	AP Chem-Unit 10 -	wkst: Review	FR	magnet from men, of the field field field free free property for a management of the security and		
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	PH= 2.79, 500ml, 0.20	A distribution of purposes analysis are as a second to a second to a second to a second secon				
A)_	Acid	Buse	CB	CA		
8)	Ka = [CH3CH200-32H30+]					
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na a panamana a sama'ara a sa simbana a samban ha'ili si maka'ili sabha'i	i) CH3 CH2 COO + H2O = OH + CH3 CH2 COOH in Beaker: weak Base at equivalence pt pH greate 7 FAlse > why ii) HCI pH = CH3 CH2 COOH pH is make concentration EH03 = EcH3 CH3 COOH 3? True - HCI is a otrong pick that dissociates completely, whereas propancic acid is a week Acid that does not dissociate completely. to Achieve equal pH the EHCIJ meest Be less the Epropancic J					
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	75.0 mb	~				

AP Chem-Unitio-wkst: Review FR d) conti = 1.0075 moles CH3CH2COOH e) CCH3CH2COU-J ? 2.5 mmols = 1.033 M F) [H30+] 4 PH ? [HT] = Ka [Besse] Added BASE = 1.3×10-5 (10.0-2.5) (0+2.5) [H-] = 3.9×10-5 PH = PKa + log CHAS PH = -19 CHT pka=-logka pK= = 4.89 DH = 4.89 + log (. 8 53)

pH= 4.41

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APChem-Un: + 10- Review FR

An experiment is performed to determine the molar mass of an unknown solid monoprotic acid, HA, by titration with a standardized NaOH solution.

(a) What measurement(s) must be made to determine the number of moles of NaOH used in the titration?

Initial volume of standardized NaOH solution and final volume of standardized NaOH solution (volume at the endpoint of the titration)

1 point for identifying both initial and final volume of base

(b) Write a mathematical expression that can be used to determine the number of moles of NaOH used to reach the endpoint of the titration.

 $M_{\rm NaOH} \times V_{\rm NaOH}$

(Molarity of NaOH solution) times (volume (in L) of NaOH added)

1 point for mathematical expression

(c) How can the number of moles of HA consumed in the titration be determined?

 $HA + NaOH \rightarrow NaA + H_2O$

moles HA = moles NaOH

moles monoprotic acid = moles NaOH

 $n_{\rm HA} = \text{moles NaOH} \left(\frac{1 \text{ mol HA}}{1 \text{ mol NaOH}} \right)$

1 point for showing conversion based on stoichiometry of the neutralization reaction

(d) In addition to the measurement(s) made in part (a), what other measurement(s) must be made to determine the molar mass of the acid, HA?

mass of HA

1 point for measurement

(e) Write the mathematical expression that is used to determine the molar mass of HA.

mass HA

mol HA

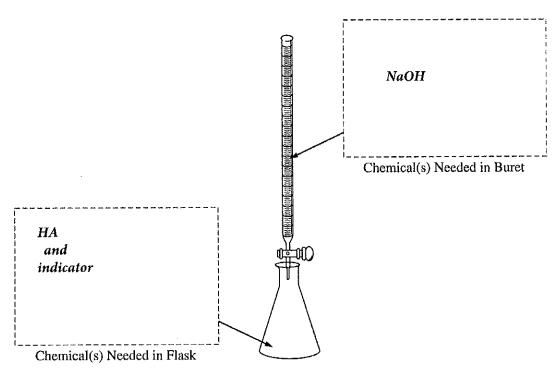
mass of HA measured in part (d) divided by the moles of HA determined in part (c)

1 point for quotient

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2)

(f) The following diagram represents the setup for the titration. In the appropriate boxes below, list the chemical(s) needed to perform the titration.



Chemicals needed in flask: solid weak monoprotic acid (HA) and an indicator to detect endpoint of titration

Chemical in buret: standardized NaOH solution

1 point for either one of two chemicals in flask, 2 points for both

1 point for NaOH in the buret

- (g) Explain what effect each of the following would have on the calculated molar mass of HA. Justify your answers.
 - (i) The original solid acid, HA, was not completely dry at the beginning of the experiment.

Measured mass of HA is larger; so, according to expression in part (e), calculated molar mass will be higher than it should.

1 point for the effect on molar mass <u>and</u> explanation.

(ii) The procedure called for 25 mL of H_2O in the Erlenmeyer flask, but a student used 35 mL of H_2O .

No effect on calculated molar mass, because mathematical expression for molar mass does not include amount of water used to dissolve solid HA. Both mass and number of moles of HA are unaffected by the addition of water.

1 point for effect on molar mass and explanation.