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- Why? to test for ~~aqueous~~ ammonium ions

- How?

- Add ~~5~~ aqueous sodium hydroxide to solution
- Heat over bunsen burner and test gas given off with damp red litmus paper
- Ammonia ($\text{NH}_3^{\#}$) is given off

- Remember

- Ammonia turns damp red litmus blue
- Same first step as ~~at~~ the identification of other aqueous cations.

- Why? To test For Calcium and Zinc in solution

- How?

- Add Sodium Hydroxide to form white precipitate
- Add excess Sodium Hydroxide
 - ↳ Zinc will dissolve
 - ↳ Calcium will not

For Zinc

- Repeat with Ammonia solution
- It dissolves

For Calcium

- Do Flame test
- A brick red colour will appear.

- Remember

- Zinc dissolves in excess Sodium Hydroxide
- Both form white precipitates.

- ~~What~~
- Why? To test for nitrate ions
 - How? Make the solution Alkaline and warm with Aluminium Foil
 - Reduction by aluminium
 - Ammonia gas given off
 - Remember
 - Ammonia can be identified with damp red Litmus paper
 - Use of aluminium
 - Use of sodium hydroxide

- Why? to test for chloride and bromide

- How?

- Add dilute nitric acid

- Add Silver Nitrate

Chloride will form a white precipitate

Bromide will form a cream precipitate

- Remember

- Silver Nitrate test

- Colours different for different halides.

- Why? To identify metal cations
 - Sodium
 - Lithium
 - Copper (II)
 - Potassium

- How? Flame test
 - Sodium orange/yellow
 - ~~Lithium~~ crimson
 - Copper (II) blue-green
 - Potassium Lilac

- Remember
 - LSCP = Lida Sells Cute Puppies
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- Rainbow order

441

• Why? To test for aqueous cations

• How?

- Iron (II) Fe^{2+}
- Iron (III) Fe^{3+}
- Copper (II) Cu^{2+}

• How?

- Add aqueous Sodium Hydroxide and check for colour of precipitate

- Iron (II) Fe^{2+}

green

- Iron (III) Fe^{3+}

brown

- Copper (II) Cu^{2+}

light blue

• Remember

- If the precipitate is coloured it is either iron or copper

- Eye-colours

- Why? To test for Sulfate ions

- How?

- add hydrochloric acid

- add Barium nitrate

- white precipitate = positive result

- Remember

- it is an anion

- hydrochloric acid gets rid of carbonates/impurities

- Why? To test for the presence of Carbonates
- How? ~~It~~ React with hydrochloric acid and bubble gas given off through lime water, if it creates a white precipitate ~~its~~ it contains a carbonate
- Remember:
 - Carbonates are anions
 - Carbonates give off carbon dioxide when reacted with acid