Unit 6: Weather- Understanding Weather Variables

Name:_____ **Date:**_____ **Block:**_____

Weather:

_____-are individual pieces of information that describe specific conditions of the atmosphere.

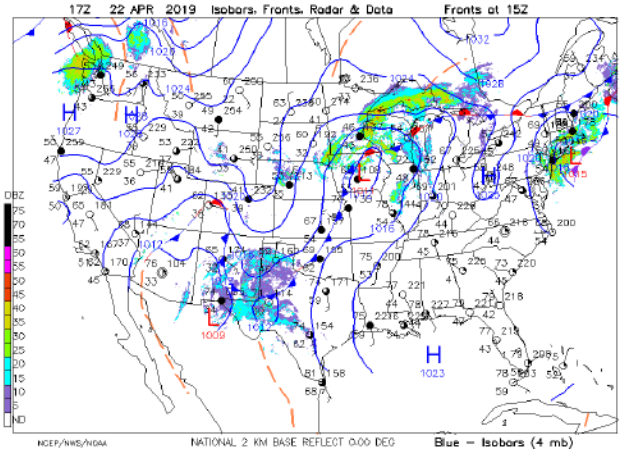
Examples:

Forecasting – is making _____ based upon _____conditions of the atmosphere.

← **Weather Stations**: _____

_____

_____- provide a picture of the weather conditions at a given time→



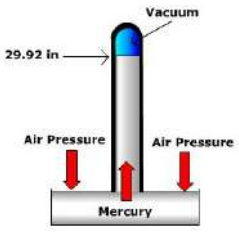
1. **Temperature:**

- measured in °C/F (less commonly, Kelvin or K)

Room Temperature according to pg. 13 of the ESRT: _____°F or _____°C

2. **Barometric Pressure:**

- Measured in _____ (mb), _____ of mercury (“), and atmospheres (atm).
- Air pressure depends on how _____packed the molecules are and how _____they are.
- Sea Level Pressure or “One atmosphere” is equal to _____mb OR_____” of mercury (on pg. 13 ESRT)
- **Barometer:**
- At sea level there is _____ lbs. of pressure/inch



Relationships:

a. _____: Why? Air _____ when _____(Density ↓)

b. _____: Why? Air _____ when _____(Density ↑)

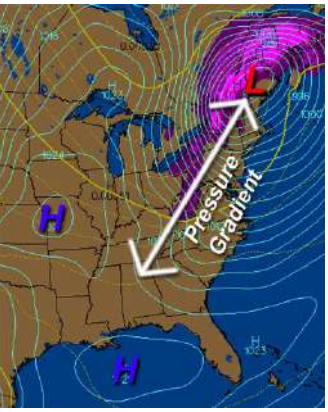
A change in _____ causes the _____and _____ of air. The exchange of air from regions of _____to _____ pressure=_____!

3. **Wind Speed and Direction**

– Wind is the _____ _____of air.

– *Wind occurs because of* _____ *on earth.*

– The _____ the difference in _____, the _____ the wind speed. Speed is given in mph or in knots.



– Wind is named for the direction _____ it comes (a "SW" wind blows NE)

– An _____ measures wind speed/direction

– Air flows from regions of _____ to _____ Pressure

– And is _____ where the _____ is the _____ (ΔPressure (high-low)/Distance)

Draw and label diagrams of a sea breeze and a land breeze including information on relative temperatures (cool vs. warm), pressures (high vs. low), and the direction the air moves vertically (rising or sinking) and the direction the air moves horizontally between the zones of land and sea (wind).

Sea Breeze (Day)	**Land Breeze (Night)**

4. **Dew Point Temperature:** temperature at which water vapor will _____ to become drops of water or ice crystals.
   a. It indicates how _____ the air is
   b. The air must be _____ for this to happen
   c. The dewpoint temperature depends on the amount of _____ in the air; It DOES NOT depend on the _____
   d. A _____ dewpoint temperature indicates a _____ concentration of water vapor.

How to Measure Dew Point Temperature:

- Using a _____

- This will yield two temperatures: A "_____" temperature and "_____" temperature
- In order to find the dew point, you must find the _____ between the dry and wet bulb temperatures (_____) and your ESRT **page _____ (Dew Point Chart)**

Dry Bulb	Wet Bulb	Dry-wet	DPT
26°C	20 °C		
6 °C	5 °C		
12 °C	8 °C		
18 °C	17 °C		
14 °C	14 °C		
0 °C	-3 °C		

Dry Day:

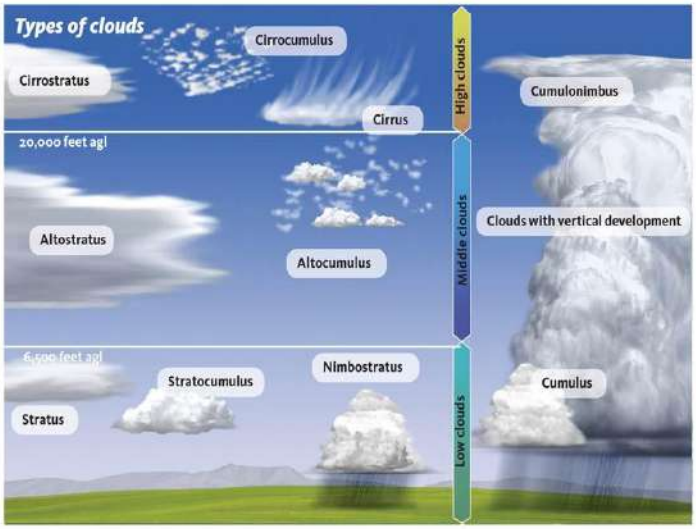
- _____of moisture will evaporate.
- The wet bulb will be _____than the dry bulb.

