AIM: What are the factors that are needed for cloud formation?

## *INGREDIENTS FOR CLOUDS*

- _____ air
- _____ nuclei
- Air temperature at or near the _____ _____ temperature
- Relative Humidity at or near _____%

## *CLOUD-MAKING STEPS*

1. _____ of surface water to raise the humidity of the air.
2. UPLIFT of air
   a. _____ the pressure (and density) of air
   b. Causes air to _____ and cool
3. Cooling of air to the ____ _____ temperature (bringing relative humidity to 100%)
4. _____ of water vapor around condensation nuclei
5. Precipitation forms when liquid or ice droplets grow too _____ to be held up by air pressure.

## *Factors causing air to be UPLIFTED*

1. Convection

2. Orographic Effect (air moving up a mountain)

3. Collision of two air masses (two fronts meeting)

AIM: What causes clouds to form?

EVAPORATION: _____ process (absorbs energy), _____ process

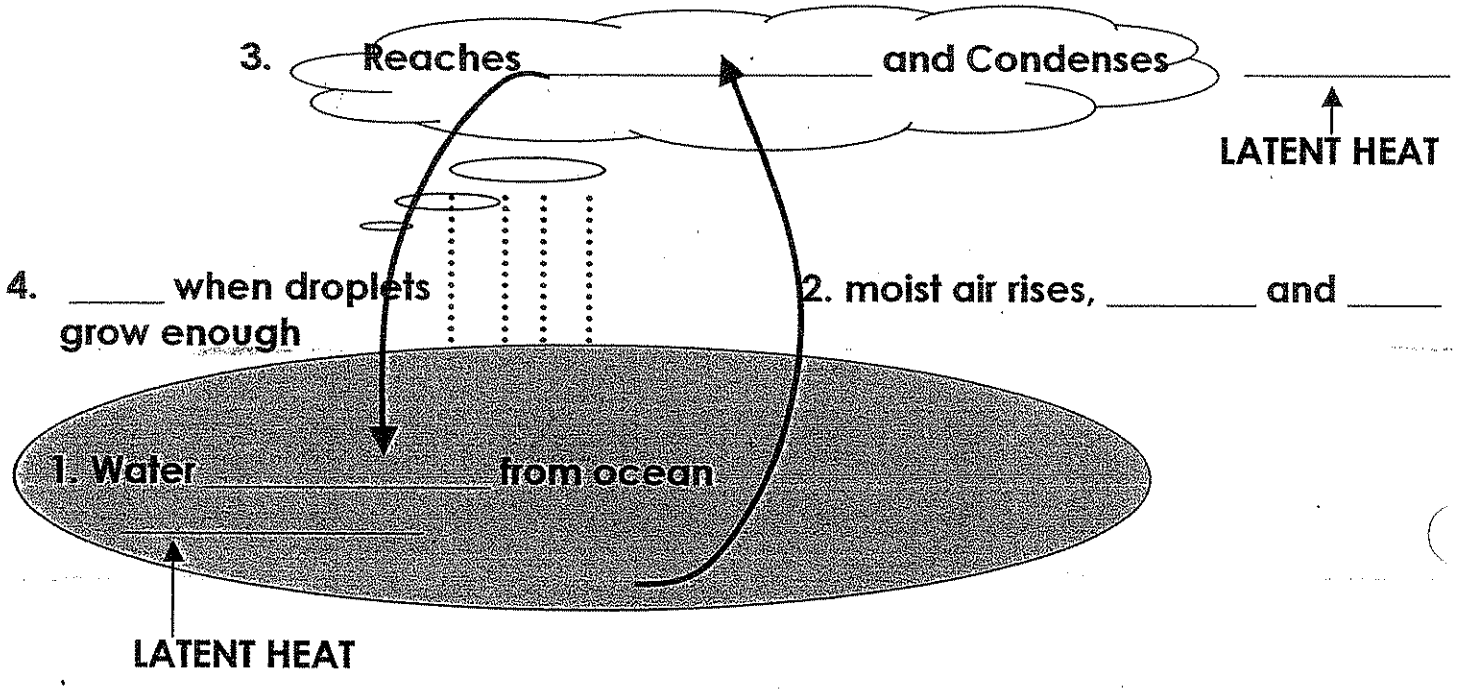
CONDENSATION: _____ process (releases energy), _____ process

1. What is a cloud?
   a. A collection of tiny _____ or _____ droplets that form from condensation.
   b. NOT _____

2. What causes condensation in the atmosphere?
   a. The cooling of air that is _____
      i. Air must reach the _____
      _____

   b. A solid surface for water droplets to form on, called _____ _____ (water droplet magnets!)
      i. Pollution—smoke, ash
      ii. Salt from ocean spray that has evaporated
      iii. dust

