Thermochemistry: An _____ Reaction

A Carolina Essentials™ Demonstration

Student Worksheet

Essential Question

How does energy flow during a chemical reaction?

Demonstration Objectives

1. Observe an endothermic reaction.
2. Describe the flow of heat energy during the reaction.
3. Construct an energy diagram for the reaction.

Key Materials

Reactants: _____

Products: _____

Procedure

1. Sketch the demonstration setup, including reactants.

2. Sketch the results of the demonstration, including the products.

3. Using arrows, show the flow of heat energy through the reaction process.

Continued on next page.

Data and Observations

	Temperature (C°)	Observations
1		
2		
3		
4		
5		

Analysis and Discussion

Physical Science

1. Fill in the blank in the title.

2. Was the reaction exothermic or endothermic? What data support your answer? (Use your sketch above to support your answer.)

3. Did energy flow from the system (beaker with chemicals) to the environment or from the environment to the beaker? Explain your thinking.

4. Did the products or the reactants have more energy? Explain.

5. Balance the reaction and include the symble H on the appropriate side. Identify the reaction type.

Chemistry

6. Draw an energy diagram for the reaction progress.

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7. Calculate ΔH for the reaction. Show your work.

Compound	$\Delta H_f°$/kJ mol^{-1}
$Ba(OH)_2 \cdot 8H_2O(s)$	-3345
$NH_4Cl(s)$	-314
$NH_3(g)$	-46
$H_2O(l)$	-286
$BaCl_2(s)$	-859
$BaCl_2 \cdot 2H_2O(s)$	-1460

$$\Delta H = \Sigma H_{products} - \Sigma H_{reactants}$$