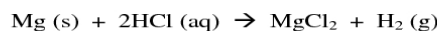


Date: _____ Block: _____ Name: _____

Chemistry 11 - MOLE RATIOS (using the three step method)

Magnesium metal reacts with hydrochloric acid to produce magnesium chloride and hydrogen gas. The chemical equation is given as the following:



If 4 moles of HCl is used, how many moles of MgCl₂ will be formed in the reaction?

Step (1): What is the mole ratio for HCl to MgCl₂?

2 mol HCl : 1 mol MgCl₂

Step (2): Write two conversion factors for this mole ratio.

$\frac{2 \text{ mol HCl}}{1 \text{ mol MgCl}_2}$ or $\frac{1 \text{ mol MgCl}_2}{2 \text{ mol HCl}}$

Step (3): Calculate the number of moles of MgCl₂ formed.

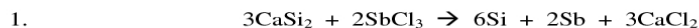
What you want = What you have X Conversion factor

Moles MgCl₂ = 4 mol HCl X $\frac{1 \text{ mol MgCl}_2}{2 \text{ mol HCl}}$

= 2 mol MgCl₂

2 mol MgCl₂

Now try these example questions on a separate sheet of paper using the 3-step method!



a) If 0.65 moles of CaSi₂ is used, how many moles of Sb will be formed in the reaction?

Answer: 0.43 mol Sb

b) If 1.47 moles of Si is formed in the reaction, how many moles of SbCl₃ was used at the start of the reaction?

Answer: 0.49 mol SbCl₃

2. In a Chemistry 11 experiment, John mixes 0.010 moles of calcium chloride together with silver nitrate in a beaker. This results in the formation of silver chloride and calcium nitrate. How many moles of silver chloride are formed in the reaction?

Answer: 0.020 mol AgCl