**Learning Goals for Thermochemistry**

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| Guiding Question: *Why* is heat absorbed or released in chemical reactions and physical changes and *how* can the change in heat be determined? | |
| Content Goals  Students will be able to:   * Explain how potential energy in chemical bonds is converted to kinetic energy **OR** kinetic energy is converted to potential energy, in all chemical reactions * Use calorimetry to measure changes in heat (enthalpy) * Determine the specific heat of a substance based on mass, temperature change and heat absorbed or released * Identify reactions as endothermic or exothermic based on data or observations * Calculate the heat (enthalpy) of reaction or phase change using:  -Hess’ Law,  -heats of formation,  -calorimetry data, or  -stochiometry * Predict change in entropy based on phases and nature of reactants and products | Skills Goals  Students will:   * Determine changes in heat using calorimeter * Interpret and analyze graphs * Explain the effect of error on results of a lab * Summarize the main idea and key supporting statements in a scientific text * Evaluate the reliability of a published text * Use research to support or reject statements from a published text |
| Organizing Ideas  Students will:   * Understand why every chemical reaction is accompanied by a change in heat and how to determine the heat change. | |
| Assessment : How will I know if students have mastered content, skills, and big ideas?  Students will:   * Use calorimetry in the laboratory to determine specific heat of water and known heats of reaction * Complete tests and quizzes on all topics in content goals | |

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| Vocabulary | | |
| Temperature  Heat  Enthalpy  Endothermic  Exothermic  Specific Heat (capacity)  Calorimeter | ΔH  Heat of Combustion  Heat of Fusion  Heat of Solidification  Heat of Vaporization  Heat of Condensation | Heat of Solution  Heat of Reaction  Hess’s Law  Standard Heat of Formation  Entropy |



