

1. What is the dewpoint temperature when the dry-bulb temperature is  $12^{\circ}\text{C}$  and the wet-bulb temperature is  $7^{\circ}\text{C}$ ?

- A)  $1^{\circ}\text{C}$  B)  $-2^{\circ}\text{C}$  C)  $-5^{\circ}\text{C}$  D)  $4^{\circ}\text{C}$

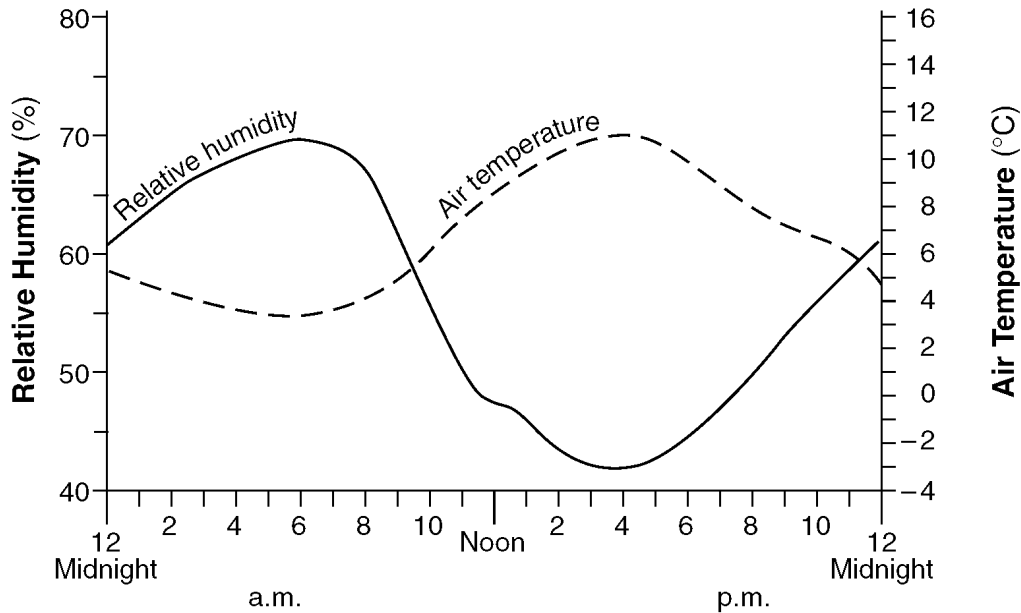
2. A parcel of air has a dry-bulb temperature reading of  $16^{\circ}\text{C}$  and a wet-bulb temperature reading of  $13^{\circ}\text{C}$ . What is the relative humidity?

- A) 11% B) 13% C) **71%** D) 80%

3. When the dry-bulb temperature is  $14^{\circ}\text{C}$  and the wet-bulb temperature is  $8^{\circ}\text{C}$ , the relative humidity is

- A) 6% B) 22% C) 25% **D) 41%**

Base your answers to questions 4 and 5 on the graph below, which shows the changes in relative humidity and air temperature during a spring day in Washington, D.C.



4. Which statement best describes the relationship between relative humidity and air temperature as shown by the graph?

- A) Relative humidity decreases as air temperature decreases.  
**B) Relative humidity decreases as air temperature increases.**  
C) Relative humidity increases as air temperature increases.  
D) Relative humidity remains the same as air temperature decreases.

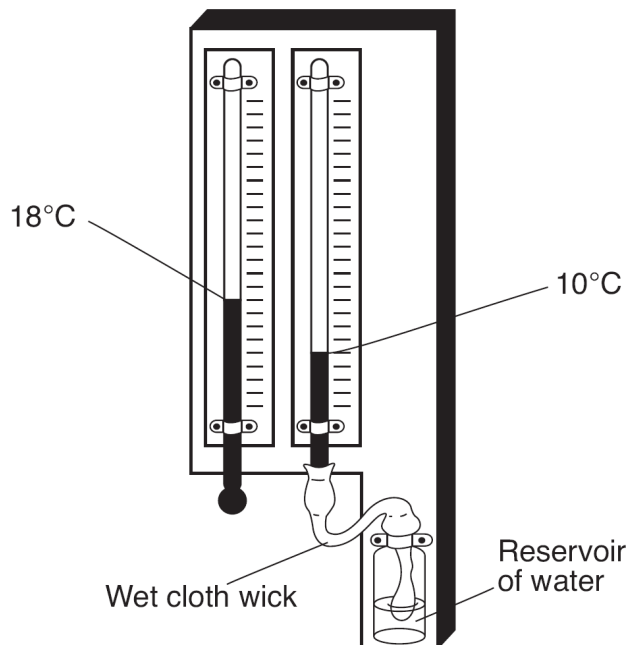
5. What were the relative humidity and air temperature at noon on this day?

