Phone: 417.347.7431 Fax: 417.374.7442 service@gosciencecrazy.com 1747 North Deffer Drive Nixa, Missouri 65714

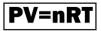


Charles's Law Apparatus, Deluxe #CHRLW01



Introduction

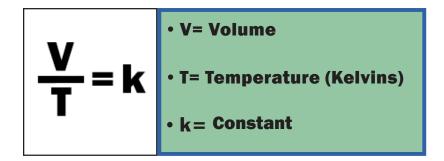
The behaviors of gases in most conditions can be approximated using the **Ideal Gas Law:**



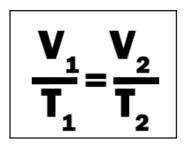
This law of gas behavior is the combination of three separate discoveries – Boyle's Law, Avogadro's Law, and **Charles's Law**.

Of the variables covered by the Ideal Gas Law – pressure, volume, molecular quantity, and temperature – Charles's Law describes the relationship between the volume and the temperature of a gas at a given amount and pressure.

Charles's Law is written as follows:



To compare the same quantity of the same gas under two different sets of conditions, the formula can also be written as follows:





 $\begin{bmatrix} 1 \end{bmatrix}$

How to Use

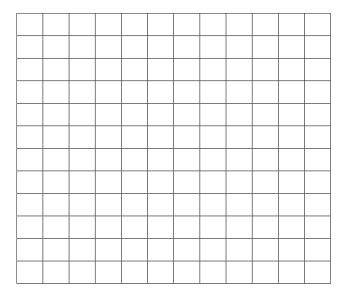
- 1. Assemble the apparatus as shown to the right. Place it on a level surface.
- 2. Fill the open ended glass tube with water. Set the slider holding the open-ended glass tube to a point where water will not cross the bend in the capillary tube and pass into the glass bulb.
- 3. Fill the provided can with water, and insert a thermometer. Place the can over a bunsen burner (not included) and beneath the glass bulb. **(Note:** Do not let the bulb touch the boiling water. Heat only with steam.**)**
- 4. As the steam heats up the bulb, take note of the temperature and the water-level in the open-ended glass tube.
- 5. Take at least 12 readings at different temperatures and record them in the table.
- 6. Draw a graph with your data with temperature on your x-axis and volume on your y-axis. What do you observe?



Observation Table

Temperature	Volume of Gas
(Kelvins)	(Level of Water)





Temperature (Kelvins)

Graph

Care and Precauition

- 1. Do not immerse the bulb in boiling water.
- 2. Use caution when handling hot water and hot glassware.
- 3. Be careful that water doesn't rush into the bulb when you remove heat from the bulb.