

Question

Name: _____

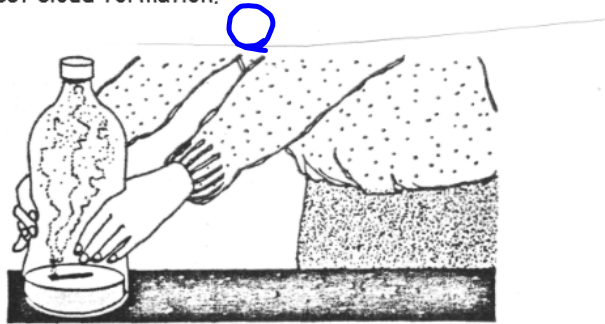
Date _____

Cloud Formation Lab

Problem: How do temperature and pressure effect cloud formation?

Materials:



- 2-L soft drink bottle with cap
- graduated cylinder
- cold water
- hot water
- matches
- black paper
- funnel



Procedure:

1. Record your data in the data table below.
2. Measure and pour 60 mL of cold water into the plastic bottle.
3. Replace the cap. Shake the bottle quickly back and forth for about 10s. Place the bottle on a flat surface.
4. Remove the cap. Light a match and drop it into the mouth of the bottle. *CAUTION: Handle matches carefully. Close the matchbook cover before striking.*
5. Replace the cap. Place the bottle in front of black paper so you can see what is happening in the bottle.
6. Squeeze the bottle with two hands to increase pressure. Then, release the pressure. Squeeze the bottle again and release.
7. Record your observations.
8. Empty the plastic bottle. Measure and pour 60 mL of hot water into the plastic bottle.
9. Hypothesize how a "cloud" formed by hot water will differ from the "cloud" formed by cold water. Write your hypothesis on the next page.
10. Repeat steps 3-7 and record your observations.

Data Table: Observations of Cloud Formations

Water Temperature	Observations when match dropped in	Observations when pressure increased	Observations when pressure decreased
Cold 			
Warm 			

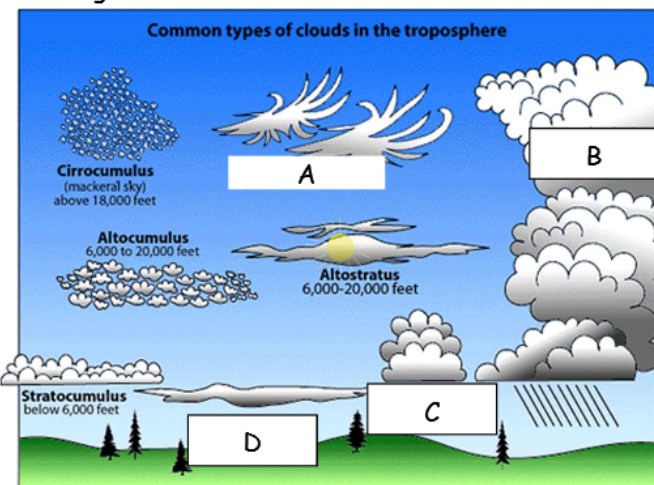
What you think will happen

Hypothesis : If one cloud is made with warm water and another is made with cool water, then

Questions and Conclusions:

1. What did you observe when the plastic bottle was squeezed?
2. What was the purpose of dropping the match into the bottle?
3. How did the "clouds" formed by cold water and hot water compare? Explain.
4. How does your hypothesis compare with the results of the activity? Explain your answer.
5. What does this activity tell you about how clouds form?

Labeling:



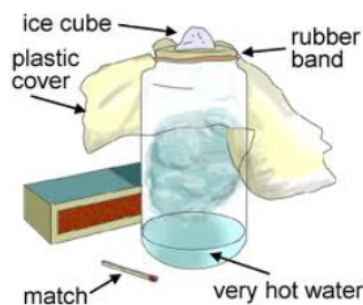
- ___ 6. Cumulus
- ___ 7. Stratus
- ___ 8. Cumulonimbus
- ___ 9. Cirrus

Matching

- | | |
|---|---|
| <p>____ 10. Stratus</p> <p>____ 11. Cumulus</p> <p>____ 12. Cumulonimbus</p> <p>____ 13. Cirrus</p> | <p>a. type of cloud that is most dangerous because it can produce damaging storms</p> <p>b. type of cloud that appears anywhere from a few thousand feet to over 50,000 feet above the ground; it appears fluffy and cotton-like</p> <p>c. type of cloud that is high in the atmosphere and is wispy; does not produce rain</p> <p>d. type of cloud that would most likely block out the sun because it appears as a sheet covering the sky</p> |
|---|---|

Scientific Method Questions

Students did an experiment to find out how hot the water had to be in a bottle in order to make a cloud. The setup is shown below. Answer the following questions based on this experiment.



14. ____ What is the independent variable?
- a. Amount of ice on top of jar
 - b. Temperature of hot water
 - c. Size of jar
 - d. Thickness of plastic cover
15. ____ What is the dependent variable?
- a. Amount of cloud in jar
 - b. Time the match is lit
 - c. Type of water used
 - d. Humidity of room
16. ____ Which hypothesis is most appropriate for this experiment?
- a. If colder water is used, then a larger cloud will be produced in the jar.
 - b. If hotter water is used, then a thinner cloud will be produced in the jar.
 - c. If hotter water is used, then the cloud will last longer in the jar.
 - d. If hotter water is used, then a larger cloud will be produced in the jar.