

## Answer on Question #78016, Chemistry / General Chemistry

### Question:

A balloon contains 46.3 L of Helium at 42 °C, and 2.01 atm is released into the air. At a certain altitude, the temperature falls to 21 °C, and the pressure falls to 0.25 atm. What is the volume of the balloon under these conditions?

- A. 3.5 L
- B. 35.0 L
- C. 347.5 L
- D. 3475.0 L
- E. None of the Above

### Solution:

Starting temperature: 42 °C = 315 K

Final temperature: 21 °C = 294 K

(Other data can be used "as is")

The law for this task:  $(p \cdot V) / T = \text{const}$ , so:

$$(p_1 \cdot V_1) / T_1 = (p_2 \cdot V_2) / T_2$$

Solving for  $V_2$ :

$$V_2 = (p_1 \cdot V_1 \cdot T_2) / (p_2 \cdot T_1) = (2.01 \cdot 46.3 \cdot 294) / (0.25 \cdot 315) = 347.4 \text{ L}$$

### Answer:

- C. 347.5 L