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Chemistry

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Gas Laws Dalton, Boyle, Charles and Gay-Lussac Review Mix

Solve each of the following problems and write the name of the law used. Use significant figures in solving your answer.

1. Determine the total pressure of a gas mixture that contains hydrogen, nitrogen and helium if the partial pressures of the gasses are: hydrogen: 700 torr, nitrogen: 340 torr, and helium: 250 torr.
2. A sample of butane occupies 3.2 liters at 85 kPa. What is the volume if the pressure is increased to 101 kPa?
3. A sample of oxygen occupies a volume of 450 mL at 25 °C. What volume will it occupy at 35 °C?
4. Air contains oxygen, nitrogen, carbon dioxide, and trace amounts of other gases. What is the partial pressure of oxygen if the total pressure = 82.30 kPa, the pressure of nitrogen = 59.10 kPa, the pressure of carbon dioxide = 9.140 kPa, and the pressure of the trace gases = 0.94 kPa?
5. A gas has a pressure of 45.6 kPa at 540 K. What will the pressure be at 210 K if the volume does not change?
6. A sample of helium occupies a volume of 3.50 liters at 135 kPa pressure. What pressure would the gas exert if the volume were decreased to 1.5 liters?
7. At 10 °C I inflate my tires to a pressure of 45.0 psi. Calculate the pressure if the temperature increases to 25 °C.
8. Calculate the new volume of a gas if the original volume is 700. mL and the pressure is decreased from 1.1 atm to 0.67 atm.

9. What is the original pressure of a gas if the original volume is 2.0 liters and the new volume and pressure are 900. mL & 1.5 atm.
10. The gas in a balloon has a pressure of 190 kPa at 28 °C. What will the temperature be if the pressure rises to 280 kPa?
11. A gas exerts a pressure of 1.1 atm and has a volume of 2.8 liters. Determine the volume of the gas if the pressure is increased to 900 torr.
12. A 5.0 L sample of neon had its pressure changed from 80 kPa to 120 kPa. What is the new volume?
13. A sample of oxygen at 1.1 atm has its pressure decreased to 0.9 atm producing a new volume of 880 mL. What was its original volume?
14. Calculate the pressure of an unknown gas if the total pressure is 18.0 psi and the pressure of the other known gases is 770 mm Hg.
15. A gas has a volume of 18.5 liters at 45 °C. What is the volume of the gas if the temperature is lowered to -10°C?
16. A sample of argon gas occupies 550 mL at 900 torr pressure. What volume will it occupy at 700 torr pressure?
17. Which law(s) shows a direct relationship? Which law(s) show and inverse relationship? Draw a graph of each.