Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hour: \_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chemistry: *Percentage Composition and Empirical & Molecular Formula*

Solve the following problems. Show your work, and always include units where needed.

1. A compound is found to contain 36.5% Na, 25.4% S, and 38.1% O. Find its empirical formula.

2. Find the empirical formula of a compound that is 53.7% iron and 46.3% sulfur.

3. Analysis of a sample of a compound indicates that is has 1.04 g K, 0.70 g Cr, and 0.86 g O. What is its

empirical formula?

4. If 4.04 g of nitrogen combine with 11.46 g of oxygen to produce a compound with a molar mass of 108.0g,

what is the molecular formula of this compound?

5. The molar mass of a compound is 92 g. Analysis of the sample indicates that it contains 0.606 g N and

1.390 g O. Find the compound’s molecular formula.

6. An acid commonly used in the automotive industry is shown to be 31.6% phosphorous, 3.1% hydrogen,

and 63.5% oxygen. Determine the empirical formula of this acid.

7. A solvent is found to be 50.0% oxygen, 37.5% carbon, and 12.5% hydrogen. What is the empirical

formula of this solvent.

8. A particular sugar is determined to have the following composition: 40.0% carbon, 6.7% hydrogen, and

53.5% oxygen. Determine the empirical formula of this sugar molecule.

9. If the molar mass of the sugar in question #8 is 180.0 g, find the molecular formula of the sugar.

10. Ethene, a gas used extensively in preparing plastics and other polymers, has a composition of 85.7%

carbon and 14.3% hydrogen. Its molar mass is 28 g. Find the molecular formula for ethane.

Answers: 1. Na2SO3 6. H3PO4

 2. Fe2S3 7. CH4O (actually, CH3OH, which is methanol)

 3. K2CrO4 8. CH2O

 4. N2O5 9. C6H12O6

 5. N2O4 10. C2H4

# KEY

Chemistry: *Percentage Composition and Empirical & Molecular Formula*

Solve the following problems. Show your work, and always include units where needed.

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 **Na2SO3**

2. Find the empirical formula of a compound that is 53.7% iron and 46.3% sulfur.

 **Fe2S3**

3. Analysis of a sample of a compound indicates that is has 1.04 g K, 0.70 g Cr, and 0.86 g O. What is its

empirical formula?

 **K2CrO4**

4. If 4.04 g of nitrogen combine with 11.46 g of oxygen to produce a compound with a molar mass of 108.0g,

what is the molecular formula of this compound?

 **N2O5**

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# KEY – Page 2

Chemistry: *Percentage Composition and Empirical & Molecular Formula*

5. The molar mass of a compound is 92 g. Analysis of the sample indicates that it contains 0.606 g N and

1.390 g O. Find the compound’s molecular formula.

  **NO2**

 ** **

6. An acid commonly used in the automotive industry is shown to be 31.6% phosphorous, 3.1% hydrogen,

and 63.5% oxygen. Determine the empirical formula of this acid.

 **H3PO4  (phosphoric acid)**

7. A solvent is found to be 50.0% oxygen, 37.5% carbon, and 12.5% hydrogen. What is the empirical

formula of this solvent.

 **CH3OH orCH4O (methanol)**

8. A particular sugar is determined to have the following composition: 40.0% carbon, 6.7% hydrogen, and

53.5% oxygen. Determine the empirical formula of this sugar molecule.

 **CH2O (methanol)**

# KEY – Page 3

Chemistry: *Percentage Composition and Empirical & Molecular Formula*

9. If the molar mass of the sugar in question #8 is 180.0 g, find the molecular formula of the sugar.

CH2O

 ** **

 **C6H12O6**

10. Ethene, a gas used extensively in preparing plastics and other polymers, has a composition of 85.7%

carbon and 14.3% hydrogen. Its molar mass is 28 g. Find the molecular formula for ethane.

 **CH2**

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Answers: 1. Na2SO3 6. H3PO4

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# KEY

Percentage Composition and Empirical & Molecular Formula

1.

 **Na2SO3**

2.

  **Fe2S3**

3.

  **K2CrO4**

4.

  **N2O5**

 ****

5.

  **NO2**

 ** **

# KEY – Page 2

Percentage Composition and Empirical & Molecular Formula

6.

 **H3PO4  (phosphoric acid)**

7.

  **CH3OH orCH4O (methanol)**

8.

  **CH2O (methanol)**

9.

CH2O

 ** **

 **C6H12O6**

10.

 **CH2**

 ** **