

Lab: Acid-Base Titration Simulator

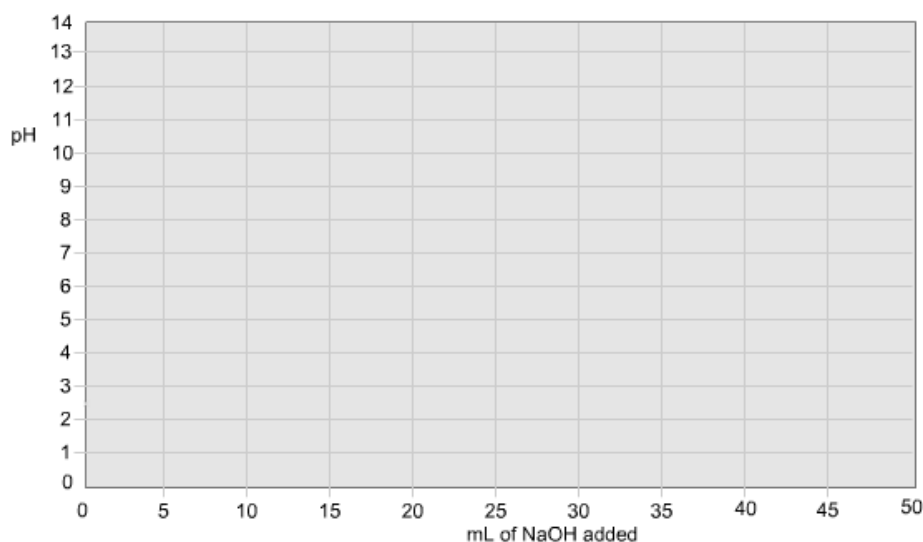
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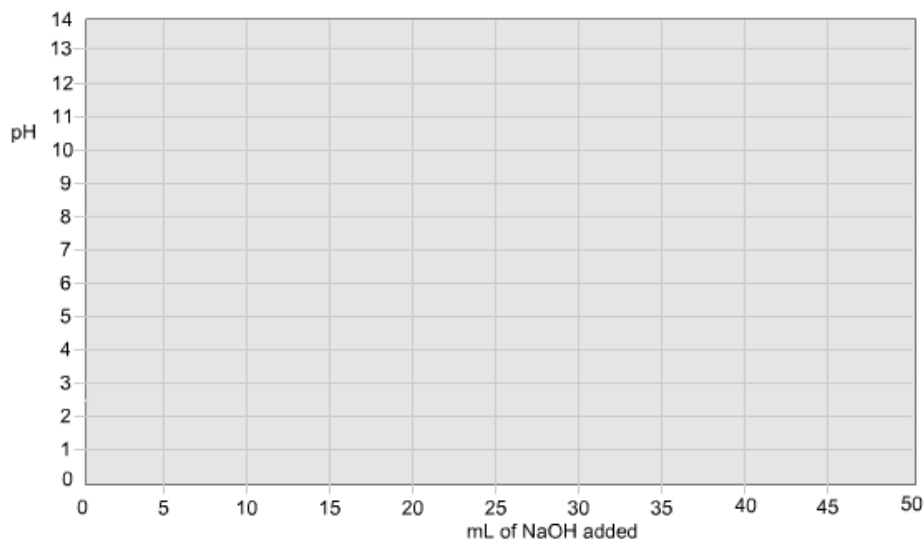
Block:

 On time Late

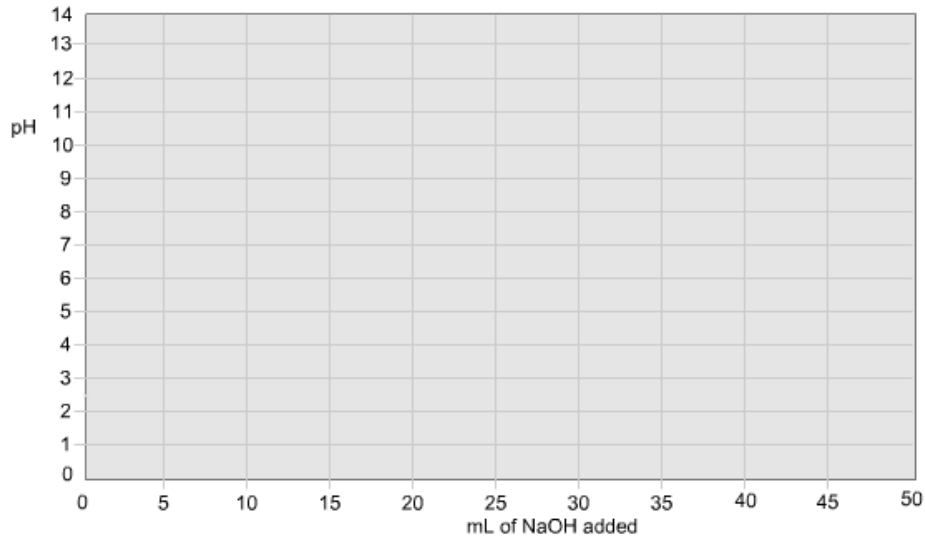
- Go to the following website: <http://users.wfu.edu/ylwong/chem/titrationsimulator/>
- Select: "Find the concentration of an acetic acid solution"
- What is the titrant? (Read the objective) _____
- Read through the instructions.
- Start your titration!
- What is the K_a of CH_3COOH ? _____. What is the volume of CH_3COOH in the flask? _____
- Titration #1:** Start adding your base! (What is $[\text{NaOH}]$? _____) **Sketch** your curve. Label your equivalence point on the graph. (**If you don't get a curve, restart your titration with a higher $[\text{NaOH}]$ **) What volume of NaOH did you need at equivalence point? _____



