General Chemistry
Mr. MacGillivray
Quiz #6:
Temperature, Heat, and Specific Heat

Possibly Useful Information

$Q = mC\Delta T$ $\quad$ °C = K – 273

4.18 J = 1 cal

C of Fe = $0.45 \frac{J}{g°C}$ $\quad$ C of H_2O = $4.18 \frac{J}{g°C}$

1. Would it require more heat to increase the temperature of 10.0 g of water by 10 degrees C or would it require more heat to raise the temperature of 10.0 g of iron by 10 degrees C?

Why? water. It has a higher specific heat capacity.

2. A 10.0 g sample of lead was heated from 250 K to 315 K. If the specific heat of lead is 0.129 J/gK, how much heat was absorbed by the lead? Show all work.

$Q = MC\Delta T = (10.0g)(0.129 \frac{J}{gK})(315-250)$

$= 83.9$ J

Perform the following conversions. No work needs to be shown.

3. 500 °C = 773 K

4. 500 K = 227 °C

Perform the following conversions. Show all work.

5. 232.4 kcal = 9.71×10^5 J

$232.4 \text{ Kcal} \times \frac{1000 \text{ cal}}{1 \text{ Kcal}} \times \frac{4.18 \text{ J}}{1 \text{ cal}} = ___ \text{ J}$

6. 232.4 kJ = 5.56×10^4 cal

$232.4 \text{ kJ} \times \frac{1000 \text{ J}}{1 \text{ KJ}} \times \frac{1 \text{ cal}}{4.18 \text{ J}} = ___ \text{ cal}$