Name :_____
BLk:____Date:_____

Chemistry 11
MOLECULAR FORMULA

Once the EMPIRICAL FORMULA (_____ _____)of a substance is known you can determine the MOLECULAR FORMULA (_____ _____)
Provided that you have the following information:

1.

2.

The EQUATION for determining the MOLECULAR FORMULA is:

Example 1. A molecule has an EMPIRICAL FORMULA of HO and a molar mass of 34.0 g/mol. What is the molecule's Molecular Formula?
Step 1. Determine (or in this case, identify) the EMPIRICAL FORMULA

Step 2. Calculate the EMPRIRICAL MASS (similar procedure as calculating the molar mass of a known compound, but using the empirical formula instead!)

Step 3. Calculate (or identify, as in this case) the molar mass (NOTE: must be in g/mol!)

Step 4. Calculate "N" using the MOLECULAR FORMULA EQUATION

Step 5. Multiply the EMPIRICAL FORMULA by **"N"** to get the MOLECULAR FORMULA:

Example 2. A gas has the EMPIRICAL FORMULA of POF_3. IF 0.350 L of the gas at STP has a mass of 1.62g, what is the molecular formula of the compound?
Step 1. Determine (or in this case, identify) the EMPIRICAL FORMULA

Step 2. Calculate the EMPRIRICAL MASS:

Step 3. Calculate the molar mass:(NOTE: must be in g/mol!)

Step 4. Calculate "N" using the MOLECULAR FORMULA EQUATION

Step 5. Multiply the EMPIRICAL FORMULA by "N" to get the MOLECULAR FORMULA:

Example 3. The EMPIRICAL FORMULA of a compound is SiH_3 . If 0.0275 moles of the compound has a mass of 1.71 grams, what is the compound's molecular formula?
Step 1. Determine (or in this case, identify) the EMPIRICAL FORMULA

Step 2. Calculate the EMPRIRICAL MASS:

Step 3. Calculate the molar mass:(NOTE: must be in g/mol!)

Step 4. Calculate "N" using the MOLECULAR FORMULA EQUATION

Step 5. Multiply the EMPIRICAL FORMULA by "N" to get the MOLECULAR FORMULA: