

Reactions in Solution

— Molarity, Stoichiometry, and Dilution

Name: _____

Student ID: _____

Date: _____

1. When sulfuric acid and potassium hydroxide solution are mixed the flask gives off heat.

- What is the balanced molecular equation for this reaction?
- What is the net ionic equation for this reaction?
- What are the spectator ions in this reaction?
- Is this a precipitation, neutralization, or gas evolution reaction?

2. (a) How many milliliters of a stock solution of 11.2 M HNO_3 would you have to use to prepare 0.360 L of 0.370 M HNO_3 ?

(b) If you dilute 25.0 mL of the stock solution to a final volume of 0.440 L, what will be the concentration of the diluted solution?

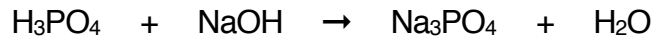
3. A given substance has a molecular weight of 201.34 g/mol. If you dissolved 15.3 grams of this substance in 257.2 mL of water, what would be the molarity of the solution?

4. What mass of KCl is needed to precipitate all the silver ions in 15.0 mL of 0.200 M AgNO_3 ?

5. What how many mL of 3.0 M HCl would you need to dissolve 6.50 grams of magnesium?

6. What how many mL of 0.250 M Na_2CO_3 would you need to neutralize 135 mL of 0.500 M HNO_3 ?

7. Consider the following reaction:



- Is this equation balanced?
- How many moles of phosphoric acid are in each drop of a 0.0125 M H_3PO_4 solution? (a drop is 0.30 mL)
- How many mL of 10.0 M sodium hydroxide would be required to completely neutralize one drop of the 0.0125 M H_3PO_4 solution?
- If you did not know the molarity of that phosphoric acid solution, and you tried to determine it by titration with a 10.0 M sodium hydroxide solution -- what problem would encounter?