NH}_3$ ) \_\_\_\_\_

12. Write the chemical formula of each substance mentioned in the following word descriptions.

- a) Zinc carbonate can be heated to form zinc oxide and carbon dioxide.
- b) On treatment with hydrofluoric acid, silicon dioxide forms silicon tetrafluoride and water.
- c) Sulfur dioxide reacts with water to form sulfurous acid.