

1. Electrolytes/Dissociation

1. What is the difference between a strong electrolyte and a weak electrolyte?

↑ dissociates completely

↑ partial diss.

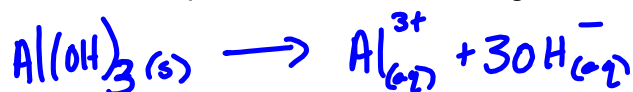
2. What type of bond is associated with solutions that are:

a) Electrolytes Ionic / polar



b) Non-Electrolytes Covalent
non polar

3. Write the Dissociation equation for the dissolving of aluminum hydroxide



2. Electrolytes

Explain how some substances are electrolytes when in solution, while others are not.

↑ Covalent no diss. no ions

↓ ionic dissociate form ions

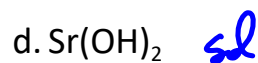
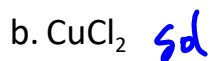
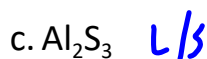
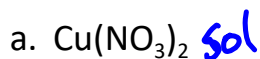
What is the difference between a strong and weak electrolyte?

↑ complete dissociation (more ions)

partial dissociation (less ions)

3. Solubility/Dissociation

1. Are the following soluble in water?



2. Write the dissociation reaction for each, including states



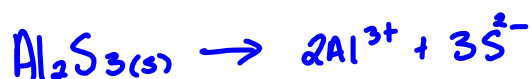
4. Dissolving vs Dissociation

1. What is the difference between dissolving and dissociation.

dissolving \rightarrow going into solution

dissociating \rightarrow breaking into ions when in solution

2. Write the dissociation reaction for Aluminum sulphide.

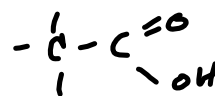
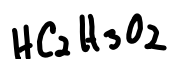
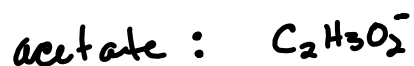


3. If you have a 0.5 mol/L solution of Aluminum sulphide, determine

$$[\text{Al}^{3+}] = 1.0 \frac{\text{mol}}{\text{L}}$$

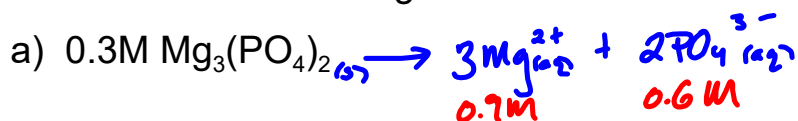
$$[\text{S}^{2-}] = 1.5 \frac{\text{mol}}{\text{L}}$$

the concentration of the ions formed.

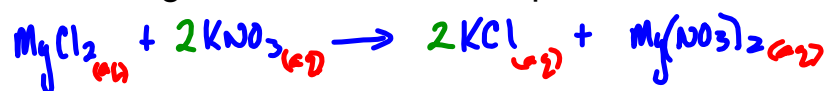


5. Dissociation

Write the dissociation equation and determine the concentration of each ion in the following solutions:

**6. Molecular/Ionic/Net Ionic**

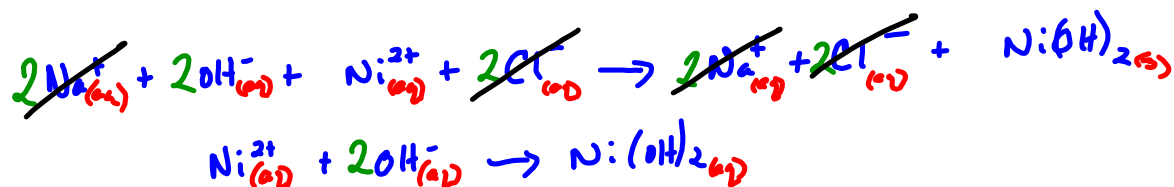
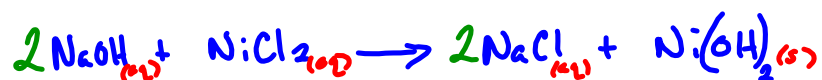
Write the complete set of reactions (molecular, ionic and net ionic) for the reaction between magnesium chloride and potassium nitrate.



No Net ... all cancel

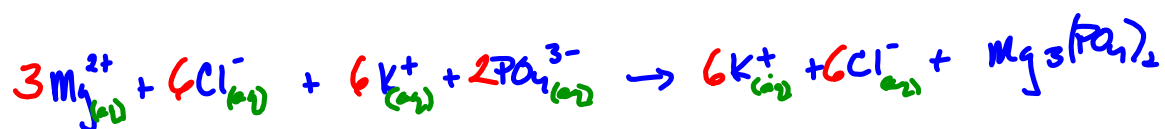
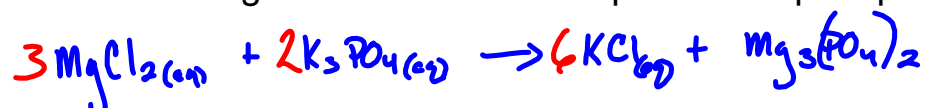
7. Molecular/Ionic/Net Ionic

Write the complete set of reactions (molecular, ionic, and net ionic) for the reaction between **Sodium hydroxide and Nickel (II) chloride**



8. Molecular/Ionic/Net ionic

Write the complete set of reactions (molecular, ionic and net ionic) for the reaction between magnesium chloride and potassium phosphate.



