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Glue on this side

Periodic table

1	I can state that all elements currently known may be found listed in the periodic table
2	I can state that the modern periodic table was developed by Mendeleev and I can describe the changes that he made
3	I can state that the periodic table can be used to predict patterns in reactions and that elements in the same group of the periodic table will have similar patterns in reactions
4	I can describe how elements with similar physical and chemical properties are grouped together
5	I can describe the patterns of reactivity for Group 1 and Group 7 in the periodic table

1	alkali metals	The elements in the left column of the Periodic Table including lithium, sodium, and potassium. Also called Group 1.
2	chemical properties	Features of the way a substance reacts with other substances.
3	group	A column of the Periodic Table. The elements in a group have similar properties.
4	Group 1	The elements in the left column of the Periodic Table, including lithium, sodium, and potassium. Also called the alkali metals.
5	period	A row of the Periodic Table. There are trends in the properties of the elements across a period.
6	trend	A pattern in properties, such as an increase or decrease.

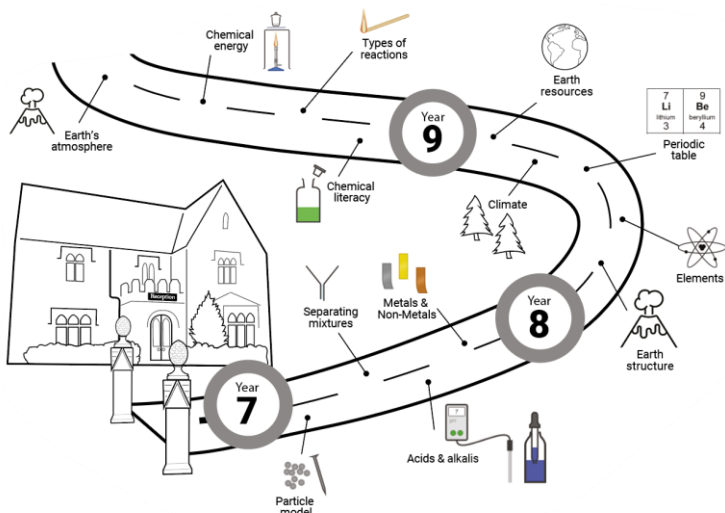
Why?

The historical development of the periodic table and models of atomic structure provide good examples of how scientific ideas and Explanations develop over time as new evidence emerges.

Before: This is a new topic and has not been covered in KS2. You may have done some investigations on sorting and grouping substances that may be useful in this topic..

Careers
Chemist
Scientist
Drug development
Teacher

At GCSE you will learn the periodic table provides chemists with a structured organisation of the known chemical elements from which they can make sense of their physical and chemical properties.



Metals

- good conductors of heat and electricity
- shiny
- malleable and ductile
- sonorous when solid
- most have high melting and boiling points
- some metals react with oxygen to form metal oxides

Group 1

- called the **alkali metals**
- like all other metals but are very **reactive**
- react vigorously (strongly) with water
- get more reactive as you go down the group
- lower melting points than most other metals
- melting points decrease down the group
- always produce a metal hydroxide and hydrogen gas when reacted with water



1	2
Li lithium	Be beryllium
Na sodium	Mg magnesium
K potassium	Ca calcium
Rb rubidium	Sr strontium
Cs caesium	Ba barium
Fr francium	Ra radium

solids

liquids

gases at room temperature

This version of the Periodic Table does not include every discovered element.

Group 7

- called the **halogens**
- generally very reactive
- generally the opposite of Group 1
- melting point increases down the group while reactivity decreases.
- take part in **displacement reactions**, where an element from higher up the group takes the place of one from lower down the group in a compound.

For example: potassium iodide + chlorine → potassium chloride + iodine

metals

3	4	5	6	7	0/8
B boron	C carbon	N nitrogen	O oxygen	F fluorine	He helium
Al aluminum	Si silicon	P phosphorus	S sulfur	Cl chlorine	Ar argon
Ga gallium	Ge germanium	As arsenic	Se selenium	Br bromine	Kr krypton
In indium	Sn tin	Sb antimony	Te tellurium	I iodine	Xe xenon
Tl thallium	Pb lead	Bi bismuth	Po polonium	At astatine	Rn radon

• columns are called **groups**

• rows are called **periods**

Elements in a group normally have similar properties, meaning chemists can predict properties of elements based on their group.

Non-metals

- often have properties the opposite of metals
- low boiling points, so are often gases at room temperature
- poor conductors of electricity and heat
- dull in appearance
- low density
- **brittle** and not sonorous
- some metals react with oxygen to form metal oxides

Group 0

- called the **noble gases**
- very unreactive
- low boiling points, so are gases at room temperature
- like the halogens, their boiling points increase down the group





Physical properties

The **physical properties** of an element describe how a substance behaves generally.
(E.g., **conductor** of electricity, dense, conductor of heat, shiny, **malleable**, sonorous, high melting and boiling points)

Chemical properties

The **chemical properties** of an element describe how a substance behaves in chemical reactions.
For example, how reactive it is, what other substances it reacts with, and the products it forms in reactions.

Complete some of the tasks below to reach a total of _____ points over this unit of work – Highlight the box once completed.

Topic	1 Point	2 Points	4 Points	6 Points	10 Points
History of the periodic table 	Colour in a periodic table to show where the metals and non-metals are located	Create two truths and one lie about the periodic table	Create a poster to explain the similarities and differences between Newland and Mendeleev's periodic table	'Newland's periodic table is better than Mendeleev's'. Do you agree? Explain your decision	Research what the lanthanides and actinides are and write down some interesting facts about them. Try and relate these facts to the position of these facts on the periodic table.
Order of the periodic table 	On a periodic table, show where the alkali metals, transition metals, halogens and noble gases are	Create two truths and one lie about the arrangement of the periodic table	Create a glossary for the key words from the last two lessons.	Research what atomic number is, what mass number is and what an isotope is	Research why the group 1 elements are all located in group 1.
Group 1 elements 	Write down a list of the elements in group one and if they are reactive or not reactive	Create a mnemonic to help you remember the elements in group 1	Write down the word equations for the reactions of sodium, lithium and potassium with water	Are the products of the reactions of group 1 metals with water acidic or alkaline? Write a paragraph to explain.	Research the electronic structure of lithium, sodium and potassium and draw a diagram of the atom using this information
Group 7 elements 	Write down a list of elements in group 7 and if they are reactive or not reactive	Create a mnemonic to help you remember the elements in group 7	Compare the reactivities of group 7 elements and then compare these with the reactivities of elements in group 1.	'When chlorine is added to sodium bromide solution, sodium chloride is formed'. Is this correct? Why? Write a paragraph to explain.	Research the electronic structure of fluorine, chlorine and bromine and draw a diagram of the atom using this information