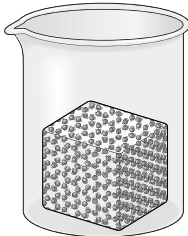


Name: _____ Date: _____

The Particle Model of Matter

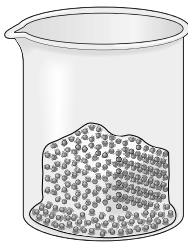
Use the following words to fill in the blanks in the chart.

**absorbs condensation empty evaporation fills fixed freely freezing gas
larger liquid melting shape slowly small solid reverse vibrate**



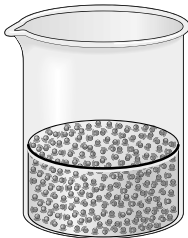
The particles in a solid are held together strongly. The spaces between the particles are very small.

A Solid has a fixed shape and a fixed volume because the particles can move only a little. The particles vibrate back and forth but remain in their fixed positions.



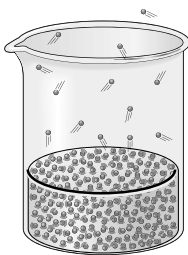
As a solid is heated, the particles vibrate faster and faster until they have enough energy to break away from their fixed positions. When this happens, the particles can move about more freely. The change from a solid to a liquid is called melting.

The reverse of melting is called freezing or solidification. This is the change from a liquid to a solid. As a liquid cools, the particles in the liquid lose energy and move more and more slowly. When they settle into fixed positions, the liquid has frozen or solidified.



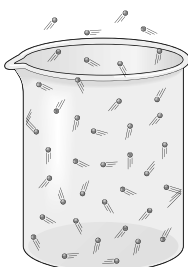
The particles in a liquid are separated by spaces that are large enough to allow the particles to slide past each other.

A liquid takes the shape of its container because the particles can move around more freely than they can in a solid. They are held close together, however. Therefore, a liquid has a fixed volume, like a solid.



When a liquid absorbs heat energy, the particles move about more and more quickly. Some of the particles gain enough energy to break free of the other particles. When this happens, the liquid changes to a gas. The change from a liquid to a gas is called evaporation.

The opposite process—the change from a gas to a liquid—is called condensation. As a gas cools, the particles in the gas lose energy and move more and more slowly until the gas condenses to a liquid.



The particles in a gas are separated by much larger spaces than the particles in a liquid or a solid. Therefore, a gas is mostly empty space.

A gas always fills whatever container it is in. Since the particles are moving constantly in all directions, they spread throughout their container, no matter what volume or shape their container is.

Use with textbook pages 246–253.

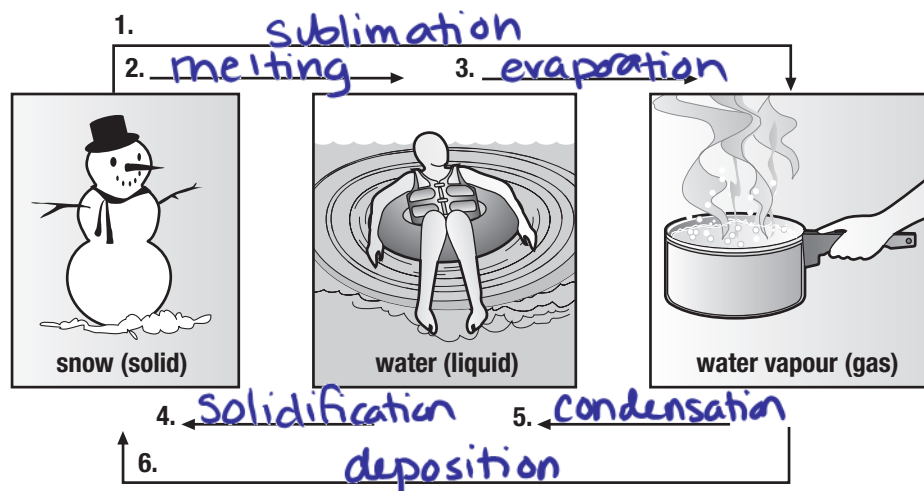
What's the matter?

Vocabulary

condensation
deposition
evaporation

melting
solidification
sublimation

Use the terms in the vocabulary box to label the diagram. Place the terms on the numbered arrows.



Complete the following table by describing the change of state. The table has been partially completed to help you.

	Change of state	Heat added or released
condensation	gas to liquid	released
deposition	gas to solid	released
evaporation	liquid to gas	added
melting	solid to liquid	added
solidification	liquid to solid	released
sublimation	solid to gas	added