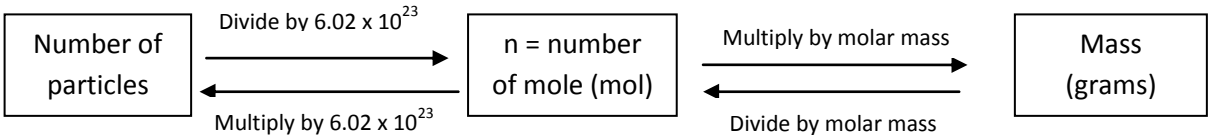
$$n = \frac{\text{Number of particles}}{6.03 \times 10^{23}} \qquad n = \frac{\text{mass (g)}}{\text{molar mass}}$$



Use the information above to answer the following questions.

1. How many molecules are present in each of the following
   a. 2.5 g of hydrogen molecules, H_2 = 7.53×10^{23} hydrogen molecules
   b. 50 g of nitrogen dioxide = 6.54×10^{23} nitrogen dioxide molecules
   c. 3.00g of methane, CH_4 = 1.12×10^{23} methane molecules
   d. 63g of diphosphorus pentoxide = 2.67×10^{23} diphosphorus pentoxide molecules

2. Determine the number of particles present in the following.
   a. 50.0 g of carbon = 2.51×10^{24} carbon atoms
   b. 2000 g of water = 6.69×10^{25} water molecules
   c. 10.0 mg of niacin ($C_6H_4N_2$) = 5.79×10^{19} niacin molecules

3. What is the mass of each of the following?
   a. 7.5×10^{22} atoms of neon = 2.48 grams
   b. 1.2×10^{25} molecules of ethanoic acid (CH_3COOH) = 1.20 Kg
   c. 6.02×10^{24} copper (I) ions = 635 grams
   d. 100 molecules of nitric acid (HNO_3) = 1.05×10^{-20} grams
   e. 1 molecule of glucose, $C_6H_{12}O_6$ = 2.99×10^{-22} grams

4. Vitamin A is chemically known as retinol ($C_{20}H_{30}O$). If an average carrot contains the equivalent of 2.40 mg of retinol, determine the number of
   a. Mole of retinol present in the carrot = 8.39×10^{-6} mol
   b. Retinol molecules present = 5.05×10^{18} retinol molecules
   c. Carbon atoms present in this amount of retinol = 1.01×10^{20} carbon atoms
   d. Atoms present in the retinol = 2.58×10^{20} atoms in retinol