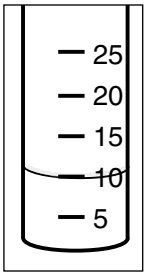
Student activity sheet
Activity 5.4

Name: _____

Change in temperature—Endothermic reaction

Aside from bubbling, what else happens during a reaction between baking soda and vinegar?

You have seen that mixing baking soda and vinegar produces a gas. This bubbling is a sign that something new was produced. In this activity, you will combine baking soda and vinegar again. But this time you will use a thermometer to see if the temperature changes during this reaction.



In the procedure below you will use a graduated cylinder to measure 10 ml of vinegar. When measuring, you need to make sure your eye is level with the 10 ml mark. Then carefully add a little bit of vinegar to the graduated cylinder. You may notice a little curve at the top of the vinegar. This is called the *meniscus*. Keep watching the level of the vinegar as you add more. Stop adding vinegar when the bottom of the *meniscus* touches the 10 ml line.

Procedure

1. Use a graduated cylinder to measure 10 ml of vinegar and pour it into a clear plastic cup.
2. Place a thermometer in the vinegar. Read the thermometer and record the temperature in the chart below.
3. While the thermometer is in the cup, add ½ teaspoon of baking soda.
4. Watch the thermometer to observe any change in temperature. Record the lowest temperature reached in the chart below.

	Temperature
Before adding baking soda	
After adding baking soda	
Change in temperature	
Did the temperature increase or decrease?	

When two or more substances are mixed together and the temperature changes, this is a clue that a chemical reaction has occurred. When the temperature decreases during a chemical reaction, it's called an *endothermic* reaction.