

## The Periodic Table

## **8**

### **Elements**

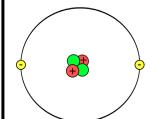
- An element is a substance which is made up of only one type of atom.
- Each element has its own unique formula, represented by either one capital letter, or a capital letter followed by a lower-case letter. E.g. O, Mg or Na

### Compounds

- A compound is a substance made up of two or more elements which have bonded together.
- You can identify compounds by spotting capital letters next to each other in their formula. E.g. MgO, or MgOH

### Structure of Atoms

Each element has its own atom. An atom actually contains three much smaller particles.



Proton (positive)



Electron (negative)



Neutron (neutral)

There 118 different elements on the periodic table. This means there are 118 different types of atom.

All atoms have an overall neutral charge as they have the same number of protons and electrons.

### The Periodic Table The groups are all numbered. The elements in groups have similar properties to each other. He heliun Key Columns relative atomic mass 20 **Ne** Be atomic symbol are called nitroger 7 fluorine 9 neon atomic (proton) number groups 23 **Na** 28 **Si** 32 **S** 35.5 **CI** Mg Ar Rows chlorin 17 odiur 11 silicor 14 spho 15 argon 18 gnesi 12 are called 39 Mn Zn Ca Sc Co Ni Cu periods potassiu 19 alcium 20 titaniun 22 nickel 28 romin 35 krypto 36 andiu 21 nadiu 23 iron 26 cobalt 27 zinc 30 arseni 33 eleniu 34 coppe 29 24 25 32 103 128 127 112 119 131 Rb trontiu 38 ttrium 39 coniu heniu 44 rhodiun 45 iobiur 41 ntimor 51 silver 47 50 enor 54 37 43 46 48 42 As you go 139 **La**\* 181 **Ta** 190 **Os** 195 **Pt** 201 **Ha** 207 **Pb** [209] **Po** [210] **At** [222] 133 **Cs** 137 **Ba** 178 **Hf** 184 **W** 186 192 **Ir** 197 209 **Bi** down the 56 72 73 ngste 74 76 77 78 <sup>gold</sup> 79 80 82 83 84 85 55 57 75 groups, [223] **Fr** [226] **Ra** [227] **Ac**\* [261] **Rf** [262] **Db** [266] **Sg** [264] **Bh** [277] **Hs** [268] Mt [271] **Ds** [272] **Rg** [285] **Cn** 6] [289] **FI** [289] **Mc** [293] **Lv** [294] **O**g the atoms lubnium 105 108 get bigger aborgiui 106 109 ntgenii 111 116 104 110 112 115 118

### **Group One**

- Group one are called the alkali metals
- Alkali metals are soft and float on water
- They react vigorously with water producing metal hydroxides and releasing hydrogen
- The reactivity increases as you go down the group







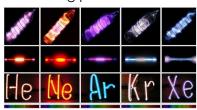
### **Group Seven**

- Group seven are called the halogens
- Halogens are non-metals
- The reactivity decreases as you go down the group
- More reactive halogens will displace less reactive halogens



### **Group Zero**

- Group zero are called the noble gases
- Noble gases are colourless
- They are chemically unreactive, this is also known as being inert.
- As you go down the group, the boiling point increases





# **CORE** Questions



1	State the definition of an element.	A substance which is made up of only one type of atom.
2	What does the periodic table show you?	All of the elements (118)
3	True or False. The majority of elements are non-metals.	FALSE
4	A student wrote the symbol for magnesium as MG. Explain why he is wrong.	It should be Mg. The first letter is always a captial, the second letter is lower case.
5	Use your periodic table to write the symbols for: Lithium, Sodium, Potassium, Oxygen, Hydrogen and Iron.	Lithium (Li), Sodium (Na), Potassium (K), Oxygen (O), Hydrogen (H) and Iron (Fe)
6	State the definition of a compound.	A substance made up of two or more elements, bonded together
7	True or False. Air is an example of a compound.	False. Air is a mixture.
8	True or Flase. Oxygen is a compound.	Flase. Oxygen is an element
9	True or False. Magnesium Oxide is a compound.	True.
10	Name the compound formed when sodium reacts with oxygen.	Sodium Oxide
11	Name the compound formed when magnesium reacts with chlorine.	Magnesium Chloride
12	Use the periodic table. Name the elements in MgF2	Magnesium and Fluorine
13	Use the periodic table. Identify the elements in CaCO3	Calcium, Carbon and Oxygen
14	Use the periodic table. Identify the elements and the number of atoms for each element in CuCO3.	Copper - 1 atom, Carbon - 1 atom, Oxygen - 3 atoms
15	Use the periodic table. Identify the elements and the number of atoms for each element in H2O	Hydrogen - 2 atoms, Oxygen - 1 atom
16	Use the Periodic Table. What are rows in in the periodic table known as?	Groups
17	Use the Periodic Table. What are rows in the periodic table known as?	   Periods
18	Use the Periodic Table. What is the name of group 1?	The Alkali Metals
19	Use the Periodic Table. What is the name of group 7?	
20	Use the Periodic Table. What is the name of group 0?	The Noble Gases
21	What is the center block of the periodic table called?	The Transition Metals
22	What type of metals are lithium, sodium and potassium?	Alkali Metals
23	Describe the trend in reactivity for the alkali metals.	Reactivity increases down the group.
24	What gas is released when sodium reacts with water?	Hydrogen
25	What alkali is made when potassium reacts with water?	Potassium Hydroxide
26	Describe the trend in reactivity for the halogens.	Reactivity decreases down the group.
27	Write the word eqaution for the reaction between lithium and fluorine.	Lithium + Fluorine -> Lithium Fluoride
28	What two elements reacted to form the product potassium chloride.	Potassium and Chlorine
29	Use the Periodic Table. Put the following elements in order of reactivity from most to least. Chlorine, Bromine, Fluorine, Iodine.	Fluorine, Chlorine, Bromine, Iodine
30	A student tries to react chlorine with potassium fluoride. Suggest why this will not work.	Fluorine is more reactive than chlorine.
31	Complete the word equation. Lithium Bromide + Chlorine -> +	Lithium Bromide + Chlorine -> Lithium Chloride + Bromine
32	What type of gases are helium, neon and argon?	Noble Gases
33	The noble gases are chemically inert. What does that mean?	They are unreactive.
34	Use the Periodic Table. Which element has a lower boiling point, helium or Xenon?	Helium