**Activity on States of Matter**

**This assignment supports the following Course Goals, Course Learning Outcomes, and Unit Objectives**:

* Define and distinguish between heat and temperature. (CLO2)(CLO3)
* Express temperature using Fahrenheit, Celsius, and Kelvin scales. (CLO2)(CLO5)
* Discuss heat transfer applications and relate them to phase changes of matter. (CLO2)(CLO3)

**Simulation Procedure:**

Open the [“States of Matter” Simulation](https://phet.colorado.edu/en/simulation/states-of-matter)at https://phet.colorado.edu/en/simulation/states-of-matter and click on the Big Red “5”

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

* Solid Drawing
* Liquid Drawing
* Gas Drawing

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: |

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

**Explain the following:**

How the molecules in a solid, liquid and gas compare to each other.

How temperature relates to the kinetic energy of molecules. Include drawings, to help with your explanation.

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

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

