

### Quiz Review 3

1) Write the net ionic reaction for:

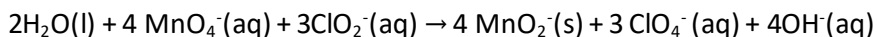
Potassium chloride reacting with calcium sulfide

Magnesium chloride and sodium fluoride

2) If 319 mL of 6.80 M HCl is used to form 6.00 M of HCl, what is the final volume?

3) In a reaction, 34.4 grams of aqueous Al will completely react with how many moles of aqueous HCl? What would the molarity of Al and HCl be in a 500 mL solution?

4) Given 1.5 grams of  $\text{Ba}(\text{OH})_2$  in 0.230 L of water, what is the concentration of hydroxide ions?



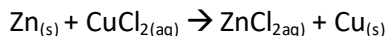
5) According to the balanced equation above, how many moles of  $\text{ClO}_2^-(\text{aq})$  are needed to react completely with 20. mL of 0.20 M  $\text{KMnO}_4$  solution?

6) A 25.0 mL sample of potassium chloride solution is mixed with 15.0 mL of .900 M lead(II) nitrate solution.

- Determine theoretical yield
- Determine the percent yield if the reaction produces 2.45 g of precipitate.

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7) What is the molarity of  $\text{ZnCl}_2$  that forms when 25.0 g of zinc completely reacts with  $\text{CuCl}_2$ ? Assume a final volume of 175 ml



8) An acid solution is .100 M in HCl and .200 M in  $\text{H}_2\text{SO}_4$ . What volume of 0.150 M KOH solution would completely neutralize of the acid present in 500.0 mL of this solution?

9) James reacts 2.50 grams of hydroiodic acid (HI) and some concentrated barium hydroxide. If the concentration of barium hydroxide is .800 M, then what is the volume required to reach the end point when titrating 100.00 mL of hydroiodic acid?

10) What is the bond order of  $\text{NO}^{3-}$ ? Draw out the theoretical Lewis dot structure and label the formal charges on all the atoms.

11) Mark is having tummy problems after eating too much ice cream and cheap mochi and decides to go to EBGB's to look for something to help his woozy stomach. Mark knows that sodium bicarbonate ( $\text{NaHCO}_3$ ) is a strongly basic compounds and will neutralize excess hydrochloric acid secreted by the stomach and alleviate his acid reflux. Mark mixes 2.5 grams of sodium bicarbonate in water and drinks it. How much hydrochloric acid will be neutralized from this?

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James mixes 100.00 mL of 250M  $\text{Li}_2$  to a 125 mL solution of 0.175 M  $\text{Pb}(\text{NO}_3)_4$

- Write a net ionic reaction for this solution mixture and identify spectator ions.
- What is the theoretical yield of the solid in grams?
- if the total collected amount of precipitate after being dried off and weighed is 1.14 grams, what was the percent yield?
- what volume of excess solution is left in the container?

Mark wants to buy new laundry detergent. He knows that sodium carbonate is a component used to soften hard water and make the detergent more effective. Mark uses a laundry detergent that is a mixture of  $3.5 \times 10^{-3}$  M in  $\text{Ca}^{2+}$  and  $1.1 \times 10^{-3}$  M in  $\text{Mg}^{2+}$  and he knows that the washing machine capacity is about 19.5 gallons of water and that the detergent requires about 0.65 kg of detergent per load. What percentage of mass of detergent should be sodium carbonate if Mark wants to completely precipitate all of calcium and magnesium ions in an average load of his laundry?