

1. The Periodic Table

- ❑ The elements in a group all react in a similar way and sometimes show a pattern in reactivity
- ❑ As you go down a group and across a period the elements show patterns in physical properties
- ❑ Metals are generally found on the left side of the table, non-metals on the right
- ❑ The charge of a proton is 1+
- ❑ The charge of an electron is 1-

3. Group 7

- ❑ Group 7 contains non-metals called Halogens
- ❑ All group 7 elements react in a similar way, the reactivity decreases as you go down the group. Halogens react to form halides
- ❑ The melting point of Group 7 elements increase down the group. The colours of the elements get darker too.

Investigation

- ❑ Using the knowledge you have gained throughout the topic carry out an investigation to explain:
 - what is the periodic table and what is its significance in science
 - the trend in how elements in group 1, group 7 and group 0 react

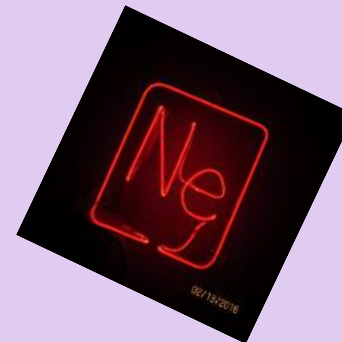
2. Group 1

- ❑ Group 1 contains reactive metals called alkali metals
- ❑ Group 1 elements react in a similar way with water and oxygen, the reactivity increases down the group
- ❑ Group 1 metals react with oxygen to produce an alkali metal oxide
- ❑ Metal oxides are basic. Those that dissolve in water form alkaline solutions
- ❑ Group 1 metals react with water producing and alkali metal hydroxide and hydrogen gas

The Periodic Table Year 8

4. Group 0

- ❑ Group 0 contains unreactive gases called noble gases



Periodic Table of the Elements

1 1IA H Hydrogen 1.00794	2 IIA He Helium 4.002602	3 IIIB Li Lithium 6.941	4 IVB Be Beryllium 9.0122	5 VB B Boron 10.811	6 VIB C Carbon 12.011	7 VIIB N Nitrogen 14.0064	8 VIIIA O Oxygen 15.999	9 VIIIA F Fluorine 18.998	10 VIIIA Ne Neon 20.180	11 IB Na Sodium 22.990	12 IIB Mg Magnesium 24.305	13 IIIB Al Aluminum 26.982	14 IVB Si Silicon 28.086	15 VA P Phosphorus 30.974	16 VIA S Sulfur 32.06	17 VIIA Cl Chlorine 35.453	18 VIIIA Ar Argon 39.948	19 IIB K Potassium 39.098	20 IIB Ca Calcium 40.078	21 IIIB Sc Scandium 44.956	22 IVB Ti Titanium 47.88	23 VB V Vanadium 50.942	24 VIB Cr Chromium 51.996	25 VIIB Mn Manganese 54.938	26 VIII Fe Iron 55.845	27 VIII Co Cobalt 58.933	28 VIII Ni Nickel 58.693	29 IB Cu Copper 63.546	30 IIB Zn Zinc 65.38	31 IIIB Ga Gallium 69.723	32 IVB Ge Germanium 72.64	33 VB As Arsenic 74.922	34 VIB Se Selenium 78.96	35 VIIB Br Bromine 79.904	36 VIIIA Kr Krypton 83.80	37 IIB Rb Rubidium 85.468	38 IIB Sr Strontium 87.62	39 IIIB Y Yttrium 88.906	40 IVB Zr Zirconium 91.224	41 VB Nb Niobium 92.906	42 VIB Mo Molybdenum 95.94	43 VIIB Tc Technetium 98.906	44 VIII Ru Ruthenium 101.07	45 VIII Rh Rhodium 102.905	46 VIII Pd Palladium 106.42	47 IB Ag Silver 107.868	48 IIB Cd Cadmium 112.411	49 IIIB In Indium 114.818	50 IVB Sn Tin 118.710	51 VB Sb Antimony 121.757	52 VIB Te Tellurium 127.6	53 VIIB I Iodine 126.905	54 VIIIA Xe Xenon 131.29	55 IIB Cs Cesium 132.905	56 IIB Ba Barium 137.327	57-71 Lanthanide Series La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.222	78 Pt Platinum 195.084	79 Au Gold 196.967	80 Hg Mercury 200.59	81 IB Tl Thallium 204.387	82 IIB Pb Lead 207.2	83 IIIB Bi Bismuth 208.980	84 IVB Po Polonium 209	85 VB At Astatine 210	86 VIIIA Rn Radon 222	87 IIB Fr Francium 223	88 IIB Ra Radium 226	89-103 Actinide Series Ac Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr	104 Rf Rutherfordium 261	105 Db Dubnium 262	106 Sg Seaborgium 263	107 Bh Bohrium 264	108 Hs Hassium 265	109 Mt Meitnerium 266	110 Ds Darmstadtium 267	111 Rg Roentgenium 268	112 Cn Copernicium 269	113 Uut Ununtrium 270	114 Fl Flerovium 271	115 Uup Ununpentium 272	116 Lv Livermorium 273	117 Uus Ununseptium 274	118 Uuo Ununoctium 276
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1. Mixtures

