

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

## Percent Composition Worksheet

- 1) What is the percent composition of each element in  $\text{AgNO}_3$ ?

$$\begin{array}{l} \text{Ag} = 107.87 \\ \text{N} = 14.01 \\ \text{O} = 48.00 \end{array} \left\{ 169.88$$

$$\% \text{Ag} = \left( \frac{107.87}{169.88} \right) \times 100 = 63.49\%$$

$$\% \text{N} = \left( \frac{14.01}{169.88} \right) \times 100 = 8.25\%$$

$$\begin{aligned} \% \text{O} &= \left( \frac{48}{169.88} \right) \times 100 \\ &= 28.24\% \end{aligned}$$

- 2) What is the percent composition of carbon in  $\text{C}_2\text{H}_5\text{O}$ ?

$$\begin{array}{l} \text{C} = 2(12.01) = 24.02 \\ \text{H} = 5(1) = 5.00 \\ \text{O} = 16 \end{array} \left\{ 45.02 \text{ g}$$

$$\left( \frac{24.02}{45.02} \right) \times 100 = 53.35\%$$

- 3) What is the percent composition of hydrogen in  $\text{H}_2\text{SO}_4$ ? Is this the empirical formula? Yes

$$\begin{array}{l} \text{H} = 2 \\ \text{S} = 32.06 \\ \text{O} = 64 \end{array} \left\{ 98.06 \text{ g} \quad \left( \frac{2}{98.06} \right) \times 100 = 2.04\% \right.$$

- 4) What is the percent composition of sulfur in sulfur hexafluoride?

$$\begin{array}{l} 32.06 \\ 6(19) \end{array} \left\{ 146.06 \quad \left( \frac{32.06}{146.06} \right) \times 100 = 21.95\% \right.$$

- 5) What is the percent composition of iron (II) in iron (II) sulfide?

$$\begin{array}{r} 55.85 \\ + 32.06 \\ \hline 87.91 \end{array} \quad \left( \frac{55.85}{87.91} \right) \times 100 = 63.53\%$$

- 6) What is the percent composition of lithium in lithium phosphate?

$$\begin{array}{l} \text{Li: } 3(6.989) = 20.917 \\ \text{P: } 30.97 \\ \text{O: } 4(16) \end{array} \left\{ 115.79 \quad \text{Li}_3\text{PO}_4 \quad \left( \frac{20.917}{115.79} \right) \times 100 = 17.98\% \right.$$

- 7) What is the percent of water in magnesium chloride dihydrate?

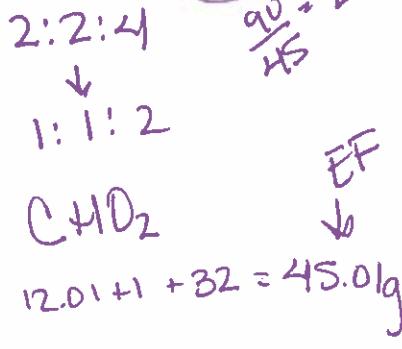
$$\begin{array}{l} \text{Mg: } 24.31 \\ \text{Cl: } 2(35.45) \end{array} \left\{ 95.21 \quad \text{MgCl}_2 \cdot 2\text{H}_2\text{O} \quad \left( \frac{36}{95.21} \right) \times 100 = 27.24\% \right.$$

- 8) A compound has the following percentage composition, 26.7% carbon, 2.2% hydrogen, 71.1% oxygen. The molecular weight of this composition is 90. What is the compounds true formula? Sample 100g

$$26.7\% \text{C} \quad \frac{26.7\% \text{C}}{12.01 \text{ g/C}} = 2.22 \text{ moles C} \quad 2$$

$$2.2\% \text{H} \quad \frac{2.2\% \text{H}}{1.01 \text{ g/H}} = 2.2 \text{ moles H} \quad 2$$

$$71.1\% \text{O} \quad \frac{71.1\% \text{O}}{16.00 \text{ g/O}} = 4.44 \text{ moles O} \quad 4$$



- 9) The percentage composition of ethane gas is 80.0% carbon and 20.0% hydrogen.

The molecular weight for ethane is 30. What is the correct formula for this compound?

100g Sample

80.0g C

20.0g H

C<sub>2</sub>H<sub>6</sub>

$$\frac{80.0\text{gC}}{12.0\text{gC}} \mid 1\text{mol} = 6.66\text{ moles C}$$

$$\frac{20.0\text{gH}}{1.0\text{gH}} \mid 1\text{mol} = 20\text{ moles H}$$

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On a scale from 1-10 (1 being not good at all and 10 being confident), how do you feel about percent composition? \_\_\_\_\_

Molecular and Empirical formulas? \_\_\_\_\_

$$0.80(30) = 24\text{gC}$$

$$0.20(30) = 6\text{gH}$$

$$\frac{24\text{gC}}{12\text{g}} \mid 1\text{mole} = 2\text{ mole}$$

$$\frac{6\text{gH}}{1.0\text{gH}} \mid 1\text{mol} = 6\text{ mole}$$

↓

C<sub>2</sub>H<sub>6</sub>

2:6