

Problems on the Gas Laws: $PV = k$, $P/T = k$, $V/T = k$

1. The pressure on 220 cm^3 of a gas is 110 kPa . What will be the volume if the pressure is changed to 55.0 kPa , (keeping temp. constant)? (440 cm^3)
2. If a sample of gas measures 2.00 L at 25°C , what is its volume at 50°C if the pressure remains unchanged? (2.2 L)
3. Your car tire pressure is 200 kPa at 25°C . After a drive, the tire is warm – you find its temperature is 50°C . What is the pressure in the tire now? (216.8 kPa)
4. A balloon which was out in -20°C temperature had a 1 litre volume. What is its volume indoors at 30°C ? (1.36 L)
5. A tank of oxygen registers a pressure of 500 kPa outdoors at -33°C . When the tank was brought indoors, the pressure gauge rose to 625 kPa . What was the indoor temperature? (300.5 K)
6. The initial pressure of a gas is 150 kPa . What will be the final pressure if the gas is compressed to $\frac{1}{2}$ its original volume? (300 kPa)
7. A fixed volume of gas had a pressure of 425 kPa at 27°C . When heated to 127°C , what would be its new pressure? (566.7 kPa)
8. What was the original temperature of a gas whose present pressure is 450 kPa , at a temperature of 87°C which is 5 times the original temperature?