

Homework 21.

1. Find the mass of oxygen in the 10 liter cylinder if at  $T=13^{\circ}\text{C}$  the pressure  $P=9 \times 10^6 \text{Pa}$ .
2. How many molecules move out of the room if the temperature inside is increased from  $T=15^{\circ}\text{C}$  to  $25^{\circ}\text{C}$  if the room volume is  $120 \text{m}^3$  and atmospheric pressure is  $10^5 \text{Pa}$ ?  
Assume that the air is an ideal gas with average molar mass of  $29 \text{g/mol}$ .
3. (*More difficult*). Two identical cylinders are connected with a tube. The volume of the tube is very small. The cylinders are filled with gas at a temperature  $T$ . How many times does the pressure in the system change if we will heat one of the cylinders to temperature  $T_1$  and maintain the other at the temperature  $T$ ?