

Answer on Question #56850 – Chemistry – General Chemistry

Question:

A sample of gas (1.9 mol) is in a flask at 21 °C and 697 mm Hg. The flask is opened and more gas is added to the flask. The new pressure is 841 mm Hg and the temperature is now 26 °C. There are now _____ mol of gas in the flask.

Solution:

Ideal Gas Law: $pV = nRT$

Where p is pressure; V is volume; n is the number of moles; R is the universal gas constant; T is temperature (K)

Volume of a flask is constant, so

$$V = n_1RT_1/p_1 = n_2RT_2/p_2;$$

$$n_2 = n_1p_2T_1/p_1T_2;$$

$$n_2 = 1.9 * 841 * (273.16 + 21) / 697 * (273.16 + 26) = 2.25;$$

Answer: 2.25 mol;