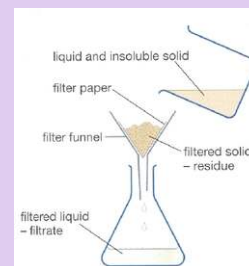
- A mixture is made up of substances that are not chemically joined
- A solution is a mixture of a liquid with a solid or a gas. All parts of the solution are the same, You cannot see the separate substances
- In a solution, the substance that dissolves is called the solute
- The liquid in which the solute dissolves is called the solvent
- Solvents include water, propanone and ethanol

2. Solubility

- Soluble means that a substance is able to dissolve
- Insoluble means that a substance is unable to dissolve
- A saturated solution is a solution in which no more solute can dissolve
- Solubility of a substance changes with temperature

3. Filtration and Evaporation

- Filtration separates a liquid from an insoluble solid
- You can separate a solute from its solution by evaporation



Separation Techniques *Year 8*

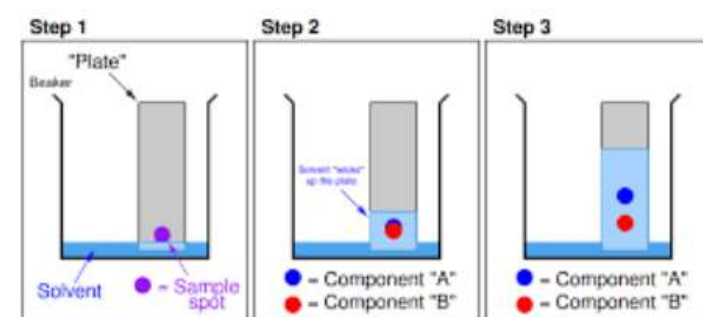
4. Distillation

- You can separate a solvent from its solution by distillation



5. Chromatography

- You can separate substances in a mixture by chromatography



Investigation

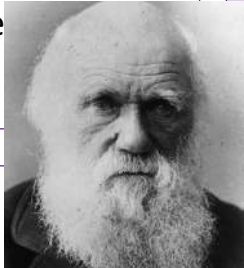
You will be given a mixture to separate and find out what it is made up of!

Can you use the skills you have learned to do this!

CSI!

1. Inheritance

- You inherit characteristics from your parents, this is your DNA
- DNA is arranged into long strands called chromosomes, Each chromosome is divided into sections of DNA
- The sections of DNA that contain the information to produce a characteristic are called genes
- Inheritance of genes from both parents leads to variation within a species



3. Natural Selection

- Natural selection is a theory that explains how species evolve and why extinction occurs
- Within a species, variation helps adaptation to environmental changes, avoiding extinction
- If an organism is not able to change over time due to natural selection, their numbers will decrease

Adaptation and Inheritance

Year 8

2. Types of Variation

- Any feature that changes gradually over a range of values has continuous variation e.g. height
- Any feature that has a limited number of values or can be grouped into categories have discontinuous variation e.g. eye colour
- Scatter graphs are used to show whether or not there is a relationship between two sets of data
- Variation is important for the survival of a species

4. Biodiversity

- Biodiversity is vital to maintain populations
- Within an ecosystem, having many different species ensures that resources are available for other populations, like humans
- A lack of biodiversity can affect an ecosystem
- By preserving biodiversity, we can provide useful products and services for humans, such as drugs for disease



Investigation

How have organisms evolved over time?

Using an example discuss how organisms have evolved over time. You can explain variation and how natural selection has taken place to give some species advantages over others. (Your work can also include discussion on where genetic information is kept/changed to give key features)

You may create a comic strip (in detail) or booklet to outline your work

