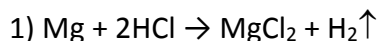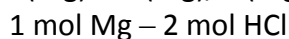# Answer on Question #64470 - Chemistry – General Chemistry

Suppose you ran this same reaction (using the balloon setup as seen in the video) on your own with two different flasks. In Flask A, you reacted 5.10 g Mg with 0.447 mol HCl. In Flask B, you reacted 24.21 g Mg with 0.998 mol HCl. Which ballon will inflate the most?
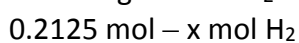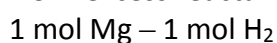
Solution.
1) $Mg + 2HCl \rightarrow MgCl_2 + H_2\uparrow$
$n(Mg) = m(Mg)/M(Mg) = 5.1/24 = 0.2125$ mol
1 mol Mg − 2 mol HCl
0.2125 mol Mg − x mol HCl
x = 0.425 mol HCl
HCl − excess reactant, Mg − limiting reactant
1 mol Mg − 1 mol H_2
0.2125 mol − x mol H_2
x = 0.2125 mol
$V(H_2) = n(H_2) \times 22.4 = 0.2125 \times 22.4 = 4.76$ L
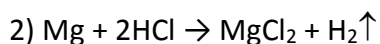
2) $Mg + 2HCl \rightarrow MgCl_2 + H_2\uparrow$
$n(Mg) = m(Mg)/M(Mg) = 24.21/24 = 1.00875$ mol
1 mol Mg − 2 mol HCl
1.00875 mol Mg − x mol HCl
x = 2.0175 mol HCl
Mg − excess reactant, HCl − limiting reactant
2 mol HCl − 1 mol H_2
0.998 mol − x mol H_2
x = 0.499 mol
$V(H_2) = n(H_2) \times 22.4 = 0.499 \times 22.4 = 11.1776$ L
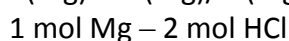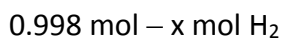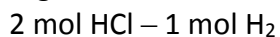
Answer: Flask B − $V(H_2)$ = 11.1776 L > Flask A − $V(H_2)$ = 4.76 L

Answer provided by https://www.AssignmentExpert.com