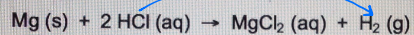


### Warm-up:

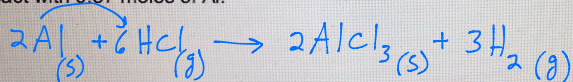
1. Magnesium reacts with hydrochloric acid according to the following balanced chemical equation:



If two moles of hydrochloric acid react with excess magnesium, how many moles of hydrogen gas will be produced?

$$\frac{2 \text{ mol HCl}}{2 \text{ mol HCl}} \left| \frac{1 \text{ mol H}_2}{2 \text{ mol HCl}} \right| = 1 \text{ mol H}_2$$

2. Aluminum reacts with HCl to produce aluminum chloride and hydrogen gas. Write a balanced equation for the reaction and calculate the number of moles of HCl required to react with 0.87 moles of Al.

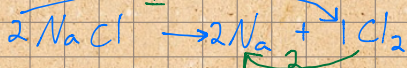


$$\frac{0.87 \text{ mol Al}}{2 \text{ mol Al}} \left| \frac{6 \text{ mol HCl}}{2 \text{ mol Al}} \right| = 2.6 \text{ mol HCl}$$

### Mass→Mass Stoichiometric Problems:

★ Using your mole road map, you can mole bridge to convert to/from grams, liters, & representative particles

- Ex 1: How many molecules of chlorine are produced when 1.2 g of Sodium chloride decomposes?



$$\frac{1.2 \text{ g NaCl}}{58.5 \text{ g NaCl}} \left| \frac{1 \text{ mol NaCl}}{2 \text{ mol NaCl}} \right| \left| \frac{1 \text{ mol Cl}_2}{2 \text{ mol NaCl}} \right| \left| \frac{6.02 \cdot 10^{23} \text{ molec Cl}_2}{1 \text{ mol Cl}_2} \right| = 6.2 \cdot 10^{21} \text{ molecules Cl}_2$$

- Ex 2: How many grams of Sodium are produced if 3.2 g of Cl<sub>2</sub> were produced?

$$\frac{3.2 \text{ g Cl}_2}{70.90 \text{ g Cl}_2} \left| \frac{1 \text{ mol Cl}_2}{1 \text{ mol Cl}_2} \right| \left| \frac{2 \text{ mol Na}}{1 \text{ mol Cl}_2} \right| \left| \frac{22.99 \text{ g Na}}{1 \text{ mol Na}} \right| = 2.1 \text{ g Na}$$