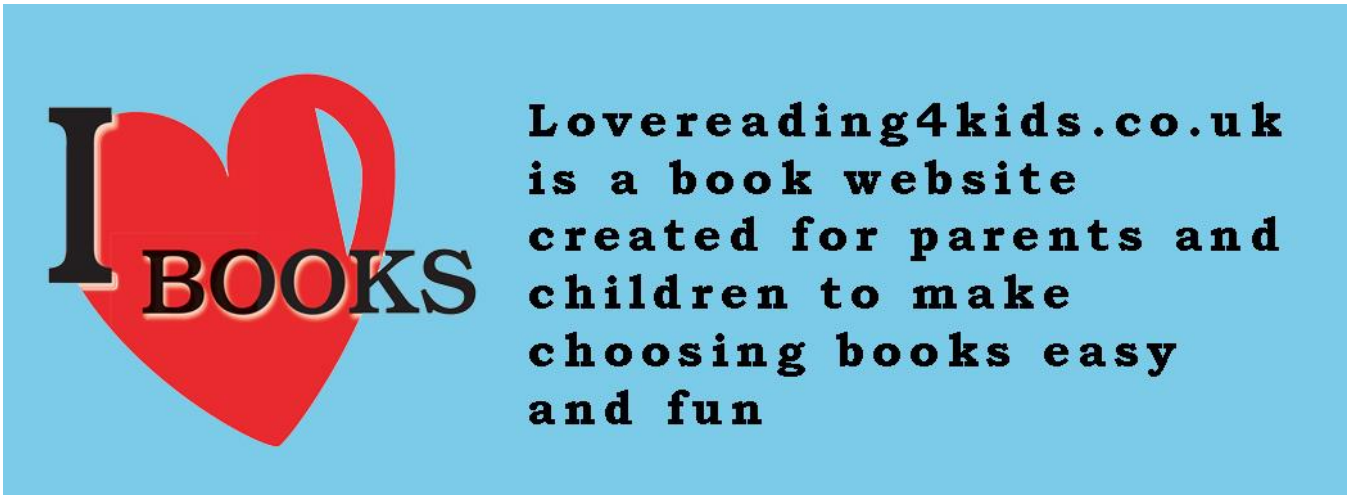


extracts from

Lift the Flap Periodic Table

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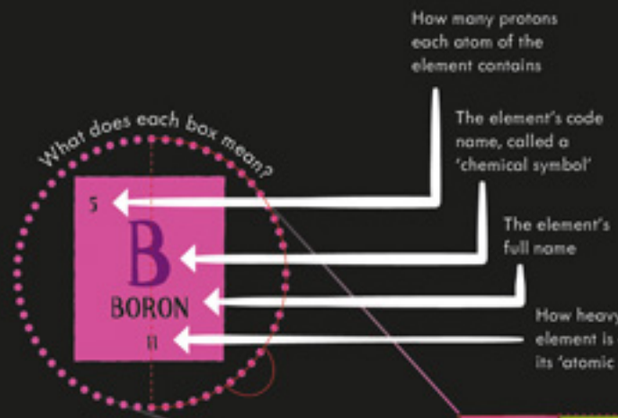
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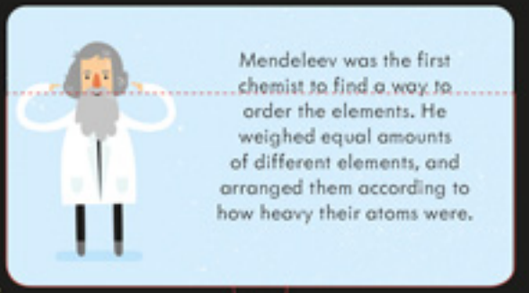
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How does the Periodic Table work?

The Periodic Table looks like this. It shows 118 different elements, and reveals which elements are similar to each other. Each box represents one element.









Each element contains one more proton than the one before it.

