

Name: _____ Per _____

Boyle's, Charles', and Gay-Lussac's Law

Practice Sheet #29

Give the formula and the name the law used to solve each problem.

Boyle's Law

$$P_1V_1 = P_2V_2$$

Charles' Law

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

Gay-Lussac's Law

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

1. The volume of a gas at 3.50 atm is 300 mL. If the pressure is increased to 5.00 atm, what will be the new volume?
2. The pressure of a sample of helium in a 1.0 L container is 0.98 atm. What is the new pressure if the sample is placed in a 2.0 L container?
3. If a sample of oxygen has a volume of 4.00 L at a pressure of 8.10×10^4 Pa. What will be the pressure if the volume is decreased to 0.500 L?
4. A gas has a volume of 3.0 L at 77 °C. What will be the resulting volume if the temperature is lowered to 10 °C?
5. The volume of a sample of gas at 300 K is 3.00 L. What will be the new temperature of the gas if the volume is raised to 4.50 L?

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6. A gas at 314 K occupies a volume of 0.650 L. At what temperature will the volume increased to 1.12 L?

7. A sample of gas has a pressure of 4.0 atm and a temperature of 52 °C. What will be the new pressure if the temperature is raised to 227°C.

8. A sample of gas has a pressure of 2.00 atm and a temperature of 400 K. What will be the new temperature if the pressure is increased to 4.00 atm?

9. A sample of neon gas has a pressure of 7.50×10^4 Pa at 300 K. What will be the new pressure of 500 K?

10. 100 mL of gas is collected at 27 °C. What is the volume at 42°C?

11. A gas at -2.0 °C has a pressure of 710 mm Hg. What is the temperature when the pressure is 680 mm of Hg?