**Solutions Test Topics Answers**

1. Terms to know:

* Solvent vs. Solute
* Concentration
* Dilute vs. Concentrated
* Stock solution (known conc)

1. Percentage concentration – gives the amount of solute compared to the amount of solution. Percentage concentrations are used in everyday life.

**w/w %=g solute x 100 w/v %= g solute x 100 v/v %= mL solute x 100  
 g solvent mL solvent mL solvent**

1. Molar concentration – gives the number of moles of solute compared to the volume of solution (L). Concentrations of solutions used in chemistry labs are given in molar concentration. **mol/L**

Equation Triangle: **n = c x v c = n/v v = n/c**

n

v

c

Know how to solve for all three parts, and know how to convert between mass and moles using molar mass.  
**Molar mass from periodic table to convert between mass and moles**

1. Dilution – preparing a weaker solution from a more concentrated solution by adding water.

Equation: **ccvc = cdvd**

In this particular equation, you do not need to convert mL to L, because the volume units will cancel out.

1. Be able to describe how to make a stock solution (a solution of known concentration) and how to perform a dilution, using volumetric flasks, electronic balances, and pipettes.
2. Arrhenius theory of acids and bases:

When dissolved in water, acids ionize to produce **H+** in solution.

When dissolved in water, bases dissociate to produce **OH-** in solution.

1. Strong acids ionize **completely** in water to form ions, and are therefore **good** conductors of electricity. Weak acids ionize **partially** in water to form ions and are therefore **weak** conductors of electricity.
2. Acid – base indicators are used for what? How do they work?
3. Know how to write total ionic equations, net ionic equations, and indicate the spectator ions. Only dissociate the aqueous solutions.
4. pH and pOH calculations: [H+] = 10-pH pH = -log[H+] [OH-] = 10-pOH pOH = -log[OH-] pH + pOH=14

Acids use pH and [H+] Bases use pOH and [OH-]

1. Neutralization Reactions: Acid + base 🡪 **salt + water**

\_\_\_\_ H2SO4 (aq) + \_\_\_\_ NaOH (aq) 🡪

1. Titrations
   1. Their purpose: **determine an unknown concentration**
   2. Equipment: burette **known concentration**
   3. Erlenmeyer flask **unknown concentration (pipette)**
   4. End-point: **when you see the colour change**
   5. Equivalence point: **moles acid = moles of base**
   6. Calculations **Find moles mole ratio find ?**

**n=cxv V**

**n=m/M m**

**c**