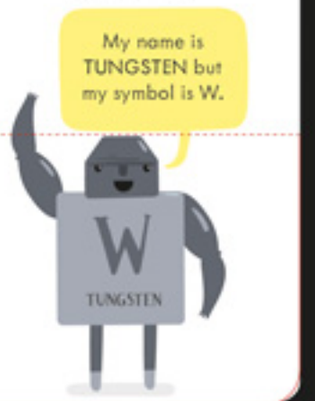
Columns are called groups. Elements get heavier down each group.

Horizontal rows are called periods.

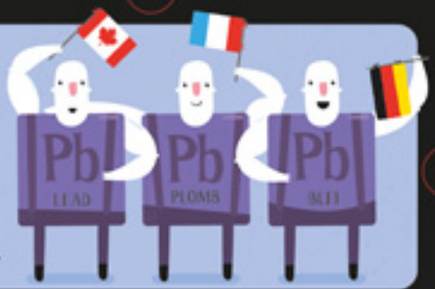
1 H HYDROGEN 1																	2 He HELIUM 4
3 Li LITHIUM 7	4 Be BERYLLIUM 9											5 B BORON 11	6 C CARBON 12	7 N NITROGEN 14	8 O OXYGEN 16	9 F FLUORINE 19	10 Ne NEON 20
11 Na SODIUM 23	12 Mg MAGNESIUM 24											13 Al ALUMINUM 27	14 Si SILICON 28	15 P PHOSPHORUS 31	16 S SULFUR 32	17 Cl CHLORINE 35	18 Ar ARGON 40
19 K POTASSIUM 39	20 Ca CALCIUM 40	21 Sc SCANDIUM 45	22 Ti TITANIUM 48	23 V VANADIUM 51	24 Cr CHROMIUM 52	25 Mn MANGANESE 55	26 Fe IRON 56	27 Co COBALT 59	28 Ni NICKEL 59	29 Cu COPPER 64	30 Zn ZINC 65	31 Ga GALLIUM 70	32 Ge GERMANIUM 73	33 As ARSENIC 75	34 Se SELENIUM 79	35 Br BROMINE 80	36 Kr KRYPTON 84
37 Rb RUBIDIUM 85	38 Sr STRONTIUM 88	39 Y YTTRIUM 89	40 Zr ZIRCONIUM 91	41 Nb NIOBIUM 93	42 Mo MOLYBDENUM 96	43 Tc TECHNETIUM 99	44 Ru RUTHENIUM 101	45 Rh RHODIUM 103	46 Pd PALLADIUM 106	47 Ag SILVER 108	48 Cd CADMIUM 112	49 In INDIUM 115	50 Sn TIN 119	51 Sb ANTIMONY 122	52 Te TELLURIUM 128	53 I IODINE 127	54 Xe XENON 131
55 Cs CAESIUM 133	56 Ba BARIUM 137	57-71 La-Lu	72 Hf HAFNIUM 178	73 Ta TANTALUM 181	74 W TUNGSTEN 184	75 Re RHENIUM 186	76 Os OSMIUM 190	77 Ir IRIDIUM 192	78 Pt PLATINUM 195	79 Au GOLD 197	80 Hg MERCURY 201	81 Tl THALLIUM 204	82 Pb LEAD 207	83 Bi BISMUTH 209	84 Po POLONIUM 209	85 At ASTATINE 210	86 Rn RADON 222
87 Fr FRANCIUM 223	88 Ra RADIUM 226	89-103 Ac-Lr	104 Rf RUTHERFORDIUM 261	105 Db DUBNIUM 262	106 Sg SEABORGIUM 266	107 Bh BOHRIUM 264	108 Hs HASSIUM 269	109 Mt MEITNERIUM 268	110 Ds DARMSTADTIUM 269	111 Rg ROENTGENIUM 272	112 Cn COPERNICIUM 277						

Elements 113-118 were officially discovered in 2015, and named in 2016. Lift the flap to see them.

An element's code name, called its **chemical symbol**, can be quite different from its name.







The Periodic Table is used in every country, and the code names are the same in every language, even when their full names are different.

