

**CHM 151**  
**Recitation #3, 17 September 2008**

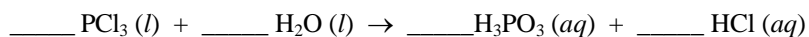
1. Name the following compounds.

Formula	Name
$P_2O_5$	
$MgCl_2$	
$Cu_2SO_4$	

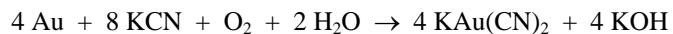
2. True or False?

- a) When aluminum (Al) reacts with chlorine gas ( $Cl_2$ ) to produce aluminum chloride, each aluminum atom will lose 3 electrons.
- b) Molecular compounds are composed of ions that are held together by electrostatic attraction.
- c) Consider the combustion of hydrogen gas:  $2H_2(g) + O_2(g) \rightarrow 2H_2O(g)$ . If 10.0 moles of  $H_2$  are reacted, 5.0 moles of  $O_2$  will be needed for complete reaction.
- d) In 2.0 moles of  $P_2O_5$ , there are 5.0 moles of oxygen (O).
3. Formaldehyde has the formula,  $CH_2O$ . How many **molecules** are in 0.500 g of formaldehyde?
4. Allicin is the compound responsible for the characteristic smell of garlic. An analysis of the compound gives the following percent composition by mass: C: 44.4%, H: 6.21%, S: 39.5%, O: 9.86%. Calculate the **empirical formula** for Allicin.

5. Balance the following equation with the smallest set of whole numbers.

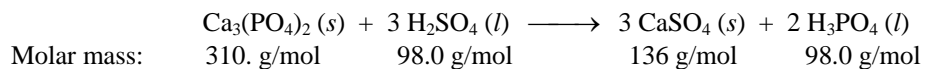


6. For many years the recovery of gold—that is, the separation of gold from other materials—involved the use of potassium cyanide (KCN):



What amount of KCN in **moles** is needed to extract 29.0 g of gold (Au)?

7. Phosphoric acid can be prepared from calcium phosphate according to the following reaction:



**103 g of  $\text{Ca}_3(\text{PO}_4)_2$  are combined with 75.0 g  $\text{H}_2\text{SO}_4$ .**

a) What is the **limiting reagent**?

b) How many **grams** of  $\text{H}_3\text{PO}_4$  can be produced?