

Enthalpy Labs

The enthalpy labs are extra credit, so I don't send out detailed instructions for the calculations, but here are the basics. There is information in the lab procedures and in the answer help area for the review quiz as well!

$$q = mC\Delta T$$

q = heat lost or gained by the solution (aka enthalpy...this is what you are looking for!

m = mass of the solution

(Note, you will need to consider that you added 2 solutions together, so you will need to determine the total mass. You can assume that density is 1.0 g/mL for the solutions, so the volume converts directly to mass.)

C = specific heat of the solution (4.17 joules/g- $^{\circ}$ C for water)

ΔT = temperature change in $^{\circ}$ C

Convert your answers, which will be in joules, to kilojoules by dividing by 1000.

For the Enthalpy of Neutralization lab,

q = enthalpy of neutralization.

You will need to determine whether the energy change was positive or negative...whether heat was released (negative enthalpy) or absorbed (positive enthalpy). You will also need to determine if there is a pattern for strong acid/base reactions and weak acid/base reactions.

For the Enthalpy of Solution lab,

q = heat absorbed by water.

-q = heat of dissolution

To find the molar heat of dissolution, divide the heat of dissolution by the number of moles of salt present in the solution.

Again, determine if the energy changes are positive (heat absorbed) or negative (heat released). This may not be the same for all the salts!