GAY-LUSSAC'S LAW WORKSHEET

$$\frac{P_1}{T_1} = \frac{P_2}{T_2} = k \text{ if } V, n \text{ are constant}$$

1. Determine the pressure change when a constant volume of gas at 1.00 atm is heated from 20.0 °C to 30.0 °C.

2. A gas has a pressure of 0.370 atm at 50.0 °C. What is the pressure at standard temperature?

3. A gas has a pressure of 699.0 mm Hg at 40.0 °C. What is the temperature at standard pressure?

4. If a gas is cooled from 323.0 K to 273.15 K and the volume is kept constant what final pressure would result if the original pressure was 750.0 mm Hg?

5. If a gas in a closed container is pressurized from 15.0 atmospheres to 16.0 atmospheres and its original temperature was 25.0 °C, what would the final temperature of the gas be?

6. A 30.0 L sample of nitrogen inside a rigid, metal container at 20.0 °C is placed inside an oven whose temperature is 50.0 °C. The pressure inside the container at 20.0 °C was at 3.00 atm. What is the pressure of the nitrogen after its temperature is increased?

7. A sample of gas at 3.00 x 10^3 mm Hg inside a steel tank is cooled from 500.0 °C to 0.00 °C. What is the final pressure of the gas in the steel tank?

8. The temperature of a sample of gas in a steel container at 30.0 kPa is increased from -100.0 °C to 1.00 x 10^3 °C. What is the final pressure inside the tank?

9. Calculate the final pressure inside a scuba tank after it cools from 1.00 x 10^3 °C to 25.0 °C. The initial pressure in the tank is 130.0 atm.