Name_____ Date_____ Per_____

Mole to Grams, Grams to Moles Conversions Worksheet

To find moles divide molar mass	To find grams multiply molarmass

What are the molecular weights of the following compounds?

1) NaOH 2) H_3PO_4

3) H_2O 4) Mn_2Se_7

5) $MgCl_2$ 6) $(NH_4)_2SO_4$

There are ~~three~~ definitions (equalities) of mole. They are:

1 mole = 6.02 x 10^{23} particles
1 mole = molar mass (could be atomic mass from periodic table or molecular mass)
1 mole = 22.4 L of a gas at STP (**You do not need to worry about this yet**)

Each definition can be written as a set of two conversion factors. They are:

1 mole = molar mass(g) can be written as $\left(\frac{1\text{ mole}}{\text{molar mass (g)}}\right)$ **OR** $\left(\frac{\text{molar mass (g)}}{1\text{ mole}}\right)$

1 mole = 6.02 x 10^{23} particles can be written as $\left(\frac{1\text{ mole}}{6.02 \times 10^{23}}\right)$ **OR** $\left(\frac{6.02 \times 10^{23}}{1\text{ mole}}\right)$

Solve any 5 of the following:

1) **How many moles** are in 15 grams of lithium? **(molar mass of lithium is 7 g/mole)**

15 ~~grams~~ x $\frac{1\text{ mole}}{7\text{ ~~grams~~}}$ = 2.14 moles lithium OR (15g/7g = 2.14moles)

2) **How many grams** are in 2.4 moles of sulfur? **(molar mass of sulfur is 32 g/ mole)**

2.4 ~~moles~~ x $\frac{32\text{ grams}}{1\text{ ~~mole~~}}$ = 76.8 grams sulfur OR 2.4moles x 32 g = 77 g

3) **How many moles** are in 22 grams of argon?

4) **How many grams** are in 88.1 moles of magnesium?

5) **How many moles** are in 2.3 grams of phosphorus?