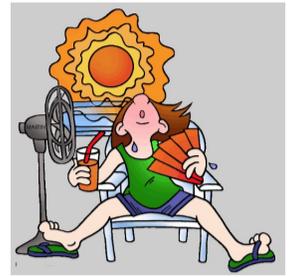




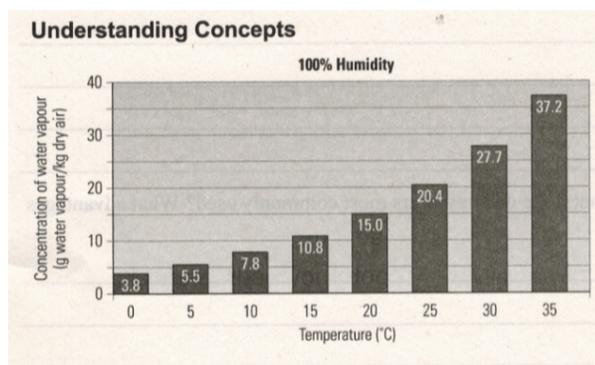
Humidity is a measure of the amount of water vapour in the atmosphere. It affects the weather as well as how comfort we feel. Also referred to (absolute Humidity)

Low Humidity means that evaporation can occur from bodies of water and other sources. Relative humidity is often low in the warm indoors resulting in dry skin. People use humidifiers to add moisture to their homes and offices.



High Humidity means that clouds or fog may form. Here, you may feel uncomfortable during physical activity when the relative humidity is high because evaporation does not take place fast.

Relative humidity Is the measure of the amount of water vapour actually in the air as a percent of the maximum amount of water vapour the air can hold at that temperature.



$$\text{Relative Humidity} = \frac{\text{concentration}}{\text{maximum concentration}} \times 100\%$$

Saturation refers to the air is holding the maximum amount of water vapour for a given temperature. The relative humidity is 100%.

Hygrometer is a device that is used to measure the moisture content of the air. basically this means the relative humidity and the dew point.

Psychrometer It is a particular type of hygrometer. It is an instrument used to indirectly determine the relative humidity from the atmosphere (indirectly because its values must be compared with precalculated values.

Dry-bulb temperature (°C)	Difference between wet-bulb and dry-bulb temperatures (°C)								
	1	2	3	4	5	6	7	8	9
10	88	77	66	55	44	34	24	15	6
12	89	78	68	58	48	39	29	21	12
14	90	79	70	60	51	42	34	26	18
16	90	81	71	63	54	46	38	30	23
18	91	82	73	65	57	49	41	34	27
20	91	83	74	67	59	53	46	39	32
22	92	83	76	68	61	54	47	40	34
24	92	84	77	69	62	56	49	43	37
26	92	85	78	71	64	58	51	46	40
28	93	85	78	72	65	59	53	48	42
30	93	86	79	73	67	61	55	50	44

Dew: forms when the air cools and the water vapour it contains condenses on a cool surface near the ground.

Dew Point: The temperature at which dew forms. When air reaches the saturation temperature, i.e., when the relative humidity is 100%

1. The ratio of the actual amount of water in the atmosphere to the maximum possible at that temperature is the
 - (A) absolute humidity.
 - (B) dew point temperature.
 - (C) specific humidity.
 - (D) relative humidity.

2. Which device is used to measure relative humidity?
 - (A) Anemometer
 - (B) Barometer
 - (C) Thermometer
 - (D) Psychrometer

3. Using the table on page 560, what is the relative humidity if the wet bulb temperature is 17 °C and the dry bulb temperature is 24 °C?
 - (A) 26%
 - (B) 38%
 - (C) 49%
 - (D) 65%

4. We are likely to have our highest relative humidity
 - (A) around sunrise.
 - (B) around midnight.
 - (C) during mid-afternoon.
 - (D) at noon.

5. The temperature at which a mass of air becomes saturated is called the
 - (A) dew-point temperature.
 - (B) vapor-pressure temperature.
 - (C) relative saturation temperature.
 - (D) specific-humidity temperature.

6. The dew point is the:
 - (A) critical temperature required for condensation to take place
 - (B) development of cirrus clouds during the winter season
 - (C) elevation of the earth's surface when the lapse rate reaches 0°C
 - (D) relative humidity in mid-latitude climates

PART B: Written response

1. Describe how you could use a sponge to illustrate relative humidity of 0%, 50% and 100%. [2]

2. Refer to diagram on page 1 of this handout to answer the following questions:

A) Air at 30° C is 50% saturated. Calculate the concentration of water vapour in this air. [2]

B) What is the mass of water vapour per kilogram of saturated air at 25° C? [2]

C) Determine the mass of water vapour in 2 kg of saturated air at 5° C? [3]

3. Describe the conditions that allow dew to form. [2]

4. During which months is dew most likely in Newfoundland? Based on your understanding of how dew forms, explain your answer. [2]

5. During which season(s) are dehumidifiers most commonly used? What advantages do they offer? [2]

6. Why does 5°C with a 0°C dew point feel more uncomfortable than 5°C with a 10°C? [2]

7. Determine the relative Humidity in each of the following locations [2]

Location	Dry - Bulb Temperature (°C)	Wet - Bulb Temperature (°C)	Relative Humidity (%)
A	30	20	
B	28	25	
C	10	2	