

# Relative Humidity and Dew Point Lab

Name:

Hour:

**Reference:** Classroom notes and pages 17 and 156-157 in your textbook

**Problem:** What is the dewpoint and relative humidity of the inside air compared to the outside air?

**Background:** Relative humidity is a measure of the amount of water vapor present in the air compared to the amount needed for saturation at a specific temperature. Meteorologists use psychrometers to measure relative humidity. A psychrometer is a device made with two thermometers, one with a wet bulb and the other with a dry bulb. Determining the relative humidity can help to predict how comfortable one will feel on a hot day or whether dew will form on the ground. The temperature at which air is saturated and condensation forms is the dew point. Dew point changes with the amount of water vapor in the air; meteorologists determine the dew point to know what temperature the air must be cooled to in order for condensation to occur (cloud formation).

**Hypothesis:**

**Materials:** Cotton ball, two thermometers and water

**Procedure:**

1. Wrap the cotton ball around the end of one of the thermometers.
2. Dip the cotton ball in water (make sure it is wet but not dripping).
3. Fan both thermometers until the temperatures stabilize.
4. Record the temperatures (in Celsius).
5. Subtract the difference between the dry and wet bulb; record this value in the chart below.
6. Determine the relative humidity and dew point using the charts provided by your teacher.
7. Repeat the process to determine the relative humidity and dew point outside.

**Data Chart: CLASSROOM**

Trial #	Dry-Bulb Temperature (Celsius)	Wet-Bulb Temperature (Celsius)	Dry-Bulb minus Wet-Bulb	Relative Humidity (Use R.H. chart)	Dew Point (Use D.P. Chart)
1					
2					
Average	X	X	X		

**Data Chart: WEATHER PERMITTING - OUTSIDE**

Trial #	Dry-Bulb Temperature	Wet-Bulb Temperature	Dry-Bulb minus Wet-Bulb	Relative Humidity (Use R.H. chart)	Dew Point (Use D.P. Chart)
1					
2					
Average	X	X	X		

**Conclusion:**

1. Define “relative humidity.”
2. Define “dew point.”
3. Identify the process where water changes from a liquid to a gas.
4. Energy is being released/absorbed (circle one) from the above process.
5. Is there always the same amount of water vapor in the air? **Explain.**
6. Why is the wet bulb thermometer registering a different temperature than the dry bulb thermometer?
7. If the difference between the temperature readings on the two thermometers is large, is the relative humidity high or low? **Explain.**
8. What would the relative humidity reading be if the wet bulb and dry bulb thermometers recorded the same temperature? **Explain.**
9. Identify the variables and constants in the humidity experiment. List them in the data table below.  
(Variables—things that changed) (Constants—things that stayed the same)

<b>Variables</b>	<b>Constants</b>