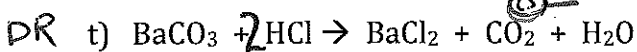
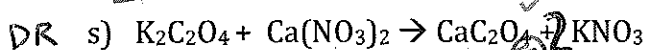
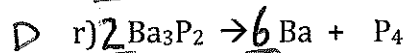
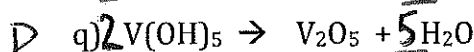
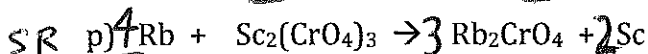
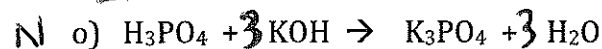
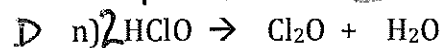
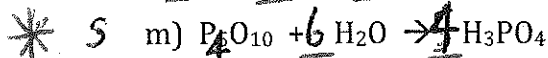
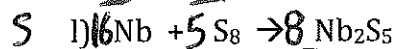
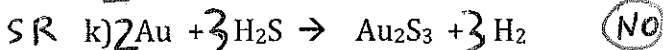
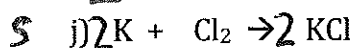
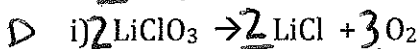
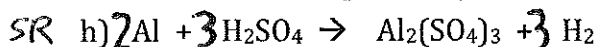
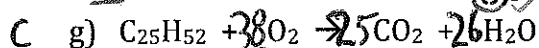
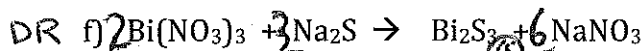
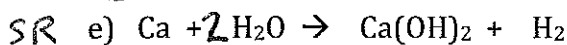
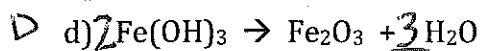
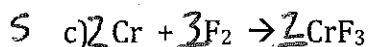
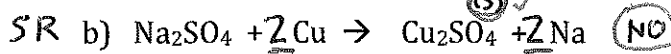


4.2 Review Questions (p. 184)

2 each

1. Balance each of the following reactions:



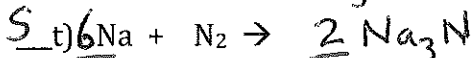
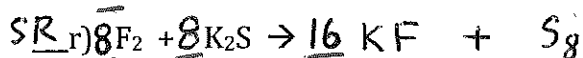
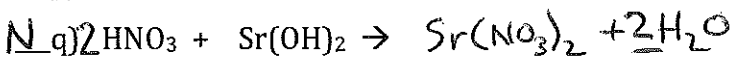
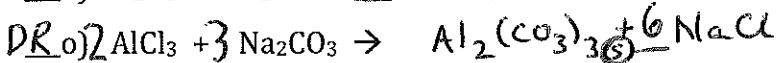
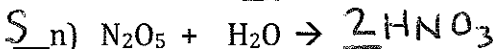
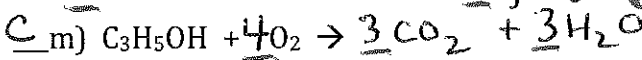
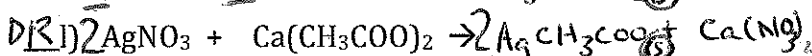
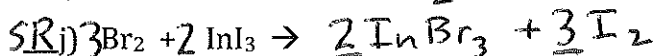
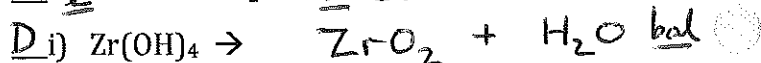
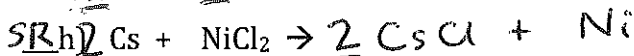
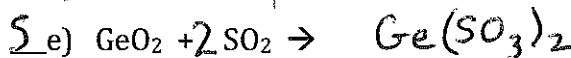
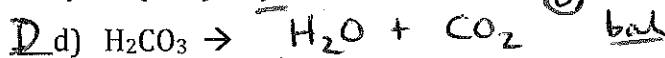
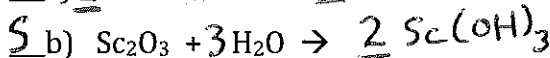
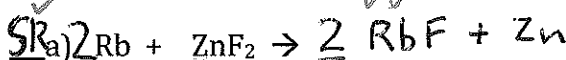
2. a) Classify each of the reactions in question 1 as synthesis, decomposition, combustion, single replacement, double replacement or neutralization.

b) Which of the single replacement reactions would *not* proceed spontaneously? *b, k*

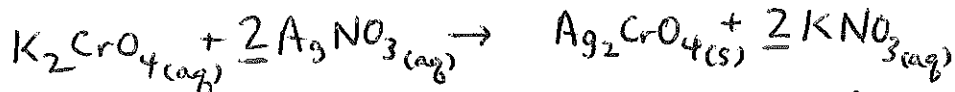
c) Which of the double replacement reactions involve precipitate formation? *a, f, s*

d) Indicate the precipitates with a (s).

3. Classify each of the following reactions, using the following key: S = Synthesis, D = Decomposition, C = Combustion, SR = Single Replacement, DR = Double Replacement, N = Neutralization. Complete the equations and balance them. Indicate any precipitates that form with a (s).

