6.8 Virtual Titration Lab

Background

Titrations are neutralization reactions used to determine the concentration of an acid or base. For example, if you had a strong acid with an unknown concentration, you would add strong base to it until all of the acid had been neutralized. At the very point that all of the acid was gone, the amount of base that was added would be exactly equal to the original quantity of acid.
Likewise, if you wanted to find the concentration of a base, you could neutralize it with an acid of known concentration. The equation for titration calculations is:

YMAVA = XMBVB

MA = molarity of acid *MB = molarity of base*
VA = volume of acid *VB = volume of base*

*Note: **Any unit can be used for volume**, as long as the same unit is used for the volume of both acid and base.*

In all titrations, an indicator is needed to determine when the acid or base has been neutralized. Without an indicator, it would be impossible to determine when the titration should stop. The exact amount of indicator used is unimportant, as it isn't directly involved in the neutralization reaction. In this lab, the indicator we are using is phenolthalien.

Purpose

The purpose of this lab is to carry out a titration experiment to determine the molar mass of an unknown acid.

Procedure

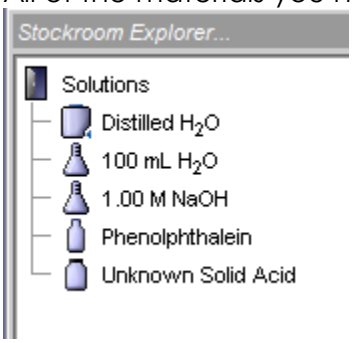
There will be no set procedure for this lab activity. It will be up to you to design a procedure and perform an experiment to determine the molar mass of a solid unknown acid (hint: think about the topic in your 6.7 notes). Please note, it is important that you record your data are you complete the lab to use in your calculations section.

All of the materials and equipment you need to carry out the lab can be found at the website below:

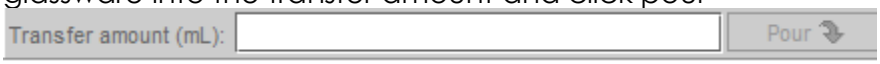
http://chemcollective.org/activities/autograded/143

A few things that might be helpful:

1. Click on this button  for any glassware you need (beaker, flasks, burets, etc.).
2. Click on this button  for any equipment you need (Bunsen burner, etc.).
3. All of the materials you need can be found in the "stockroom"



4. To add material to glassware, place the material on top of the glassware until you see a green (+) sign. Then, type in the amount you want to add to the glassware into the transfer amount and click pour



5. Right click on any glassware, equipment or materials and choose remove from the drop down menu to remove them from your workbench.

Data:

Mass of unknown acid used to make solution: _____

Total volume of unknown acid solution: _____

Volume of unknown acid solution used in titration: _____

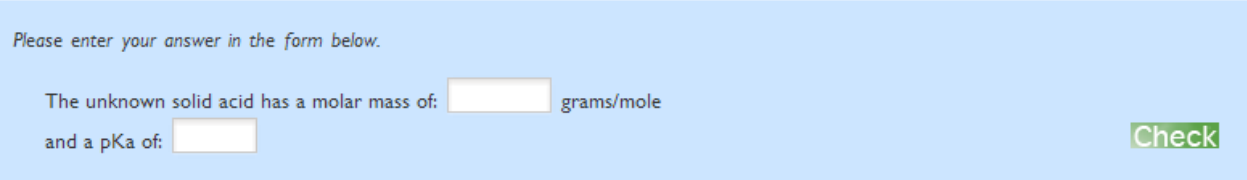
Concentration of base used: _____

Volume of base used: _____

Calculations

Based on the data you collected above, calculate the molar mass of the unknown acid.

Check your answer by typing it into the bottom of the website.



Please note, we do not learn about pKa in Chemistry 30, so we are not calculating this. However, to check your answer, a value must be put into the pKa box. Place any value you like here.

You can submit your answers up to three times. If all three answers are incorrect, you will be given the correct answer and asked to reload the page and try a new problem. Good Luck! Please be aware that reloading the page will result in having to start a new problem with a different unknown acid.