Unit E − The Mole and More

Name_____Per___

Papers worth reviewing

- What Makes a Good Data Table?
- What makes a Good Graph?
- LAD E1 − Formula of a Hydrate
- LAD E2 − Molarity and Dilution
- NoteSheet E1 −The Mole
- NoteSheet E2 − Empirical Formulas
- NoteSheet E3 − Hydrates
- NoteSheet E4 − Molecular Formulas
- NoteSheet E5 − Molarity
- Practice E1 − Wholey Moley (and the In Class Practice E1)
- Practice E2 − Empirical Formulas (and the In Class Practice E2)
- Practice E3 − Hydrates (and the In Class Practice E3)
- Practice E4 − Molecular Formulas (and the In Class Practice E4)
- Practice E5 − Molarity (and the In Class Practice E5)
- Practice E6 − Review Problems of All Types
- Consider using the class presentation and clicker questions for review as well (available on the unit E document page at the top)
- Consider reviewing your openers. (You can find a pdf with all the openers…and more, with answers on the documents page)
- Consider using the vocabulary list on the back of this sheet

Objectives

1. Define and understand what a mole is. $\frac{6.02\times10^{23}\,items}{1\,mol}$ *or* $\frac{1\,mol}{6.02\times10^{23}\,items}$
   - know Avogadro's number and units
   - understand that the periodic table provides molar masses, the mass of one mole of particles $\frac{\#\,g}{1\,mol}$ *or* $\frac{1\,mol}{\#\,g}$
   - know how to calculate molar masses of compounds given a formula
2. Be able to make mole conversions
   - mass ⇄ moles ⇄ items ⇄ parts (atoms)
   - understand that percent composition values can be used as masses
3. Given masses, percentages, or particles, be able to calculate empirical formulas for
   - ionic compounds
   - hydrates
   - molecular compounds
4. Be able to work calculations using the molarity formula $Molarity(M)=\frac{\#\,moles}{1\,Liter}$ *or* $\frac{\#\,millimoles}{1\,milliliter}$
   - calculate moles & mass needed for a particular molar solution
   - calculate the number of moles in a solution
   - calculate volume from molarity and moles
5. Be able to use the "dilution equation" $M_{concentrated}V_{concentrated}=M_{dilute}V_{dilute}$
   - to calculate the "stock" solution required to make a particular dilution
   - calculate the molarity resulting from a particular dilution
6. Know your diatomic elements
   - H_2, F_2, Cl_2, Br_2, I_2, At_2

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Vocabulary List

This vocabulary list is meant to complement your study. Knowing this list alone, without the concepts on the front would not prepare you for the test.

- mole (millimole)
- Avogadro's number
- molar mass, aka molecular weight
- molecule vs atom vs formula unit (aka ionicule)
- percent composition
- theoretical
- experimental
- ionic compounds
- heating to a contant mass
- hydrate
    - mono-
    - di-
    - tri-
    - tetra-
    - penta-
    - hexa-
    - hepta-
    - septa-
    - octo-
    - nono-
    - deca-
    - dodeca-
- anhydrate
- molecular compound
- empirical formula
- molecular formula
- molarity
- solute
- solvent
- solution
- aqueous solution
- concentrated
- dilute
- volumetric flask
- diatomic elements