

Combined Gas Law Questions

Note: atmospheric pressure (atm) is $1 \times 10^5 \text{ Pa}$

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

1. If I initially have a gas at pressure of 12atm, a volume of 23 litres and a temperature of 200K, and then I raise the pressure to 14atm and increase the temperature to 300K, what is the new volume of the gas?
2. A gas takes up a volume of 17 litres, has a pressure of 2.3atm, and a temperature of 299K. If I raise the temperature to 350K and lower the pressure to 1.5atm, what is the new volume of the gas?
3. A gas that has a volume of 28 litres, a temperature of 45°C , and an unknown pressure has its volume increased to 34 litres and its temperature decreased to 35°C . If I measure the pressure after the change to be 2.0atm, what was the original pressure of the gas?
4. A gas has a temperature of 14°C , and a volume of 4.5 litres. If the temperature is raised to 29°C and the pressure does not change, what is the new volume of the gas?
5. If I have 17 litres of gas at a temperature of 67°C and a pressure of 88.89atm, what will be the pressure of the gas if I raise the temperature to 94°C and decrease the volume to 12 litres?
6. I have an unknown volume of gas at a pressure of 0.5atm and a temperature of 325K. if I raise the pressure to 1.2 atm, decrease the temperature to 320K, and measure the final volume to be 48 litres, what was the initial volume of the gas?
7. If I have 21 litres of gas held at a pressure of 78 atm and a temperature of 900K, what will be the volume of the gas if I decrease the pressure to 45 atm and decrease the temperature to 750K?
8. If I have 2.9L of gas at a pressure of 5atm and a temperature of 50°C , what will be the temperature of the gas if I decrease the volume of the gas to 2.4L and decrease the pressure to 3atm?
9. I have an unknown volume of gas held at a temperature of 115K in a container with a pressure of 60atm. If by increasing the temperature to 225K and decreasing the pressure to 30atm causes the volume of the gas to be 29 litres, how many litres of gas did I start with?