

## Hot and Cold Packs

Lesson Title: *The Transfer of Energy 1: Thermochemistry*  
Page 1 of 2

Name: \_\_\_\_\_

Follow along as your teacher conducts the following Hot and Cold Pack experiment.  
Then record your observations and answer the questions.

### Hot and Cold Packs Experiment Procedure

- Take three 250 ml or larger beakers, fill them with water, and add a thermometer.
- Record the temperature.
- Then, add approximately 25 grams of calcium chloride to one beaker, and 25 grams of ammonium nitrate to the second, and leave the third without any chemical added.
- Stir continuously to ensure mixing, and watch the changes in temperature over time.
- Record the temperature every five minutes for a total of 30 minutes.

Record the temperature of each beaker at five minute intervals up to 30 minutes:

	Water Alone	Calcium Chloride	Ammonium Nitrate
Start Temp			
5 minutes			
10 minutes			
15 minutes			
20 minutes			
25 minutes			
30 minutes			

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Page 2 of 2

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Which beaker(s) rose in temperature? Which beaker(s) fell in temperature?

Why would the beaker with no reaction change in temperature?

What might happen to the temperature after the calcium chloride and ammonium nitrate fully dissolve in solution? Where does heat energy flow from, and where does it end up?

(For thought) Imagine, instead of beakers, the reactions were performed in styrofoam cups or coffee mugs. Would the temperature return to room temperature faster or slower than in glass beakers?