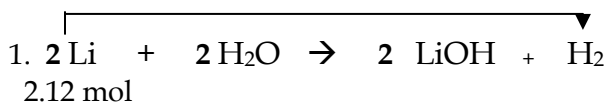


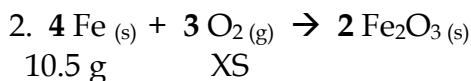
Mrs B's solutions:



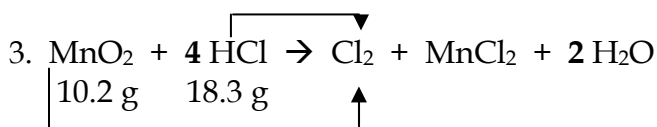
Mole ratio from balanced equation

Molar mass from Periodic Table

2.12 mol Li	1 mol H <sub>2</sub>	= 1.06 mol H <sub>2</sub>
	2 mol Li	



10.5 g Fe	1 mol Fe	2 mol Fe <sub>2</sub> O <sub>3</sub>	159.7 g	= 15.0 g Fe <sub>2</sub> O <sub>3</sub>
	55.85 g	4 mol Fe	1 mol Fe <sub>2</sub> O <sub>3</sub>	



Competing reactions

Least amount of product therefore MnO<sub>2</sub> is the L/R.

MnO<sub>2</sub>

10.2 g MnO <sub>2</sub>	1 mol MnO <sub>2</sub>	1 mol Cl <sub>2</sub>	0.117 mol Cl <sub>2</sub>
	86.94 g	1 mol MnO <sub>2</sub>	

HCl

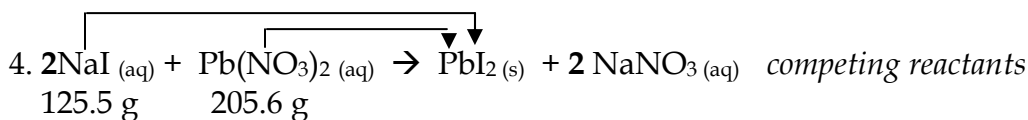
18.3 g HCl	1 mol HCl	1 mol Cl <sub>2</sub>	0.125 mol Cl <sub>2</sub>
	36.46 g	4 mol HCl	

Starting with the Least amount of product, convert this to grams:

0.117 mol Cl <sub>2</sub>	70.90 g	= 8.30 g Cl <sub>2</sub>
	1 mol Cl <sub>2</sub>	

This is the Theoretical yield

% Yield = (actual yield/theoretical yield) x 100% so: 7.20 g/8.30 g x 100% = 86.7% Yield



This is the LEAST amount of Product so NaI is the L/R

NaI

125.5 g NaI	1 mol NaI	1 mol PbI <sub>2</sub>	461.00g	= 193.0 g PbI <sub>2</sub>
	149.89 g	2 mol NaI	1 mol PbI <sub>2</sub>	

This is the Theoretical yield

Pb(NO<sub>3</sub>)<sub>2</sub>

205.6 g Pb(NO <sub>3</sub> ) <sub>2</sub>	1 mol Pb(NO <sub>3</sub> ) <sub>2</sub>	1 mol PbI <sub>2</sub>	461.00g	= 286.2 g PbI <sub>2</sub>
	331.22 g	1 mol Pb(NO <sub>3</sub> ) <sub>2</sub>	1 mol PbI <sub>2</sub>	

% Yield =	164.5 g actual yield in lab (given)	X 100% =	85.23 %
	193.0 g theoretical yield (calculated)		