**#63729 Chemistry, General Chemistry**

**Question one - Jill fills a balloon with 25.6 moles of helium to a volume of 23.5 kiloliters. She adds 150.0 grams of helium to the balloon. What is the new volume?**

**Question two- Alex had a gas container that contained several gases that fellow friends added to. AJ added 4.72 ATM of $CO_2$. Allie added 809.3 mmHG of $O_2$. Alexis added 27.8 kPa of $H_2$. What is the total pressure of the gas system?**

**Answer:**

1) $n = V(He_2)/22.4$
   $M(He_2) = 8.0$ g/mol
   $n = m (He_2) / M (He_2) = 150.0 / 8.0 = 18.8$ moles
   $V_1(He_2) = n \cdot 22.4 = (25.6+18.8) \cdot 22.4 = 994.6$ liters

2) Conversion Factors for Pressure 1 atm = 760 torr = 760 mmHg = 101.3 kPa
   Dalton's Law of Partial Pressures P total = P 1 + P 2 + P 3 … + P n Dalton's law of partial pressures states that the total pressure of a mixture of gases is equal to the sum of the pressures of all the gases in the mixture.
   $p (CO_2) = 4.72 \cdot 101.3 = 478.14$ kPa
   $p (O_2) = 809.3/760 \cdot 101.3 = 107.9$ kPa
   $p_{total} = 478.14 + 107.9 + 27.8 = 613.84$ kPa