9. Electrolytes/Acid-Base Properties

1. What is the difference between a strong and weak electrolyte?

Complete dissociation
(more ions)

↓
partial dissociation
(less ions)

2. What type of compounds form Electrolytes and non-electrolytes?

ionic

covalent

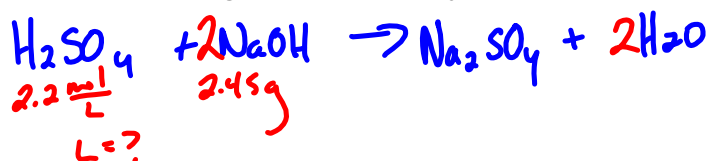
3. Give 1 property of acids and bases.

sour
pH < 7

Bitter
pH > 7

10. Neutralization

Calculate the volume of 2.2M sulphuric acid needed to neutralize a solution made with 2.45g of sodium hydroxide.



$$2.45 \text{ g} \times \frac{1 \text{ mol}}{40.01 \text{ g}} = 0.061 \text{ mol NaOH} \times \frac{1}{2} = 0.031 \text{ mol H}_2\text{SO}_4 \times \frac{1 \text{ L}}{2.2 \text{ mol}}$$

0.014 L

11. Neutralization

What mass of solid $\text{Ca}(\text{OH})_2$ can neutralize 52.0mL of 0.50mol/L H_2SO_4 acid? (assume final volume is still 52.0mL)

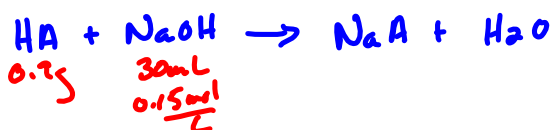


$$0.052 \text{ L} \times \frac{0.5 \text{ mol}}{1 \text{ L}} = 0.026 \text{ mol H}_2\text{SO}_4 \times \frac{1}{1} = 0.026 \text{ mol Ca}(\text{OH})_2 \times \frac{74.12 \text{ g}}{1 \text{ mol}}$$

$$= 1.93 \text{ g}$$

12. Neutralization

1. The neutralization of 0.900g of an unknown solid acid HA needed 30.0mL of 0.150mol/L NaOH. Calculate the molar mass (g/mol) of the acid. (hint: find the moles of acid first)

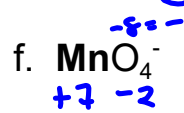
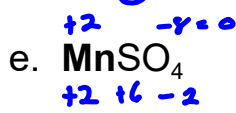
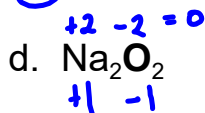
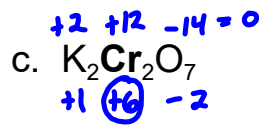
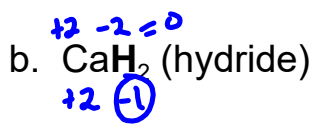
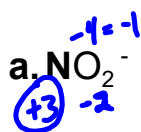


$$0.03 \text{ L} \times \frac{0.15 \text{ mol}}{1 \text{ L}} = 0.0045 \text{ mol NaOH} \times \frac{1}{1} = 0.0045 \text{ mol HA}$$

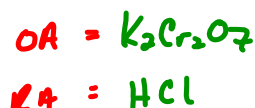
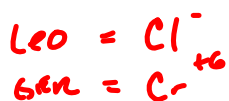
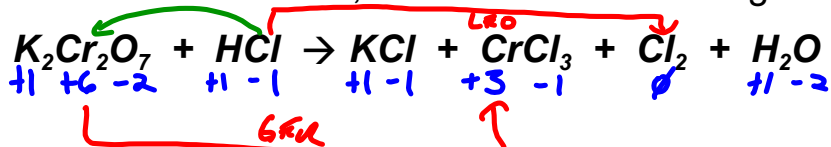
$$\frac{0.9 \text{ g}}{0.0045 \text{ mol}} = 200 \text{ g/mol}$$

13. Oxidation Numbers/LEO/GER/OA/RA

1. Determine the oxidation number of the BOLD element:

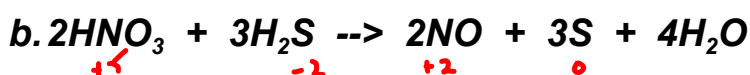
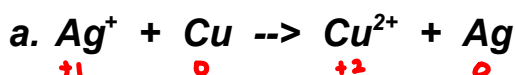
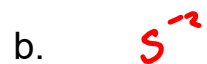


