

Ch4/ PowerPoint Study-4 Solution Stoichiometry **Name:** _____

Answer these questions as you are watching the videos. They are due in class.

These questions are not just for you to answer but also to prepare you for the exam.

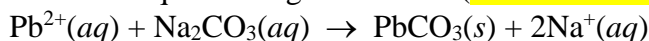
*Make sure you understand what you are writing and not just copy from the text book. **Show all work.***

- 1) What is the concentration of chloride ions in a 0.35 M solution of calcium chloride.

Strategy:

- What is the formula for calcium chloride? _____
- How many mols of chloride in one mol of calcium chloride? _____
- Set up dimensional analysis to find the molarity of chloride ions.

- 2) **Gravimetric:** A 0.4078 g precipitate of lead (II) carbonate forms when a solution of sodium carbonate is added to 100.0 mL solution of the lead (II) solution. What is the concentration of a Pb^{2+} solution? The balanced equation is given below. (Ans: 0.01526 M)



Strategy:

- Convert 0.4078 g of lead (II) carbonate into mols using the formula mass of lead (II) carbonate.
- What is the mol ratio of lead (II) ions with lead (II) carbonate? _____
- What are the mols of lead ions in the solution? (hint: in this case same as in b)) _____
- Find the molarity using the mols from c) and the volume (in L) given in the problem. (for practice, set up the entire answer as dimensional analysis)

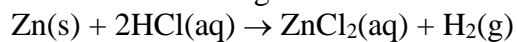
- 3) **Neutralization:** A 34.62 mL of 0.1510 M NaOH was needed to neutralize 50.0 mL of an H_2SO_4 solution. What is the concentration of the original sulfuric acid solution? (Ans: 0.0523 M)

Strategy:

- write the equation between NaOH and H_2SO_4 and balance it;
- calculate mols of NaOH in the solution:
- What is the mol ratio of NaOH to H_2SO_4 (this is should give mols of H_2SO_4)

d) Divide mols of H_2SO_4 by L of H_2SO_4 to get molarity.

- 4) Zinc dissolves in hydrochloric acid to yield hydrogen gas. What mass of hydrogen gas is produced when a 7.35 g chunk of zinc dissolves in 500. mL of 1.200M HCl? (Ans: 0.226 g)



Strategy:

1) calculate mols of both Zn and HCl (this is a limiting reagent problem);

2) take the smaller mols and calculate mass of hydrogen produced.