Chemistry - Stoichiometry

Mole to Mole Conversions:

In the last section, we learned to write ***ratios of the coefficients***

These ratios can be used as conversion factors to convert from moles of reactants to moles of products.

Example: Given the decomposition of potassium chlorate into oxygen and potassium chloride, how many moles of KCl could be formed from the decomposition of 2.5 moles of $KClO_3$?

$2\ KClO_3 \rightarrow 2\ KCl + 3\ O_2$

Example: In the production of water, how many moles of Hydrogen are used when 5.25 moles of oxygen react?

$$2\ H_2\ +\ O_2 \rightarrow\ 2\ H_2O$$

Mole to Mass problems

Example: In the previous problem, how many grams of water were formed from reacting the 5.25 moles of oxygen?

How many grams of hydrogen were used?

$$2\ H_2\ +\ O_2 \rightarrow\ 2\ H_2O$$

Mass to Mass Problems

Example: In the formation of ammonia gas, how many grams of ammonia could be produced from reacting 12.5 g of nitrogen gas with an excess of hydrogen gas?

How many grams of hydrogen were used?

Try this one on your own:

Many fertilizers contain ammonium nitrate, NH_4NO_3. When it decomposes, it produces N_2O gas and water. Determine the mass of water produced from the reaction of 25.0 g of ammonium nitrate.