

# Chemistry 20 In Class Assignment

What is Dissociation?

**How do you complete a dissociation equation?**

1. Write the ionic formula for the desired compound
2. Write an arrow with water above it (representing solvation)
- 3 Write the separated ions, including original charges of each ion as a superscript
4. Use aqueous notation behind each ion (due to solvation occurring)
5. Balance the ionic equation as normal balancing

**Dissociate the following ionic compounds**

Sodium Chloride

Potassium permanganate

Lithium hydroxide

Calcium fluoride

Copper(I)sulfite

Iron(III)chlorate

Chromium nitrite

Aluminium iodide

## What is Ionization?

### How do you complete a ionization equation?

1. Write the molecular formula for the desired compound reacting with water
2. Write an arrow
- 3 Separate the compound, pulling off the Hydrogen and attaching it to the water to create hydronium (note there will be as many hydronium as there are hydrogens in the original molecule, which will require the same number of waters to react)
4. the remaining (not hydrogenated ion) will remain with its original charge (note: the charge should be the same number as how many hydrogens were lost from the original compound)
5. Use aqueous notation behind each ion (due to solvation occurring)
6. Balance the ionic equation as normal balancing
7. If no hydrogens are present on the original molecular compound, use 2 water molecules to produce a hydronium ion, add the remaining OH to the original molecular compound

### Ionize the following ionic compounds

Acetic Acid

Hydrogen Sulfide

Perchloric acid

Carbon dioxide

Dinitrogen tetrahydride

Ammonium

Sulfurous Acid

## Electrolytes vs Non Electrolytes

<b>Electrolytes</b>	<b>Non electrolytes</b>
Conduct electricity	Do not conduct electricity
Ionic compounds	Molecular compounds
Strong Acids	Weak Acids
Examples:	Examples:

## Mole Conversions:

When given a question in which you must find an amount given a different amount (i.e. given moles need to find grams) set it up as below:

**GOAL UNITS = given amount with units x convert to moles x convert to goal units**

In solutions

- when given grams, use \_\_\_\_\_ to convert to moles
- when given litres, use \_\_\_\_\_ to convert to moles
- when given molecules, use \_\_\_\_\_ to convert to moles
- when given density, use \_\_\_\_\_ to convert to moles

In gases,

- when given litres, use \_\_\_\_\_ to convert to moles

These ideas are the same when you desire the units as well!!

**GOAL UNITS = given amount with units x convert to moles x convert to goal units**

Determine the number of grams required to create 240mL of a 1.283M solution of boric acid

Determine the number of grams required to create 19mL of a 2.3840M solution of sodium iodide

Determine the molarity of 140mL solution of ethanoic acid created using 65mg of solid in preparation

Determine the molarity of potassium perchlorate in a 250mL volumetric flask using 1.283mL of a 12M solution and diluting it to the line.

Determine the molarity of a solution of copper(II)sulfate created using  $5.293 \times 10^{22}$  molecules and 2.45L of water

Determine the number of litres required to make a 4.5M solution of aluminium oxide using 34.293g of solid

Determine the number of litres required to make a 0.0300M solution of methanol using 8.3849g of solid

Determine the molarity of mercury given its density is 13.6g/mL

Determine the molarity of 0.70g/mL sugar (sucrose)

Determine the concentration of a solution of platinum nitride created by measuring 1.2837g into 900mL of water. Using this information, determine the ion concentration of all ions present in solution.

