

# Combined Gas Law - One Problem

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A gas occupies 3.75 L exerting 284mmHg of pressure and is at a temperature of 103degC. If I decrease the pressure to 164mmHg and heat it to 191degC what would the new volume ( in L ) be?

∅ const n

$$V_1 = 3.75 \text{ L}$$

$$P_1 = 284 \text{ mmHg}$$

$$T_1 = 103^\circ\text{C} + 273 = 376 \text{ K}$$

$$T_2 = 191^\circ\text{C} + 273 = 464 \text{ K}$$

$$P_2 = 164 \text{ mmHg}$$

$$V_2 = ?$$

$$V_2 = V_1 \left( \frac{T_2}{T_1} \right) \left( \frac{P_1}{P_2} \right)$$

$$V_2 = (3.75 \text{ L}) \left( \frac{464 \text{ K}}{376 \text{ K}} \right) \left( \frac{284 \text{ mmHg}}{164 \text{ mmHg}} \right)$$

$$V_2 = 8.013 \text{ L}$$

$$V_2 = 8.01 \text{ L}$$

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Last edited May 14, 2015 2:32 pm (diff)

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