

Psychrometer Lab – Relative Humidity & Dew Point

Name: _____
Date: _____ Block: _____

Purpose: To determine the relative humidity and dew point of the classroom by using a psychrometer.

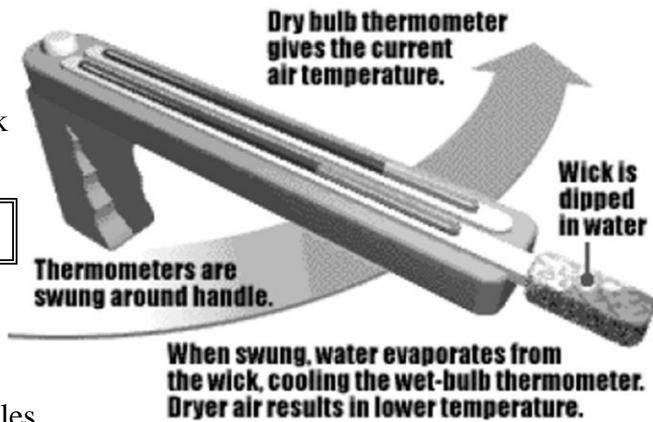
Background Information:

Relative humidity - a measure of how much water vapor is in the air compared with the total amount of water vapor the air is capable of holding at a given temperature. If the relative humidity is 50% at room temperature then the air in the room is at half its holding capacity.

Dew point - the temperature at which water vapor will condense into liquid.

Psychrometer - an instrument used to measure the amount of water vapor in the air. Consists of two thermometers:
(1) wet bulb – covered with a wet wick (2) dry bulb – no wick

$$\text{Wet Bulb Depression} = \text{Dry Bulb Temp} - \text{Wet Bulb Temp}$$



Procedure:

Part I: Practice Using Relative Humidity and Dew Point Tables

- Given the following dry and wet bulb data, calculate the wet bulb depression. Use Table 1 to find relative humidity and Table 2 for dew point.

Example	Dry Bulb Temp. (°C)	Wet Bulb Temp. (°C)	Wet Bulb Depression (°C)	Relative Humidity (%)	Dew Point (°C)
1	25	20			
2	30	26			
3	23	20			

Part II: Finding Relative Humidity and Dew Point of the Classroom

SAFETY PRECAUTIONS

Inspect your psychrometer and make sure it is in good condition. While swinging the psychrometer do not hit any objects. DO NOT swing the psychrometer violently.

- Moisten your wet bulb using the eyedropper and room temperature water.
- Carefully swing your psychrometer in the air until the wet bulb temperature stops falling and remains constant.
- Immediately record your dry bulb and wet bulb temperatures in the data chart below.
- Calculate the wet bulb depression.
- Perform a second and third trial by repeating steps 1-4.
- Find and record the relative humidity for each trial.
- Find and record the dew point for each trial.
- Calculate the average relative humidity.
- Calculate the average dew point.

Classroom Data

Trial	Dry Bulb Temp. (°C)	Wet Bulb Temp. (°C)	Wet Bulb Depression (°C)	Relative Humidity (%)	Dew Point (°C)
1					
2					
3					
Average Relative Humidity and Dew Point →					

Part III: Conclusion

1. Is the air today humid or dry? Explain.
 2. Why is the wet bulb temperature lower than the dry bulb temperature? What process cools it off?