

# CHEMISTRY DAILY PLAN

**Class:**

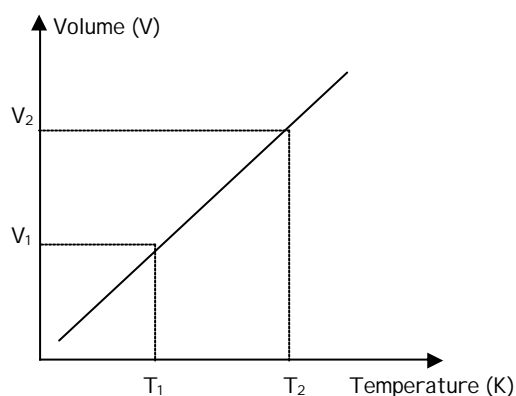
**Date:**

**Subject:** Gas Laws 2

**Time:**

## Charles Law (Temperature-Volume Relationship)

The volume of given amount of gas is directly proportional to absolute temperature at constant pressure.



$$V \propto T \Rightarrow V_1/T_1 = V_2/T_2 \text{ or } V_1/V_2 = T_1/T_2$$

$$K = ^\circ C + 273$$

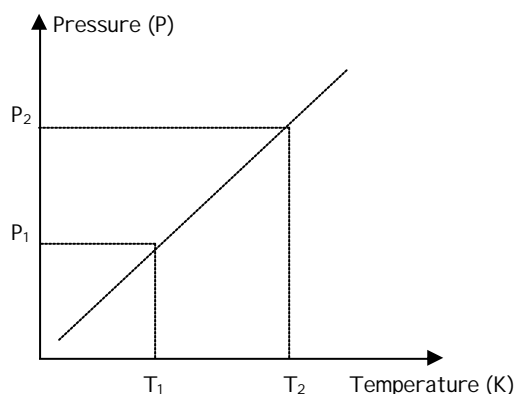
**Example:** A gas has a volume of 75 mL at 27 °C. If the temperature is changed to 127 °C what is the new volume?  
(100mL)

**Example:** A sample of CO<sub>2</sub> has a volume of 120 mL at 273 °C. What is the new volume of CO<sub>2</sub> at standard temperature?  
(60 mL)

**Example:** A sample of He occupies 5 L at 127 °C. Calculate the temperature in °C at which the gas will occupy 0.5 L at constant pressure.

## Gay-Lussac's Law (Pressure-Temperature Relationship)

The pressure of a given sample of a gas is directly proportional to absolute temperature at constant volume.



$$P \propto T \Rightarrow P_1/T_1 = P_2/T_2 \text{ or } P_1/P_2 = T_1/T_2$$

**Example:** In a closed container there is O<sub>2</sub> gas under 1 atm pressure. If the temperature of the gas is increased from 0 °C to 273 °C, what will be its pressure? (2 atm)

**Example:** There is a sample of a gas at 27 °C and 4 atm pressure. To decrease its pressure to 2 atm, the temperature must be reduced to what centigrade degree? (-123 °C)