ANSWER KEY **Boyle's, Charles' and Gay-Lussac's Gas Problems**

1. If a gas at occupies 2.60 liters at a pressure of 1.00 atm, what will be its volume at a pressure of 3.50 atm? 0.743 L (Boyle's Law)

2. A gas occupies 900.0 mL at a temperature of 27.0 °C. What is the volume at 132.0 °C? 1215 mL (Charles' Law)

3. What change in volume results if 60.0 mL of gas is cooled from 33.0 °C to 5.00 °C? 54.5 mL (Charles' Law)

4. Determine the pressure change when a constant volume of gas at 1.00 atm is heated from 20.0 °C to 30.0 °C. 1.03 atm (Gay-Lussac's Law)

5. 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 atm? 634.2 atm (Gay-Lussac's Law)

6. Given 300.0 mL of a gas at 17.0 °C. What is its volume at 10.0 °C? 292.8 mL (Charles' Law)

7. 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? 317.9 K (Gay-Lussac's Law)

8. A gas occupies 4.31 liters at a pressure of 0.755 atm. Determine the volume if the pressure is increased to 1.25 atm. 2.60 L (Boyle's Law)

9. 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? 3.31 atm (Gay-Lussac's Law)

10. A 600.0 mL of a gas is at a pressure of 8.00 atm. What is the volume of the gas at 1000 torr? 3648 mL (Boyle's Law)

11. 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 in atm of the gas in the steel tank? 1.39 atm (Gay-Lussac's Law)

12. A sample of gas has a volume of 12.0 L and a pressure of 200 kPa. If the pressure of gas is increased to 50 psi, what is the new volume of the gas? 6.97 L (Boyle's Law)