PHASE CHANGE – STATES OF MATTER NOTES

Name _____ per___ date____ mail box_____

Write the term from the word bank with the best suited match:

1063° Celsius	Freezing	Condensation	**0° Celsius**	Evaporation
Vaporization	**-556° Celsius**	Melting	**-100° Celsius**	Temperature

1. _____ A measure of the average kinetic energy of the particles making up a sample of matter.

2. _____ As a solid is heated the kinetic energy of its particles increases. The particles vibrate faster and faster until the forces of attraction can no longer hold on between adjacent molecules. Forces of attraction are weakened and molecules start to move more freely around and between one another.

3. _____ As the temperature of a liquid decreases the kinetic energy of its particles decreases. The slower moving particles rebound and collide off each over with less and less frequency as forces of attraction start to gain traction. If kinetic energy continues to lessen eventually particles, become fixed in their relative positions.

4. Gold **freezes** at this temperature _____

5. _____ Particles in a liquid move at different speeds and in many different directions. If significant kinetic energy is applied rapidly, the forces of attraction that hold a liquid in its state can be overwhelmed throughout the liquid. Sometimes particles at the surface of a liquid may gain just enough kinetic energy to escape the surface, however this phase change is far more volatile, as molecules change state within the bodily of the liquid and shoot to the surface immediately taking on new physical properties, like lower density.

6. _____ Molecules in a liquid have other forces to contend with as well. Atmospheric pressure and gravity often pin them in place and resist this phase change from occurring. Despite these forces, some particles at the surface may gain just enough kinetic energy to overcome the forces of attraction that keep them together in the liquid state.

7. Water **freezes** at this temperature _____

8. _____ This typically occurs when gaseous matter encounters lower temperatures than its present temperature. These particles of matter then go from a state of higher kinetic energy to a state of lower kinetic energy. With this forces of attraction return and the vast distances between particles are reduces. Meanwhile collisions between molecules become more frequent. If these particles encounter any surface, they rapidly adhere to it and complete a phase change.

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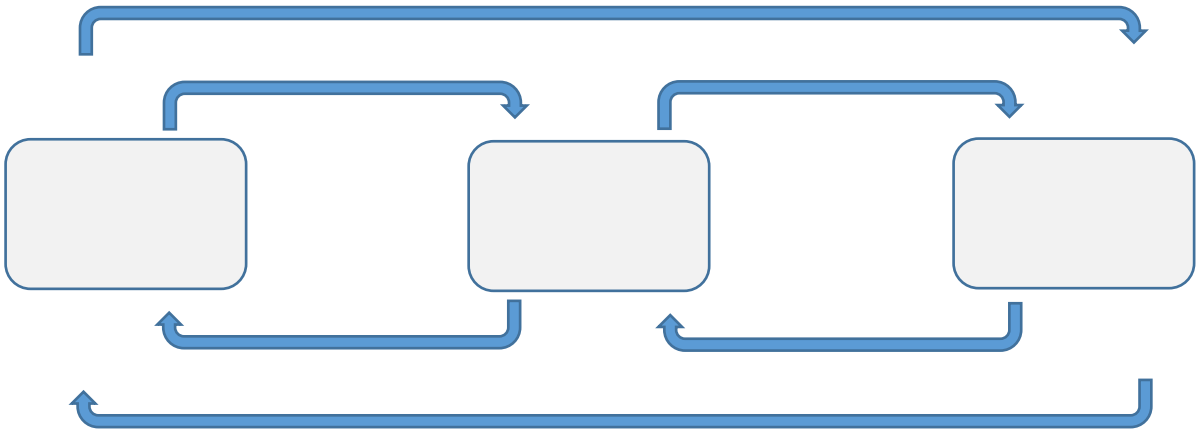
DIRECTIONS:

