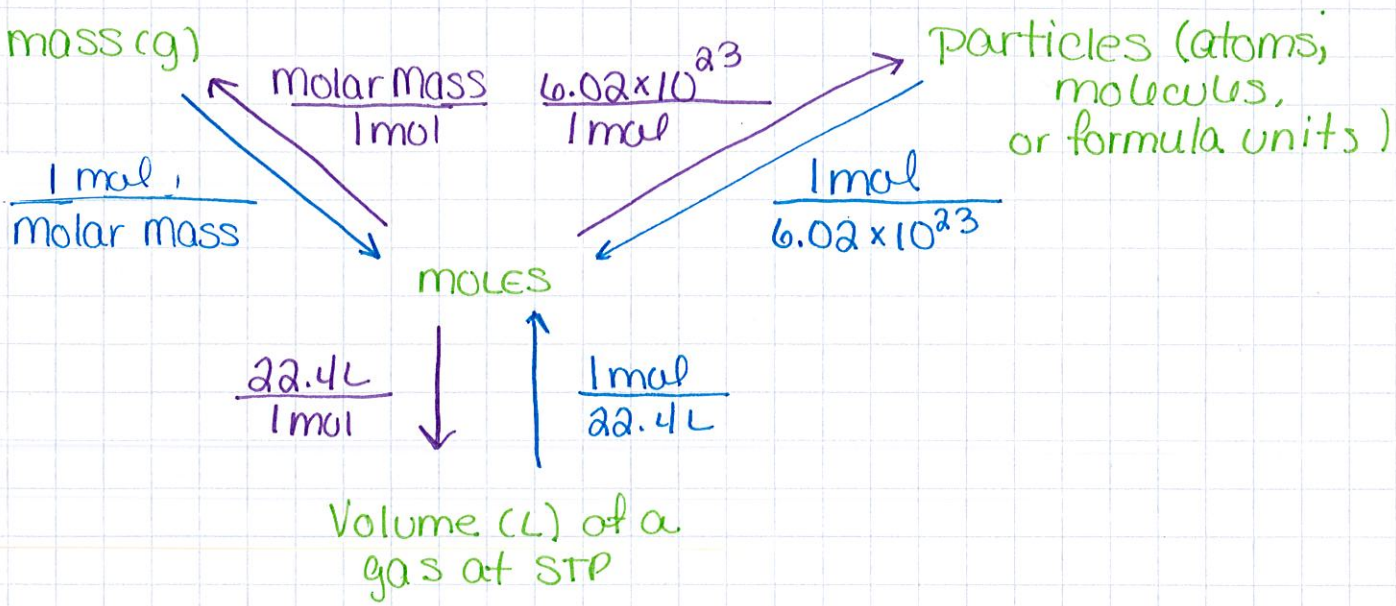

Combined Mole Problems - 2 step problems

Ex) How many (atoms)? are in 32.64 L of argon gas at STP?
GIVEN

$$32.64\,\text{L Ar} \left| \frac{1\,\text{mol}}{22.4\,\text{L}} \right| \frac{6.02\times10^{23}\,\text{atoms}}{1\,\text{mol}} = 8.77\times10^{23}\,\text{atoms Ar}$$

Ex) What is the (mass)? of 1.800 × 10^24 formula units of sodium hydroxide, NaOH?
GIVEN

$$1.800\times10^{24}\,\text{f.units NaOH} \left| \frac{1\,\text{mol}}{6.02\times10^{23}\,\text{f.units}} \right| \frac{40.00\,\text{g}}{1\,\text{mol}} = 119.6\,\text{g NaOH}$$

M.M. NaOH
Na 22.99 g
O 16.00 g
H + 1.01 g
40.00 g

MM Fe_2O_3
Fe: 2 × 55.85 g = 111.70 g
O: 3 × 16.00 g = 48.00 g
159.70 g

Ex) What is the (volume)? of 10.0 g of iron (III) oxide, Fe_2O_3?
GIVEN

$$10.0\,\text{g}\ Fe_2O_3 \left| \frac{1\,\text{mol}}{159.70\,\text{g}} \right| \frac{22.4\,\text{L}}{1\,\text{mol}} = 1.40\,\text{L}\ Fe_2O_3$$