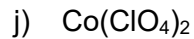
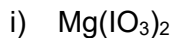
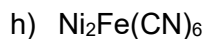
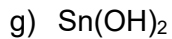
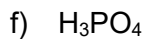
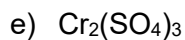
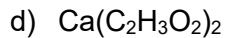


Problems: Calculations with Formula Weights and Moles

Prepared by David A. Katz, 2019

1. Calculate the formula weights of the following compounds.



2. Calculations involving the mole

These problems convert grams to moles and moles to grams. All the compounds used in these problems are those used for calculating formula weights in the previous section.

a) Convert 100.0 g of $\text{K}_2\text{S}_2\text{O}_4$ to moles.

- b) How many g of $\text{Sn}(\text{OH})_2$ are there in 2.5 moles?
- c) How many moles of H_3PO_4 are there in 325.0 g ?
- d) How many g of $\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2$ are the in 4.0 moles?
- e) Calculate the number of moles in 500.0 g of Ag_2CO_3 ?
- f) Calculate the number of g in 0.25 mole of $\text{Cr}_2(\text{SO}_4)_3$?

3. Calculations involving the mole when Avogadro's Number is needed.

These problems specifically ask to calculate **number of atoms or molecules** or **masses of atoms or molecules**. All the compounds used in these problems are those used for calculating formula weights in the first section.

Avogadro's number, 6.02×10^{23} particles/mol is the conversion factor to **convert between numbers of atoms or molecules and moles**. Otherwise, conversions between moles and grams is the same as in the preceding section.

NOTE: Review exponents and scientific notation before working on this section.

- a) What is the mass of a single molecule of $\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2$?
(NOTE: Always assume that mass is expressed in g.)
- b) How many molecules are there in 1.00 μg of $\text{Sn}(\text{OH})_2$?
- c) How many silver atoms are there in 5.00 mg of Ag_2CO_3 ?
- d) What is the mass of 1000 molecules of $\text{Cr}_2(\text{SO}_4)_3$?
- e) How many moles of Ni atoms are there in 1.00 ng of $\text{Ni}_2\text{Fe}(\text{CN})_6$?