

Question #81980, Chemistry / General Chemistry | for completion

At a pressure of 3.2 atm a balloon has a volume of 8.0 L. If the pressure is decreased to 0.60 atm (at constant temperature), what is the new volume of the balloon?

Answer:

$T = \text{const}$ (we can choose $T=1$)

$P_1 = 3.2 \text{ atm}$

$P_2 = 0.6 \text{ atm}$

$V_1 = 8.0 \text{ L}$

$n = ?$

$V_2 = ?$

Formula: $PV = nRT$, therefore $n = PV/RT$ and $V = nRT/P$.

$n = PV/RT = 3.2 \times 8.0 / 0.082 \times 1 = 312.2 \text{ mol}$,

$V_2 = nRT/P = 312.2 \times 0.082 \times 1 / 0.6 = 42.667 \text{ L}$

$V_2 = 42.667 \text{ L}$

Answer provided by www.AssignmentExpert.com