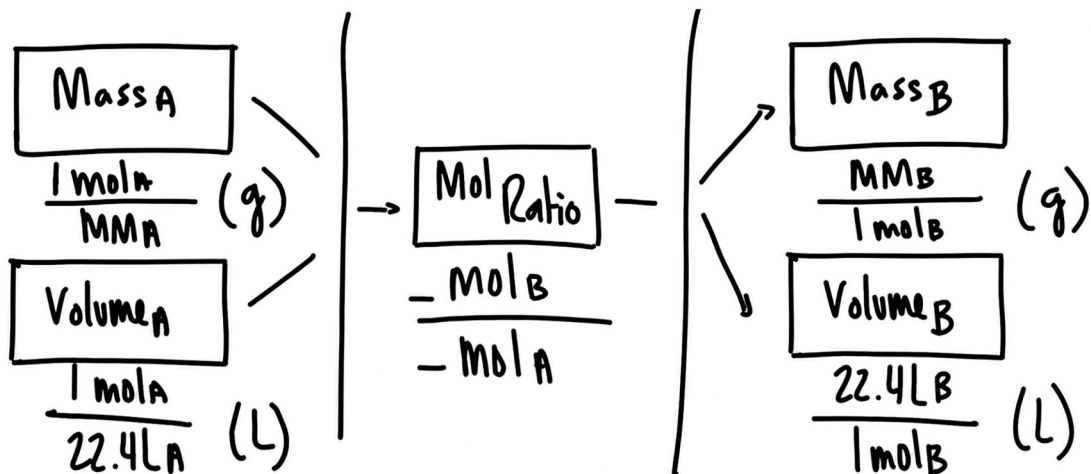


Three Step Conversion Roadmap



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Three Step Conversion Variations



30.0 L H_2 , convert to volume Cl_2

$_ \text{ L H}_2 \rightarrow _ \text{ mol H}_2$	$(L_A \rightarrow L_B)$
$_ \text{ mol H}_2 \rightarrow _ \text{ mol Cl}_2$	
$_ \text{ mol Cl}_2 \rightarrow _ \text{ volume Cl}_2$	

60.0 g H_2 , convert to mass HCl

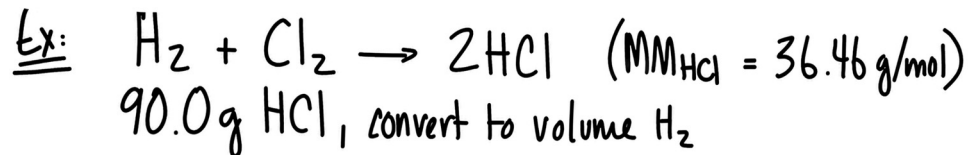
$_ \text{ g H}_2 \rightarrow _ \text{ mol H}_2$	
$_ \text{ mol H}_2 \rightarrow _ \text{ mol HCl}$	$(g_A \rightarrow g_B)$
$_ \text{ mol HCl} \rightarrow _ \text{ mass HCl}$	

90.0 g HCl , convert to volume H_2

$_ \text{ g HCl} \rightarrow _ \text{ mol HCl}$	
$_ \text{ mol HCl} \rightarrow _ \text{ mol H}_2$	$(g_A \rightarrow L_B)$
$_ \text{ mol H}_2 \rightarrow _ \text{ volume H}_2$	

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Three Step Volume Conversions



$$\begin{array}{r|l}
 90.0 \text{ g HCl} & \text{to mol HCl} \\
 \hline
 & 36.46 \text{ g HCl} \\
 & = 2.47 \text{ mol HCl}
 \end{array}
 \quad
 \begin{array}{r|l}
 \text{— mol HCl to mol H}_2 \\
 2.47 \text{ mol HCl} & | \text{ 1 mol H}_2 \\
 \hline
 & 2 \text{ mol HCl} \\
 & = 1.24 \text{ mol H}_2
 \end{array}
 \quad
 \begin{array}{r|l}
 \text{— mol H}_2 \text{ to volume H}_2 \\
 1.24 \text{ mol H}_2 & | \text{ 22.4 L H}_2 \\
 \hline
 & 1 \text{ mol H}_2 \\
 & = 34.44 \text{ L H}_2
 \end{array}$$