# Common Acid Reactions

Section 9.7

#### Acids and Hydroxide Bases

- Neutralization reaction
- Products are water and ionic salt

 $HA(aq) + MOH(aq) \rightarrow H_2O(l) + MA(aq)$ 

• Where M is some metal, and A is some anion

# Example #1

Determine the products of the reaction between NaOH and HBr.



- Metal is Na<sup>+</sup>
- Anion is Br -

#### $HBr(aq) + NaOH(aq) \rightarrow H_2O(l) + NaBr(aq)$

### Acids and Carbonate or Bicarbonate

Products are water and carbon dioxide and ionic salt

 $HA(aq) + MCO_3(aq) → H_2O(l) + CO_2(g) + MA(aq)$  $HA(aq) + MHCO_3(aq) → H_2O(l) + CO_2(g) + MA(aq)$ 

• Where M is some metal, and A is some anion



Write a balanced equation for the reaction of nitric acid (HNO<sub>3</sub>) with each compound:

a. NaHCO<sub>3</sub>

b. MgCO<sub>3</sub>

## Example #2 Solved

a. NaHCO<sub>3</sub>: Na<sup>+</sup> is M, NO<sub>3</sub><sup>-</sup> is A

 $HNO_{3}(aq) + NaHCO_{3}(aq) \rightarrow H_{2}O(l) + CO_{2}(g) + NaNO_{3}(aq)$ 

b.  $MgCO_3$ :  $Mg^{2+}$  is M,  $NO_3^{-}$  is A

 $2HNO_3(aq) + MgCO_3(aq) \rightarrow H_2O(l) + CO_2(g) + Mg(NO_3)_2(aq)$ 

#### Acids and Metals

Products are hydrogen gas and ionic salt

$$HA(aq) + M(s) \rightarrow H_2(g) + MA(aq)$$

• Where M is some metal, and A is some anion



Write a balanced equation for the reaction of sulfuric acid  $(H_2SO_4)$  with each metal:

a. Na

b. Ca

c. Sr

# Example #3 Solved

a. Na

 $\label{eq:H2SO4} \begin{array}{l} H_2SO_4(aq) + 2Na(s) \rightarrow H_2(g) + Na_2SO_4(aq) \\ \mbox{b. Ca} \end{array}$ 

 $H_2SO_4(aq) + Ca(s) \rightarrow H_2(g) + CaSO_4(aq)$ c. Sr

 $H_2SO_4(aq) + Sr(s) \rightarrow H_2(g) + SrSO_4(aq)$ 



Write a balanced equation for the reaction of hydrochloric acid (HCI) with each compound:

a. LiOH

b. Na<sub>2</sub>CO<sub>3</sub>

c. Mg