CHEMISTRY MATTERS
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NOTE-TAKING GUIDE
Unit 6, SEGMENT C

Name:

Date:

Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas and big questions.

Objective(s):

- *To use dimensional analysis to solve molar volume conversions.*
- *To calculate percent composition, empirical formulae and molecular formulae.*

Notes:

During the video segment, use words, phrases or drawings to take notes.

Summary:

After watching the video segment, write at least three sentences explaining what you learned.
You can ask yourself: "If I was going to explain this to someone else, what would I say?"

After watching the video and performing any associated labs and/or experiments, you should be able to answer the following:

1. What is the volume of a mole of any gas at standard temperature and pressure?

2. What is "standard temperature" in degrees Celsius?

3. What is "standard pressure"?

4. If the molar volume of one mole of carbon dioxide is 22.41 liters, what is the molar volume of two moles of carbon dioxide at standard temperature and pressure?

5. How do chemists use gas chromatography?

6. The simplest ratio of the elements in a chemical formula is known as the empirical formula. If a compound exists with the following formula, $C_{12}H_{24}O_{12}$, what is its empirical formula?

7. Percent composition is the percentage by mass of each element in a compound. The empirical formula of copper sulfide is Cu_2S. Calculate the percent composition by mass of copper in Cu_2S.

    %Cu = 2 x molar mass of copper/molar mass of Cu_2S = _____ %Cu

To determine the empirical formula of a compound, we sometimes use a rhyme to remind us of the steps in the calculation.
>   *Percent to mass*
>   *Mass to mole*
>   *Divide by smallest*
>   *Multiply until whole*

8. Use these steps to find the empirical formula of a compound that is 25.9% N and 74.1% O.

9. Unlike an empirical formula, the molecular formula states the exact number and type of each atom present in a molecule. Show the three steps needed to calculate the molecular formula for ethylene.

10. If the empirical formula of ethylene is CH_2, find the molecular formula if the molecular mass is 28.1 g/mol