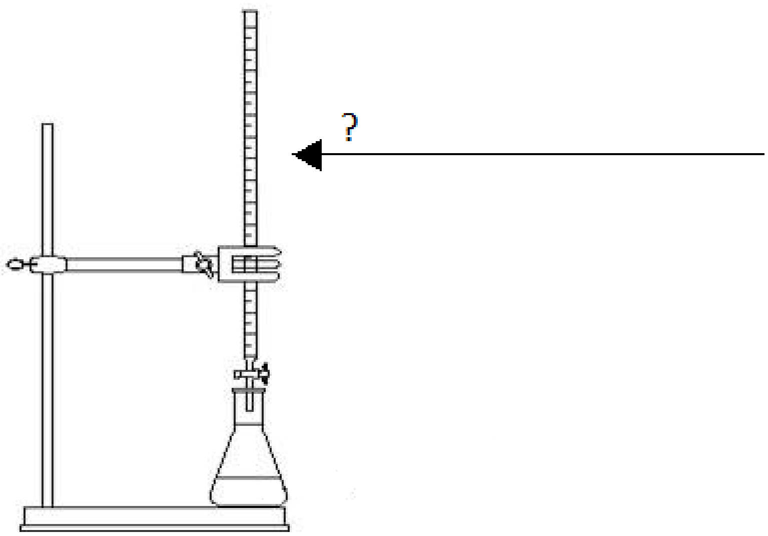
Name: ______________________________ Date: __________________________

Titration Preparation

Part A: Video Response Sheet: "Setting Up and Performing a Titration"

Answer the following questions as you watch the video.

1. The purpose of a titration is to **quantitatively** determine the concentration of an unknown solution called a ________________________ by adding a known volume of a solution called a ________________________
2. What is added to the analyte? ________________________
3. What is this piece of equipment called?



4. The markings go from ________________________ at the top to ________________________ at the bottom.
5. The stopcock is closed when it is (circle one): horizontal vertical
6. Do you need to fill the burette exactly to the zero mark?
7. The liquid forms a ________________________ , because the water pulls itself up the sides of the burette. You should read from the ________________________ of this curve.
8. When you are reading the volume on a burette with 0.1 mL markings, you should have ______ decimal places in your reading.
9. After you measure and add liquid to the Erlenmeyer flask, you need to add a few drops of ________________________. White paper under the flask makes it easier to detect the ________________________.
10. A dark coloured solution means an ________________________ of titrant has been added. The desired colour is a faintly, pale-coloured solution.
11. You should do ________________________ titrations and average your results.

Part B: Procedure Questions

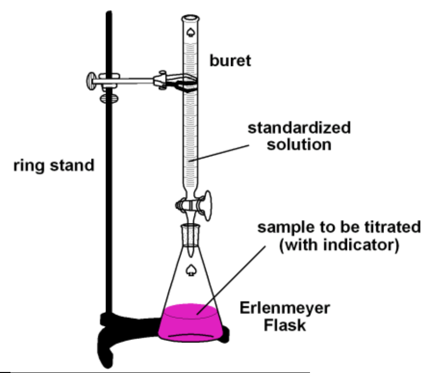
You have a solution with a pH of 1.03. You want to determine the concentration of the solution, so you decide to perform an acid-base titration.

1. The solution is acidic. How do you know?

2. Sodium hydroxide, a strong base, is as used as the **titrant** (solution in the burette). Why?

3. Why do you need to swirl the flask as you mix?

4. Why is it important to do the titration more than once?



Part C: Titration Calculations

The set up you are using for your titration is shown. You have 10 mL of acid to be titrated in your Erlenmeyer flask.

1. Find the average volume of NaOH added. *Do not use any data that is very different from the rest.*

Volume of NaOH Used in Acid Titration

Trial	Initial Burette Reading	Final Burette Reading	Volume of NaOH (mL)
1	0.0	16.2	16.2 mL
2	16.2	33.2	16.0 mL
3	33.2	49.2	17.0 mL
4	0.0	16.0	16.0 mL

2. Find the number of moles of NaOH added, using the average volume and a concentration of 0.0150 mol/L.

$$[NaOH] = n_{NaOH}/V$$

3. Using a mole ratio of NaOH:Acid = 1:3, find the number of moles of acid that were neutralized.

$$n_{acid} = n_{NaOH} \times molar\ ratio$$

4. Find the concentration of the acid based on the volume in the Erlenmeyer flask and the number of moles.

$$[Acid] = n_{acid}/V$$

Part D: Titration Practice

Try titrating 10.0 mL of the 0.10 mol/L hydrochloric acid with 0.10 mol/L sodium hydroxide solution.

a. Practice adding NaOH dropwise and stopping as soon as a colour change occurs.
b. Determine how much NaOH you should have to add to get a colour change – is this what you're getting? If not, try again. Be careful with your measurements. Make sure everything is rinsed well before you start. Water residue does not matter in this process.
c. Do this until you have THREE successful titrations. Make sure that BOTH partners have practiced. You will be marked on your lab on how good your data is!

Trial	Volume of HCl	Initial Volume of NaOH	Final Volume of NaOH	Volume of NaOH
1				
2				
3				
4				
5				
6				
7				
8				