1. Calculate the mass, in grams, of each of the following;

a) 2.56 mol $Mg(OH)_2$

$$2.56 \text{ mol } Mg(OH)_2 \left(\frac{58.3 \text{ gram } Mg(OH)_2}{1 \text{ mol } Mg(OH)_2} \right) = 149 \text{ grams } Mg(OH)_2$$

b) 8.12×10^{-3} mol $CrCl_3$

$$8.12 \times 10^{-3} \text{ mol } CrCl_3 \left(\frac{158.5 \text{ gram } CrCl_3}{1 \text{ mol } CrCl_3} \right) = 1.29 \text{ grams } CrCl_3$$

c) an atom of Mo (molybdenum)

$$\left(\frac{95.94 \text{ g Mo}}{6.023 \times 10^{23} \text{ atom}} \right) = 1.594 \times 10^{-22} \text{ grams}$$

2. Calculate each of the following;

a) the number of hydrogen atoms in one molecule of C_4H_{10}. (Note: this question does not require a calculation, just provide a number.)

10 atoms of H in one molecule of C_4H_{10}

b) the number of P atoms in one mol of P_4.

$$1 \text{ mol } P_4 \left(\frac{6.023 \text{ x } 10^{23} \text{ molecules } P_4}{1 \text{ mol } P_4} \right) \left(\frac{4 \text{ atoms of P}}{1 \text{ molecule } P_4} \right) = 2.409 \text{ x } 10^{24} \text{ P atoms}$$

c) the number of N atoms in 3.0 mol of N_2O.

$$3 \text{ mol } N_2O \left(\frac{6.023 \text{ x } 10^{23} \text{ molecules } N_2O}{1 \text{ mol } N_2O} \right) \left(\frac{2 \text{ atoms of N}}{1 \text{ molecule } N_2O} \right) = 3.612 \text{ x } 10^{24} \text{ N atoms}$$

d) the number of Cl atoms in 210 grams $CaCl_2$.

$$210 \text{ grams } CaCl_2 \left(\frac{1 \text{ mol } CaCl_2}{111 \text{ g } CaCl_2} \right) \left(\frac{6.023 \text{ x } 10^{23} \text{ formula units } CaCl_2}{1 \text{ mol } CaCl_2} \right) \left(\frac{2 \text{ atoms of Cl}}{1 \text{ formula unit } CaCl_2} \right) =$$

2.279 x 10^{24} Cl atoms