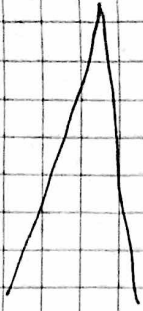


1.



$$P_2 = 30 \text{ kPa} = 30\,000 \text{ Pa}$$

$$V_2 = ? \text{ liter}$$

$$T_2 = -60^\circ\text{C} = 213 \text{ K}$$

$$+273$$



$$P_1 = 101\,300 \text{ Pa} - \text{ normalt lufttryck}$$

$$V_1 = 10 \text{ liter}$$

$$T_1 = 10^\circ\text{C} = 283 \text{ K}$$

$$+273$$

$$pV = nRT \quad \text{dela med } T \Rightarrow$$

$$\frac{pV}{T} = nR$$

$$R = 8,31451 \frac{\text{J}}{\text{mol} \cdot \text{K}}$$

n antal mol $\Rightarrow n$ mol är $6 \cdot 10^{23}$ molekyler.

n ändras inte, ty inget puser ut ur ballongen. \Rightarrow

$$\frac{p_1 V_1}{T_1} = \frac{p_2 V_2}{T_2}$$

sätt in värden eller
lös ut $V_2 \Rightarrow$

$$V_2 = \frac{p_1 V_1 T_2}{T_1 p_2} = \frac{101\,300 \cdot 10 \cdot 213}{283 \cdot 30\,000} \approx 25 \text{ liter}$$

SVAR: 25 liter