

Identify the type of reaction, predict the products, and write the complete balanced equation. On the key, you will see states of matter for all reagents and products. You should be able to identify states of matter for elements, but we have not yet covered this for compounds – so do not worry about that.

1. aluminum plus magnesium
2. potassium hydroxide plus hydrogen sulfide gas
3. barium hydroxide breaks down into...
4. ammonium acetate plus iron (II) chloride
5.  $\text{tin}^{4+}$  plus lead (II) nitrate
6. magnesium carbonate plus phosphoric acid
7. ammonium chloride plus sodium sulfate
8. magnesium carbonate breaks down into ....
9. zinc plus sulfuric acid
10. iron (II) plus sulfur
11. chlorine gas plus lithium bromide
12. calcium oxide plus water
13. sodium chloride plus potassium chromate
14. beryllium plus fluorine gas
15. copper (II) oxide breaks down into ...
16. magnesium plus zinc nitrate

Lame chemistry joke:

Two atoms bump into each other. The second one cries out, "Oh no! I think I've lost an electron!" "Are you sure?", asks the first. The second atom replies, \_\_\_\_\_

1.  $\text{Al} + \text{Mg} \rightarrow$  no reaction.      Synthesis will not proceed, both are metals.
2.  $2 \text{KOH}_{(\text{aq})} + \text{H}_2\text{S}_{(\text{g})} \rightarrow 2 \text{H}_2\text{O}_{(\text{L})} + \text{K}_2\text{S}_{(\text{aq})}$       DR
3.  $\text{Ba}(\text{OH})_2 \rightarrow \text{H}_2\text{O}_{(\text{L})} + \text{BaO}_{(\text{s})}$       decomposition of a metal hydroxide – check your best friend
4.  $2 \text{NH}_4\text{C}_2\text{H}_3\text{O}_2_{(\text{aq})} + \text{FeCl}_2_{(\text{aq})} \rightarrow 2 \text{NH}_4\text{Cl}_{(\text{aq})} + \text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_2_{(\text{aq})}$       DR
5.  $\text{Sn}^{4+} + 2 \text{Pb}(\text{NO}_3)_2_{(\text{aq})} \rightarrow 2 \text{Pb}_{(\text{s})} + \text{Sn}(\text{NO}_3)_4_{(\text{aq})}$       SR
6.  $3 \text{MgCO}_3_{(\text{s})} + 2 \text{H}_3\text{PO}_4_{(\text{aq})} \rightarrow \text{Mg}_3(\text{PO}_4)_2_{(\text{aq})} + 3 \text{H}_2\text{CO}_3_{(\text{aq})}$       Usually both reagents have to be a solution or a gas, but since one is an acid, this DR will proceed.
7.  $2 \text{NH}_4\text{Cl}_{(\text{s})} + \text{Na}_2\text{SO}_4_{(\text{aq})} \rightarrow (\text{NH}_4)_2\text{SO}_4_{(\text{aq})} + 2 \text{NaCl}_{(\text{aq})}$       DR
8.  $\text{MgCO}_3 \rightarrow \text{CO}_2_{(\text{g})} + \text{MgO}$       decomposition of a metal carbonate – check your best friend.
9.  $\text{Zn}_{(\text{s})} + \text{H}_2\text{SO}_4_{(\text{aq})} \rightarrow \text{ZnSO}_4_{(\text{aq})} + \text{H}_2_{(\text{g})}$       SR
10.  $\text{Fe}_{(\text{s})} + \text{S}_{(\text{s})} \rightarrow \text{FeS}_{(\text{s})}$       Synthesis reaction
11.  $\text{Cl}_2_{(\text{g})} + 2 \text{LiBr}_{(\text{aq})} \rightarrow 2 \text{LiCl}_{(\text{s})} + \text{Br}_2_{(\text{l})}$       SR
12.  $\text{CaO}_{(\text{s})} + \text{H}_2\text{O}_{(\text{l})} \rightarrow \text{Ca}(\text{OH})_2_{(\text{aq})}$       Synthesis of a metal hydroxide – check your best friend
13.  $2 \text{NaCl}_{(\text{aq})} + \text{K}_2\text{CrO}_4_{(\text{aq})} \rightarrow \text{Na}_2\text{CrO}_4_{(\text{aq})} + 2 \text{KCl}_{(\text{aq})}$       DR
14.  $\text{Be} + \text{F}_2 \rightarrow \text{BeF}_2$       synthesis
15.  $2 \text{CuO} \rightarrow 2 \text{Cu}_{(\text{s})} + \text{O}_2_{(\text{g})}$       decomposition of a metal oxide – check your best friend
16.  $\text{Mg}_{(\text{s})} + \text{Zn}(\text{NO}_3)_2_{(\text{aq})}$  yields  $\text{Mg}(\text{NO}_3)_2_{(\text{aq})} + \text{Zn}_{(\text{s})}$       SR

Lame chemistry joke continued: “Yes, I’m positive.” UGH! Bad one.