

Name: _____

Weather

Date: _____ Period: _____

The Physical Setting: Earth Science

Weather Instruments

CLASS NOTES

- Thermometer - _____

 - Different scales include: Celsius, Fahrenheit, and Kelvin
- Barometer - _____

 - Different scales include: Inches of Mercury or Millibars
- Anemometer - _____

 - Different scales include: Knots or Miles per hour
- Weather Vane - _____

 - Measure direction using compass directions
- Sling Psychrometer - _____

 - Relative Humidity - _____

 - To calculate relative humidity you need a dry bulb temperature, difference in wet bulb and dry bulb temperature, and the E.S.R.T.
 - Dewpoint - _____

 - To calculate relative humidity you need a dry bulb temperature, difference in wet bulb and dry bulb temperature, and the E.S.R.T.

Weather Instruments

Relative Humidity Chart

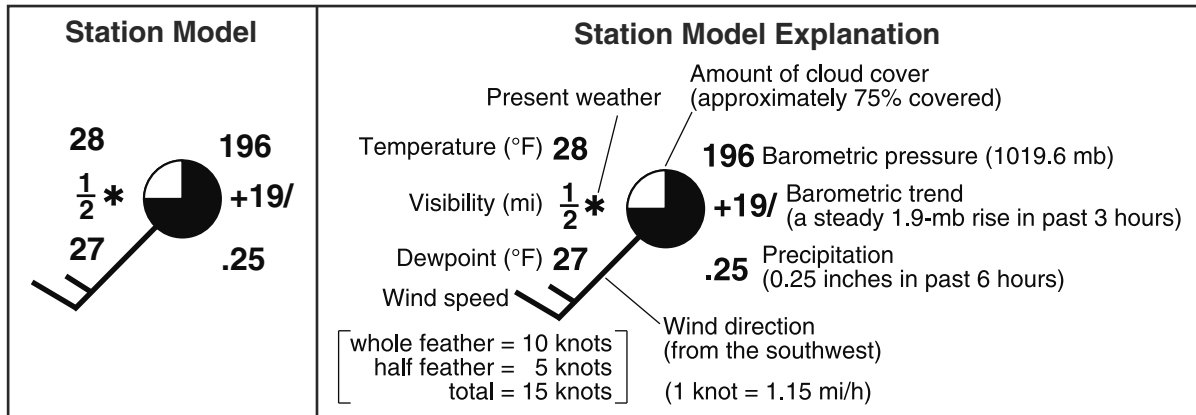
| Dry-Bulb Temperature (°C) | Difference Between Wet-Bulb and Dry-Bulb Temperatures (C°) | | | | | | | | | | | | | | | |
|---------------------------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| -20 | 100 | 28 | | | | | | | | | | | | | | |
| -18 | 100 | 40 | | | | | | | | | | | | | | |
| -16 | 100 | 48 | | | | | | | | | | | | | | |
| -14 | 100 | 55 | 11 | | | | | | | | | | | | | |
| -12 | 100 | 61 | 23 | | | | | | | | | | | | | |
| -10 | 100 | 66 | 33 | | | | | | | | | | | | | |
| -8 | 100 | 71 | 41 | 13 | | | | | | | | | | | | |
| -6 | 100 | 73 | 48 | 20 | | | | | | | | | | | | |
| -4 | 100 | 77 | 54 | 32 | 11 | | | | | | | | | | | |
| -2 | 100 | 79 | 58 | 37 | 20 | 1 | | | | | | | | | | |
| 0 | 100 | 81 | 63 | 45 | 28 | 11 | | | | | | | | | | |
| 2 | 100 | 83 | 67 | 51 | 36 | 20 | 6 | | | | | | | | | |
| 4 | 100 | 85 | 70 | 56 | 42 | 27 | 14 | | | | | | | | | |
| 6 | 100 | 86 | 72 | 59 | 46 | 35 | 22 | 10 | | | | | | | | |
| 8 | 100 | 87 | 74 | 62 | 51 | 39 | 28 | 17 | 6 | | | | | | | |
| 10 | 100 | 88 | 76 | 65 | 54 | 43 | 33 | 24 | 13 | 4 | | | | | | |
| 12 | 100 | 88 | 78 | 67 | 57 | 48 | 38 | 28 | 19 | 10 | 2 | | | | | |
| 14 | 100 | 89 | 79 | 69 | 60 | 50 | 41 | 33 | 25 | 16 | 8 | 1 | | | | |
| 16 | 100 | 90 | 80 | 71 | 62 | 54 | 45 | 37 | 29 | 21 | 14 | 7 | 1 | | | |
| 18 | 100 | 91 | 81 | 72 | 64 | 56 | 48 | 40 | 33 | 26 | 19 | 12 | 6 | | | |
| 20 | 100 | 91 | 82 | 74 | 66 | 58 | 51 | 44 | 36 | 30 | 23 | 17 | 11 | 5 | | |
| 22 | 100 | 92 | 83 | 75 | 68 | 60 | 53 | 46 | 40 | 33 | 27 | 21 | 15 | 10 | 4 | |
| 24 | 100 | 92 | 84 | 76 | 69 | 62 | 55 | 49 | 42 | 36 | 30 | 25 | 20 | 14 | 9 | 4 |
| 26 | 100 | 92 | 85 | 77 | 70 | 64 | 57 | 51 | 45 | 39 | 34 | 28 | 23 | 18 | 13 | 9 |
| 28 | 100 | 93 | 86 | 78 | 71 | 65 | 59 | 53 | 47 | 42 | 36 | 31 | 26 | 21 | 17 | 12 |
| 30 | 100 | 93 | 86 | 79 | 72 | 66 | 61 | 55 | 49 | 44 | 39 | 34 | 29 | 25 | 20 | 16 |

