Vocabulary: Define the following.

1. **limiting reactant--**

2. **excess reactant--**

3. **theoretical yield--**

4. **actual yield--**

5. **percentage yield--**

Step 1: Write the balanced equation.
Step 2: Observe the product or products formed. If there are more than one product, pick the one with the easiest molar mass.
Step 3: Enter the given mass in dimensional analysis to obtain the mass of the product determined in the problem.
Step 4: Repeat step 3 with the second given mass for the same product.
Step 5: The reactant that produces the smallest chosen product is the limiting reactant.

1. Lead(II) nitrate reacts with potassium iodide to produce lead(II) iodide and potassium nitrate according to the equation: $Pb(NO_3)_2 + KI \rightarrow PbI_2 + KNO_3$ What is the limiting reactant when 16.40 grams of lead(II) nitrate is added to 28.50 grams of potassium iodide?

Percent Yield

In chemical reactions the amounts of product predicted by the stoichiometric calculation and the actual product obtained in the lab may not always be the same. The amount predicted by the equation is the expected yield, and the amount obtained in the laboratory is the actual yield. The formula for obtaining the percent yield is:

$$\text{Percent Yield} = \frac{\text{Actual Yield}}{\text{Expected Yield}} \times 100\%$$

Example: A particular reaction is expected to produce 2.6L of oxygen gas. In reality, the reaction only produces 1.9L of oxygen gas. What is the percent yield?