

1. a.  $2\text{C}_2\text{H}_2(\text{g}) + 5\text{O}_2 \longrightarrow 4\text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$   
combustion
- b.  $\text{Zn}(\text{s}) + \text{CuSO}_4(\text{aq}) \longrightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu}(\text{s})$   
single replacement
- c.  $\text{Cl}_2(\text{aq}) + 2\text{KI}(\text{aq}) \longrightarrow 2\text{KCl}(\text{aq}) + \text{I}_2(\text{aq})$   
single replacement
- d.  $2\text{H}_2\text{O}_2(\text{l}) \longrightarrow 2\text{H}_2\text{O}(\text{l}) + \text{O}_2(\text{g})$   
decomposition
- e.  $\text{MgCl}_2(\text{s}) \longrightarrow \text{Mg}(\text{s}) + \text{Cl}_2$   
decomposition
- f.  $\text{Fe}(\text{s}) + \text{I}_2(\text{s}) \longrightarrow \text{FeI}_2(\text{s})$   
synthesis
- g.  $16\text{Cu}(\text{s}) + \text{S}_8(\text{l}) \longrightarrow 8\text{Cu}_2\text{S}(\text{s})$   
synthesis
- h.  $\text{C}_6\text{H}_{12}\text{O}_6(\text{aq}) + 6\text{O}_2(\text{aq}) \longrightarrow 6\text{CO}_2(\text{aq}) + 6\text{H}_2\text{O}(\text{l})$   
combustion
- i.  $\text{FeCl}_2(\text{aq}) + \text{K}_2\text{S}(\text{aq}) \longrightarrow \text{FeS}(\text{s}) + 2\text{KCl}(\text{aq})$   
double replacement
- j.  $\text{H}_2\text{SO}_4(\text{aq}) + 2\text{NaOH}(\text{aq}) \longrightarrow \text{Na}_2\text{SO}_4(\text{aq}) + 2\text{H}_2\text{O}(\text{l})$   
double replacement, water forming
- k.  $\text{Pb}(\text{NO}_3)_2(\text{aq}) + \text{K}_2\text{CrO}_4(\text{aq}) \longrightarrow \text{PbCrO}_4(\text{s}) + 2\text{KNO}_3(\text{aq})$   
double replacement
- l.  $4\text{Cr}(\text{s}) + 3\text{SnCl}_4(\text{aq}) \longrightarrow 4\text{CrCl}_3(\text{aq}) + 3\text{Sn}(\text{s})$   
single replacement

## Example 5-6

Write the equation for the reaction between aluminum chloride and aqueous potassium iodide.

## Suggested solution

The reactants are reactants.

Table 5-2 shows that aluminum is more reactive than magnesium, so magnesium chloride and aluminum iodide are formed.

The equation is

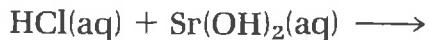
3M

## Example 5-7

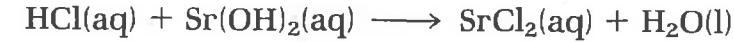
Complete and balance the following equations for reactions in aqueous solutions.

## Solved Solution

Write the correct formulas for the reactants, and indicate that dissolved in water:



water, hydrogen replaces strontium to combine with the. The table in Appendix D indicates that the strontium remains dissolved in the water that was present in the and the water formed is in the liquid form:

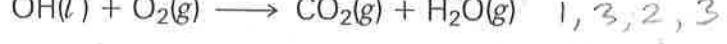
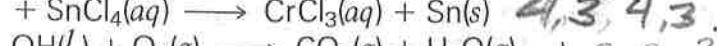
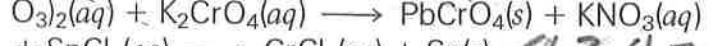
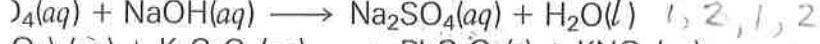
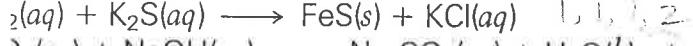
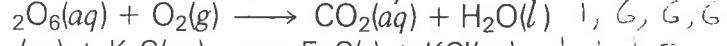
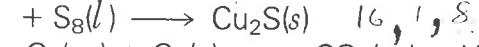
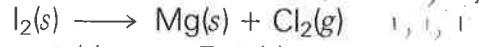
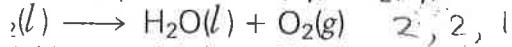
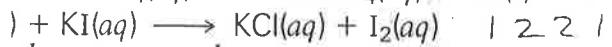
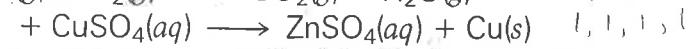
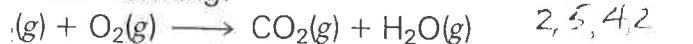


