ACIDS, BASES, AND TITRATION CURVES I SMART WORKSHEET

PART A: DETERMINATION OF THE CONCENTRATION OF THE NAOH TITRANT

DATA ANALYSIS

UNITS

Choose the correct units for the variables below:

Variable	Units
Mass KHP	<u>a</u> g
Volume $ m NaOH$ used ($\Delta V = V_f - V_i$)	<u> </u>
NaOH Concentration	■ mol/L

DATA

Use your data collected in the lab to complete the table below.

• Trials 1 and 2 are compulsory, trials 3-5 are optional.

Trials

- $\bullet~$ The molar mass of KHP is 204.22 g/mol.
- $\bullet \quad K_a = 1.80 \times 10^{\text{-5}}$

Trial (optional) (optional) (optional) $\mathsf{Mass}\,KHP$ 0.4665 0.4550 $\quad \text{Volume } NaOH$ 9.88 7.48 used 1. NaOH Concentration 0.297860 0.231205 (Unrounded) 2. NaOH Concentration 0.298 (Rounded)

MOLARITY ANALYSIS

CHOICE OF 2 TRIALS

Indicate the 2 trials used to calculate average [NaOH]:



AVERAGE MOLARITY CALCULATION



PART B: TITRATION OF ACETIC ACID

DATA

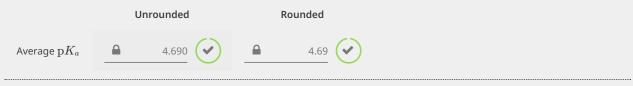
Use your data collected in the lab to complete the table below.



$\mathrm{p}K_a$ analysis

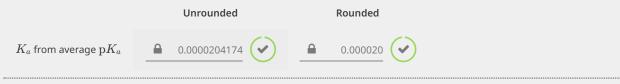
AVERAGE $\mathrm{p} K_a$

Calculate the average of measured $\mathrm{p}K_a$ values:



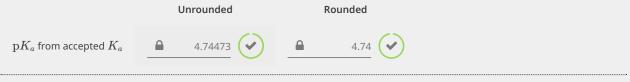
CALCULATING K_a

Calculate the K_a from the average $\mathrm{p}K_a$ (4.690):



CALCULATING $\mathrm{p}K_a$ FROM ACCEPTED K_a

Calculate the ${\rm p}K_a$ of acetic acid from accepted K_a (1.80 \times 10 $^{\text{-5}}$) :



CALCULATING % ERROR

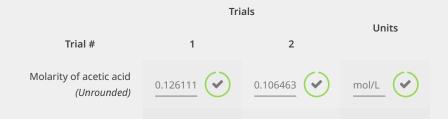
Calculate % error of the average $\mathrm{p}K_a$:



CONCENTRATION ANALYSIS

MOLARITY CALCULATIONS OF 2 TRIALS

Calculate the molarity of acetic acid:









SAVED: 🗸