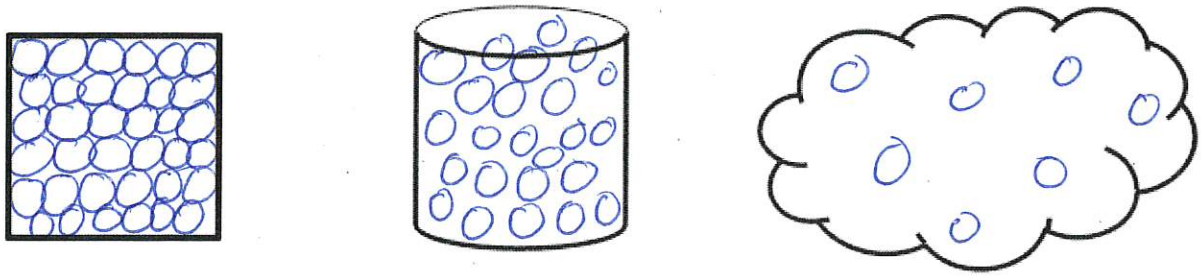
Substance - something made of matter
particle - molecule / atom

States of Matter – study guide

Spacing and motion of particles

A. *In the objects below, draw a model of the spacing of molecules for each phase. Use small circles (o) to represent each molecule.*

ice (solid) water (liquid) water vapor (gas)



Fill in the blanks with solids, liquids, or gasses

1. solids *have particles that are the closest together.*
2. gasses *change their volume according to the container.*
3. liquids and gasses *have particles that move around each other.*
4. liquids *have enough energy for the particles to move around, but do not change volume.*
5. gasses *can be compressed or expanded easily.*
6. gasses *have much less density than the other two.*
7. *List the three phases from the least amount of energy and motion to the most*

solid (least) liquid gas (most)

Particle motion and energy

What happens to the molecules when water is heated?

Molecules start moving around faster and space out a little more.

What happens to the molecules when water is cooled?

Molecules slow down and get a little closer together.

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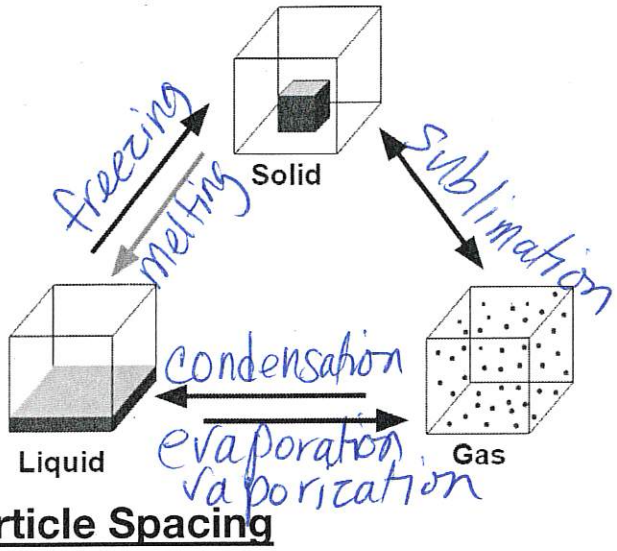
Changes of States

Label each arrow



Particle Spacing

Compare the spacing of molecules in a liquid and a solid.

In a liquid, molecules are farther apart than in a solid. They are also more organized in a solid

Compare the spacing of molecules in a liquid and a gas.

In a gas, molecules are a lot farther apart than in liquids. They move around until they hit the edge of the container or another gas molecule.

Applying the Concepts – Use your knowledge of states of matter to answer these questions. Use extra paper to answer

1. It is a clear winter night. Not a cloud in the sky and **no chance of rain** for a couple of days. You go outside and notice that the grass is wet. It **hasn't rained** for a few days and there are **no sprinklers**. Why is the grass wet with dew?

2. When a hair dryer is used to dry hair, the hair dryer blows both heated air and quickly moving air onto the wet hair. Use your knowledge of states/phases of matter to describe why this combination of heat and blowing air are more effective at drying hair that just blowing air. In addition to writing, use a diagram to help you explain how the motion and spacing of particles is related to this problem.