Limiting Reactants / Excess Reactants

reactant that is used up completely in a reaction, controls amount of product that can be made

all the other reactants

How do we figure out which reactant is the limiting reactant?

Ex) $Cu(s) + 2AgNO_3(aq) \rightarrow 2Ag(s) + Cu(NO_3)_2(aq)$

You react 2.00 g copper (GIVEN 1) w/ 1.10 g silver (1) nitrate. (GIVEN 2)

(1) which reactant is the limiting reactant & what is the theoretical yield of silver?

$$2.00\,g\,Cu \left| \frac{1\,mol\,Cu}{63.55\,g\,Cu} \right| \frac{2\,mol\,Ag}{1\,mol\,Cu} \left| \frac{107.87\,g\,Ag}{1\,mol\,Ag} \right| = 6.79\,g\,Ag$$

$$1.10\,g\,AgNO_3 \left| \frac{1\,mol\,AgNO_3}{169.88\,g\,AgNO_3} \right| \frac{2\,mol\,Ag}{2\,mol\,AgNO_3} \left| \frac{107.87\,g\,Ag}{1\,mol\,Ag} \right| = .698\,g\,Ag$$

1 Ag × 107.87 = 107.87 g
1 N × 14.01 = 14.01 g
3 O × 16.00 = 48.00 g
169.88 g

LR = $AgNO_3$ TY = .698 g Ag
ER = Cu