**C8 Learning Journey**

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| 1C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\D0188B64.tmp | A **pure** substance in a chemical sense only contains one **element** or **compound**. **Pure** substances have very **specific melting** and **boiling points**, and the more **impurities** are in a substance, the greater the range of temperatures over which it will melt and boil.  |
| 2C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\AC455B12.tmp | A **formulation** is a **mixture** that has been designed as a useful product. Many **formulations** are mixtures in which each **component** has a particular purpose. **Formulations** are made by mixing the components in carefully measured **quantities** to ensure that the product has the required **properties**. Formulations include **fuels**, **cleaning agents**, **paints**, **medicines**, **alloys**, **fertilisers** and **foods**. |
| 3C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\308CFCF0.tmp | Required practical - **Chromatography** can be used to separate mixtures and identify substances. **Chromatography** involves a **stationary phase** and a **mobile phase**. Separation depends on the **distribution** of substances between the phases. The ratio of the distance moved by a compound to the distance moved by the solvent can be expressed as its **Rf value = distance moved by substance/ distance moved by solvent**. The compounds in a mixture may separate into different spots but a **pure** compound will produce a **single spot**. |
| 4C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\9C92A07E.tmp | Gas testing - **oxygen** will **reignite** a **glowing** splint; **hydrogen** will make a lit splint burn brightly with a ‘**squeaky pop**’; **carbon dioxide** will make **limewater** go **cloudy**; **chlorine** will **bleach** damp litmus paper white. |
| 5 T C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\7C22A13C.tmp | **Flame tests** can be used to identify some **metal ions**:**Lithium** burns with a **crimson** flame**Sodium** burns with a **yellow** flame**Potassium** burns with a **lilac** flame**Calcium** burns with an **orange-red** flame**Copper** burns with a **green** flame.If a sample containing a mixture of ions is used some flame colours can be masked. |
| 6 TC:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\E0766AA.tmp | **Sodium hydroxide** solution can be used to identify some **metal ions**. Solutions of **aluminium**, **calcium** and **magnesium** ions form **white** **precipitates** when sodium hydroxide solution is added. Only the **aluminium** hydroxide precipitate **dissolves in excess** sodium hydroxide solution. Solutions of **copper(II)**, **iron(II)** and **iron(III)** ions form **coloured** precipitates when sodium hydroxide solution is added. **Copper(II)** forms a **blue** precipitate, **iron(II)** a **green** precipitate and **iron(III)** a **brown** precipitate. |
| 7 TC:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\A7114448.tmp | When **acid** reacts with **carbonate**, **salt**, **water** and **carbon dioxide** are formed. The **carbon dioxide** can be identified by bubbling through **limewater** which turns **cloudy**. |
| 8 T C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\E6C95996.tmp | **Halide ions** (Fluoride, bromide and iodide) in solution produce **coloured precipitates** when **silver nitrate** solution and **dilute nitric** **acid** are added. **Silver chloride’s** precipitate is **white**, silver **bromide’s** is **cream** and silver **iodide’s** is **yellow**. |
| 9 TC:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\CA077214.tmp | **Sulphate** ions in solution produce a **white precipitate** when **barium** **chloride** solution and **dilute hydrochloric acid** are added. |
| 10 T C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\CC62E542.tmp |  Required practical - **identify unknown ions** using the tests learned about in previous lessons. |
| 11 T C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\8C3676A0.tmp | **Elements** and **compounds** can be detected and identified using **instrumental methods**. Instrumental methods are **accurate**, **sensitive** and **rapid**. **Flame emission spectroscopy** is an example of an instrumental method used to analyse **metal ions** in solutions. The sample is put into a flame and the light given out is passed through a **spectroscope**. The output is a **line spectrum** that can be analysed to **identify** the metal ions in the solution and measure their **concentrations**. |