

CHAPTER 4	Combined Gas Law (2) Answer Key	BLM 4.1.2A
ANSWER KEY		

$$\begin{aligned}
 1. \quad \frac{P_1 V_1}{T_1} &= \frac{P_2 V_2}{T_2} \\
 T_2 &= \frac{T_1 P_2 V_2}{P_1 V_1} \\
 T_2 &= \frac{(273.15 \text{ K})(211 \text{ kPa})(176.2 \text{ mL})}{(101.325 \text{ kPa})(175.0 \text{ mL})} \\
 T_2 &= 572.71 \text{ K} = 300^\circ \text{C}
 \end{aligned}$$

$$\begin{aligned}
 2. \quad \frac{P_1 V_1}{T_1} &= \frac{P_2 V_2}{T_2} \\
 P_2 &= \frac{P_1 V_1 T_2}{T_1 V_2} \\
 P_2 &= \frac{(102.3 \text{ kPa})(60 \text{ L})(283.15 \text{ K})}{(243.15 \text{ K})(5400 \text{ L})} \\
 P_2 &= 1.3 \text{ kPa}
 \end{aligned}$$

$$\begin{aligned}
 3. \quad \frac{P_1 V_1}{T_1} &= \frac{P_2 V_2}{T_2} \\
 T_2 &= \frac{T_1 P_2 V_2}{P_1 V_1} \\
 T_2 &= \frac{(298.15 \text{ K})(1100 \text{ kPa})(200 \text{ mL})}{(350 \text{ kPa})(200 \text{ mL})} \\
 T_2 &= 9.4 \times 10^2 \text{ K} = 6.7 \times 10^2 ^\circ \text{C}
 \end{aligned}$$