

Name _____ Period _____

College Prep Chemistry of the Earth System

Assignment 7F – Calorimetry

20 Points

Specific Heat Equation Forms

Specific Heat	$q = c \cdot m \cdot \Delta T$	$c = \frac{q}{m \cdot \Delta T}$	$m = \frac{q}{c \cdot \Delta T}$	$\Delta T = \frac{q}{c \cdot m}$
Change in T	$\Delta T = T_{\text{final}} - T_{\text{ini}}$	Heat Transfer	$q_{\text{metal}} = -q_{\text{water}}$	

Solve the following heat capacity problems

$\Delta T = +$ (inc. T)
 $\Delta T = -$ (dec. T)
 $\Delta T = +$ $q = +$
 $\Delta T = -$ $q = -$

$c_{\text{water}} = 4.184 \text{ J/}^\circ\text{C}$, $m_{\text{water}} = 50.0 \text{ g}$
 $T_{\text{ini}} = 100^\circ\text{C}$, $T_{\text{final}} = 89.3^\circ\text{C}$
 $\Delta T = \text{ }^\circ\text{C}$, $q_{\text{water}} = \text{ J}$, $q_{\text{metal}} = \text{ J}$
 $\Delta T = T_{\text{final}} - T_{\text{ini}} \leftarrow \text{"start"}$
 $\Delta T = 89.3^\circ\text{C} - 100^\circ\text{C}$

$\Delta T = -10.7^\circ\text{C}$

$q_{\text{water}} = 4.184 \text{ J/g}^\circ\text{C} \cdot 50.0 \text{ g} \cdot -10.7^\circ\text{C}$

$q_{\text{water}} = -2238.44 \text{ J}$

$q_{\text{metal}} = +2238.44 \text{ J}$

$(-) q_{\text{water}} \rightarrow q_{\text{metal}} (+)$

$q_{\text{metal}} = 3190.38 \text{ J}$

$T_{\text{ini}} = 100^\circ\text{C}$, $T_{\text{final}} = 72.48^\circ\text{C}$
 $\Delta T = \text{ }^\circ\text{C}$, $m_{\text{water}} = \text{ g}$

$\Delta T =$

$\Delta T =$

$m_{\text{water}} =$
 $-q$ and $-\Delta T$
 $\text{cancel} = +$

$m_{\text{water}} =$

$c_{\text{water}} = 4.184 \text{ J/}^\circ\text{C}$, $m_{\text{water}} = 75.0 \text{ g}$
 $T_{\text{ini}} = 100^\circ\text{C}$, $T_{\text{final}} = 69.2^\circ\text{C}$
 $\Delta T = \text{ }^\circ\text{C}$, $q_{\text{water}} = \text{ J}$, $q_{\text{metal}} = \text{ J}$
 $\Delta T =$

$\Delta T =$

$q_{\text{water}} =$

$q_{\text{water}} =$

$q_{\text{metal}} =$

$q_{\text{metal}} = 2835.38 \text{ J}$
 $q_{\text{water}} = -2835.38 \text{ J}$

$T_{\text{ini}} = 100^\circ\text{C}$, $T_{\text{final}} = 59.31^\circ\text{C}$
 $\Delta T = \text{ }^\circ\text{C}$, $m_{\text{water}} = \text{ g}$

$\Delta T = T_{\text{final}} - T_{\text{ini}}$
 $\Delta T = 59.31^\circ\text{C} - 100^\circ\text{C}$

$\Delta T = -40.69^\circ\text{C}$

$m_{\text{water}} =$
 $\neq 2835.38 \text{ J}$
 $4.184 \text{ J/g}^\circ\text{C} \cdot \neq 40.69^\circ\text{C}$

$m_{\text{water}} = 16.65 \text{ g}$

$q_{\text{water}} =$
 $-q_{\text{metal}}$

$q = -$
 $\Delta T = -$

$q = c \cdot m \cdot \Delta T$
 $m = \frac{q}{c \cdot \Delta T}$

(16.65 mL)