2. Find the substance oxidized, reduced and the two agents:

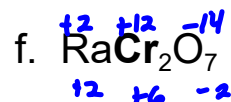
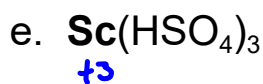
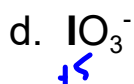
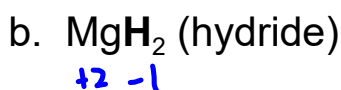
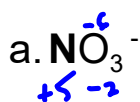


14. LEO/GER/OA/RA

1. Fill in the blanks regarding the following reactions:

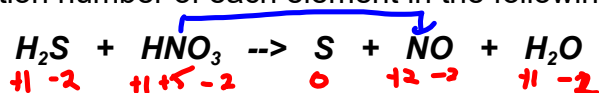
Substance being **Oxidized**:Substance being **Reduced**:**Oxidizing Agent**:**Reducing Agent**:

2. Determine the oxidation number of the BOLD element:

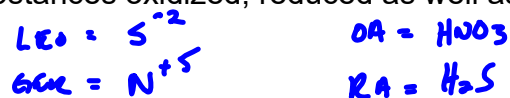


15. Balancing Redox

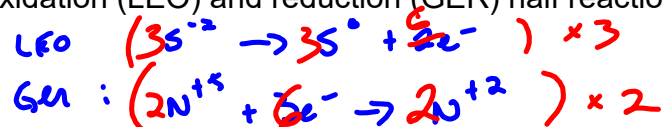
1. Determine the oxidation number of each element in the following reaction:



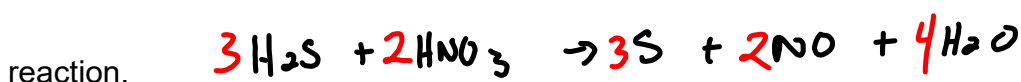
2. List the substances oxidized, reduced as well as the oxidizing and reducing agents.



3. Write the oxidation (LEO) and reduction (GER) half reactions.



4. Balance the electrons lost and gained in question 3, then write the final balanced

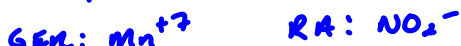


16. Balancing In Acid Solution

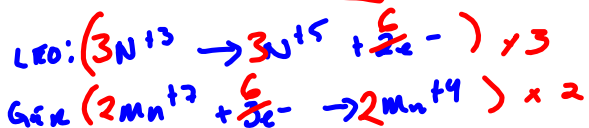
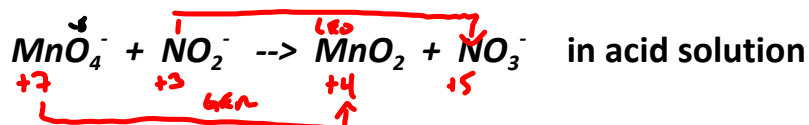
Given the reaction below:



1. Find the LEO/GER/OA/RA

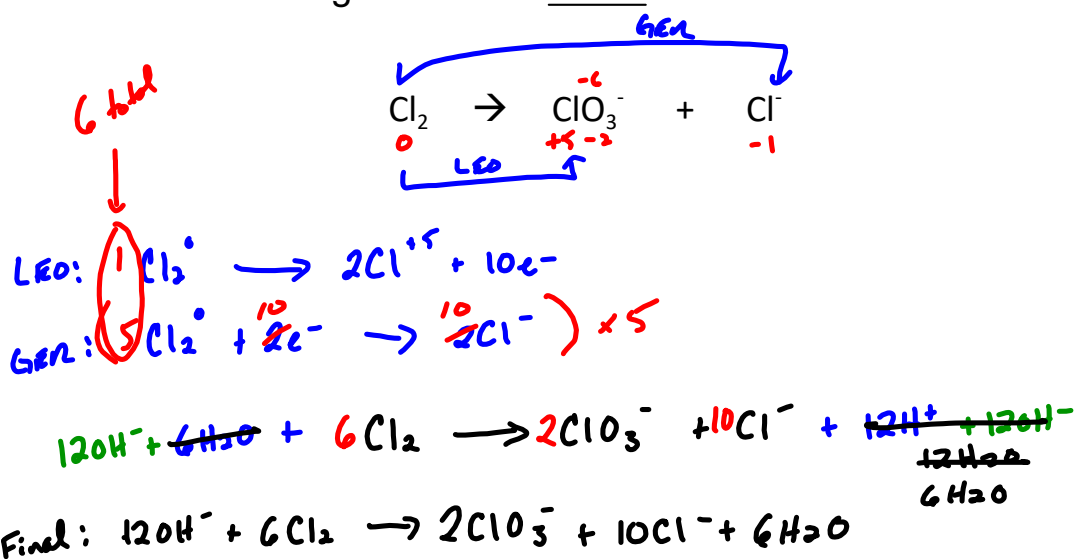


2. Balance using half reaction methods:



17. Balancing in Basic Solution

Balance the following reaction in basic solution:



18. Balancing REDOX in Base Solution

Balance $\text{CrO}_2^- + \text{S}_2\text{O}_8^{2-} \rightarrow \text{CrO}_4^{2-} + \text{SO}_4^{2-}$ in basic solution

