Name_____**Period**_____ **[PI , AID, CE]**

Formula for a Cloud

Pre-lab Questions:

1. Which will probably have more humidity (water vapor) in the air above it ? Circle one.

. . . . . A) a part of the ocean having colder surface waters

. . . . . B) a part of the ocean having warmer surface waters

2. Why did you choose the answer in #1?

3. As air is compressed (squeezed), what will happen to its temperature?

Why?

4. As air is allowed to expand, what happens to its temperature?

Why?

Materials: 2 liter (un-tinted) plastic pop bottle with lid, matches, hot water, cold water

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Procedures/Observations:

1. Trial #1: Pour 200 ml of cold water into the plastic bottle, and then firmly screw on the lid. Shake the bottle for 30 seconds. Squeeze the bottle for several seconds to increase the pressure, and then release it to allow the air inside to expand. Squeeze and release several times as you watch the air in the bottle.

Observations:

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2. Trial #2: Unscrew the cap from the bottle. Light a match, blow it out, and then hold the smoking match inside the tilted bottle for about 3 seconds. Quickly replace the cap. Squeeze and release as you did in procedure #1.

Observations:

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3. Trial #3: Empty the cold water from the bottle, and pour 200 ml of hot water into it. Replace the cap, and shake the bottle for 30 seconds. Squeeze, release, and observe.

Observations:

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4. Trial #4: Unscrew the cap, and hold a match into the bottle as you did in procedure #2. Quickly replace the cap, and then squeeze, release, and observe.

Observations:

Analysis Questions:

1. Was cloud formation more visible with or without smoke particles in the bottle?

    Why?

2. What does squeezing your bottle do to the pressure in your bottle?

    And what happens to the pressure when you let go?

3. What do you have to do to water vapor to get it to change from a gas into a liquid?

4. Why would starting with warm or cold water in your bottle make a difference?

5. What happens to your cloud when you squeeze the bottle?

    Why would this happen? (hint: look at #5 and Pre-lab #3)

6. What happens to your cloud when you release your bottle?

    Why would this happen? (hint: look at #5 and Pre-lab #4)

7. Based on your findings, write out 3 ingredients or conditions that must happen for a cloud to form:

8. <u>In full sentences</u>, Explain how clouds form: