**PHYS 102 LAB    Gas Laws**       Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Purpose: Study the following gas laws by visiting this [Java site.](http://www2.biglobe.ne.jp/~norimari/science/JavaApp/Mole/e-gas.html)  In this site you can measure the temperature (T), volume (V), pressure (P), and the number of moles (N) of a gas confined in a cylinder.

A. Boyle's law: Pressure vs. Volume

Keep T=150 and N=30.   
Set the pressure to 10, wait for equilibrium, record the volume three times, and find the average volume. Repeat the volume measurements for other pressures shown below and complete the data table. Plot Pressure VS. Average volume, and describe the behavior in your conclusion.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pressure | Volume-1 | Volume-2 | Volume-3 | Average Volume |
| 10 |  |  |  |  |
| 20 |  |  |  |  |
| 30 |  |  |  |  |
| 40 |  |  |  |  |
| 49 |  |  |  |  |

B. Charles's Law: Volume vs. Temperature

Keep N=30 and P=30.  
Set the temperature 50, wait for equilibrium, record the volume three times, and find the average volume. Repeat the volume measurements for other temperatures shown below and complete the data table. Plot Average Volume VS. Temperature, and describe the behavior in your conclusion.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Temperature | Volume-1 | Volume-2 | Volume-3 | Average Volume |
| 50 |  |  |  |  |
| 100 |  |  |  |  |
| 150 |  |  |  |  |
| 200 |  |  |  |  |
| 250 |  |  |  |  |

C. Attach your data tables, plots, and write a conclusion.