3. What happens when humid air cools and undergoes condensation?
   CLOUDS FORM IF CONDENSATION NUCLEI ARE PRESENT

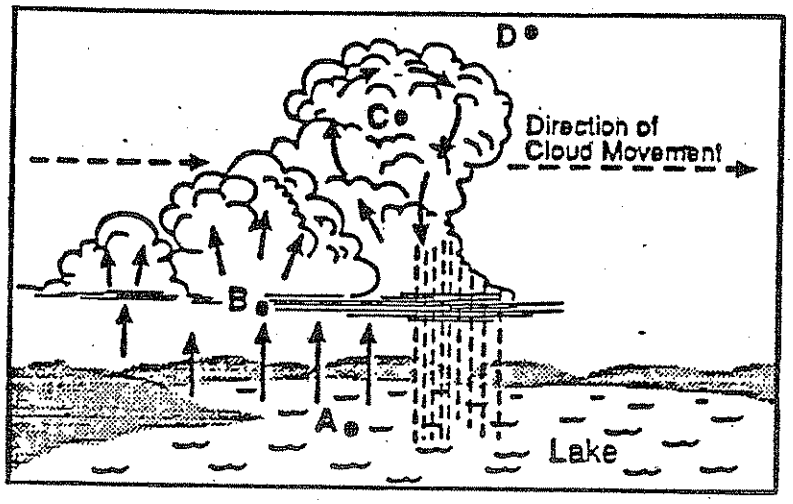


Part III

Question 5.

Answer all parts of question 5. (6 Points)

Base your answers to question 5 on the *Earth Science Reference Tables*, the diagram below, and your knowledge of Earth science. The diagram shows air movements associated with cumulus cloud formation over a lake during a summer day. *A*, *B*, *C*, and *D* are reference points.




a. At which point (letter) is evaporation mainly taking place? (1)

a. _____

b. State three (3) things that will increase evaporation in one or more full sentences. (3)

b. _____

_____

_____

c. At which point in the diagram does the air temperature first reach the dewpoint. Give the letter and explain in one or more complete sentences why. (2)

c. _____

_____

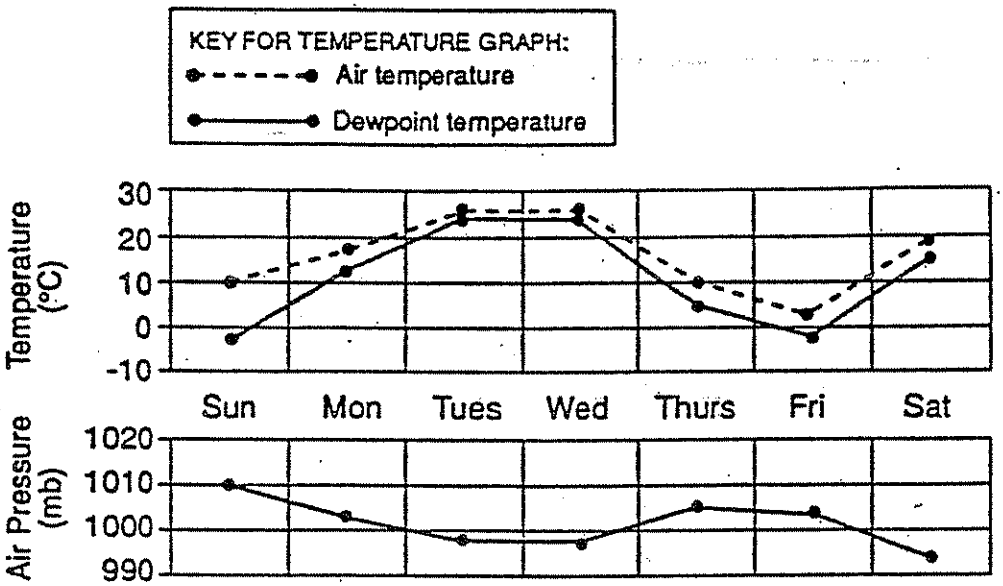
_____

_____

Group

If you choose this group, be sure to answer questions

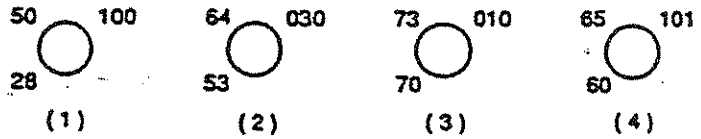
Base your answers to questions through on the *Earth Science Reference Tables*, the graphs below, a your knowledge of earth science. The graphs show the noontime air temperatures, dewpoint temperatures, and air pressures recorded at a location in New York State.




1. The relative humidity on Wednesday at noon was approximately,
   (1) 20%
   (2) 40%
   (3) 60%
   (4) 90%

2. The weather on Tuesday was most likely
   1 clear and cool
   2 rainy and cold
   3 cloudy and warm
   4 cool and breezy

3. Which partial weather station model best represents the conditions for Sunday at noon?




Note that question 4 has only three choices.

4. According to the graphs, as the dewpoint temperature increases, the air pressure
   1 decreases
   2 increases
   3 remains the same

5. For this location, which graph best represents the probable relationship during this 7-day period between the water vapor content of t atmosphere and time?