List the steps to creating 250mL of a 6.0M solution of Zinc Sulfide

**Write the molecular, total ionic and net ionic equations for the following word equations, where possible:**

1. acetic acid + calcium hydroxide → calcium acetate + water

a) molecular eq'n

b) total ionic eq'n

c) net ionic eq'n

2. sulphuric acid + barium nitrate → barium sulphate + nitric acid

a) molecular eq'n

b) total ionic eq'n

c) net ionic eq'n

3. zinc + copper (II) chloride → copper + zinc chloride

a) molecular eq'n

b) total ionic eq'n

c) net ionic eq'n

4. sulfuric acid + barium hydroxide → barium sulfate + water

a) molecular eq'n

b) total ionic eq'n

c) net ionic eq'n

5. sodium carbonate + potassium nitrate → potassium carbonate + sodium nitrate

a) molecular eq'n

b) total ionic eq'n

c) net ionic eq'n

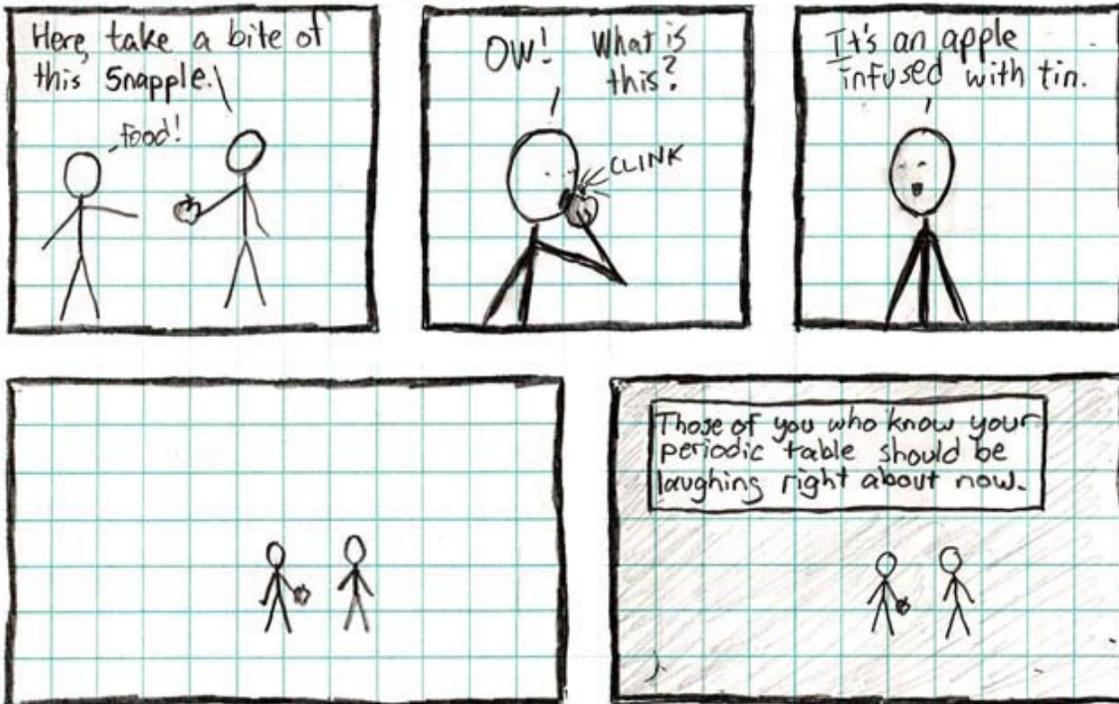
6. sodium carbonate + hydrochloric acid  $\rightarrow$  sodium chloride + water + carbon dioxide

a) molecular eq'n

b) total ionic eq'n

c) net ionic eq'n

This one is entirely James' fault.



# Acid Base Review

## Formulas to Know

Acids	Conversions	Bases
$\text{pH} = -\log [\text{H}_3\text{O}^+]$	$\text{pH} + \text{pOH} = 14.0$	$\text{pOH} = -\log [\text{OH}^-]$
$[\text{H}_3\text{O}^+] = 10^{-\text{pH}}$	$[\text{H}_3\text{O}^+][\text{OH}^-] = 1.0 \times 10^{-14}$	$[\text{OH}^-] = 10^{-\text{pOH}}$

1. A certain solution has  $[\text{H}_3\text{O}^+] = 2 \times 10^{-5}$ . Calculate the concentration of  $[\text{OH}^-]$  and the pH of the solution
  
2. A certain solution has  $[\text{H}_3\text{O}^+] = 5 \times 10^{-9}$ . Calculate the concentration of  $[\text{OH}^-]$  and the pH of the solution
  
3. A certain solution has  $[\text{OH}^-] = 4 \times 10^{-3}$ . Calculate the concentration of  $[\text{H}_3\text{O}^+]$  and the pH of the solution



8. A certain solution has  $\text{pOH} = 9.3$ . Calculate the  $\text{pH}$ , the concentration of  $[\text{H}_3\text{O}^+]$  and the  $[\text{OH}^-]$  of the solution
9. A certain solution has  $[\text{OH}^-]$  of  $5 \times 10^{-4}$ . Calculate the  $[\text{H}_3\text{O}^+]$ , the  $\text{pH}$  and the  $\text{pOH}$ , of the solution
10. A certain solution has  $[\text{H}_3\text{O}^+]$  of  $5 \times 10^{-12}$ . Calculate the  $[\text{OH}^-]$ , the  $\text{pH}$  and the  $\text{pOH}$ , of the solution