

Name _____ Class Number _____ Class Period _____

Hot & Cold Pack Lab

Often times when you get hurt you might reach for a cold pack. This cold pack usually requires you to “pop” an internal pocket that will mix with another chemical and the result is a cold pack similar to an ice pack.

Conversely, you might have a sore muscle that requires heat and you can also reach for a hot pack. This pack requires you to again mix the two chemicals inside a packet and shake. The result is a pack that heats up like a hot pad you might plug into an outlet. The following lab experiment shows the transfer of energy and how these two chemical reactions occur.

Follow the directions CAREFULLY and be aware of all your steps!

Mixture #1	Mixture #2	Mixture #3
<ul style="list-style-type: none"> • Beaker • 250mL Water 	<ul style="list-style-type: none"> • Beaker • 250mL Water 	<ul style="list-style-type: none"> • Beaker • 250mL Water
<p>RECORD THE TEMPERATURES OF EACH BEAKER IN THE TABLE BELOW.</p> <p>Once you have completed this, follow the next steps.</p>		
<ul style="list-style-type: none"> • ADD NOTHING 	<ul style="list-style-type: none"> • ADD 25 grams of Calcium Chloride 	<ul style="list-style-type: none"> • ADD 25 grams of Ammonium Nitrate

	Mixture #1 (Water Alone)	Mixture #2 (Calcium Chloride)	Mixture #3 (Ammonium Nitrate)
Start Temp.			
5 minutes			
10 minutes			
15 minutes			
20 minutes			
25 minutes			
30 minutes			

Continued Thinking

1. Which beaker(s) rose in temperature?
2. Which beaker(s) fell in temperature?
3. Why would the beaker with no reaction change in temperature?
4. What might happen to the temperature after the calcium chloride and ammonium nitrate fully dissolve in solution?
5. Where does the heat energy flow from and where does it end up?
6. 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?
7. What is the importance in a cold or hot pack to keep the chemicals in separate pockets until use?
8. Which mixture is Endothermic? _____
9. Which mixture is Exothermic ? _____