

pH Titration Tutorial

Titration is a laboratory technique by which we can determine the concentration of an unknown reagent using a standard concentration of another reagent that chemically reacts with the unknown. This standard solution is referred to as the "titrant". We have to have some way to determine when the reaction is complete that we are using. This is referred to as the "end point" or more technically the equivalence point. At that point all the unknown has been reacted with the standard titrant and some kind of chemical indicator must let us know when that point has been arrived at.

Titration- Iowa State

http://www.chem.iastate.edu/group/Greenbowe/sections/projectfolder/flashfiles/stoichiometry/acid_base.html

Activity 1.

1. Select "Strong Acid vs. Strong Base".
2. Click fill the buret with Base.
3. Select HNO₃ as the acid and KOH as the base.
4. Select phenolphthalein as the indicator.
5. The computer will automatically assign you a molarity for the acid and a volume for the acid.
Write these down
6. Use the slider to add 10.0 mL of Base
7. Add more base drop wise until the solution turns pink and stays pink
8. If you go past the equivalence point, "Concordant Values" and start again at step 6
9. Calculate the Molarity of the Base. Use $M_A V_A = M_B V_B$
10. Fill in your calculated value of Molarity of the base and check answer.

Activity 2.

1. Select "Strong Acid vs. Strong Base".
2. Click fill the buret with Acid.
3. Select HCl as the acid and NaOH as the base.
4. Select Methyl Red as the indicator.
5. The computer will automatically assign you a molarity for the base and a volume for the base.
Write these down
6. Use the slider to add 10.0 mL of Acid
7. Add more Acid drop wise until the solution turns rd and stays red
8. If you go past the equivalence point, "Concordant Values" and start again at step 6
9. Calculate the Molarity of the Acid. Use $M_A V_A = M_B V_B$
10. Fill in your calculated value of Molarity of the Acid and check answer.

Titration- McGraw Hill

http://highered.mcgraw-hill.com/sites/0073656011/student_view0/chapter16/elearning_session.html

Acitivity 3

1. Click on Acid/Base Titration and follow the simulation
2. Click on Acid/Base Titration Quiz
3. Complete the Quiz

Name _____ Date _____ Period _____

pH Titration Tutorial Worksheet

Activity 1

	Acid	Base
Molarity (mol/L)		
Volume (mL)		

Activity 2

	Acid	Base
Molarity (mol/L)		
Volume (mL)		

Activity 3

1. In an acid-base titration, when does the equivalence point occur?
2. If it takes 43.32ml of .1M NaOH to neutralize a 50ml HCL solution, how many moles of NaOH were added to the HCL solution?
3. If it takes 43.32ml of .1M NaOH to neutralize a 50ml HCL solution, how many moles of HCL were originally present?
4. If it takes 43.32ml of .1M NaOH to neutralize a 50ml HCL solution, what is the molarity of HCL?
5. In the reaction, $2\text{NaOH}(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}(\text{l})$, estimate the number of moles of NaOH it would take to neutralize the H_2SO_4 solution.