

Chemistry  
Mole Conversions - 2-step

Name KEY Block \_\_\_\_\_  
Date \_\_\_\_\_

- How many grams are in  $8.2 \times 10^{22}$  molecules of  $N_2I_6$ ?  $107.5g N_2I_6$   

$$\frac{8.2 \times 10^{22} \text{ molec}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molec}} \times \frac{789.42g}{1 \text{ mol}} =$$
- 80.8 g of calcium contain how many calcium atoms?  $1.21 \times 10^{24} \text{ atoms Ca}$   

$$\frac{80.8g}{40.08g} \times \frac{1 \text{ mol}}{1 \text{ mol}} \times \frac{6.02 \times 10^{23}}{1} =$$
- What is the mass in grams of ammonia gas in  $1.204 \times 10^{24}$  molecules of ammonia gas,  $NH_3$ , at STP?  $34g NH_3$   

$$\frac{1.204 \times 10^{24} \text{ molec}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molec}} \times \frac{17g}{1 \text{ mol}} =$$
- How many grams of sucrose are in  $9.112 \times 10^{23}$  molecules of sucrose,  $C_{12}H_{22}O_{11}$ ?  $510.2g C_{12}H_{22}O_{11}$   

$$\frac{9.112 \times 10^{23} \text{ molec}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molec}} \times \frac{342.34g}{1 \text{ mol}} =$$
- $2.03 \times 10^{23}$  molecules of  $H_2S$  gas takes up how much space (in liters) at STP?  $7.56 L H_2S$   

$$\frac{2.03 \times 10^{23} \text{ molec}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molec}} \times \frac{22.4L}{1 \text{ mol}} =$$
- What is the mass in grams of boron trifluoride in  $1.162 \times 10^{23}$  boron trifluoride molecules?  $13.08 g BF_3$   

$$\frac{1.162 \times 10^{23} \text{ molec}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molec}} \times \frac{67.76 BF_3}{1 \text{ mol}} =$$
- How many liters are in  $3.01 \times 10^{23}$  molecules of ethylene gas,  $C_2H_4$ , at STP?  $11.2 L C_2H_4$   

$$\frac{3.01 \times 10^{23}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23}} \times \frac{22.4}{1 \text{ mol}} =$$
- How many grams of  $H_2O$  are in  $3.47 \times 10^{25}$   $H_2O$  molecules?  $1038.7g H_2O$   

$$\frac{3.47 \times 10^{25}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23}} \times \frac{18.02g}{1 \text{ mol}} =$$
- How many grams of methane gas are in 83.33 liters of methane gas,  $CH_4$ , at STP?  $59.71 g CH_4$   

$$\frac{83.33 L}{22.4L} \times \frac{1 \text{ mol}}{1 \text{ mol}} \times \frac{16.05g}{1 \text{ mol}} =$$
- A large sample of iron filings has a mass of 102 grams. How many iron atoms are there?  $1.099 \times 10^{24} \text{ atoms Fe}$   

$$\frac{102g}{55.85} \times \frac{1 \text{ mol}}{1 \text{ mol}} \times \frac{6.02 \times 10^{23}}{1} =$$