- A) 47% and  $32^{\circ}\text{F}$  B) 65% and  $32^{\circ}\text{F}$  C) **47% and  $48^{\circ}\text{F}$**  D) 65% and  $48^{\circ}\text{F}$

6. A student using a sling psychrometer measured a wet-bulb temperature of  $10^{\circ}\text{C}$  and a dry-bulb temperature of  $16^{\circ}\text{C}$ . What was the dewpoint?

- A)  $-10^{\circ}\text{C}$  B)  $45^{\circ}\text{C}$   
C)  $6^{\circ}\text{C}$  **D)  $4^{\circ}\text{C}$**

7. The weather instrument below can be used to determine relative humidity.



Based on the temperatures shown, the relative humidity is

- A) 19% B) 2% C) **33%** D) 40%
8. Which weather change usually occurs when the difference between the air temperature and the dewpoint temperature is *decreasing*?
- A) The amount of cloud cover decreases.  
 B) The probability of precipitation decreases.  
 C) **The relative humidity increases.**  
 D) The barometric pressure increases.
9. What is the dewpoint temperature when the dry-bulb temperature is 14°C and the wet-bulb temperature is 10°C?
- A) -17°C B) **6°C**  
 C) 3°C D) 4°C
10. If air has a dry-bulb temperature of 2°C and a wet-bulb temperature of -2°C, what is the relative humidity?
- A) 11% B) 20% C) **36%** D) 67%
11. What is the relative humidity of a sample of air that has a dry-bulb temperature of 20°C and a wet-bulb temperature of 11°C?
- A) 9% B) 2% C) 17% D) **30%**

12. What is the dewpoint temperature when the dry-bulb temperature is 16°C and the wet-bulb temperature is 11°C?

A) 5°C B) **7°C**  
 C) 9°C D) -17°C

13. What is the approximate dewpoint temperature if the dry-bulb temperature is 18°C and the wet-bulb temperature is 11°C?

A) 1°C B) -10°C  
 C) 7°C D) **4°C**

14. What is the approximate dewpoint temperature if the dry-bulb temperature is 11°C and the wet-bulb temperature is 8°C?

A) 1°C B) **5°C**  
 C) 3°C D) -13°C

15. What is the approximate dewpoint temperature when the dry-bulb temperature is 24°C and the wet-bulb temperature is 18°C?

A) 6°C B) 12°C C) **14°C** D) 17°C

16. The table below shows dry-bulb and wet-bulb temperature readings taken at four different locations, A, B, C, and D.

Location	Dry-Bulb Temperature (°C)	Wet-Bulb Temperature (°C)
A	13	9
B	18	15
C	23	21
D	28	27

Which location has the lowest relative humidity?

A) **A** B) B C) C D) D

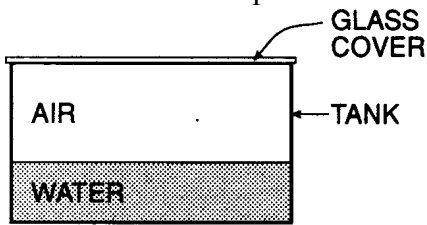
17. What is the approximate dewpoint temperature if the dry-bulb temperature is 13°C and the wet-bulb temperature is 10°C?

A) **7°C** B) 10°C  
 C) 3°C D) -25°C

18. A student used a sling psychrometer to measure the humidity of the air. If the relative humidity was 65% and the dry-bulb temperature was 10°C, what was the wet-bulb temperature?

