

Honors Chemistry

Extra Practice Problems – The Mole and Conversions with Mass and Representative Particles

Complete the following problems on a separate sheet of paper.

1. Determine the mass of Lithium Carbonate in 4.020 moles of Lithium Carbonate?

$$\frac{4.020 \text{ moles } Li_2CO_3}{1} \times \frac{73.89 \text{ g } Li_2CO_3}{1 \text{ mole } Li_2CO_3} = 297.0 \text{ g } Li_2CO_3$$

2. Determine the number of representative particles and the type of representative particles in 392.1 g of Oxygen Dichloride.

$$\frac{392.1 \text{ g } OCl_2}{1} \times \frac{1 \text{ mole } OCl_2}{86.905 \text{ g } OCl_2} \times \frac{6.02 \times 10^{23} \text{ molecules } OCl_2}{1 \text{ mole } OCl_2} = 2.716 \times 10^{24} \text{ molecules } OCl_2$$

3. Determine the number of moles in 93.20 g of Carbon tetrahydride.

$$\frac{93.20 \text{ g } CH_4}{1} \times \frac{1 \text{ mole } CH_4}{16.043 \text{ g } CH_4} = 5.809 \text{ mole } CH_4$$

4. Determine the mass of 9.3021×10^{27} representative particles of Fluorine. What is the representative particle?

$$\frac{9.3021 \times 10^{27} \text{ molecules } F_2}{1} \times \frac{1 \text{ mole } F_2}{6.02 \times 10^{23} \text{ molecules } F_2} \times \frac{37.996 \text{ g } F_2}{1 \text{ mole } F_2} = 587,110 \text{ g } F_2 \text{ OR } 5.8711 \times 10^5 \text{ g } F_2$$

5. Determine the mass of 3.902×10^{28} representative particles of Ammonium Chloride. What is the representative particle?

$$\frac{3.902 \times 10^{28} \text{ f.u. } NH_4Cl}{1} \times \frac{1 \text{ mole } NH_4Cl}{6.02 \times 10^{23} \text{ f.u. } NH_4Cl} \times \frac{53.492 \text{ g } NH_4Cl}{1 \text{ mole } NH_4Cl} = 3,467,000 \text{ g } NH_4Cl \text{ OR } 3.467 \times 10^6 \text{ g } NH_4Cl$$

6. How many moles of Iron III Carbonate are there in 9.032×10^{30} representative particles of Iron III Carbonate?

$$\frac{9.032 \times 10^{30} \text{ f.u. } Fe_2(CO_3)_3}{1} \times \frac{1 \text{ mole } Fe_2(CO_3)_3}{6.02 \times 10^{23} \text{ f.u. } Fe_2(CO_3)_3} = 1.500 \times 10^7 \text{ mole } Fe_2(CO_3)_3$$

7. How many representative particles are there in 490.2 grams of Copper I Oxide?

$$\frac{490.2 \text{ g } Cu_2O}{1} \times \frac{1 \text{ mole } Cu_2O}{143.091 \text{ g } Cu_2O} \times \frac{6.02 \times 10^{23} \text{ f.u. } Cu_2O}{1 \text{ mole } Cu_2O} = 2.062 \times 10^{24} \text{ f.u. } Cu_2O$$