

## Gas Laws Worksheet

1. Select the volume, number of moles of inert gas, pressure, and temperature of the system you would like to study (only three may be selected independently - the fourth is determined by the other three). The default values are volume = 24.5 L, moles = 1.00 moles, pressure = 1.0 atm, and temperature = 298.6 K.
2. Decide on two variables to study (the other two variables are to be held constant).
3. Now change one of the two variables you decided to study (you may wish to vary it in a systematic fashion). Record changes in the other parameter. At this point it may be wise to begin filling in the table below.
4. Repeat step 3 four more times (try to cover a wide range of the variable that you are altering). If your system blows apart, or fails in another way, just follow the directions on the screen!
5. Now repeat steps 1 through 4 for one more set of initial conditions (volume, moles, temperature and pressure). Record all your data in the tables below and complete the rest of the worksheet.

Hints for filling out the table:

P = the pressure of the system in atmospheres (atm)

V = the volume of the system in liters (L)

n = the quantity of gas in moles (n)

T = the temperature in Kelvin (K)

Values of variables (the first row should list the initial conditions chosen)				
P (in atm)	V (in L)	n (in moles)	T (in K)	PV/nT

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### Follow-up questions:

1. What is the numerical value found when PV/nT is calculated for each trial? What is the significance of this value?
2. What two variables did you hold constant? What two variables did you monitor? How were they related, directly or inversely? (direct means when one is increased the other also increases, inverse means when one is increased the other decreases)
3. If the relationship you observed was a direct one, graph one of the two variables you monitored vs. the other one. On the other hand, if the relationship you observed was an inverse one, graph one of the two variables vs. the inverse of the other.
4. Try to see how the slope of your graph relates to the two variables you held constant (you might want to look to question number 1 for a hint).