A flask with capacity of 1 liter is heated from 250°C to 350°C. What volume of air will escape from the flask?

Solution: In this process the isobaric heating occurs, because pressure of the air in the flask is constant and equals to the atmospheric pressure. According to the combined gas law, $\frac{P \cdot V}{T} = const$, and when $P = const$, then $\frac{V}{T} = const$; $\frac{V_1}{T_1} = \frac{V_2}{T_2}$, $V_2 = \frac{V_1 \cdot T_2}{T_1}$, $\Delta V = V_2 - V_1 = \frac{V_1 \cdot T_2}{T_1} - V_1 = V_1 \cdot \left(\frac{T_2}{T_1} - 1 \right)$;

$T_1 = 250 + 273 = 523$ K; $T_2 = 350 + 273 = 623$ K;

$\Delta V = 1 \cdot 10^{-3} \cdot \left(\frac{623}{523} - 1 \right) = 1.91 \cdot 10^{-4}$ m^3 $= 0.191$ liters.

Answer: 0.191 liters.