

Sec: _____ Name: _____

Experiment: States of Matter
(E. Science 9-2-3e)

Purpose: To observe the characteristics of a solid, to change gas to a liquid. To compare the characteristics of a solid, liquid, & gas.

Materials: 1 L beaker
ice cubes (frozen from 200 mL of water)
water ice cube tray
glass (cold or add an ice cube)

Methods:

1. Mark the level of the top of the ice cubes while they are still in the tray. Remove the ice cubes and place them into the beaker. Record the characteristics of the ice in the results section.
2. Let the ice cubes melt. Record the volume and the characteristics of the resulting water in results.
3. Pour the water back into the tray. Mark the level of the top of the water on the tray. Under "Other Characteristics" in results, record whether this level is higher or lower than that of the ice.
4. Place the cold glass in a warm area. After a few minutes record your observation of the glass in results section.
5. Place an ice cube in the beaker of water. Observe whether or not it floats. Record your observations in results.

Results:

<u>Material</u>	<u>State of matter</u>	<u>Takes</u>	<u>Container</u>	<u>Shape</u>	<u>Other Characteristics</u>
Ice cubes	_____		yes	no	floats: yes no
Water	_____		yes	no	higher/lower in tray
volume	ml				than ice level
<u>Cold glass observations:</u>					

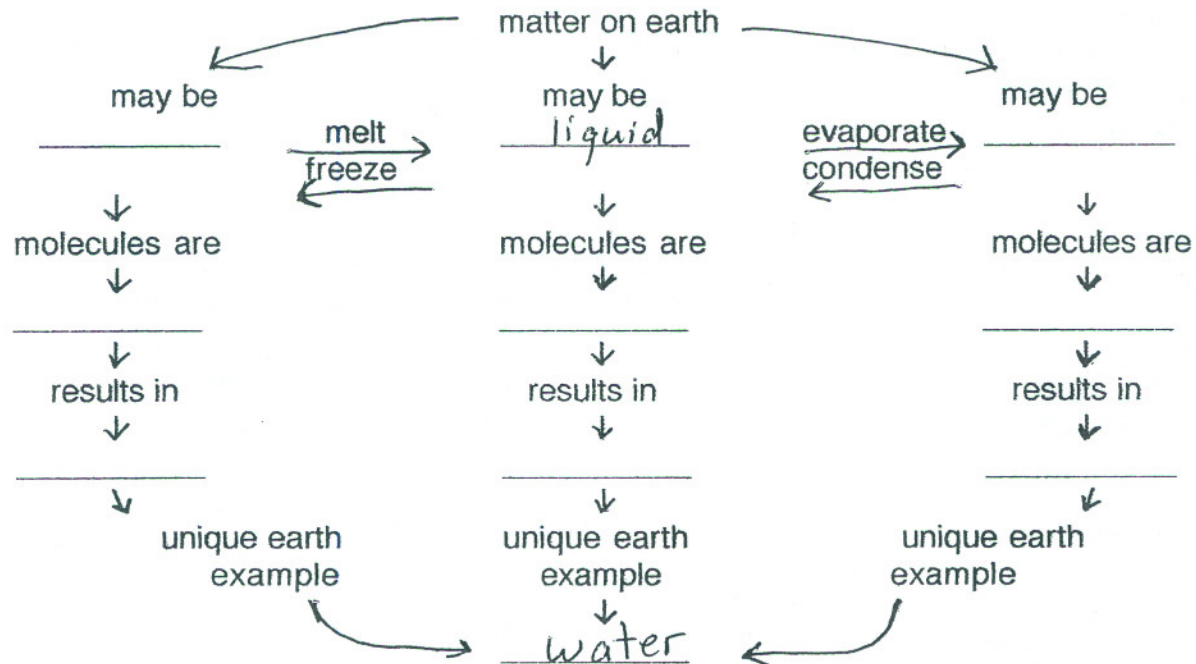
Conclusions:

1. what is solid water called? Liquid water?
Water as a gas?
2. Did the ice cube sink or float in water? Explain why.
3. Which occupies more volume, an equal mass of water or of ice? Explain.
4. Where did the water on the glass come from? Explain how it occurred.
5. What are the characteristics of water as a gas?

Discussion:

1. What change caused the water vapor to change to a liquid?
2. If you changed the water to water vapor in a pressure cooker, what volume would the water vapor occupy in relation to the size of the pressure cooker?
3. Compare the characteristics of water as a solid, a liquid, and a gas.
 solid: _____ liquid: _____
 gas: _____
4. If you were to place liquid mercury into a container what portion of the container will the liquid occupy? (bottom, all of container, top portion)
5. If you were to place mercury gas into a container what portion of the container will the gas occupy? (bottom, all of container, top portion)
6. Use the words or statements below to complete the concept map below.

- fixed in position
- ~~- liquid~~
- definite size & shape
- gas
- ~~- solid~~
- ~~- water~~
- completely fills its container
- freely moving & independent
- takes the shape of its container
- close together & moving freely



- 7a. In Psalm 97: 1-12 David describes the power of God. In God's presence what will happen to the mountains?
- 7b. In God's presence what will happen to those who reject God and worship idols?
- 7c. In God's presence what will those who love Jesus do?