the equation is balanced by using a coefficient of 2 for HCl

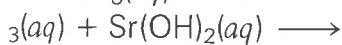
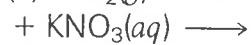
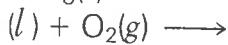
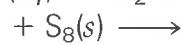
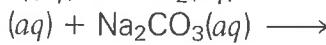
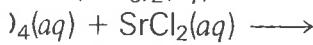
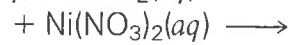
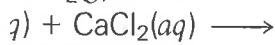
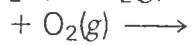
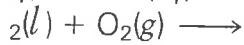
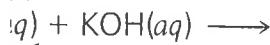
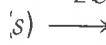
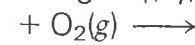
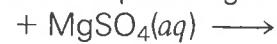


## and Practice

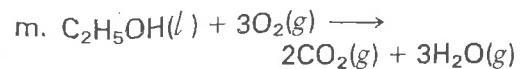
the following equations and classify each of the reactions as synthesis, decomposition, combustion, single replacement, double replacement-water-forming:



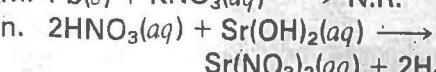
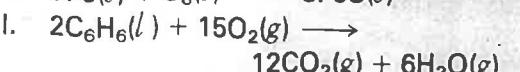
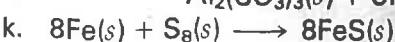
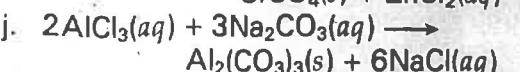
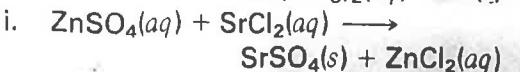
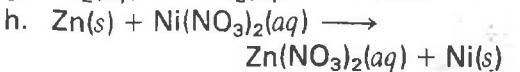
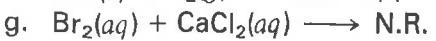
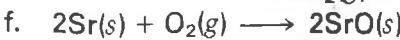
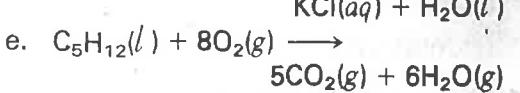
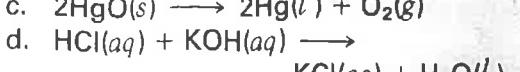
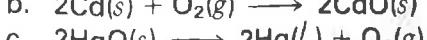
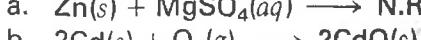
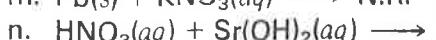
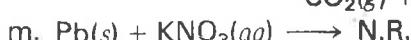
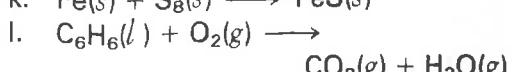
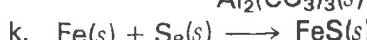
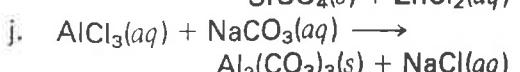
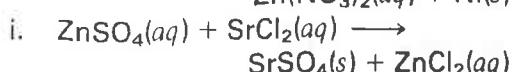
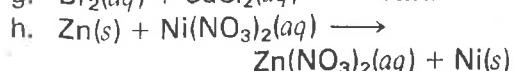
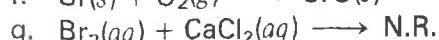
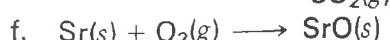
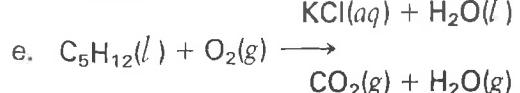
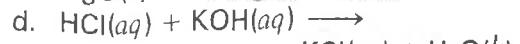
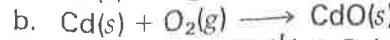
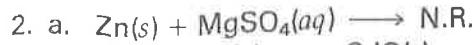
to the equation given the reactants:



each equation in item 2



combustion



4. a. single replacement

b. synthesis, combustion

c. decomposition

d. water-forming

e. combustion

f. synthesis, combustion

g. single replacement

h. single replacement

i. double replacement

j. double replacement

k. synthesis

l. combustion

m. single replacement

n. water-forming