

Relative Humidity

Relative humidity compares how moisture is in the air to how much moisture air can hold at a temperature.

The higher the humidity, the more uncomfortable we usually feel.

Current Conditions:

Location	Wet Bulb	Dry Bulb
Inside		
Outside		

Use the chart at the right to answer the following:

1. Calculate the relative humidity of both locations.
 - a. Inside:
 - b. Outside:

2. In a kitchen, the dry bulb reading was 30 degrees and the wet bulb reading was 23 degrees, calculate the relative humidity of the room.

3. The smaller the difference in the dry and wet bulb temperatures on a sling psychrometer, the _____ the relative humidity.

4. A humid bathroom has a dry bulb reading of 34 degrees and a wet bulb reading of 32 degrees. Determine the relative humidity.

5. If a room has a relative humidity of 76% and the difference in the temperatures of the wet and dry bulbs is 3 degrees, find the temperature of the room.

6. Determine the wet bulb temperature of an area with a temperature of 14 degrees and a relative humidity 25%.

Relative Humidity Chart (%)															
Temp Dry Bulb (°C)	Difference Between Dry Bulb and Wet Bulb Temperatures (°C)														
	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20
2	84	68	52	37	22	8									
4	85	70	56	42	29	26	3								
6	86	73	60	47	34	22	11								
8	87	75	63	51	39	28	18	7							
10	88	76	65	54	44	33	23	14	4						
12	89	78	67	57	47	38	29	20	11	3					
14	89	79	69	60	51	42	33	25	17	9					
15	90	80	71	62	54	45	37	29	22	14					
18	91	81	73	64	56	48	41	33	26	19	6				
20	91	82	74	66	58	51	44	37	30	24	11				
22	91	83	75	68	60	53	46	40	34	27	16	5			
24	92	84	76	69	62	55	49	43	37	31	20	9			
26	92	85	77	70	64	57	51	45	39	34	23	14	4		
28	92	85	78	72	65	59	53	47	42	37	26	17	8		
30	93	86	79	73	67	61	55	49	44	39	29	20	12	4	
32	93	86	80	74	68	62	56	51	46	41	32	23	15	8	1
34	93	87	81	75	69	63	58	53	48	43	34	26	18	11	5
36	93	87	81	75	70	64	59	54	50	45	36	28	21	14	8
38	94	88	82	76	71	65	60	56	51	47	38	31	23	17	11
40	94	88	82	77	72	66	62	57	52	48	40	33	26	19	13
42	94	88	83	77	72	67	63	58	54	50	42	34	28	21	16
44	94	89	82	78	73	68	64	59	55	51	43	36	29	23	18

How to Calculate Relative Humidity

1. Using a sling psychrometer, find the wet-bulb and dry-bulb temperatures for a location.
2. Using the relative humidity chart, find the dry-bulb temperature in the first column. (You might have to round your dry bulb reading from the psychrometer.)
3. Subtract the dry-bulb and wet-bulb temperatures you got from the psychrometer.
4. Find the difference you just got from subtracting in the first row of numbers on the chart.
5. The relative humidity is the number where your column and row intersect in the chart.
Remember to express this number as a percent.

Example:

John measured the humidity of his bathroom after running the shower for 5 minutes. The dry-bulb temperature was 24°C. The wet-bulb temperature was 23°C. Find the relative humidity of the bathroom.

Dry-bulb: 24°C

Wet-bulb: 21°C

Difference: $24 - 21 = 3$

Answer: Relative Humidity = 76%

The answer is 76% because this is where the row for the dry-bulb and the column for the temperature difference intersect.

		Relative Humidity Chart (%)																			
Temp Dry Bulb (°C)	Difference Between Dry Bulb and Wet Bulb Temperatures (°C)																				
	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20						
2	84	68	52	37	22	8															
4	85	70	56	42	29	26	3														
6	86	73	60	47	34	22	11														
8	87	75	63	51	39	28	18	7													
10	88	76	65	54	44	33	23	14	4												
12	89	78	67	57	47	38	29	20	11	3											
14	89	79	69	60	51	42	33	25	17	9											
15	90	80	71	62	54	45	37	29	22	14											
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28	92	85	78	72	65	59	53	47	42	37	26	17	8								
30	93	86	79	73	67	61	55	49	44	39	29	20	12	4							
32	93	86	80	74	68	62	56	51	46	41	32	23	15	8	1						
34	93	87	81	75	69	63	58	53	48	43	34	26	18	11	5						
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