

Name _____

Lab Partner _____

Lab Partner _____

Lab Partner _____

Date of Lab _____ Per. _____

Specific Heat Lab

Data: (Remember to write correct units!!)

1st Type of Metal: _____

Mass of Cups & Water _____

Mass of Cups _____

Mass of Water (in calorimeter) _____

Initial Temp. of Water _____

***Final Temp of Water** _____

Mass of metal _____

Initial Temp. Hot Metal _____

***Final Temp. Metal**
(in calorimeter) _____

Use for #1
below

Use for #2
below

* = same temp.

2nd Type of Metal: _____

Mass of Cups & Water _____

Mass of Cups _____

Mass of Water (in calorimeter) _____

Initial Temp. of Water _____

***Final Temp of Water** _____

Mass of metal _____

Initial Temp. Hot Metal _____

***Final Temp. Metal**
(in calorimeter) _____

Results:

1. Calculate the heat gained by the water (lost by the substance) in the calorimeter using the equation in the Introduction. Remember to write the **units!!**

Q for water using 1st Metal

$$Q_{\text{water}} = m_{\text{water}} \times (T_f - T_i)_{\text{water}} \times C_p \text{ water}$$

Q for water using 2nd Metal

$$Q_{\text{water}} = m_{\text{water}} \times (T_f - T_i)_{\text{water}} \times C_p \text{ water}$$

2. Calculate the specific heat of the substance using the answer from number 1 and the equation in the Introduction. Now, C_p is your unknown since you're using Q from #1.

Cp of 1st Metal

$$Q_{\text{subst}} = m_{\text{subst}} \times (T_i - T_f)_{\text{subst}} \times C_p \text{ subst}$$

$$C_p = \frac{Q_{\text{subst}}}{m_{\text{subst}} \times (T_i - T_f)_{\text{subst}}}$$

$$C_p = \frac{\quad}{3 \text{ sf}} \text{ J/g } ^\circ \text{ C}$$

Cp for 2nd Metal

$$Q_{\text{subst}} = m_{\text{subst}} \times (T_i - T_f)_{\text{subst}} \times C_p \text{ subst}$$

$$C_p = \frac{Q_{\text{subst}}}{m_{\text{subst}} \times (T_i - T_f)_{\text{subst}}}$$

$$C_p = \frac{\quad}{3 \text{ sf}} \text{ J/g } ^\circ \text{ C}$$

3. Look up the specific heat of your substance samples and find your percent error.

Substance #1: Experimental Cp _____

Substance #2: Experimental Cp _____

Substance #1: Literature Cp _____

Substance #2: Literature Cp _____

Percent Yield: _____

Percent Yield: _____