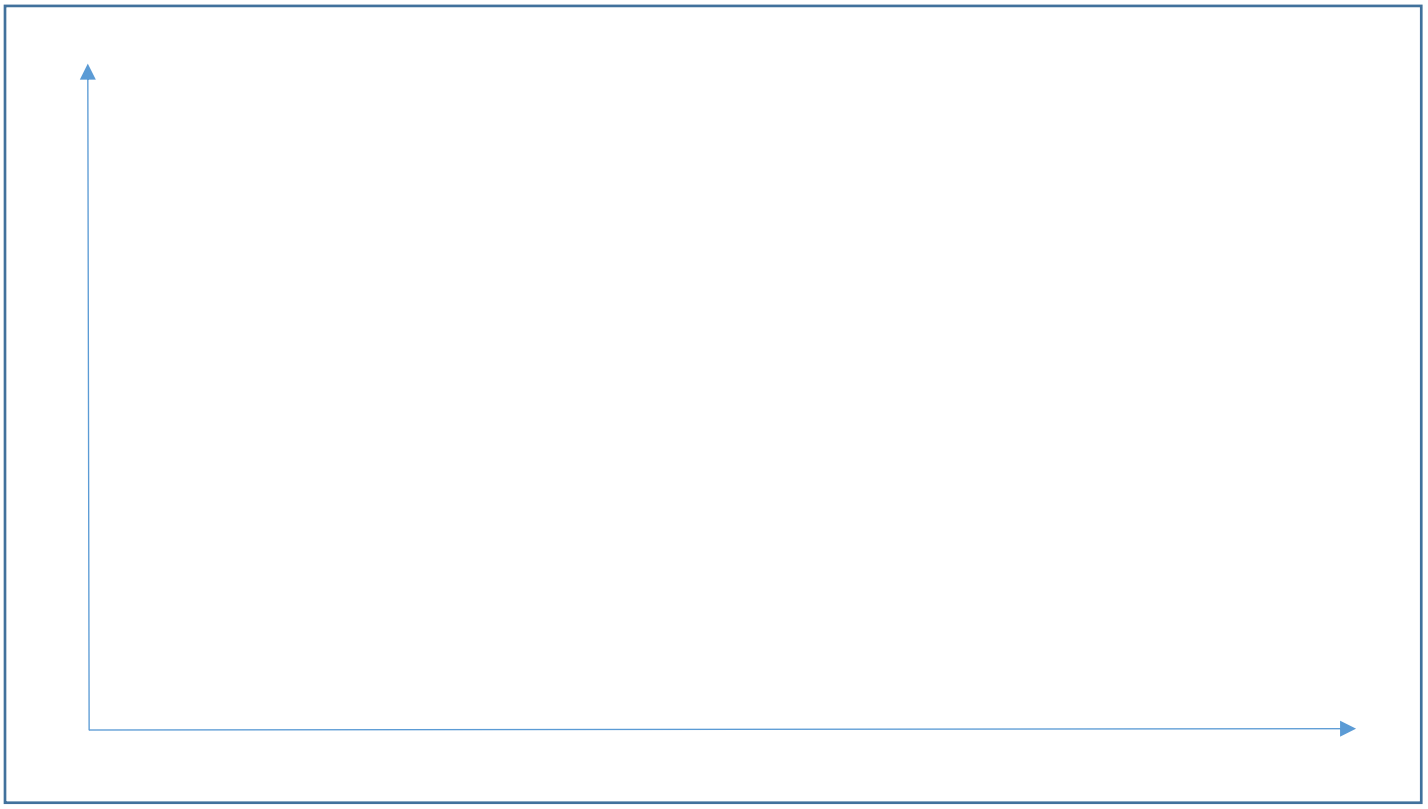


DIRECTIONS:

Fill in the 3 States/Phases of Matter in the Blocks above.

Then label the arrows with the appropriate phase change terminology.

GRAPHING PHASE CHANGES OF MATTER



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GRAPH OF PHASE CHANGE CHALLENGE CONCEPT – use complete sentences

1. What do you notice that seems strange about the graph we made above?

_____
_____

2. Is this an actual graph or a theoretical one based on scientific knowledge of phase change in matter. Which is it?

_____
_____

3. Look at the graph. What is happening to the temperature of a substance during a phase change?

_____
_____

4. Why is that all matter maintains its temperature during the actual phase change, but is free to change temperature while in a particular state. Describe what is happening to the energy and where it is going.

_____
_____

Sublimation:

Ex:

https://youtu.be/6JzQ08AGuhI **<= dry ice video**

Deposition:

Ex:

https://youtu.be/rM04U5BO3Ug **<= nitrogen gas to nitrogen solid**