

GASES AND THEIR PROPERTIES - LECTURE NOTES

Homework Answers (solutions to the homework) (the 5's) - Craig

PRACTICE PROBLEM:

10. A sample of hydrogen gas has a volume of 630.0 cm^3 when the sample contains 3.00 moles of hydrogen. What is the volume of this gas (in cm^3) when the sample reduced the number of moles to 1.75? The temperature and pressure of the gas remain constant.

Answer:

$$\begin{aligned} V_1 &= 630.0 \text{ cm}^3 \\ n_1 &= 3.00 \text{ mol} \\ V_2 &= ? \\ n_2 &= 1.75 \text{ mol} \end{aligned}$$

$$\frac{n_1}{V_1} = \frac{n_2}{V_2} \quad \text{OR} \quad \frac{V_1}{n_1} = \frac{V_2}{n_2}$$

$$\frac{V_1}{n_1} = \frac{V_2}{n_2} \implies \frac{n_2 V_1}{n_1} = V_2 = \frac{(1.75 \text{ mol})(630.0 \text{ cm}^3)}{3.00 \text{ mol}}$$

$$V_2 = 367.5 \text{ cm}^3$$