**Chemistry: *Percent Yield***

Directions: *Solve each of the following problems. Show your work, including proper units, to earn full credit.*

1. "Slaked lime," $Ca(OH)_2$, is produced when water reacts with "quick lime," CaO. If you start with 2 400 g of quick lime, add excess water, and produce 2 060 g of slaked lime, what is the percent yield of the reaction?

2. Some underwater welding is done via the thermite reaction, in which rust (Fe_2O_3) reacts with aluminum to produce iron and aluminum oxide (Al_2O_3). In one such reaction, 258 g of aluminum and excess rust produced 464 g of iron. What was the percent yield of the reaction?

3. Use the balanced equation to find out how many liters of sulfur dioxide are actually produced at STP if 1.5×10^{27} molecules of zinc sulfide are reacted with excess oxygen and the percent yield is 75%.

$$2\ ZnS(s)\ +\ 3\ O_2(g)\ \rightarrow\ 2\ ZnO(s)\ +\ 2\ SO_2(g)$$
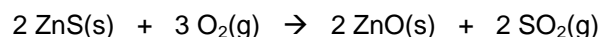
4. The Haber process is the conversion of nitrogen and hydrogen at high pressure into ammonia, as follows:

$$N_2(g)\ +\ 3\ H_2(g)\ \rightarrow\ 2\ NH_3(g)$$
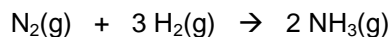
If you must produce 700 g of ammonia, what mass of nitrogen should you use in the reaction, assuming that the percent yield of this reaction is 70%?

Answers: 1. 65%   2. 87%   3. 4.19×10^4 L SO_2 4. 824 g N_2