

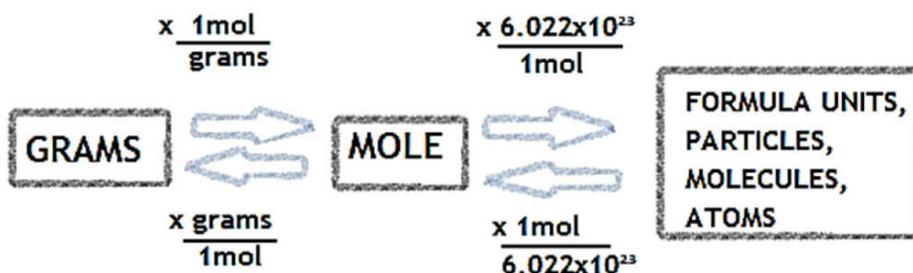
Unit 2 Test Review
Chemistry

Name _____

Molar Mass & Percent Composition: SHOW WORK!

Chemical Formula	Molar Mass of the compound	% Composition of each element
PbO₂	Pb: 1 x 207.22 = 207.22 O: 2 x 16.00 = 32.00 1 mole PbO₂ = 239.22 grams	%Pb = $\frac{207.22}{239.22} \times 100 = \mathbf{86.62\%}$ %O = $\frac{32.00}{239.22} \times 100 = \mathbf{13.38\%}$
(NH ₄) ₂ SO ₄		
XeF ₄		

Molar Conversions: SHOW WORK!



1. How many grams are in 5.66 moles of calcium carbonate (CaCO₃)?

2. What is the number of moles in 368 grams of H₂SO₄?

3. How many molecules are in 32.4 moles of KF?

4. How many grams are there in 4.99×10^{22} atoms of sodium?
5. A sample of Na_2SO_4 has a mass of 14.5 g. Calculate the number of Na_2SO_4 molecules present in the sample.

Empirical & Molecular Formula

1. For the following molecular formulas, determine the empirical formula.

Chemical Compound	Molecular Formula	Empirical Formula
Hydrogen Peroxide	H_2O_2	
Glucose	$\text{C}_6\text{H}_{12}\text{O}_6$	
Water	H_2O	
Acetic Acid	$\text{C}_2\text{H}_4\text{O}_2$	

2. A compound has a molar mass of 56.08 g/mol. Determine the molecular formula of this substance if its empirical formula is CH_2 .
3. Determine the molecular formula for a compound that has a molar mass of 138.02 g/mol and whose empirical formula is CF_3 .
4. Succinic acid is a substance produced by lichens. Chemical analysis of succinic acid indicates that it is composed of 40.68% carbon, 5.08% hydrogen, and 54.24% oxygen and has a molecular weight of 118.1 g/mol. Determine the empirical and molecular formulas for succinic acid.

Dilutions: SHOW WORK!

$$M_1V_1 = M_2V_2$$

1. How much concentrated 18 M sulfuric acid is needed to prepare 250 mL of a 6.0 M solution?
2. How much concentrated 12 M hydrochloric acid is needed to prepare 100. mL of a 2.0 M solution?
3. To what volume should 25 mL of 15 M nitric acid be diluted to prepare a 3.0 M solution?
4. 50. mL of 12 M hydrochloric acid is needed to produce 4.0 M solution? What is the final volume of the solution? How much water does the 50 mL of HCl need to be added to?