General Chemistry
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Stoichiometry Practice Part II

The problems below refer to the following equation:

$$2\,NH_3\,(g) \rightarrow N_2\,(g) + 3H_2\,(g)$$

1) Write the conversion factors that can be used to convert from
   a. Moles of ammonia to moles of nitrogen (Answer: $\frac{1\,mol\,N_2}{2\,mol\,NH_3}$)
   b. Moles of nitrogen to moles of ammonia
   c. Moles of nitrogen to moles of hydrogen
   d. Moles of hydrogen to moles of nitrogen
   e. Moles of ammonia to moles of hydrogen
   f. Moles of hydrogen to moles of ammonia
2) How many moles of hydrogen can be produced from 6.00 mol of ammonia? (Show work.)
3) How many moles of ammonia are required to produce 18.0 moles of nitrogen? (Show work.)
4) How many moles of ammonia are required to produce 18.0 moles of hydrogen? (Show work.)
5) If 76.9 moles of ammonia decompose according to the above equation, compute the (Show work.)
   a. Number of moles of hydrogen produced
   b. Number of moles of nitrogen produced
   c. Number of GRAMS of hydrogen produced
   d. Number of GRAMS of nitrogen produced
6) How many grams of ammonia must react completely in order for 38.1 g of hydrogen to be produced?
   a. Develop a strategy:

g of H_2 → mol of H_2 (using the _____) → mol of NH_3 (using the ___) → g of NH_3 (using the ___)

   b. Set up the equation and solve it:

7) Using the balanced equation for the photosynthesis of glucose, compute the number of grams of CO_2 that are required to produce 15.3 g of glucose.

$$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$$