Dewpoint Chart

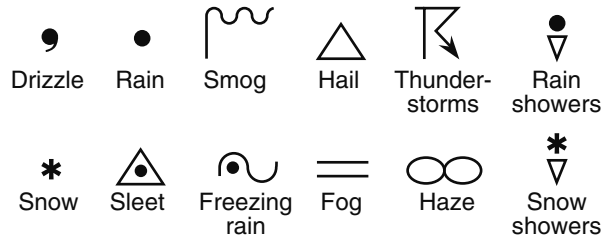
| Dry-Bulb Temperature (°C) | Difference Between Wet-Bulb and Dry-Bulb Temperatures (C°) | | | | | | | | | | | | | | | |
|---------------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| -20 | -20 | -33 | | | | | | | | | | | | | | |
| -18 | -18 | -28 | | | | | | | | | | | | | | |
| -16 | -16 | -24 | | | | | | | | | | | | | | |
| -14 | -14 | -21 | -36 | | | | | | | | | | | | | |
| -12 | -12 | -18 | -28 | | | | | | | | | | | | | |
| -10 | -10 | -14 | -22 | | | | | | | | | | | | | |
| -8 | -8 | -12 | -18 | -29 | | | | | | | | | | | | |
| -6 | -6 | -10 | -14 | -22 | | | | | | | | | | | | |
| -4 | -4 | -7 | -12 | -17 | -29 | | | | | | | | | | | |
| -2 | -2 | -5 | -8 | -13 | -20 | | | | | | | | | | | |
| 0 | 0 | -3 | -6 | -9 | -15 | -24 | | | | | | | | | | |
| 2 | 2 | -1 | -3 | -6 | -11 | -17 | | | | | | | | | | |
| 4 | 4 | 1 | -1 | -4 | -7 | -11 | -19 | | | | | | | | | |
| 6 | 6 | 4 | 1 | -1 | -4 | -7 | -13 | -21 | | | | | | | | |
| 8 | 8 | 6 | 3 | 1 | -2 | -5 | -9 | -14 | | | | | | | | |
| 10 | 10 | 8 | 6 | 4 | 1 | -2 | -5 | -9 | -14 | -28 | | | | | | |
| 12 | 12 | 10 | 8 | 6 | 4 | 1 | -2 | -5 | -9 | -16 | | | | | | |
| 14 | 14 | 12 | 11 | 9 | 6 | 4 | 1 | -2 | -5 | -10 | -17 | | | | | |
| 16 | 16 | 14 | 13 | 11 | 9 | 7 | 4 | 1 | -1 | -6 | -10 | -17 | | | | |
| 18 | 18 | 16 | 15 | 13 | 11 | 9 | 7 | 4 | 2 | -2 | -5 | -10 | -19 | | | |
| 20 | 20 | 19 | 17 | 15 | 14 | 12 | 10 | 7 | 4 | 2 | -2 | -5 | -10 | -19 | | |
| 22 | 22 | 21 | 19 | 17 | 16 | 14 | 12 | 10 | 8 | 5 | 3 | -1 | -5 | -10 | -19 | |
| 24 | 24 | 23 | 21 | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 2 | -1 | -5 | -10 | -18 |
| 26 | 26 | 25 | 23 | 22 | 20 | 18 | 17 | 15 | 13 | 11 | 9 | 6 | 3 | 0 | -4 | -9 |
| 28 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 17 | 16 | 14 | 11 | 9 | 7 | 4 | 1 | -3 |
| 30 | 30 | 29 | 27 | 26 | 24 | 23 | 21 | 19 | 18 | 16 | 14 | 12 | 10 | 8 | 5 | 1 |