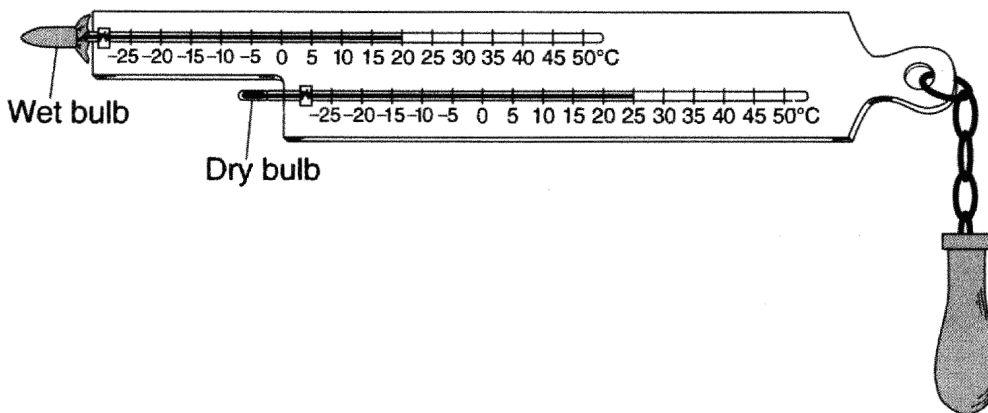
A) 5°C B) **7°C** C) 3°C D) 10°C

19. In the closed aquarium shown in the diagram below, the amount of water evaporating is equal to the amount of water vapor condensing.



Which statement best explains why these amounts are equal?

- A) The glass sides of the aquarium are warmer than the water.
- B) The air in the aquarium is 50% saturated.
- C) The relative humidity outside the aquarium is 100%.
- D) The air in the aquarium is saturated.**
20. What is the dewpoint temperature when the dry-bulb temperature is  $12^{\circ}\text{C}$  and the wet-bulb temperature is  $7^{\circ}\text{C}$ ?
- A)  $1^{\circ}\text{C}$  B)  $-5^{\circ}\text{C}$  C)  $6^{\circ}\text{C}$  D)  $4^{\circ}\text{C}$
21. What is the approximate dewpoint temperature when the dry-bulb temperature is  $18^{\circ}\text{C}$  and the wet-bulb temperature is  $14.5^{\circ}\text{C}$ ?
- A)  $8.0^{\circ}\text{C}$  B)  $10.^{\circ}\text{C}$  C)  $11^{\circ}\text{C}$  **D)  $12^{\circ}\text{C}$**
22. The diagram below represents the wet-bulb and dry-bulb temperatures on a sling psychrometer



What was the relative humidity of the air when these temperatures were recorded?

- A) 5% B) 17% C) 20% **D) 63%**

23. A sling psychrometer shows a dry-bulb reading of  $14^{\circ}\text{C}$  and a wet-bulb reading of  $9^{\circ}\text{C}$ . What are the dewpoint and the relative humidity?

- A)  $-10^{\circ}\text{C}$  and 16%    B)  $-10^{\circ}\text{C}$  and 50%  
 C)  $4^{\circ}\text{C}$  and 16%    **D)  $4^{\circ}\text{C}$  and 50%**

24. What is the wet-bulb temperature when the air temperature is  $16^{\circ}\text{C}$  and the relative humidity is 71%?

- A)  $11^{\circ}\text{C}$     **B)  $13^{\circ}\text{C}$**     C)  $3^{\circ}\text{C}$     D)  $19^{\circ}\text{C}$

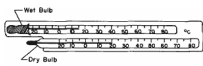
25. What is the difference between the dry-bulb temperature and the wet-bulb temperature when the relative humidity is 28% and the dry-bulb temperature is  $0^{\circ}\text{C}$ ?

- A)  $11^{\circ}\text{C}$     B)  $2^{\circ}\text{C}$     C)  $28^{\circ}\text{C}$     **D)  $4^{\circ}\text{C}$**

26. What is the relative humidity if the dry-bulb temperature is  $22^{\circ}\text{C}$  and the wet-bulb temperature is  $17^{\circ}\text{C}$ ?