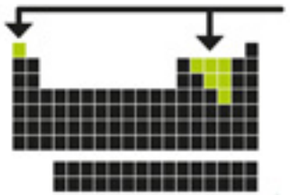
This group of elements is in a small grid underneath, to make the table easier to read.

57 La LANTHANUM 139	58 Ce CERIUM 140	59 Pr PRASEODYMIUM 141	60 Nd NEODYMIUM 144	61 Pm PROMETHIUM 145	62 Sm SAMARIUM 150	63 Eu EUROPIUM 152	64 Gd GADOLINIUM 157	65 Tb TERBIUM 159	66 Dy DYSPROSIUM 163	67 Ho HOLMIUM 165	68 Er ERBIUM 167	69 Tm THULIUM 169	70 Yb YTTERBIUM 173	71 Lu LUTETIUM 175
89 Ac ACTINIUM 227	90 Th THORIUM 232	91 Pa PROTACTINIUM 231	92 U URANIUM 238	93 Np NEPTUNIUM 237	94 Pu PLUTONIUM 244	95 Am AMERICIUM 243	96 Cm CURIUM 247	97 Bk BERKELIUM 247	98 Cf CALIFORNIUM 251	99 Es EINSTEINIUM 254	100 Fm FERMIUM 257	101 Md MENDELEVIUM 258	102 No NOBELIUM 259	103 Lr LAWRENCIUM 262

A lot of the elements not found in nature are named after famous scientists. Lift the flaps to find out who.

The elements of life

A few elements in the table are known as **non-metals**. They are all essential to life on Earth. From the air you breathe to the water you drink, they're in you and in everything around you.



The non-metals are split across the table.

All life on Earth is based on CARBON.

HYDROGEN is the most abundant element in the Universe.

HYDROGEN is the lightest element. It *used* to be used to keep airships called zeppelins in the air.

78% of the Earth's atmosphere is NITROGEN.

Your body is made of lots of non-metals.

Animals need OXYGEN to survive.

OXYGEN is used in the chemical reaction that produces energy, inside animals' bodies.

Two or more atoms stuck together form a substance called a molecule.

The OXYGEN atoms you breathe from the air always come in pairs, as molecules called O_2.

HYDROGEN and OXYGEN together make water.

Pure CARBON comes in lots of shapes and forms.

An alchemist called Hennig Brand discovered a new non-metal in 1669.

NITROGEN and PHOSPHORUS compounds are used in plant fertilizers.

PHOSPHORUS is a crucial part of DNA – the chemical code that builds living things.

Plants need a compound of CARBON and OXYGEN, called carbon dioxide, to survive.

When OXYGEN reacts with fuels such as wood or coal, and there's a spark...

Brazil nuts contain more SELENIUM than any other food.

Urgh!

Ew!

SULFUR is the smelliest element.

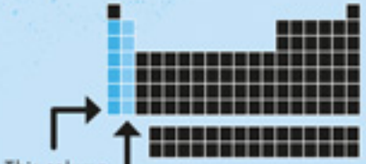
SELENIUM can cause bad breath and smelly bodies.

The outside of the Earth is mostly made of non-metals. Lift the flap to see the elements inside the Earth.

Only one type of animal can survive without OXYGEN – microscopic sea creatures called loricifera.

When HYDROGEN, SULFUR and OXYGEN combine...

Elements that FIZZ and BANG



This column is called Group 1.

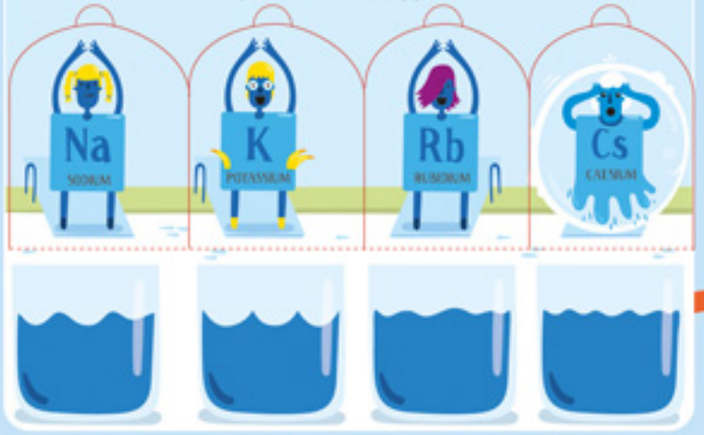
This column is called Group 2.

