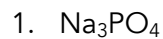# **Unit 3 -** Topic 6
Moles & Stoichiometry

Gram Formula Mass
Find the gram formula mass (also called Molar Mass) of the following compounds:
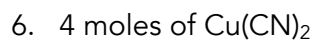
1. Na_3PO_4

2. $(NH_4)_2CO_3$

3. $C_6H_{12}O_6$
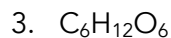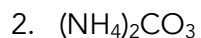
Gram - Mole Calculations
Given the following, find the number of moles. Show all work with DIMENSIONAL ANALYSIS

4. 30 grams of H_3PO_4

5. 110 grams of $NaHCO_3$
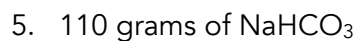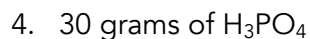
Mole - Gram Calculations
Given the following, find the number of grams. Show all work with DIMENSIONAL ANALYSIS.

6. 4 moles of $Cu(CN)_2$

7. 6.6 moles of ZnO
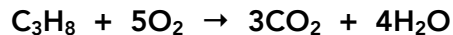
Mole Ratios

This will help you with the next part; Mole to Mole calculations. The coefficients of an equation give you the RATIO of ONE substances to ANOTHER substance. You'll need to use this any time a question gives you moles of ONE substance and asks you to find moles of a DIFFERENT substance.

$$C_3H_8 \ + \ 5O_2 \ \rightarrow \ 3CO_2 \ + \ 4H_2O$$

____ moles C_3H_8 : ____ moles O_2

____ moles O_2 : ____ moles CO_2

____ moles CO_2 : ____ moles H_2O

____ moles C_3H_8 : ____ moles CO_2

____ moles C_3H_8 : ____ moles H_2O

____ moles O_2 : ____ moles H_2O

Mole-Mole Problems

1. $N_2 + 3H_2 \rightarrow 2NH_3$
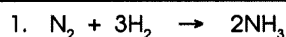
    How many moles of hydrogen are needed to completely react with two moles of nitrogen?

    _____

2. $2KClO_3 \rightarrow 2KCl + 3O_2$
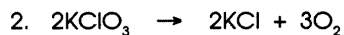
    How many moles of oxygen are produced by the decomposition of six moles of potassium chlorate?

    _____

3. $Zn + 2HCl \rightarrow ZnCl_2 + H_2$
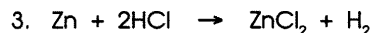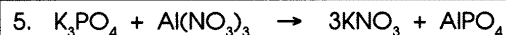
    How many moles of hydrogen are produced from the reaction of three moles of zinc with an excess of hydrochloric acid?

    _____

4. $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$
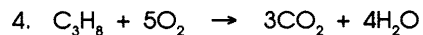
    How many moles of oxygen are necessary to react completely with four moles of propane (C_3H_8)?

    _____

5. $K_3PO_4 + Al(NO_3)_3 \rightarrow 3KNO_3 + AlPO_4$

    How many moles of potassium nitrate are produced when two moles of potassium phosphate react with two moles of aluminum nitrate?

    _____