Humid/Wet Day:

- A _____of moisture will evaporate.
- The wet bulb will _____ be much cooler than the dry bulb.

Dew Point and Cloud Formation:

_____temperature and _____temperature determine the _____ at which water vapor will condense to form _____ in the sky, _____ or _____ on the ground… On a dry day, the air must cool _____ in order to form a cloud (lower DP temp), thus the air must rise _____ into the troposphere for condensation to occur.



5. **Absolute Humidity: refers to** _____

Fact: Water vapor molecules are _____than Nitrogen molecules. This means that _____ air is _____ than dry air

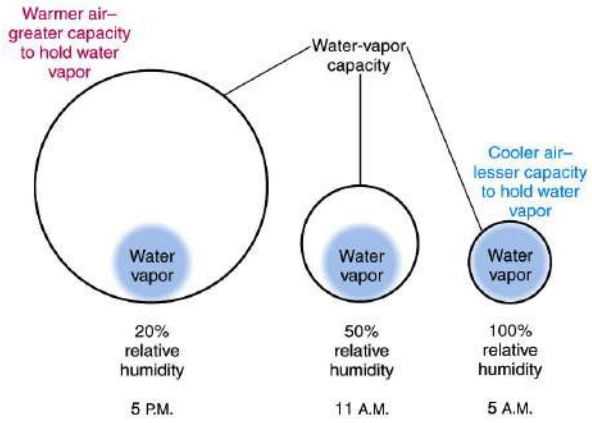
As a result:

- As_____ (H20 molecules replace N molecules)

If air pressure decreases, air can _____, thus holding more _____

Making the connection: Why does the air feel more humid during the summer months?

6. Relative Humidity



-It compares the amount of _____in the air (%), to the amount the air can _____ which is based upon the _____.

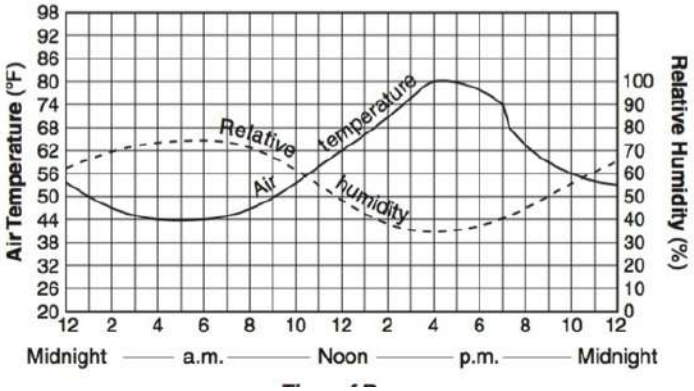
-As air temp _____, Relative humidity will _____

-A 100% RH means the air is _____.

-At ground level this will indicate _____.

Making the connection: Why is it always more humid, wet, or "dewy" during the morning hours of the day as compared to the afternoon?

Relationship of Relative Humidity to Air Temperature:



Relative Humidity Problems using pg. 12 of ESRT

1.)What is the RH if the dry bulb temperature is

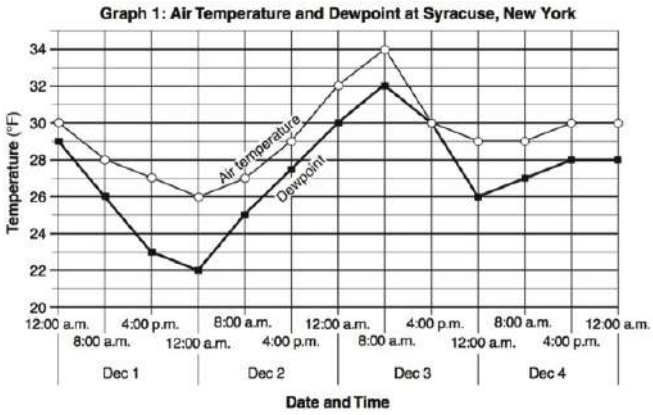
10 ℃ and the wet bulb is 8℃? _____

2.)If the difference between the dry and wet bulb is 6 C˚ and the relative humidity is 41%, what is the Dry bulb temperature ?_____

3.) What is the relative humidity if the dry bulb temperature is 18 C and the Dewpoint is 18 C? _____

what is likely to form at ground level?

Using the graph, at what time of day would you predict precipitation to occur in Syracuse using information on air temperature and dew point? _____



In Summary:

HEAVY AIR (High Pressure)	Light Air (Low Pressure)