- A) 5%    B) 14%    **C) 60%**    D) 68%

27. What is the approximate dewpoint?



- A)  $5.0^{\circ}\text{C}$     **B)  $11^{\circ}\text{C}$**   
 C)  $15^{\circ}\text{C}$     D)  $20.0^{\circ}\text{C}$

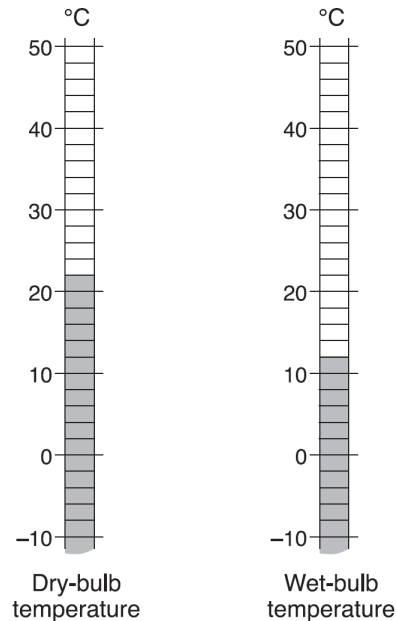
28. What is the relative humidity if the dry-bulb temperature is  $16^{\circ}\text{C}$  and the wet-bulb temperature is  $10^{\circ}\text{C}$ ?

- A) 45%**    B) 33%    C) 14%    D) 4%

29. When the dry-bulb reading of a thermometer is  $20^{\circ}\text{C}$  and the wet-bulb reading is  $11^{\circ}\text{C}$ , the relative humidity is approximately

- A) 17%    **B) 30%**    C) 33%    D) 55%

30. The diagram below shows dry-bulb and wet-bulb temperature readings for a parcel of air.



What is the dewpoint of the air?

- A)  $27^{\circ}\text{C}$     B)  $10^{\circ}\text{C}$     **C)  $3^{\circ}\text{C}$**     D)  $-5^{\circ}\text{C}$

31. Which weather instrument is most useful in measuring relative humidity?

- A) barometer    B) anemometer  
**C) psychrometer**    D) wind vane

32. The data below represent some of the weather conditions at a Vermont location on a winter morning.

Air temperature (dry-bulb temperature)	$0^{\circ}\text{C}$
Relative humidity	81%
Present weather	snow

What was the dewpoint at this time?

- A)  $1^{\circ}\text{C}$     B)  $2^{\circ}\text{C}$     **C)  $-3^{\circ}\text{C}$**     D)  $-5^{\circ}\text{C}$

33. When the dry-bulb temperature is  $22^{\circ}\text{C}$  and the wet-bulb temperature is  $13^{\circ}\text{C}$ , the relative humidity is

- A) 10%    **B) 33%**    C) 41%    D) 59%

34. What is the dewpoint when the air temperature is  $26^{\circ}\text{C}$  and the relative humidity is 77%?

- A)  $3^{\circ}\text{C}$     B)  $20^{\circ}\text{C}$     **C)  $22^{\circ}\text{C}$**     D)  $23^{\circ}\text{C}$

35. What is the dewpoint temperature when the dry-bulb temperature is  $12^{\circ}\text{C}$  and the wet-bulb temperature is  $4^{\circ}\text{C}$ ?

- A)  $-9^{\circ}\text{C}$  B)  $19^{\circ}\text{C}$  C)  $8^{\circ}\text{C}$  D)  $4^{\circ}\text{C}$

36. What is the dewpoint when the dry-bulb temperature is  $12^{\circ}\text{C}$  and the wet-bulb temperature is  $7^{\circ}\text{C}$ ?

- A)  $1^{\circ}\text{C}$  B)  $-5^{\circ}\text{C}$  C)  $28^{\circ}\text{C}$  D)  $48^{\circ}\text{C}$

