Name _____

Block _____

States of Matter

Learning Goal:

Students will be able to demonstrate their knowledge of the states of matter through illustrations and descriptions. These illustrations and descriptions should include:

- How the molecules in a solid, liquid and gas compare to each other.
- How temperature relates to the kinetic energy of molecules.

Procedure:

- Open the internet browser and enter the address: http://phet.colorado.edu
- Click on "Play with Sims" and select "Chemistry" from the menu on the left.
- Open the "States of Matter" Simulation and select "Run Now"

Investigation:

1. Predict what the molecules of a solid, liquid and gas look like. Illustrate your prediction with a drawing.

   Solid Liquid Gas

2. Complete the table below by exploring the "Solid, Liquid, Gas" tab in the simulation. **Test** your predictions and record your observations by recording the temperature and illustrations of each substance in the three states of matter.

Substances	**Observations**		
	Solid	**Liquid**	**Gas**
Neon	Temperature: Illustration:	Temperature: Illustration:	Temperature: Illustration:
Argon	Temperature: Illustration:	Temperature: Illustration:	Temperature: Illustration:

Oxygen	Temperature: Illustration:	Temperature: Illustration:	Temperature: Illustration:
Water	Temperature: Illustration:	Temperature: Illustration:	Temperature: Illustration:

3. Sketch a graph of Kinetic Energy vs. Temperature. Use this graph to describe the relationship between the two concepts.

4. Write a summary paragraph, which includes drawings, to demonstrate you have mastered the learning goal. Be sure to incorporate both concepts of the learning goal:
    - How the molecules in a solid, liquid and gas compare to each other.
    - How temperature relates to the kinetic energy of molecules.

Extension: In your small groups, answer questions 5-6.

5. Explain how a change in temperature affects the pressure inside a container.

6. Explain this phase diagram by relating what you know about temperature, states of matter and pressure.