

Answer on Question #83506 - Chemistry - General Chemistry

Question:

A sample of an ideal gas at 1.00 atm and a volume of 1.85 L was placed in a weighted balloon and dropped into the ocean. As the sample descended, the water pressure compressed the balloon and reduced its volume. When the pressure had increased to 60.0 atm, what was the volume of the sample? Assume that the temperature was held constant.

Solution:

Use Boyle's law:

$$P_1V_1 = P_2V_2$$

$$V_2 = (P_1/P_2)V_1 = (1.00 \text{ atm})/(60.0 \text{ atm}) (1.85 \text{ L}) = 0.0308 \text{ L}$$

Answer: 0.0308 L.

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