Name _____

The Enthalpy of Neutralization of Phosphoric Acid Report

Data Table

	Trial 1	Trial 2	Trial 3	CALC CHECK
Maximum temperature (°C)				
Initial temperature (°C)				
Temperature change (ΔT)				

Volume of 0.6 M H_3PO_4 _____ mL Volume of 1.85 M NaOH _____ mL

1. Use the equation below to calculate the amount of heat energy, q, produced in the reaction. In determining the mass, m, of the solution use 1.11 g/mL for the density. Use 4.18 J/(g•°C) as the specific heat, C_p, of the solution. Use the average temperature change of all trials for ΔT. $q = C_p \times m \times \Delta T$

m = _____ g

ΔT = _____ ^{0}C

q = _____ J = _____ kJ

2. Use the heat energy that you calculated in 2 above to determine the enthalpy change, ΔH, for the reaction in terms of kJ/mol of phosphoric acid. This is your experimental value of

mole $_{\text{phosphoric acid}}$ = _____ mole

ΔH = _____ kJ/mole

Use a table of standard thermodynamic data to calculate the ΔH of neutralization for phosphoric acid. Consider this the accepted value of ΔH. How does your experimental value for ΔH compare to the accepted value?

$\Delta H_{\text{theoretical}}$ = _____ kJ/mole

Calculate the percent discrepancy between the calculated (accepted) value of the ΔH of neutralization of H_3PO_4 and your experimental value.

% Discrepancy = _____ %