**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Molar Enthalpy of Neutralization for Sodium Hydroxide with Hydrochloric Acid**

**Purpose:**

**1)** To determine the molar enthalpy for the neutralization of sodium hydroxide by hydrochloric acid

**2)** To prove Hess' Law

**First Column Lab Partners**

2.00 g of NaOH plus 100.0 mL of RT water **Ti = \_\_\_\_\_\_\_\_ Tf = \_\_\_\_\_\_\_**

**BCE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ∆H = \_\_\_\_\_\_\_**

**Calculation of ∆H for NaOH:**

What is happening in this instance to the NaOH? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Second Column Lab Partners**

2.00 g of NaOH into 100.0 mL of 0.50 mol/L HCl **Ti = \_\_\_\_\_\_\_\_ Tf = \_\_\_\_\_\_\_\_**

**BCE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ∆H = \_\_\_\_\_\_\_**

**Calculation of ∆H for NaOH:**

What is happening in this instance to the NaOH? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Third Column Lab Partners**

50.0 mL of 1.00 mol/L NaOH into 50.0 mL of 1.00 mol/L HCl **Ti = \_\_\_\_\_\_\_\_ Tf = \_\_\_\_\_\_\_\_**

**BCE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ∆H = \_\_\_\_\_\_\_**

**Calculation of ∆H for NaOH:**

What is happening in this instance to the NaOH? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Analysis:**

|  |  |
| --- | --- |
| **Equations** | **∆H** |
| **1** |  |
| **2** |  |
| **3** |  |

Choose a Bench Top equation from the 3.

Use Hess' Law to prove that the other 2 equations add up to the Bench Top.

Use a table to organize your equations and your work--show me the money!

**Percent Error**

**How are the equations related to each other?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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