

Question #49833, Chemistry, Inorganic Chemistry

A sample of gas is heated from -15.0 0C to 28.5 0C. What was its original volume if the volume at 18.5 0C is 2.65 liters?

Answer:

$$T_1 = -15 + 273 \text{ K}$$

$$T_2 = 18.5 + 273 \text{ K}$$

$$pV = nRT$$

$$\frac{V}{T} = \frac{nR}{p}$$

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$V_1 = \frac{T_1 V_2}{T_2}$$

$$V_1 = \frac{(-15 + 273) 2.65}{18.5 + 273} = \mathbf{2.345 \text{ L}}$$