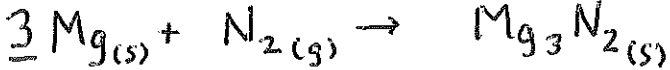


4. Classify each of the following chemical changes using the key from question 3. Write

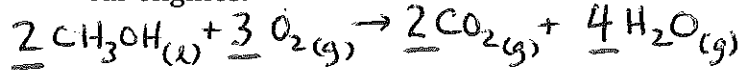


balanced formula equations for each, including ^{DR} Potassium chromate solution indicates the endpoint in a potato chip analysis with a standard silver nitrate solution.

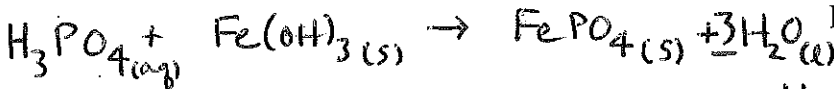
S a) A piece of magnesium ribbon on a stock shelf reacts with nitrogen gas in the air to form a black coating over time.



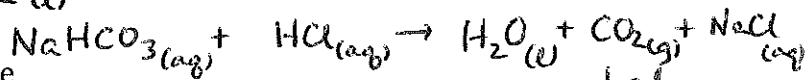
C j) Methanol (CH₃OH) is combusted in race car engines.



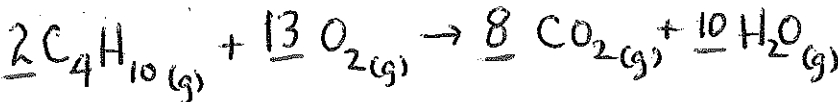
N b) Phosphoric acid solution removes iron(III) hydroxide stains from an old bath tub.



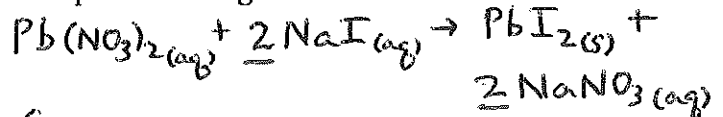
DR k) Baking soda (sodium hydrogen carbonate) ~~may~~ is used to neutralize a spill of hydrochloric acid.



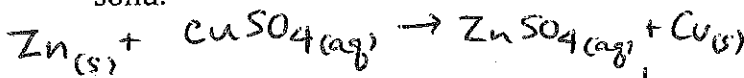
C c) Butane gas is combusted in a disposable lighter.



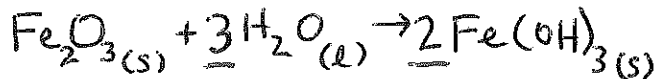
DR l) A bright yellow pigment once used in paints is formed from the reaction of lead(II) nitrate and sodium iodide solutions. Why is this paint no longer used?



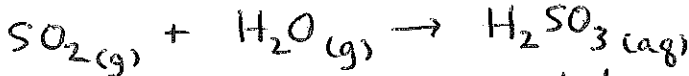
SR d) A zinc strip placed in a solution of copper (II) sulphate becomes coated with brownish solid.



S m) Iron(III) oxide and water combine to form a basic compound often called rust.

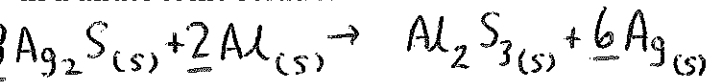
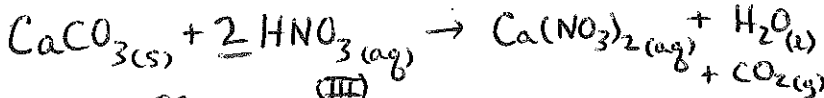


S e) Sulphur dioxide emitted from industrial plants combines with water vapour to form acid rain.

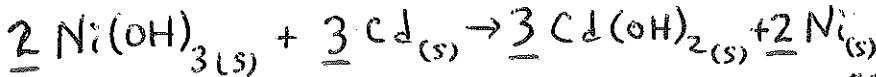


SR n) Dark silver sulphide tarnish may be removed from knives and forks by placing them in contact with a piece of aluminum foil in a dilute ionic solution.

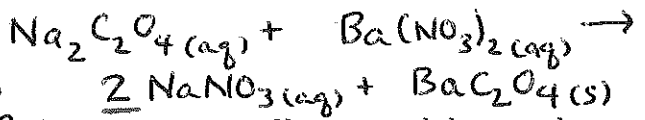
DR f) Calcium carbonate in marble structures is eroded over time by nitric acid in acid rain.



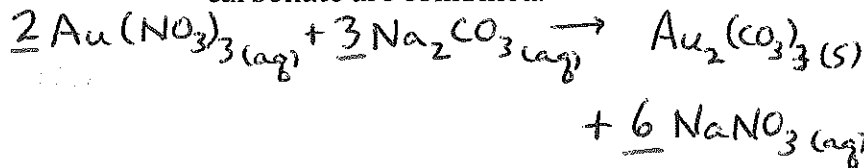
SR g) Nickel hydroxide reacts with a cadmium anode in a prototype rechargeable battery.



DR o) A precipitate of barium oxalate forms in a solution of sodium nitrate following the combination of two solutions.



DR h) Solutions of gold(III) nitrate and sodium carbonate are combined.



SR p) A precipitate of barium sulphate and hydrogen gas are formed from the combination of a metal and an acid.

