Chemistry 122 **Specific Heat and Calorimetry Worksheet**

1. The sun shone on a 125 kg block of ice at -30.0°C for half an hour. If the ice absorbed 5.03 x 10^3 kJ of energy, what was the final temperature of the ice? (Begin by rearranging to solve for t_f.) **(t_f = -11 °C)**

2. 25.00 g of an unknown metal at 102.3°C is placed in 75.00 g of water at 20.0°C. If the system reached equilibrium at 21.4°C, what was the specific heat capacity of the unknown metal? (What metal would you suggest it probably was?) **(C_{METAL} = 0.22 J/g°C)**

3. Determine the final temperature when a 30.0 g piece of iron at 95.0°C is placed into 75.0 mL of water at 22.0°C. **(t_f = 25.1 °C)**

4. Determine the final temperature when 10.00 g piece of aluminum at 130.0°C mixes with 200.0 g of water at 25.0°C. **(t_f = 26.1 °C)**

5. A student wanted to identify a piece of metal that was known to be aluminum, iron, tin, or zinc. She decided she could to a test to determine its specific heat capacity and compare her experimental result to a table of known specific heat capacities for the four possible metals. She took a 25.00 g piece of the metal, heated it to 85.00°C, and placed it in 150.00 g of water at 20.00°C. She recorded the final temperature to be 22.25°C. Using her evidence, calculate the specific heat capacity of the unknown metal. Which of the four metals was it? **(C_{METAL} = 0.899 J/g°C)**

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