

Gram Formula Mass and Mole Conversions*Practice Worksheet I***Learning Target**

Convert between the count and mass of a substance.

Determine the molar mass (gram formula mass) of a compound.

Convert the mass of a substance to the number of moles of a substance and moles to mass.

Directions: Determine the gram formula mass for each of the following compounds. You must show all of your work.

Pb_3N_4	$Pb (3)(207.20) = 621.60$ $N (4)(14.01) = \frac{56.04}{677.64}$	$677.64 \text{ g } Pb_3N_4$
$Mn_2(CO_3)_3$	$Mn (2)(54.94) = 109.88$ $C (3)(12.01) = 36.03$ $O (9)(16.00) = 144.0$	$289.9 \text{ g } Mn_2(CO_3)_3$
$NaHCO_3$	$Na (1)(22.99) = 22.99$ $H (1)(1.01) = 1.01$ $C (1)(12.01) = 12.01$ $O (3)(16.00) = 48.00$	$84.01 \text{ g } NaHCO_3$
HCl	$H (1)(1.01) = 1.01$ $Cl (1)(35.45) = 35.45$	$36.46 \text{ g } HCl$
RaS	$Ra (1)(226) = 226$ $S (1)(32.07) = 32.07$	$258 \text{ g } RaS$
Be_3N_2	$Be (3)(9.01) = 27.0$ $N (2)(14.01) = 28.02$	$55.0 \text{ g } Be_3N_2$
$Sn(NO_2)_4$	$Sn (1)(118.71) = 118.71$ $N (4)(14.01) = 56.04$ $O (8)(16.00) = 128.0$	$302.8 \text{ g } Sn(NO_2)_4$
$Pb(CN)_2$	$Pb (1)(207.20) = 207.20$ $C (2)(12.01) = 24.02$ $N (2)(14.01) = 28.02$	$259.24 \text{ g } Pb(CN)_2$
CsF	$Cs (1)(132.91) = 132.91$ $F (1)(19.00) = 19.00$	$151.91 \text{ g } CsF$

CuCl_2	$\text{Cu}(1)(63.55) = 63.55$ $\text{Cl}(2)(35.45) = 70.90$	134.45 g CuCl_2
$\text{Al}(\text{NO}_3)_3$	$\text{Al}(1)(26.98) = 26.98$ $\text{N}(3)(14.01) = 42.03$ $\text{O}(9)(16.00) = 144.0$	213.0 g $\text{Al}(\text{NO}_3)_3$
SiBr_4	$\text{Si}(1)(28.09) = 28.09$ $\text{Br}(4)(79.90) = 319.6$	347.7 g SiBr_4
NH_4NO_3	$\text{N}(2)(14.01) = 28.02$ $\text{H}(4)(1.01) = 4.04$ $\text{O}(3)(16.00) = 48.00$	80.06 g NH_4NO_3
MnO_2	$\text{Mn}(1)(54.94) = 54.94$ $\text{O}(2)(16.00) = 32.00$	86.94 g MnO_2
$\text{Ca}(\text{OH})_2$	$\text{Ca}(1)(40.08) = 40.08$ $\text{O}(2)(16.00) = 32.00$ $\text{H}(2)(1.01) = 2.02$	74.10 g $\text{Ca}(\text{OH})_2$

Part II: Mole Conversion Practice

For each of the following practice problems you must show all of your work to receive full credit.

1. How many moles are there in 512 g of SiBr_4 ?

$$512 \text{ g } \text{SiBr}_4 \times \frac{1 \text{ mol } \text{SiBr}_4}{347.7 \text{ g } \text{SiBr}_4} = 1.47 \text{ mol } \text{SiBr}_4$$

$$\text{Si}(1)(28.09) = 28.09$$

$$\text{Br}(4)(79.90) = 319.6$$

$$\hline 347.7 \text{ g}$$

2. How many grams are there in 10.1 moles of $\text{Ca}(\text{OH})_2$?

$$\text{Ca}(1)(40.08) = 40.08$$

$$\text{O}(2)(16.00) = 32.00$$

$$\text{H}(2)(1.01) = 2.02$$

$$\hline 74.10 \text{ g}$$

$$10.1 \text{ mol } \text{Ca}(\text{OH})_2 \times \frac{74.10 \text{ g } \text{Ca}(\text{OH})_2}{1 \text{ mol } \text{Ca}(\text{OH})_2} = 748 \text{ g } \text{Ca}(\text{OH})_2$$

3. How many moles are there in 0.00199 g of Be_3N_2 ?

$$\begin{array}{r} \text{Be } (3)(9.01) = 27.03 \\ \text{N } (2)(14.01) = 28.02 \\ \hline 55.05 \text{ g} \end{array}$$

$$0.00199 \text{ g } \text{Be}_3\text{N}_2 \times \frac{1 \text{ mol } \text{Be}_3\text{N}_2}{55.05 \text{ g } \text{Be}_3\text{N}_2} =$$

$$3.61 \times 10^{-5} \text{ moles } \text{Be}_3\text{N}_2$$

4. How many grams are there in 5001 moles of CsF ?

$$\begin{array}{r} \text{Cs } (1)(132.91) = 132.91 \\ \text{F } (1)(19.00) = 19.00 \\ \hline 151.91 \text{ g} \end{array}$$

$$5001 \text{ mol } \text{CsF} \times \frac{151.91 \text{ g } \text{CsF}}{1 \text{ mol } \text{CsF}} = 759701.91$$

$$759,700 \text{ g } \text{CsF}$$

5. How many moles are there in 23 g of $\text{Pb}(\text{CN})_2$?

$$\begin{array}{r} \text{Pb } (1)(207.20) = 207.20 \\ \text{C } (2)(12.01) = 24.02 \\ \text{N } (2)(14.01) = 28.02 \\ \hline 259.24 \text{ g} \end{array}$$

$$23 \text{ g } \text{Pb}(\text{CN})_2 \times \frac{1 \text{ mol } \text{Pb}(\text{CN})_2}{259.24 \text{ g } \text{Pb}(\text{CN})_2} = 0.0887208$$

$$0.089 \text{ mol } \text{Pb}(\text{CN})_2$$

6. How many grams are there in 1.50 moles of CuCl_2 ?

$$\begin{array}{r} \text{Cu } (1)(63.55) = 63.55 \\ \text{Cl } (2)(35.45) = 70.90 \\ \hline 134.45 \text{ g} \end{array}$$

$$1.50 \text{ mol } \text{CuCl}_2 \times \frac{134.45 \text{ g } \text{CuCl}_2}{1 \text{ mol } \text{CuCl}_2} = 201.6$$

$$202 \text{ g } \text{CuCl}_2$$

