Name:_____ Date:_____ Hour:_____ Assignment #_____

Gas Properties Graphing Activity

Go to the following website: **http://phet.colorado.edu/en/simulation/gas-properties**

Part I. Pressure and Number of gas particles

QUESTION: What will happen to the pressure of a gas within a closed container as the number of gas particles increases?

→PREDICTION (hypothesis): _____

_____

Procedure:

1. Using your mouse, pull all the way up on the pump handle and pull down only ONCE to allow particles into the container.
2. Allow the particles to circulate and observe pressure. When pressure appears to "level off", record the number of gas particles and pressure in the table below. **The number of gas particles appears on the right side of the screen where it says "heavy species".**
3. Pull up and down on the pump another time. This will represent 2 pumps of the handle. Allow the particles to circulate and observe pressure. When pressure appears to "level off", record the number of gas particles and pressure in the table below.
4. Repeat the steps above until 8 pumps have been completed and record all data in the table below.
5. After completing the table, create a graph show the relationship between the number of gas particles and the pressure. Place # of gas particles on the x-axis. Label this **Pressure and # of Gas Particles.**

# of pumps	# of gas particles	Pressure
1		
2		
3		
4		
5		
6		
7		
8		

→CONCLUSION: _____

_____

Part II. Temperature and Pressure

QUESTION: How does increasing the temperature of a gas affect its pressure?

→PREDICTION:_____

_____

Procedure:

1. Hit the reset button to begin.
2. Pump the handle TWICE to allow gas into the container and observe the pressure.
3. When pressure "levels off", record the temperature and pressure in the table on opposite page.
4. **WITHOUT ADDING MORE GAS PARTICLES**, add heat to raise the temperature within the container to **500 K**. Observe pressure. When pressure "levels off", record temperature and pressure in the table.
5. Repeat step 3 with the following temperatures: 700 K, 900 K, and 1100 K. Record in table.
6. After completing the table, create a graph show the relationship between the temperature of a gas and pressure. Place temperature on the x-axis. Label this graph **Pressure and Temperature of a Gas.**

Temperature	Pressure
500 K	
700 K	
900 K	
1100 K	

→CONCLUSION:_____

_____

Part III: Observations of Pressure and Volume

1. Hit the reset button to begin.
2. Pump the handle once to fill with gas particles. Observe pressure.
4. When pressure "levels off", click on the person and drag him closer to make the volume of the container smaller. Observe what happens to pressure.
5. Move the person back and forth a few times, decreasing and increasing volume, and observe what happens to pressure.

→CONCLUSION:_____

_____

→Which gas law does this simulation between **pressure** and **volume** describe?_____

→What is the formula for this gas law? _____

→n your graph paper, make a sketch of a graph showing the relationship between pressure and volume. Place pressure on the y-axis and volume on the x-axis! Label this sketch **Pressure and Volume.**