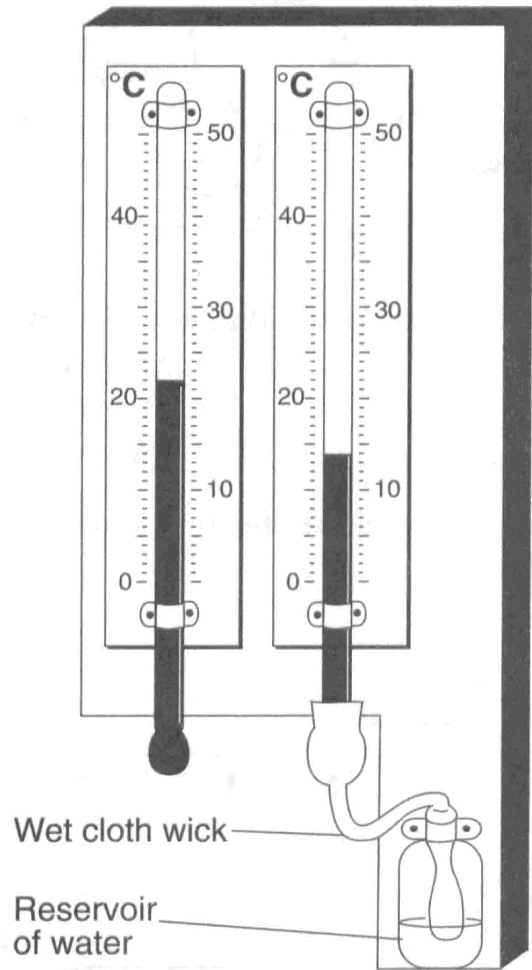
37. What is the dewpoint temperature when the dry-bulb temperature is  $12^{\circ}\text{C}$  and the wet-bulb temperature is  $7^{\circ}\text{C}$ ?

- A)  $1^{\circ}\text{C}$  B)  $-2^{\circ}\text{C}$  C)  $-5^{\circ}\text{C}$  D)  $4^{\circ}\text{C}$

38. A parcel of air has a dry-bulb temperature of  $16^{\circ}\text{C}$  and a wet-bulb temperature of  $10^{\circ}\text{C}$ . What are the dewpoint and relative humidity of the air?

- A)  $-5^{\circ}\text{C}$  dewpoint and 33% relative humidity  
 B)  $-5^{\circ}\text{C}$  dewpoint and 45% relative humidity  
 C)  $4^{\circ}\text{C}$  dewpoint and 33% relative humidity  
 D)  $4^{\circ}\text{C}$  dewpoint and 45% relative humidity

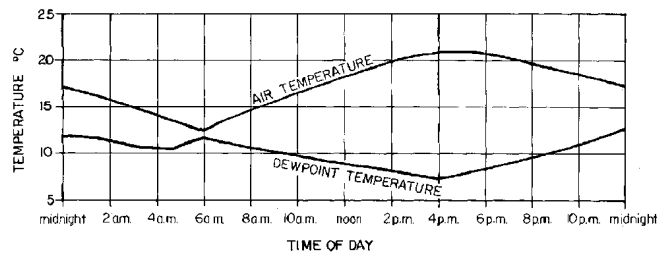
39. The weather instrument below is used to determine dewpoint and relative humidity.



Based on the temperature shown, the approximate dewpoint and relative humidity are

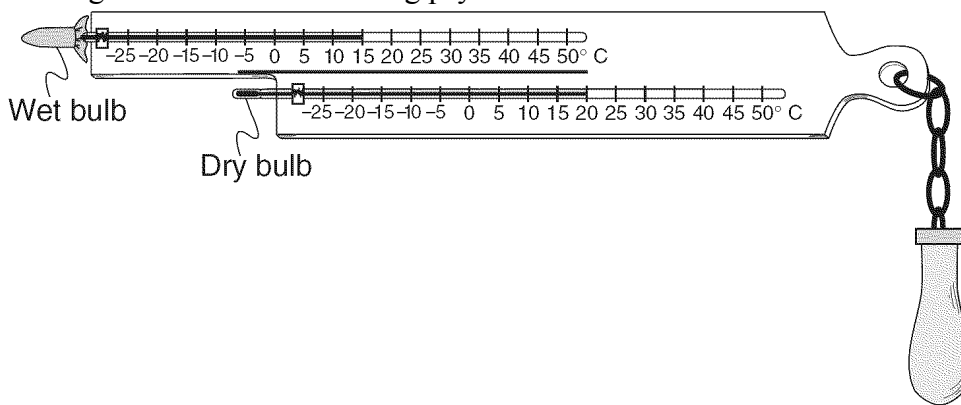
- A)  $-19^{\circ}\text{C}$  and 4%      B)  $-5^{\circ}\text{C}$  and 25%  
 C)  $8^{\circ}\text{C}$  and 40%      D)  $12^{\circ}\text{C}$  and 53%

40. The graph below shows the changes in air temperature and dewpoint temperature over a 24-hour period at a particular location. At what time was the relative humidity *lowest*?



