Name Period Date

Unit	Handout	
4	116	*Lesson 5: Investigating the Effects of Colliding Air Masses*

Purpose:	Set up an investigation that demonstrates what happens to two air masses when they meet.
Guiding Questions:	What happens when two air masses of the same and different temperatures meet?

General Instructions.

1. Setup your materials as shown in figure 5.1 on page 77.
2. Complete step 5 on page 78.

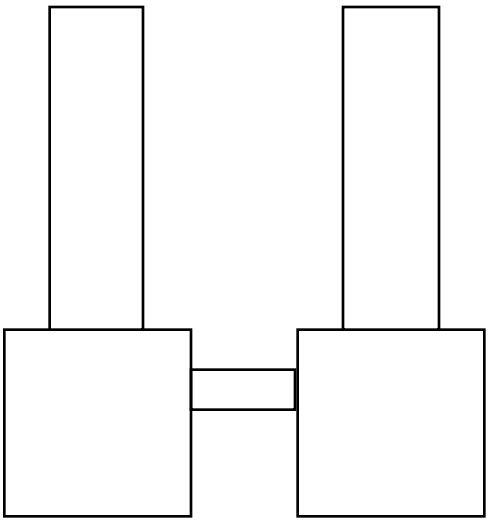
Table 1 Predictions and Observations

Setup of Convection Tubes	Predictions (What We Think Will Happen to the Air)	Observations (What Happened to the Air)
Crushed ice and crushed ice		
Hot water and hot water		
Tea candle and crushed ice		

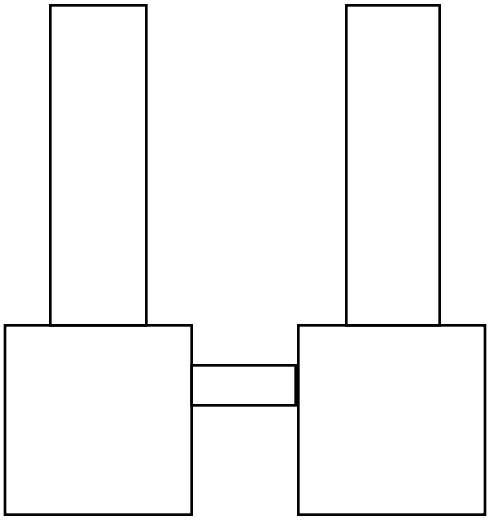
3. Review the safety rules on page 78.
4. Raise your hand when you are ready for your punk stick to be lit. Place the glowing punk into the lowermost hole. When using ice, always place it on the ice side.
5. Observations for this activity must be made in the table above **AND** on the following page. Diagrams are provided. You may make short videos, too.
6. Complete the setups in this order:
   - 6.1. Ice and Ice
   - 6.2. Candle and Ice (**do not let the candle burn for more than one minute**)
   - 6.3. Hot water and hot water (each half full)
7. When you are done with the ice, return it to the container in the front of the room.
8. Clean up procedure:
   - 8.1. Pour water into the sink.
   - 8.2. Dry tubes
   - 8.3. Organize materials into kit.
9. Continue working by answering the analysis questions on this handout (p. 3).

Observations.

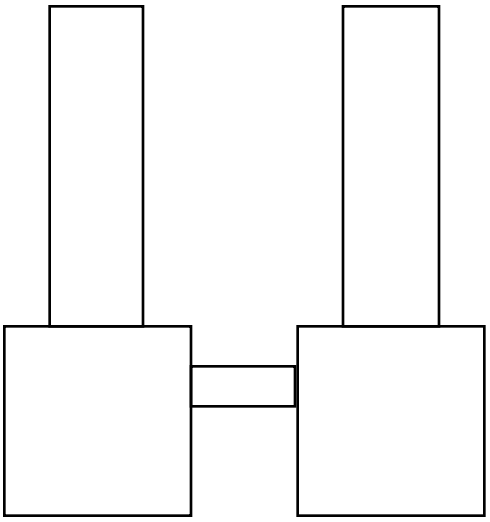
Ice and Ice



Candle and Ice



Hot water and Hot water



Analysis Questions.

1. What did you observe when both tubes contained air with the same temperature and humidity conditions? Why do you think this happened?

2. Which type of weather front did you observe between the tubes with both tubes contained ice? Explain your choice.

3. What did you observe when the tubes contained air with different temperature and humidity conditions? Why do you think this happened?

4. Which type of weather front did you observe between the tubes when one tube contained ice and the other container hot water/lit candle? Explain your choice.

5. Based on your results from Lessons 4 and 5, where and how to do you think winds and rotating storms might form?

6. Look again at the illustration in "Air Masses" on page 66. Where in the United States do you think air masses with different temperature and humidity conditions might meet? Why?

7. The boundary that forms where two air masses meet is called a weather front. What type of weather occurs along a front? Why?

8. Read the beginning of "Why Does the Wind Blow?" (pp. 80-81 only). After reading, explain what is occurring in the diagrams below. Be sure your answer contains the following words: temperature, pressure (or density/dense), rise, sink, hot (warm), cold (cool), convection, and wind.