Unit 9: Ch 15 – Molarity & Dilutions / How to Prepare & Dilute Solutions

CONCENTRATION:

➢ **DEFINITION** –

  o ***Concentrated*** Solution: _____

  o ***Diluted*** Solution: _____

➢ **MOLARITY _(M)_** –

  o **_"M"_** – Read as _____

  o **EQUATION**:

  o Ex #1: What is the concentration *(M)* of a solution that contains 5.00 grams of $NiCl_2 \cdot 6\ H_2O$ dissolved in water to prepare 250 mL of solution?

  o Ex #2: How many grams of NaOH are required to prepare 400. mL of 3.00 M NaOH solution?

DILUTING SOLUTIONS:

➢ **DILUTION** –

  o _____ relationship expressed in ***DILUTION*** formula:

  o **EQUATION:**

- o **KEEP IN MIND**:
  - ____ & ____ = _____ solution ; ____ & ____ = _____ solution
  - _____ # of _____ of **SOLUTE** _____ change during dilution.
    - Moles _____ solution = Moles _____ dilution
- o Ex #1: If you dilute 20.0 mL of a 3.50 M solution to prepare a 100 mL, what is the concentration of the dilute solution?

- o Ex #2: What volume of a 5.00 M H_2SO_4 solution is needed to prepare 100 mL of 0.250 M H_2SO_4 solution?

PREPARING SOLUTIONS: How would you prepare 100mL of 1.50 M aqueous solution of sucrose ($C_{12}H_{22}O_{11}$)?

Step #1: Convert _____ → _____ ; WHY? : _____ ; 100 mL soln = _____

Step #2: Calculate _____ of _____ →

Step #3: Calculate _____ *(grams)* of _____ →

Step #4: _____ out the calculated *mass* of the _____

Step #5: *Transfer* massed _____ into a _____ flask of *needed* _____.

Step #6: Add _____ *(water)* to fill bulb _____ and _____ to completely

_____ solute.

Step #7: Add enough solvent until _____ line is reached _____.

DILUTING SOLUTIONS:

Step #1: Extract wanted/desired *volume* of solution of desired *molarity*.
Step #2: Transfer to another volumetric flask and add enough solvent *(water)* to reach graduation mark.
Step #3: Fill to exact graduation mark of the volumetric flask.