

Name \_\_\_\_\_

Date \_\_\_\_\_

Per \_\_\_\_\_

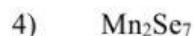
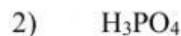
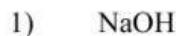
**Mole to Grams, Grams to Moles Conversions Worksheet**

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\*\*

**There are three definitions (equalities) of mole. They are:**1 mole = 6.02 x 10<sup>23</sup> 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 
$$\left( \frac{1 \text{ mole}}{\text{molar mass (g)}} \right) \text{ OR } \left( \frac{\text{molar mass (g)}}{1 \text{ mole}} \right)$$
1 mole = 6.02 x 10<sup>23</sup> particles can be written as 
$$\left( \frac{1 \text{ mole}}{6.02 \times 10^{23}} \right) \text{ OR } \left( \frac{6.02 \times 10^{23}}{1 \text{ mole}} \right)$$

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)

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

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

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

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?