Year 11 Chemistry 8: Chemical Analysis Knowledge Organiser

1. Keywords	
Pure substance	A single element or compound not mixed with any other substance. They have a specific melting and boiling point
Melting point	The temperature at which a solid turns to a liquid
Boiling point	The temperature at which a liquid turns to a gas
Formulation	A mixture that has been designed as a useful product eg fuels, cleaning agents, medicines and fuels
Chromatography	Use to separate mixtures and identify substances
Rf	(distance moved by substance)/(distance moved by solvent)

2. Identification of common gases		
Gas	Test	Observation
Hydrogen	Burning splint	Squeaky pop
Oxygen	Glowing splint	Relights
Carbon dioxide	Limewater	Goes cloudy
Chlorine	Damp Litmus paper	Bleached (goes white)

3. Flame tests (TRIPLE ONLY)	
Metal ion	Colour
Lithium (Li^+)	Crimson
Sodium (Na^+)	Yellow
Potassium (K^+)	Lilac
Calcium (Ca^{2+})	Orange-red
Copper (Cu^{2+})	Green
Flame emission spectroscopy: A sample is put in a flame and the light given out passed through a spectroscope that can identify the ions in the sample	

4. Metal hydroxides (TRIPLE ONLY)	
Metal ion	Observation with addition of sodium hydroxide
Aluminium (Al^{3+})	White precipitate which dissolves in excess
Calcium (Ca^{2+})	White precipitate
Copper (Cu^{2+})	Blue precipitate
Iron II (Fe^{2+})	Green precipitate
Iron III (Fe^{3+})	Brown precipitate

5. Testing for negative ions (TRIPLE ONLY)		
Negative ion	Reagent	Observation
Carbonate	Add carboxylic acid	Fizzes releasing Carbon dioxide
Halide	Add silver nitrate	Cl^- = white precipitate Br^- = cream precipitate I^- = yellow precipitate
Sulfate	Add Barium Chloride	White precipitate