**Relative Humidity**

|  |  |
| --- | --- |
|   | **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**  |  |

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.

1. Which room would have a higher relative humidity, a warm room with 22 grams of water vapor or a cold room with 22 grams of water vapor? Explain.

*The colder room will have higher relative humidity. Cold air has less room to hold moisture so 22 grams will take up a larger percentage of space.*

Use the chart at the right to answer the following:

1. Calculate the relative humidity of both locations. 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.

Difference: 30-23 = 7

*Go down to the 30 row (dry bulb) and then go over to the 7 column (difference).*

*Relative Humidity = 55%*

1. The smaller the difference in the dry and wet bulb temperatures on a sling psychrometer, the *higher*  the relative humidity.
2. A humid bathroom has a dry bulb reading of 34 degrees and a wet bulb reading of 32 degrees. Determine the relative humidity.

Difference: 34-32 = 2

*Go down to the 34 row (dry bulb) and then go over to the 2 column (difference).*

*Relative Humidity = 87%*

1. 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.

*Since we already know the relative humidity, we need to look for it in the 3 column (difference). Go down until you get to 76% then move over to the first column for the dry temperature which will be the temperature of the room.*

*Temperature of the room is 24 degrees Celcius*

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

*Since we already know the relative humidity, we need to look for it in the 14 row (dry bulb). Go over until you get to 25% and then move up to the first row for the difference.*

*The difference is 8 degrees. However, that only tells you that the wet bulb is 8 degrees colder than the dry bulb. So, subtract 8 from 14. Wet bulb is 6 degrees Celsius.*