

Gay-Lussac's Law

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. **1.03 atm**
2. A gas has a pressure of 0.370 atm at 50.0 °C. What is the pressure at 25.0 °C?
3. A gas has a pressure of 699.0 mm Hg at 40.0 °C. What is the temperature at 300 mm Hg? **134K**
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? **318 K**
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 3.00×10^3 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? **1059.5 mmHg**
8. The temperature of a sample of gas in a steel container at 30.0 atm is increased from -100.0 °C to 1.00×10^3 °C. What is the final pressure inside the tank?
9. Calculate the final pressure inside a scuba tank after it cools from 1.00×10^3 °C to 25.0 °C. The initial pressure in the tank is 130.0 atm. **30.4 atm**
10. The pressure of a gas in a tank is 3.20 atm at 22 °C. If the temperature rises to 60 °C, what will be the gas pressure in the tank?
11. The pressure in an automobile tire is 1.88 atm at 25.0 °C. What will be the pressure if the temperature warms up to 37.0 °C.? **1.96 atm**
12. Helium gas in a 2.00-L cylinder is under 1.12 atm pressure. At 36.5 °C, that same gas sample has a pressure of 2.56 atm. What was the initial temperature of the gas in the cylinder?
13. State Boyle's, Charles's, and Gay-Lussac's laws using sentences, then equation.
14. What will happen to the pressure of a contained gas if its temperature is lowered?
15. Explain why an unopened bag of potato chips left in a hot car appears to become larger.
16. If two variables have an inverse relationship, what happens to the value of one as the value of the other increases?
17. If two variables have a direct relationship, what happens to the value of one as the value of the other increases?