

## CHM 150/151: Balancing Equations Handout Key

**BALANCE** the following chemical equations:

- $\text{Zn (s)} + 2 \text{AgNO}_3 \text{ (aq)} \rightarrow \text{Zn(NO}_3)_2 \text{ (aq)} + 2 \text{Ag (s)}$
- $\text{N}_2 \text{ (g)} + 3 \text{H}_2 \text{ (g)} \rightarrow 2 \text{NH}_3 \text{ (g)}$
- $\text{NaCl (aq)} + \text{AgC}_2\text{H}_3\text{O}_2 \text{ (aq)} \rightarrow \text{NaC}_2\text{H}_3\text{O}_2 \text{ (aq)} + \text{AgCl (s)}$
- $3 \text{Ca(OH)}_2 \text{ (aq)} + 2 \text{H}_3\text{PO}_4 \text{ (aq)} \rightarrow 6 \text{H}_2\text{O (l)} + \text{Ca}_3(\text{PO}_4)_2 \text{ (s)}$
- $2 \text{HNO}_3 \text{ (aq)} + \text{Ni (s)} \rightarrow \text{Ni(NO}_3)_2 \text{ (aq)} + \text{H}_2 \text{ (g)}$
- $\text{Ba(HCO}_3)_2 \text{ (s)} \rightarrow \text{BaCO}_3 \text{ (s)} + \text{H}_2\text{O (g)} + \text{CO}_2 \text{ (g)}$
- $\text{BaCl}_2 \text{ (aq)} + \text{Na}_2\text{SO}_4 \text{ (aq)} \rightarrow 2 \text{NaCl (aq)} + \text{BaSO}_4 \text{ (s)}$
- $\text{Al}_2(\text{CO}_3)_3 \text{ (s)} + 6 \text{HNO}_3 \text{ (aq)} \rightarrow 2 \text{Al(NO}_3)_3 \text{ (aq)} + 3 \text{H}_2\text{O (l)} + 3 \text{CO}_2 \text{ (g)}$
- $\text{Ca (s)} + 2 \text{H}_2\text{O (l)} \rightarrow \text{Ca(OH)}_2 \text{ (aq)} + \text{H}_2 \text{ (g)}$
- $2 \text{LiHCO}_3 \text{ (s)} \rightarrow \text{Li}_2\text{CO}_3 \text{ (s)} + \text{H}_2\text{O (s)} + \text{CO}_2 \text{ (g)}$
- $\text{NaHCO}_3 \text{ (s)} + \text{HCl (aq)} \rightarrow \text{NaCl (aq)} + \text{H}_2\text{O (l)} + \text{CO}_2 \text{ (g)}$
- $\text{MgBr}_2 \text{ (aq)} + 2 \text{KOH (aq)} \rightarrow 2 \text{KBr (aq)} + \text{Mg(OH)}_2 \text{ (s)}$
- $\text{Mn (s)} + 2 \text{CuCl (aq)} \rightarrow 2 \text{Cu (s)} + \text{MnCl}_2 \text{ (aq)}$
- $\text{Zn (s)} + 2 \text{HCl (aq)} \rightarrow \text{ZnCl}_2 \text{ (aq)} + \text{H}_2 \text{ (g)}$
- $3 \text{NaOH (aq)} + \text{H}_3\text{PO}_4 \text{ (aq)} \rightarrow 3 \text{H}_2\text{O (l)} + \text{Na}_3\text{PO}_4 \text{ (aq)}$
- $2 \text{K (s)} + 2 \text{H}_2\text{O (l)} \rightarrow 2 \text{KOH (aq)} + \text{H}_2 \text{ (g)}$
- $\text{AlCl}_3 \text{ (aq)} + \text{K}_3\text{PO}_4 \text{ (aq)} \rightarrow 3 \text{KCl (aq)} + \text{AlPO}_4 \text{ (s)}$
- $2 \text{KOH (aq)} + \text{H}_2\text{CO}_3 \text{ (aq)} \rightarrow 2 \text{H}_2\text{O (l)} + \text{K}_2\text{CO}_3 \text{ (aq)}$
- $3 \text{Cd (s)} + 2 \text{Ni(NO}_3)_3 \text{ (aq)} \rightarrow 3 \text{Cd(NO}_3)_2 \text{ (aq)} + 2 \text{Ni (s)}$
- $2 \text{Al (s)} + 6 \text{HCl (aq)} \rightarrow 2 \text{AlCl}_3 \text{ (aq)} + 3 \text{H}_2 \text{ (g)}$