**USING FLOWCHARTS IN QUALITATIVE ANALYSIS**

E.g. A solution is either silver nitrate or zinc nitrate. What steps would you use to analyze a sample and identify it?

-add an aqueous chloride such as lithium chloride solution

-if a precipitate forms, the sample is silver nitrate; if no precipitate forms, it is zinc nitrate

unknown solution

add LiCl(aq)

No precipitate forms Precipitate forms

∴ the solution is Zn(NO3)2(aq) ∴ the solution is AgCl(aq)

E.g. A solution may be iron(III) chloride, ammonium sulfate, or sodium carbonate. State the steps you would use to find out the identity of the solution.

-add aqueous magnesium ion, such as in magnesium nitrate solution

-if precipitate forms, the sample is sodium carbonate, if not, it is one of the other two

-add aqueous barium ion, such as in barium nitrate solution

- if precipitate forms, the sample is ammonium sulfate; if not, it is iron(III) chloride

unknown solution

add Mg(NO3)2(aq)

No precipitate forms Precipitate forms

∴ the solution is (NH4)2SO4(aq) or FeCl3(aq) ∴ the solution is Na2CO3(aq)

add Ba(NO3)2(aq)

No precipitate forms Precipitate forms

∴ the solution is FeCl3(aq) ∴ the solution is (NH4)2SO4(aq)

Write a qualitative analysis using flowcharts for:

1. A solution that may be ammonium acetate, potassium hydroxide, or calcium bromide
2. A solution that may be sodium phosphate, calcium iodide, or lithium sulfate