

Charles' Law - One Problem

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A 763 ml container of gas is at 45.7deg C. If the container volume decreases to 391 ml, what is the new temperature of the gas?

$$V_1 = 763 \text{ ml}$$

$$T_1 = 45.7^\circ\text{C} + 273 = 318.7\text{K}$$

$$V_2 = 391 \text{ ml}$$

$$T_2 = ?$$

$$T_2 = T_1 \left(\frac{V_2}{V_1} \right)$$

$$T_2 = (318.7\text{K}) \left(\frac{391\text{ml}}{763\text{ml}} \right)$$

$$T_2 = 163.3\text{K}$$

$$T_2 = 163\text{K}$$

If wanted answer in $^\circ\text{C}$ (was not specified here)

$$T_2 = 163.3\text{K} - 273 = -109.7^\circ\text{C}$$

$$T_2 = -110.^\circ\text{C}$$

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