Name _____ Date _____

Relative Humidity

Relative Humidity is a measure of the amount of water vapor in the air at a particular temperature compared with the total amount of water the air can hold at the same temperature. In this experiment, you will determine relative humidity in your classrroom.

OBJECTIVES

In this experiment, you will

- Use a computer and two temperature probes to measure temperature. (Logger Lite software)
- Determine relative humidity.
- Explain your results.

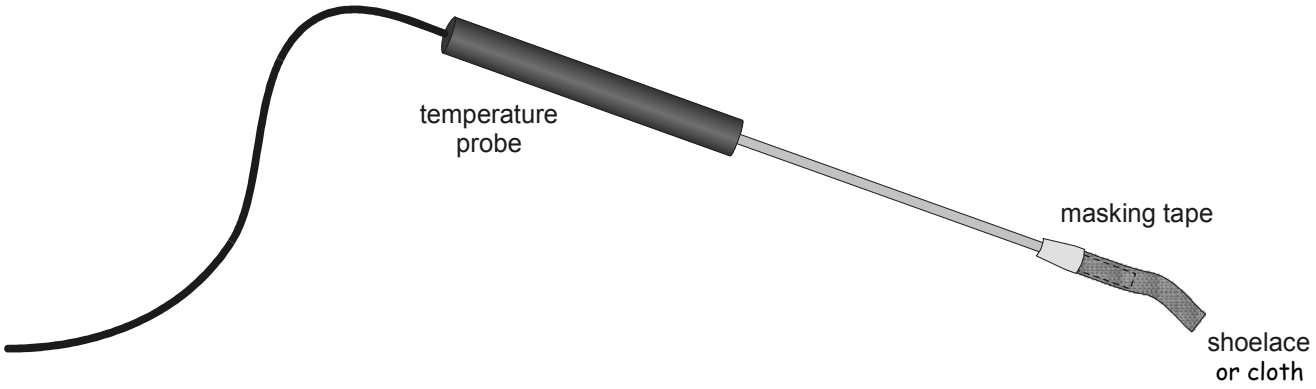

Figure 1

MATERIALS

computer (you may use two computers)
Logger Lite software
2 Temperature Probes
piece of shoelace or cloth
masking tape
beaker
water

Procedure:

1. Slip Probe 2 into a 5 cm piece of shoelace (or piece of cloth) until the probe tip is at the middle of the shoelace piece as shown in Figure 1. Fasten the shoelace to the probe with masking tape.

2. Connect the Temperature Probes. Start the Vernier data-collection program (Logger Lite).

3. Wet the shoelace on Probe 2 by placing it into a beaker of water that is at or above room temperature. Probe 1 is to stay dry.

4. Click ▸ Collect to begin data collection. Take a probe in each hand and gently wave the probes in the air.

5. Continue waving the probes until the temperatures measured by both probes stop changing, and then click ■ Stop to end data collection. Record both final temperatures.

6. Choose Store Latest Run from the Experiment menu to store your data.

7. If time permits: repeat steps 3–6 for the next two days and compare results.
.

Record your data on the next page

TABLE 1 Relative Humidity

Dry Probe Temperature	Dry Probe Temperature Minus Wet Probe Temperature (°C) (temperature difference)									
	1	2	3	4	5	6	7	8	9	10
10°C	88	77	66	55	44	34	24	15	6	
11°C	89	78	67	56	46	36	27	18	9	
12°C	89	78	68	58	48	39	29	21	12	
13°C	89	79	69	59	50	41	32	22	15	7
14°C	90	79	70	60	51	42	34	26	18	10
15°C	90	80	71	61	53	44	36	27	20	13
16°C	90	81	71	63	54	46	38	30	23	15
17°C	90	81	72	64	55	47	40	32	25	18
18°C	91	82	73	65	57	49	41	34	27	20
19°C	91	82	74	65	58	50	43	36	29	22
20°C	91	83	74	67	59	53	46	39	32	26
21°C	91	83	75	67	60	53	46	39	32	26
22°C	92	83	76	68	61	54	47	40	34	28
23°C	92	84	76	69	62	55	48	42	36	30
24°C	92	84	77	69	62	56	49	43	37	31
25°C	92	84	77	70	63	57	50	44	39	33
26°C	92	85	78	71	64	58	51	46	40	34
27°C	92	85	78	71	65	58	51	46	40	34
28°C	93	85	78	72	65	59	53	48	42	37
29°C	93	86	79	72	66	60	54	49	43	38
30°C	93	86	79	73	67	61	55	50	44	39

Relative Humidity

DATA (fill in this data chart)

	Day 1	Day 2	Day3
Dry probe temperature (Probe 1)	°C	°C	°C
Wet probe temperature (Probe 2)	°C	°C	°C
Temperature difference	°C	°C	°C
Relative humidity (use table above)	%	%	%

PROCESSING THE DATA

1. In the space provided in your data table, subtract to find the difference between the dry-probe (Probe 1) and wet-probe (Probe 2) temperatures at each site.

2. Determine the relative humidity for each day using the Relative Humidity table in Table 1.
   a. Find the temperature difference you calculated in Step 1 at the top of the table. Keep one finger on this number.
   b. Find the dry probe (Probe 1) temperature in the first column of the table.
   c. Look across the row until you find the column marked with your finger. This is the relative humidity.
   d. Record this number in your data table.

3. How did the wet probe temperature compare with the dry probe temperature? Explain.