There are six types of decomposition you should be familiar with:

I) Decomposition of a Hydrate:
   - a hydrate is a compound with water in it
   Ex. $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O} (s) \xrightarrow{A} \text{CuSO}_4 (s) + 5 \text{H}_2\text{O} (g)$

II) Decomposition of metal hydroxide:
   - products are a metal oxide and water
   Ex. $\text{Ca(OH)}_2 (s) \xrightarrow{A} \text{CaO} (s) + \text{H}_2\text{O} (g)$

III) Decomposition of a metal carbonate:
   - products are metal oxide and carbon dioxide
   Ex. $\text{Na}_2\text{CO}_3 (s) \rightarrow \text{Na}_2\text{O}(s) + \text{CO}_2(g)$

IV) Decomposition of a metal nitrate:
   - products are metal nitrite and oxygen gas
   Ex. $2 \text{NaNO}_3 (s) \rightarrow 2 \text{NaNO}_2(s) + \text{O}_2(g)$

V) Decomposition of a metal chlorate:
   - products are metal chloride and oxygen gas
   Ex. $2\text{KClO}_3 (s) \rightarrow 2\text{KCl}(s) + 3\text{O}_2(g)$

VI) Decomposition of certain acids:
   - products are non-metal oxide and water
   Ex. $\text{H}_2\text{SO}_4 \text{(aq)} \rightarrow \text{SO}_3(s) + \text{H}_2\text{O}(l)$