- A) midnight                      B) 6 a.m.  
 C) 10 a.m.                      D) 4 p.m.

41. The air outside a classroom has a dry-bulb temperature of  $10^{\circ}\text{C}$  and a wet-bulb temperature of  $4^{\circ}\text{C}$ . What is the relative humidity of this air?  
 A) 1%    B) 14%    **C) 33%**    D) 54%
42. What is the dewpoint temperature when the dry-bulb temperature is  $22^{\circ}\text{C}$  and the wet-bulb temperature is  $15^{\circ}\text{C}$ ?  
 A)  $7^{\circ}\text{C}$     **B)  $10^{\circ}\text{C}$**     C)  $12^{\circ}\text{C}$     D)  $14^{\circ}\text{C}$
43. What is the dewpoint when the dry-bulb temperature is  $16^{\circ}\text{C}$  and the wet-bulb temperature is  $12^{\circ}\text{C}$ ?  
 A)  $-19^{\circ}\text{C}$                       B)  $-16^{\circ}\text{C}$   
 C)  $7^{\circ}\text{C}$                               D)  **$9^{\circ}\text{C}$**
44. The diagram below shows a sling psychrometer.

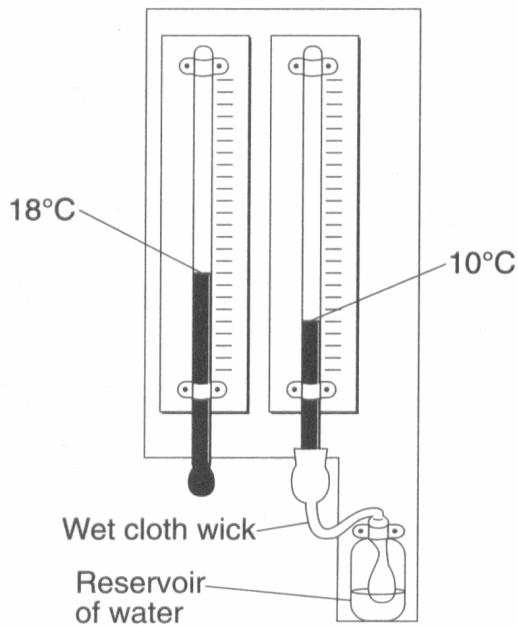


Based on the dry-bulb temperature and the wet-bulb temperature, what is the relative humidity?

- A) 66%                      **B) 58%**                      C) 51%                      D) 12%
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45. A parcel of air has a dry-bulb temperature of  $24^{\circ}\text{C}$  and a relative humidity of 55%. What is the dewpoint of this parcel of air?  
 A)  $6^{\circ}\text{C}$     **B)  $14^{\circ}\text{C}$**     C)  $24^{\circ}\text{C}$     D)  $29^{\circ}\text{C}$
46. What is the dewpoint when the dry-bulb temperature is  $24^{\circ}\text{C}$  and the wet-bulb temperature is  $21^{\circ}\text{C}$ ?  
 A)  $16^{\circ}\text{C}$     B)  $18^{\circ}\text{C}$     **C)  $20^{\circ}\text{C}$**     D)  $21^{\circ}\text{C}$