The elements down the left two columns of the table are metals that fizz, flash, bang or explode when they come into contact with other elements. They're known as **reactive metals.**

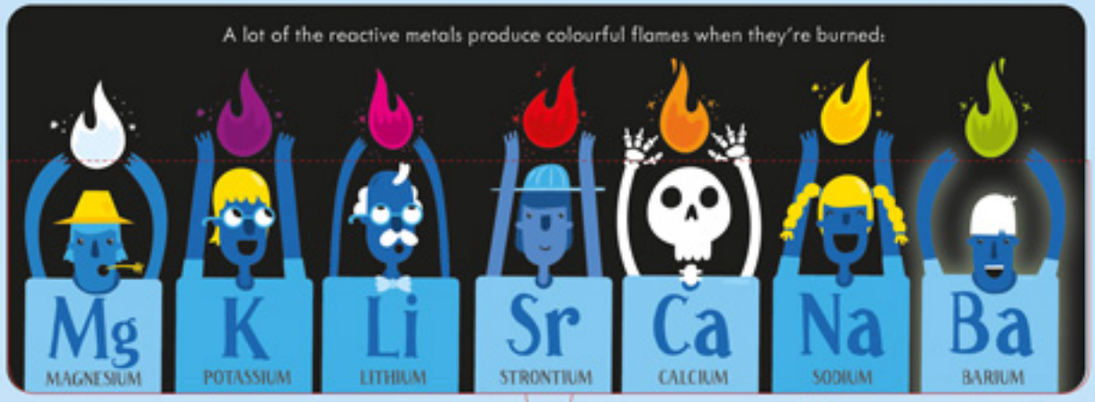
You need some of the reactive metals in your body to stay healthy...



This is what happens when some of the Group 1 metals are dropped into water:



A lot of the reactive metals produce colourful flames when they're burned:



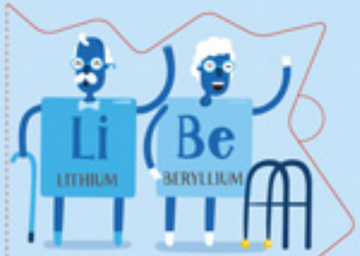


When SODIUM reacts with the gas CHLORINE they turn into a compound called sodium chloride – also known as table salt.



There are lots of other *types* of salt too. Whenever a Group 1 or 2 metal reacts with a non-metal, they form a salt (but you can't eat them).

Here are some more of the reactive metals.



LITHIUM and BERYLLIUM were two of the first elements to exist in the Universe.

Rocks that contain BARIUM glow at nightime.





Tiny amounts of STRONTIUM in fossilized bones can tell archaeologists where that person lived and died.

CAESIUM is used to make night vision goggles.





RADIUM *used* to be used to paint glow-in-the-dark hands on watches and clocks.

If MAGNESIUM catches fire, hosing it with water...





Nobody knows much about FRANCIUM, because it disappears almost immediately after being created.

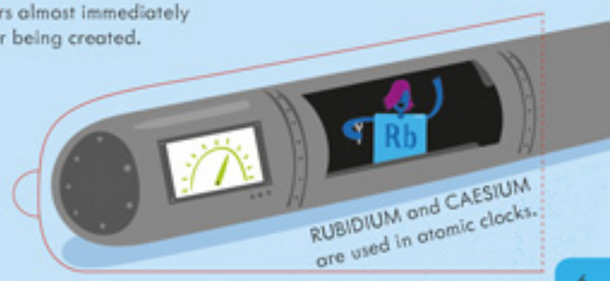
OOF!



LITHIUM is a metal, but it's so soft you could cut it with a knife.

CAESIUM is stored in bottles of oil, because when it is exposed to air...





RUBIDIUM and CAESIUM are used in atomic clocks.