207. Kupferblock in Styropor

$$a = 0.1 \text{ m}; \quad l = \tfrac{1}{10} a; \quad T_1 = 333.15 \text{ K}; \quad T_2 = 333.15 \text{ K}$$
$$\rho = 8930 \text{ kg/m}^3; \quad c = 385 \text{ J/kg K}; \quad \lambda = 0.027 \text{ W/m K};$$

a) bla

b) $G = \lambda \frac{A}{l}$

$$G = \lambda \frac{10 a^2}{a} = \underline{\underline{0.027 \text{ W/K}}}$$

c) $\frac{\mathrm{d}Q}{\mathrm{d}t} = G \Delta T$

$$\frac{\mathrm{d}Q}{\mathrm{d}t} = G(T_2 - T_1)$$

209. Limonade mit Eis

$$m_1 = 0.24 \text{ kg}; \quad T_1 = 306.15 \text{ K}; \quad m_2 = 0.025 \text{ kg}; \quad T_2 = 273.15 \text{ K}$$

a) $Q = cm \Delta T; \quad \Delta T = T_{Ende} - T_{Start}$

$$Q_1 = cm_1(T - T_1)$$
$$Q_2 = cm_2(T - T_2)$$
$$Q_1 + 2Q_2 = 0$$
$$\Rightarrow T = \frac{m_1 T_1 + 2 m_2 T_2}{m_1 + 2 m_2} = \underline{\underline{300.46 \text{ K}}} \qquad (= 27.31 \text{ °C})$$

b)

$$Q_1 + 6Q_2 = 0$$
$$\Rightarrow T = \frac{m_1 T_1 + 6 m_2 T_2}{m_1 + 6 m_2} = \underline{\underline{293.46 \text{ K}}} \qquad (= 20.31 \text{ °C})$$