50. The weather instrument shown below can be used to determine dewpoint.

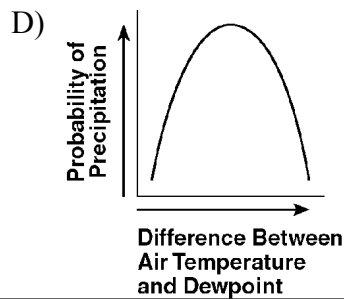
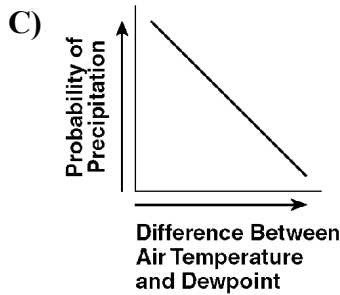
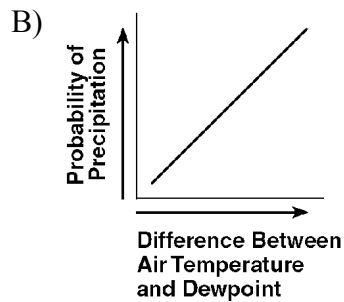
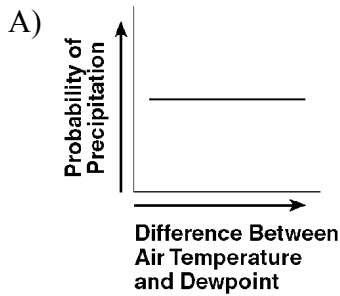


Based on the values shown, the dewpoint is

- A)  $-5^{\circ}\text{C}$  B)  **$2^{\circ}\text{C}$**  C)  $8^{\circ}\text{C}$  D)  $33^{\circ}\text{C}$
51. What is the dewpoint when the dry-bulb temperature is  $14^{\circ}\text{C}$  and the wet-bulb temperature is  $8^{\circ}\text{C}$ ?
- A)  $1^{\circ}\text{C}$  B)  $-9^{\circ}\text{C}$  C)  $6^{\circ}\text{C}$  D)  $22^{\circ}\text{C}$
52. A dry-bulb temperature of  $30^{\circ}\text{C}$  and a wet-bulb temperature of  $29^{\circ}\text{C}$  were recorded at a weather station. What are the relative humidity and the most likely weather conditions?
- A) Relative humidity is 29% with clear skies.  
B) Relative humidity is 29% with a good chance of snow.  
C) Relative humidity is 93% with clear skies.  
D) **Relative humidity is 93% with a good chance of rain.**



53. Which graph best shows the relationship between the probability of precipitation and the difference between air temperature and dewpoint?



54. What is the dewpoint temperature when the relative humidity is 30% and the air temperature is 20°C?

- A) -28°C      B) 2°C  
C) 6°C      D) 9°C

55. What is the approximate dewpoint temperature when the dry-bulb reading is 14°C and the wet-bulb reading is 8°C?

- A) 1°C    B) 6°C    C) -6°C    D) -9°C

56. On a cold winter day, the air temperature is 2°C and the wet-bulb temperature is -1°C. What is the relative humidity at this location?

- A) 6%    B) 37%    C) 51%    D) 83%

57. Which event usually occurs when air is cooled to its dewpoint temperature?

- A) freezing      B) evaporation  
C) **condensation**      D) transpiration

58. The relative humidity is 100% when

- A) the atmosphere is relatively dry  
B) **the air is at its saturated vapor pressure**  
C) the air pressure is high  
D) transpiration equals evaporation

59. What is the relative humidity when the air temperature is 29°C and the wet-bulb temperature is 23°C?

- A) 6%    B) 20%    C) 54%    D) 60%

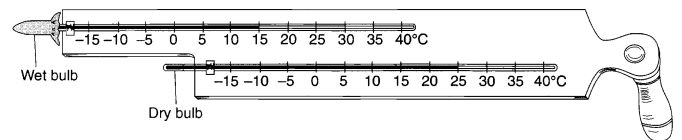
60. What is the dewpoint if the relative humidity is 100% and the air temperature is 20°C?

- A) 0°C      B) 10°C  
C) 20°C      D) 100°C

61. If the air temperature is 20°C and the relative humidity is 58%, what is the dewpoint?

- A) 5°C    B) 12°C    C) 15°C    D) 38°C

62. The diagram below shows the temperature readings on a weather instrument.



Based on these readings, the relative humidity of the air is closest to

- A) 8%    B) 11%    C) 32%    D) 60%

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63. Which statement best explains why an increase in the relative humidity of a parcel of air generally increases the chance of precipitation?
- A) The dewpoint is farther from the condensation point, causing rain.
  - B) The air temperature is closer to the dewpoint, making cloud formation more likely.**
  - C) The amount of moisture in the air is greater, making the air heavier.
  - D) The specific heat of the moist air is greater than the drier air, releasing energy.
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