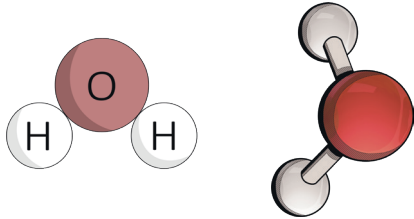
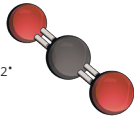
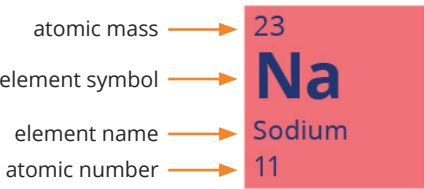
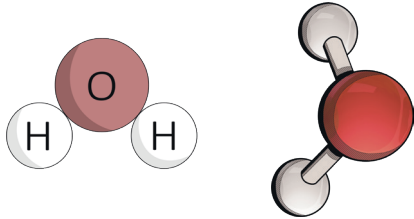
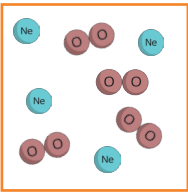
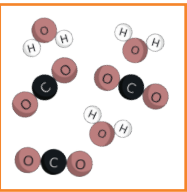
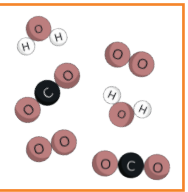


Atoms and the Periodic Table Knowledge Organiser

Key Words		Elements	Compounds	Compound Formulae
atom	The smallest part of an element that can exist.	An element is a substance that cannot be broken down into other substances. The smallest part of an element that can exist is an atom.	A compound is a substance made when two or more elements are chemically bonded together.	The formula of a compound tells you:
bond	An attraction between atoms or molecules that enables the formation of chemical compounds.	Each element is represented by a symbol. The first letter of the symbol is always capitalised, any following letters are lower case.	A compound can be represented by a diagram. The atoms are shown touching each other or joined by a stick that represents a bond.	<ul style="list-style-type: none"> which elements the compound is made from. how many atoms of each element there are.
chemical formula	A series of chemical symbols showing the number of atoms of each element in a compound.	The symbols for the elements are arranged on the periodic table.		Carbon dioxide has the formula CO ₂ . 
chemical reaction	A process that involves rearrangement of atoms to produce new substances.			C is the symbol for carbon. There are no subscript numbers after the C, so we know there is only one atom of carbon in the compound.
chemical symbol	A letter or series of letters used to represent an element, e.g. C for carbon, Na for sodium.		Water is a compound made from one oxygen atom and two hydrogen atoms. Its formula is H ₂ O.	O is the symbol for oxygen. There is a subscript 2 after the O, so we know there are two atoms of oxygen in the compound.
compound	A substance made up of two or more different elements chemically bonded together.			
element	A substance made of only one type of atom.			
group	A column of the periodic table that contains elements with similar chemical properties.			
metal	An element or substance which is typically shiny, malleable and ductile. It typically conducts heat and electricity well.			
mixture	A substance consisting of two or more substances not chemically combined together.			
non-metal	An element or substance that is not a metal.			
period	A row on the periodic table.			
trend	The general direction in which a set of data changes, i.e. increasing or decreasing.			
		Mixtures	Compounds vs Mixtures	
		A mixture is a substance consisting of two or more substances not chemically combined together. You can have mixtures of elements, mixtures of compounds or mixtures containing both.		
		In a particle diagram of a mixture, not all of the molecules shown will be touching each other or be joined by sticks representing the bonds.		
				
				
				
		mixture of elements		
		mixture of compounds		
		mixture of elements and compounds		
			Compounds	Mixtures
			The different elements are chemically joined together.	The different substances are not chemically joined together.
			The substance has different properties to the elements it is made from.	Each substance keeps its own properties.
			The elements can only be separated using chemical reactions.	Each substance can be separated easily using separating techniques like filtration, distillation, evaporation and chromatography.
			You cannot vary the amount of each element. So, the compound water always has one oxygen atom and two hydrogen atoms per molecule.	You can vary the amount of each substance. So, you can add a teaspoon of salt to water, or a cup of salt to water, and it would still be a mixture of salt water.

