

# 9/23 Notes: The Mole

1 dozen = 12 things

1 gross = 144 things

1 mole =  $6.02 \times 10^{23}$  atoms, molecules, formula units!  
 Cu (element)    H<sub>2</sub>O, F<sub>2</sub> (covalent)    NaCl, CuF<sub>2</sub> (ionics)

ex)

$$3.4 \text{ dozen eggs} \left( \frac{12 \text{ eggs}}{1 \text{ dz}} \right) = 40.8 \quad \underline{41} \text{ eggs}$$

$$3.4 \text{ mol H}_2\text{O molec} \left( \frac{6.02 \times 10^{23}}{1 \text{ mol}} \right) = 2.0468 \times 10^{24} \quad \underline{2.0 \times 10^{24}} \text{ molec H}_2\text{O}$$

$$54 \text{ eggs} \left( \frac{1 \text{ gross}}{144 \text{ eggs}} \right) = 0.375 \quad = \underline{0.38} \text{ gross eggs}$$

$$1.3 \times 10^{23} \text{ H}_2\text{O molecules} \left( \frac{1 \text{ mol}}{6.02 \times 10^{23}} \right) = \underline{0.22} \text{ mol H}_2\text{O}$$

$$1.3 \times 10^{23} \text{ H}_2\text{O molec} \left( \frac{3 \text{ atoms}}{1 \text{ H}_2\text{O molec}} \right) = \underline{3.9 \times 10^{23}} \text{ total atoms}$$

$\begin{matrix} 2\text{H}, 1\text{O} \\ \text{H}-\text{O}-\text{H} \end{matrix}$

$$\text{0.25 mol F}_2 \left( \frac{6.02 \times 10^{23}}{1 \text{ mol F}_2} \right) = \underline{1.5 \times 10^{23}} \text{ F}_2 \text{ molecules}$$