Thermodynamics

1. In a car tire at the temperature of 10 °C, the pressure of 200 kPa was measured. How it will change when the temperature will grow (after driving the car) to 27 °C?

2. In a tank with volume 100 cm^3 there is gas with a temperature 27 °C. How many molecules escaped from the tank with wrong closure, when the pressure was decreased by 4.14 kPa, whereby the temperature stay constant?

3. A tank contains compressed gas (t_1 = 27 °C, p_1 = 4 MPa). Find its pressure after ½ of the gas is released and temperature drops by 27 °C.

4. Density of the air in a balloon is 2.354 $kg \cdot m^{-3}$, when the pressure is 0.2 MPa and temperature 27 °C. What will be the density of the air in normal conditions?

5. How many years would it last, when we would count each atom from the Avogadro constant by an optical method – 1 atom in 1 second (?)

HW: How will change the volume of ideal gas, when the temperature will increase 1.5 times and pressure will decrease to a half?