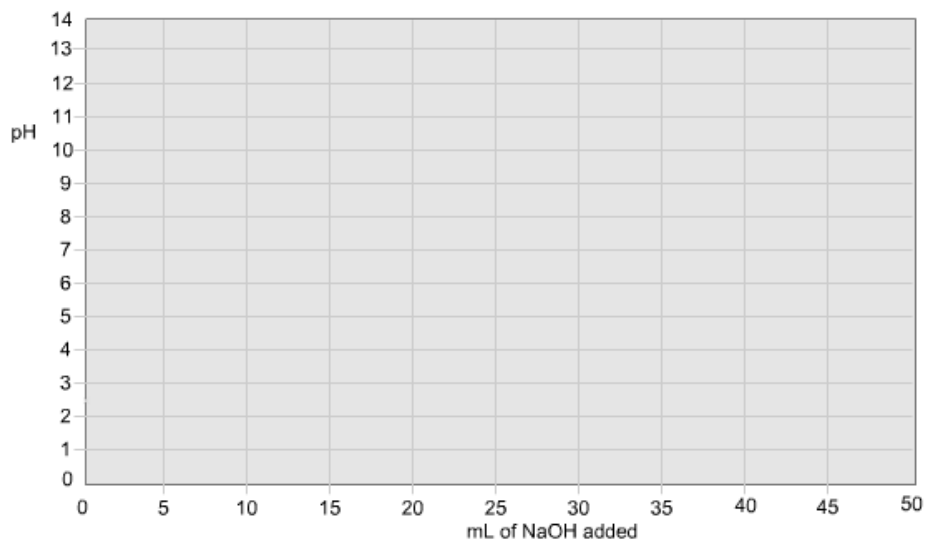
- Titration #2:** Restart your titration but change the concentration of NaOH to 0.50M. Sketch your curve. Label your equivalence point on the graph. What volume of NaOH did you need at equivalence point? _____



9. Go back to the original page and select: "Find the concentration of a hypothetical weak acid solution"
10. **Titration #3:** Change your parameters so your NaOH concentration is the same as Titration #2 and your weak acid is weaker than acetic acid. Let's call this acid "HX". K_a : _____.
11. Sketch your curve. Label your equivalence point on the graph. What volume of NaOH did you need at equivalence point? _____



12. **Titration #4:** Change your parameters so your NaOH concentration is the same as Titration #2 and your weak acid is stronger than acetic acid. Let's call this acid "HY". K_a : _____.
13. Sketch your curve. Label your equivalence point on the graph. What volume of NaOH did you need at equivalence point? _____



Calculations:

➤ Titration #1:

Calculate the [CH₃COOH] using the data from the equivalence point:

[NaOH] =

Volume NaOH =

Volume CH₃COOH =

Calculate the pH before any NaOH has been added.

Does it match your graph?

➤ **Titration #2:**

Calculate the $[\text{CH}_3\text{COOH}]$ using the data from the equivalence point:

$[\text{NaOH}] =$

Volume NaOH =

Volume $\text{CH}_3\text{COOH} =$

Calculate the pH at midpoint (exactly halfway to equivalence point).

Does it match your graph?

➤ **Titration #3:**

Calculate the $[HX]$ ($K_a = \underline{\hspace{2cm}}$) using the data from the equivalence point:
 $[NaOH] =$ $\hspace{2cm}$ $Volume\ NaOH =$ $\hspace{2cm}$ $Volume\ HX =$

Calculate the pH at equivalence point.

Does it match your graph?

➤ **Titration #4:**

Calculate the [HY] ($K_a =$ _____) using the data from the equivalence point:
[NaOH] = _____ Volume NaOH = _____ Volume HY = _____

Calculate the pH when 50.0 mL of NaOH has been added.

Does it match your graph?