Gas Laws Simulation Lab
Document all Data and graphs in your STEM Journal

- Go to Phet.colorado.edu
- Search for the "Gases Intro" simulation.
- Click on the "Laws" icon.

Experiment One: Constant volume.

- Select red dots. Select the green plus size and select 100 particles
- Mark Volume as being held as constant. Record the pressure for the following temperatures 0K, 100K, 200K, 450K, 700K, 800k, 900K
- Create a data table to record your data in your STEM Journal –

Temperature vs. pressure at constant volume	
Temperature (K)	Pressure (atm)

1. In your STEM write a statement under your data table describing how the temperature of a quantity of a gas is related to its pressure at constant volume.
2. In your STEM Journal Draw a graph illustrating this relationship, with temperature on the x-axis and pressure on the y-axis. Label the axes and give the graph a title. You do not have to scale the axes.

Experiment two: Constant temperature.

- Reset the simulation.
- Heat the oxygen to 450 K.
- Make a check next to "Width."
- Set the temperature to constant.
- Record the pressure at the following volumes 15 nm, 13nm 12.5nm, 10nm, 8nm, 7.5nm, 5nm

Volume vs. pressure at constant temperature	
Volume (nm)	Pressure (atm)

3. In your STEM Journals write a statement under your table describing how the volume of a quantity of a gas is related to its pressure at constant temperature.
4. In your STEM Journals Draw a graph illustrating this relationship, with volume on the x-axis and pressure on the y-axis. Label the axes and give the graph a title. You do not have to scale the axes.

Experiment three: Constant pressure.

- Reset the simulation.
- Pump about 30 atm of gas into the container
- Check the "Width" Box
- Select the Pressure ↕V
- Now heat the container slightly Record the temperature and volume, report 6 more times

Temperature vs. volume at constant pressure	
Temperature (K)	Volume (nm)

5. Write a statement under your graph describing how the temperature of a quantity of a gas is related to its volume at constant pressure.
6. Draw a graph illustrating this relationship, with temperature on the x-axis and volume on the y-axis. Label the axes and give the graph a title. You do not have to scale the axes.