

② CH<sub>4</sub>

$$\Delta H_c = -q$$

$$H_c = -802 \text{ kJ/mol}$$

$$nH_c = -vC\Delta T$$

$$m = ? \left( \frac{m}{16.05 \text{ g/mol}} \right) \left( -802 \frac{\text{kJ}}{\text{mol}} \right) = - (3.77 \text{ L}) \left( 4.19 \frac{\text{kJ}}{\text{L}\cdot^\circ\text{C}} \right) (81.8^\circ\text{C})$$

H<sub>2</sub>O

$$-49.97 m = -1292.14$$

$$v = 3.77 \text{ L}$$

$$m = 25.8 \text{ g}$$

$$T_i = 16.8^\circ\text{C}$$

$$T_f = 98.6^\circ\text{C}$$

①

$$q_{\text{BR}} = -q_{\text{H}_2\text{O}}$$

Brass

$$mC\Delta T = -mC\Delta T$$

$$m = 77.5 \text{ g}$$

$$T_i = 98.7^\circ\text{C}$$

$$(77.5 \text{ g})(C)(23.5^\circ\text{C} - 98.7^\circ\text{C}) =$$

$$C = ?$$

$$- (102.76 \text{ g}) \left( 4.19 \frac{\text{J}}{\text{g}\cdot^\circ\text{C}} \right) (23.5^\circ\text{C} - 18.5^\circ\text{C})$$

H<sub>2</sub>O

$$m = 102.76 \text{ g}$$

$$-5828 \text{ g}\cdot^\circ\text{C} (C) = -2152.82 \text{ J}$$


$$T_i = 18.5^\circ\text{C}$$

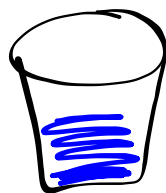
$$C = \frac{-2152.82 \text{ J}}{-5828 \text{ g}\cdot^\circ\text{C}}$$

$$T_f = 23.5^\circ\text{C}$$

$$C = 0.369 \frac{\text{J}}{\text{g}\cdot^\circ\text{C}}$$

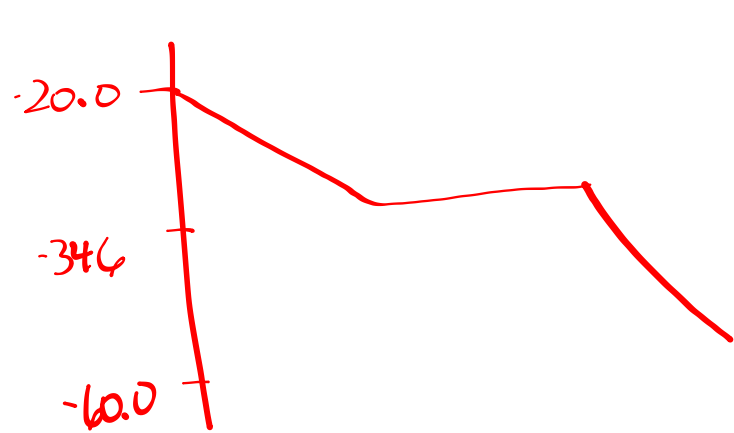
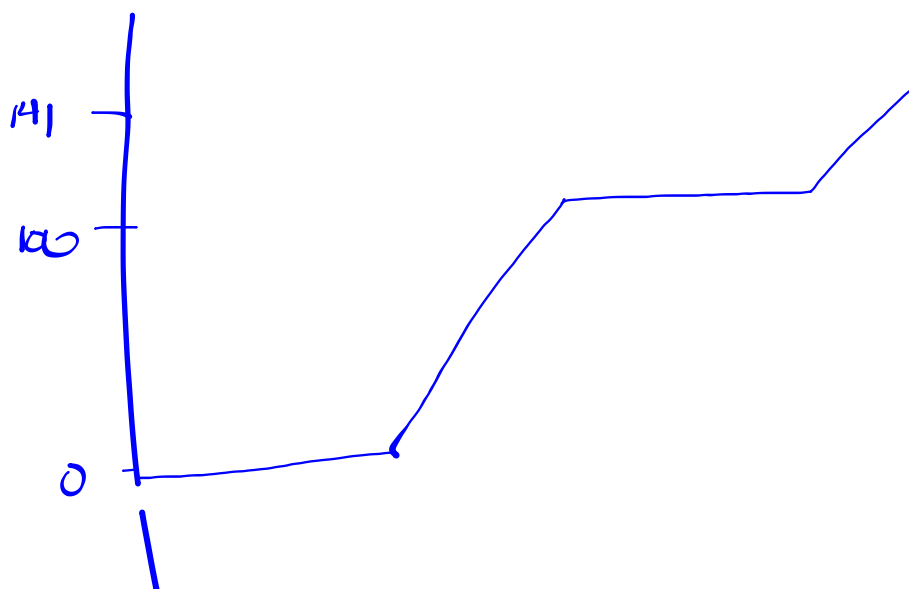
\*  $T_f$  same \*

  
77.5g  
98.7°C  
⋮  
80°C



102.76g  
18.5°C  
⋮  
21°C

- Heat ( $q$ )  $\rightarrow$  temp. change
- Enthalpy ( $\Delta H$ )  $\rightarrow$  phase change
- Total Energy  $\rightarrow$  temp & phase change
- Calorimetry



$\text{Cl}_2$   
 $\downarrow$   
 $(2 \times 35.45)$   
 $= 70.90 \text{ g/mol}$

0.0

# Homework

# Worksheet