Name:

**Limiting Reactants Notes**

The **limiting reactant** is the reactant that…

The **excess reactant** is the one that…

**Determining limiting reactant:**

1. Convert \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to moles of the given.
2. Identify the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within the reaction of reactants to product.
3. Convert the moles of the given to moles of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Repeat this process for the other value of the given \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Convert to the same product as before.
6. Value that converts into a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ value for the product is the limiting reactant.

Determine the **Mole Ratios** of **2KI + Pb(NO3)2 🡪 PbI2 + 2KNO3**

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Considering the reaction, **3Fe + 4H20 🡪 Fe3O4 + 4H2**. if 36.0g of H2Ois mixed with 67.0g Fe, which is the limiting reactant?

**Determine mass of product:**

1. Determine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of product produced by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Convert moles of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to mass of the product using \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Consider the reaction, **3Fe + 4H20 🡪 Fe3O4 + 4H2**. What mass in grams of black iron oxide is produced?

**Remaining mass of excess reactant**

A remaining reactant has material left after the reaction is completed.

1. Determine \_\_\_\_\_\_\_\_\_\_\_\_\_ of product produced by limiting reactant
2. Use moles ratio to determine the amount of moles for the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Use the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the excess reactant to convert moles to mass.
4. Find the difference between the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the amount \_\_\_\_\_\_\_\_\_\_\_\_\_ in the reaction.

**Limiting Reactant - Practice**

Consider the reaction, **3Fe + 4H20 🡪 Fe3O4 + 4H2**. What mass (g) of excess reactant remains after the reaction?

**Percentage Yield**

* In real life it is a common saying that “things did not go as planned”
* The chemical reactions that we write are considered **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
	+ - Theoretical Yield:
* In a lab, the material that is produced is considered the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
	+ - Actual Yield:

**Percentage Yield**

* Percentage yield is the percentage of the ratio between the actual yield to the theoretical yield.
	+ Formula:

**Percentage Yield - Practice**

Chlorobenzene, C6H5Cl, is used in the production of asprin, dyes, and disinfectants. One industrial method of preparing chlorobenzene is to react benzene, C6H6 with chlorine.

**C6H6 + Cl2 🡪 C6H5Cl + HCL**

When 36.8g of C6H6 react with an excess of Cl2, the actual yield of C6H5Cl is 38.8g. What is the percentage yield of C6H5Cl?