

Behavior of gases essay sample



**ASSIGN
BUSTER**

The purpose of this experiment is to conduct different experiments that will illustrate the different gas laws. We will be given a list of equipment need to perform the experiment as well as general rules to help us do the experiment. We will investigate three properties of gases pressure, temperature, and volume. By doing this experiment we will be able to define the gas laws. According to Boyles, it states that a fixed amount of ideal gas that is kept at a fixed temperature, that the pressure and volume are inversely proportional, if the temperature stays unchanged. According to Charless Law, if the pressure of a gas is held constant, as the gas is heated, its volume will increase and that cooling the gas will cause the volume to decrease. Charles law describes that of the Gay- Lussacs law, who had actually referenced unpublished work of Charles. The law states that at a constant pressure, the volume of the given mass of the ideal gas will increase/ decrease, the same ways as the temperature will increase/ decrease. An easier way to interpret this is that at a constant pressure, volume and temperature are directly proportional. Materials Lab quest Vernier gas pressure sensor Temperature probe 20 mL gas syringe 125 mL Erlenmeyer flask 3 600mL beakers hot plate Dry ice rubber stopper with 2-way valve Procedure and observations (Part 1) The first thing we did in this experiment was measure pressure and volume.

To do this we used the lab quest and syringe. You attach the syringe to the valve of the gas pressure sensor. We pick a volume and when reading the volume on the syringe make sure you read from the inside black ring on the piston of the syringe. Make sure to connect the gas pressure sensor to the Lab Quest and choose new from the file menu. Then you will set up the data

collection, first change the collection mode to events with entry, then enter volume and units (mL) and select ok. When collecting the data allow for the pressure to fluctuate and when it is stabilized, select keep and store the data points. We will be collecting five data points. When you are pushing the syringe you are decreasing the volume, and when you pull you are increasing the volume. When you have finished collecting the data make sure you save it that way you can view a graph of pressure vs. volume. (Part 2) in this experiment we will be looking at the relationship between temperature and pressure. We will be taking the Erlenmeyer flask with the water and take the temperature of it. We will be putting the Erlenmeyer flask on a hot plate and just raise or lower the temp to see how much pressure will exert from the different temperature changes. You will connect the temperature probe to channel 2 of the lab quest, choose new from the file menu. Change the graph settings so that it shows pressure vs. temperature, and change units to K (Kelvin temperature).

When you start collecting the data, you will choose keep to collect the pressure and temperature data. You will collect the pressure at different temperatures, when you have completed collecting five data points, make sure to save your data. (Part 3) We then measured pressure and temperature with different percentages of anti freeze and ethanol. As you can see from the calculations that none of them when multiplied together equal each other. In this table I'm not sure whether we didn't measure it right or what exactly happened, but in notice as the volume decreased that the pressure increased and I'm confused on whether that was supposed to be reversed. I feel this graph was also a little off as you can see the best fit line

only goes through two of the data points, I don't know again if maybe we measured wrong but the pressure and temperature seemed pretty constant to me. Here is the table below to show the ethanol, anti freeze, pressure and volume

. I really didn't understand if the $y = 262x(-265.18)$ was supposed to be used or we were supposed to use our own with our graphs. But I found my points confusing because in my volume vs. pressure graph, as the volume got bigger the pressure decreased. I don't know if this had to do with the issues we had with the lab quest because for my group it did take quite awhile to get points for the volume vs. pressure graph. Although my temperature vs. pressure graph seemed accurate because as the temperature increased the pressure increased. I didn't find the absolute zero simply because I was confused on whether to use the equation we were given or find