Weather Instruments

- Station Model - _____



Present Weather



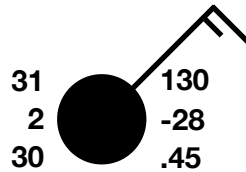
Weather Instruments

PART I QUESTIONS: MULTIPLE CHOICE

1. What is the approximate dewpoint temperature if the dry bulb temperature is 10°C and the wet-bulb temperature is 8°C ? [Refer to the Earth Science Reference Tables.]
 - a. 1°C
 - b. -13°C
 - c. 6°C
 - d. 3°C
2. What is the dewpoint when the air temperature is 18°C and the wet-bulb temperature is 13°C .
 - a. 9°C
 - b. 6°C
 - c. 25°C
 - d. 13°C
3. A temperature of 80° Fahrenheit would be approximately equal to how many degrees Celsius?
 - a. 27°C
 - b. 299°C
 - c. 178°C
 - d. 34°C
4. According to the Earth Science Reference Tables, when the dry-bulb temperature reading is 10°C and the wet-bulb temperature is 2.0°C , the dewpoint temperature of the air is approximately?
 - a. -8.0°C
 - b. 10.0°C
 - c. 2.0°C
 - d. -14.0°C
5. An air pressure of 29.65 inches of mercury is equal to how many millibars?
 - a. 1001.0 mb
 - b. 1004.0 mb
 - c. 999.0 mb
 - d. 984.0 mb
6. An air pressure of 1023 millibars is equal to how many inches of mercury?
 - a. 30.10 in of Hg
 - b. 30.19 in of Hg
 - c. 30.21 in of Hg
 - d. 30.15 in of Hg
7. A temperature of 73° Fahrenheit is approximately equal to a temperature of
 - a. 23°C
 - b. 162°C
 - c. 26°C
 - d. 17°C

Weather Instruments

Questions 8 and 13 refer to the following diagram below shows a weather station.



8. The barometric pressure is
 - a. 913.0 mb
 - b. 130.0 mb
 - c. 10.28 mb
 - d. 1013.0 mb
9. What is the approximate temperature in Celsius?
 - a. 32° C
 - b. 10 ° C
 - c. -1° C
 - d. -32° C
10. What is the wind direction recorded at the weather station?
 - a. northeast
 - b. southwest
 - c. northwest
 - d. southwest
11. What is the wind velocity at the weather station?
 - a. 15 knots
 - b. 20 knots
 - c. 25 knots
 - d. 30 knots
12. What is the cloud cover at the weather station?
 - a. 0%
 - b. 50%
 - c. 75%
 - d. 100%
13. The weather forecast for the next 6 hours at this station most likely would be
 - a. sunny, cold, probable rain
 - b. overcast, cold, probable snow
 - c. overcast, hot, poor visibility
 - d. overcast, hot, unlimited visibility

Weather Instruments

Directions: Fill in the missing information on the chart below using your Earth Science Reference Tables.

| Dry Bulb Temperature (°C) | Wet Bulb Temperature (°C) | Difference Between Wet Bulb & Dry Bulb Temperatures (°C) | Dew Point Temperature (°C) | Relative Humidity (%) |
|---------------------------|---------------------------|--|----------------------------|-----------------------|
| 8 | 6 | | | |
| 30 | 20 | | | |
| 18 | 10 | | | |
| -20 | -20 | | | |
| 4 | 2 | | | |
| 16 | 6 | | | |
| 24 | 18 | | | |
| 10 | 5 | | | |
| 17 | 13 | | | |
| 27 | 23 | | | |
| 30 | 15 | | | |
| 19 | 15 | | | |
| 20 | 13 | | | |
| 10 | 1 | | | |
| 6 | 2 | | | |
| | | 2 | -12 | 54 |
| | | 8 | 10 | 42 |