Name_____ Date_____ Per_____

Mole to Grams, Grams to Moles Conversions Worksheet

To find moles divide by molar mass	To find grams multiply by molar mass

What are the molar masses of the following compounds? **Round to 2 decimal places**

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 = 6.02×10^{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

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 = 6.02×10^{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 the following: **Round to 1 decimal place**

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

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

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

$2.4\text{ moles} \times \frac{32\text{ grams}}{1\text{ mole}} = 76.8\text{ grams sulfur}$ 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?

6) **How many grams** are in 11.9 moles of chromium?