**NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**ES106 Laboratory Video Review Exercise Atmosphere: Humidity and Moisture**

Watch the introductory videos linked on the class web site, at the URL’s posted below, and answer the review questions.

**Evaporation, Humidity and Hydrologic Clycle (Youtube Education Special ~11 min)** <https://www.youtube.com/watch?v=6oZ7HxrnSWo>

1. What is the ultimate source of fresh water at the Earth’s surface?
2. What are the three physical states in which water is found at the Earth’s surface.
3. What are the three primary processes involved in the water cycle at the Earth’s surface?
4. True or False: the rate of evaporation increases as air temperature decreases.
5. True or False: cooling air temperature causes it to contract in volume, and hold less water vapor.
6. True or False: warming air temperature causes it to expand in volume and hold more water vapor.
7. Define the term “dew point”.
8. True or False: heat is required to cause water to transform from liquid state to vapor state in the atmosphere.
9. True or False: the animatron meme in this video is a little creepy.
10. Define “absolute humidity” of air and how is it measured? In what units?
11. Define “specific humidity” of air, and how is it measured? In what units?
12. True or False: polar regions have higher specific humidity compared to tropical equatorial regions of planet Earth.
13. Define “relative humidity” of air, and how is it measured? In what units?
14. What is the primary controlling factor of how much humidity and water vapor can be contained in the atmosphere?
15. True or False: the air becomes fully saturated with water vapor at the dew point, which is 100% humidity.
16. True or False: at 100% relative humidity, evaporation of water from liquid to gas ceases.
17. Provide some examples of why humidity is important to people on planet earth.

**Introduction to Humidity and Dew Point (~2 min)** <https://www.youtube.com/watch?v=OiejHVHrdOo>

1. True or False: the lower the temperature of the air, the lower the amount of water vapor the air can hold.
2. True or False: dew point temperature is relative to the absolute temperature of the air.
3. True or False: dew point temperature is the condition in which the air is 100% saturated with water vapor.
4. True or False: warm air is more humid compared to cold air, all things being equal.

**MORE ON BACK…**

**Orographic Lifting (~2 min)** <https://www.youtube.com/watch?v=H9ZK1CnjCFo>

1. What does the term “orographic” refer to?
2. True or False: air cools as it rises in the lower atmosphere
3. True or False: air warms are it sinks in the lower atmosphere
4. True or False: it tends to be rainy on the windward (upwind side) of mountains.
5. True or False: it tends to be dry on the leeward (downwind side) of mountains.

**Adiabatic Processes (~2 min)** <https://www.youtube.com/watch?v=p-BLGbkhSO0>

1. True or False: heat is actively gained and lossed as part of adiabatic processes in atmosphere
2. True or False: as air pressure is released, it expands and cools in temperature.
3. What is the dry adiabatic lapses rate of cooling in degrees Centigrade per 1000 feet of altitude.
4. What is the wet adiabatic lapse rate of cooling in degrees Centigrade per 1000 feet of altitude?