Key Words		The Periodic Table	Properties of Metals	Properties of Non-Metals
boiling point	The temperature at which a substance changes from liquid to gas (evaporates). It is also the temperature at which a substance changes from gas to liquid (condenses).	<p>Elements are arranged into groups based on their properties. Those with similar properties are found in the same group.</p> <p>Metals are found on the left of the stepped line, and non-metals on the right. However, some elements, particularly those close to the line have properties of both.</p> <div style="text-align: center;"> <p>← metals → non-metals →</p> <p>1 2 3 4 5 6 7 0</p> <p>H</p> <p>Li Be B C N O F Ne</p> <p>Na Mg Al Si P S Cl Ar</p> <p>K Ca Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Kr</p> <p>Rb Sr Y Zr Nb Mo Tc Ru Rh Pd Ag Cd In Sn Sb Te I Xe</p> <p>Cs Ba La Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn</p> <p>Fr Ra Ac Rf Db Sg Bh Hs Mt Ds Rg Cn Nh Fl Mc Lv Ts Og</p> <p>↑ alkali metals ↓ halogens noble gases</p> </div>	<ul style="list-style-type: none"> shiny good conductor of heat good conductor of electricity sonorous oxides form alkaline solutions high density malleable ductile 	<ul style="list-style-type: none"> dull poor conductor of heat poor conductor of electricity not sonorous oxides form acidic solutions low density brittle
brittle	Hard but easily broken.			
conduction	The transfer of heat or electricity through a material.			
density	The mass of a substance divided by its volume. The more dense a substance is, the heavier it feels for its size.			
displacement reaction	A reaction in which a more reactive substance displaces a less reactive substance.			
ductile	Can be stretched into wires.			
dull	Not shiny.			
magnetic material	A material that can be attracted by a magnet or made into a magnet.			
malleable	Can be hammered or pressed into different shapes.			
melting point	The temperature at which a substance changes from solid to liquid (melts). It is also the temperature at which a substance changes from liquid to solid (freezes).			
reactivity	A measure of how easily a substance reacts with another substance.			
shiny	A surface which reflects light.			
sonorous	Makes a ringing sound when dropped.			
unreactive	A substance which does not react chemically.			

Using a Knowledge Organiser **Guide for Parents and Carers**

What is a knowledge organiser?

A knowledge organiser contains all the important information from a particular topic, summarised in just a few pages. It includes key words, important facts, diagrams, methods and skills relating to the topic.

Why is it useful?

A knowledge organiser helps students to organise the content they need to learn. This makes it easier for them to remember the information and access the facts from their memory when they need to answer an exam question.

How can it be used?

The more memories are used, the stronger the memory becomes and the easier it is to access. For students, this means regular practice at retrieving the facts they have learnt and using them in a variety of ways. They could play games with the information, explain the facts to someone, apply the information to a new situation or organise the knowledge organiser into a different format.

How can I help?

The knowledge organiser contains all the facts needed to test someone on the content from a topic. This is great because it means you can help someone revise content even if you haven't studied it yourself!

- You could ask your child some questions on the content, for example the definition of a few key words, or challenge them to draw a diagram from memory. Testing their knowledge with one or two questions a day can make a big difference to how much information they remember. Perhaps it could become part of the after dinner or breakfast routine.
- You could prompt your child to turn some of the information on the knowledge organiser into a different format.
 - A word list could become flashcards.
 - Facts could be transformed into a mind map to show links between ideas.
 - Information could become a song, story or comic strip.
 - A diagram could become a poster, a collage or a model.
- You could ask your child to teach you about something on the knowledge organiser. Having to explain information to someone else, and answer their questions about it, is a great way to reinforce their knowledge and identify areas they need to go back to and revise again.
- You could suggest turning the information into a multiple-choice quiz, either on paper or using a website. This task requires them process the information to write questions and come up with correct and incorrect answers. You could then use it to test their knowledge or to host a quiz with family or friends, either at home or online.

Using a Knowledge Organiser

Knowledge organisers are useful tools when it comes to learning and recalling information. However, just reading or copying is not the best way to get the most out of them. Learning happens when we have to think about what we are doing, and we can do this by self-testing.

1. Pick a section of the knowledge organiser and read through it.
2. Now turn over your knowledge organiser and write down as much as you can from memory. There are many different ways that you can do this. Look at the suggestions below or come up with your own.
3. Turn the knowledge organiser back over and look for anything that you missed.
4. Flip it back over one more time. Using a different colour pen, see if you can add in any extra information you missed the first time around.

Put the information into a table.

Look	Write	Check	Correct
alkali metals	<ul style="list-style-type: none">• Group 1• react with water to produce hydrogen and a metal hydroxide• reactivity increases as you move down the group	<ul style="list-style-type: none">✓✓✓	melting and boiling points decrease as you move down the group soft shiny when cut

Draw spider diagrams or mind maps.

Write a topic or keyword in the centre of the page. Add everything you know about the topic in subtopics around the centre. Can you connect any ideas? Colour and pictures will make the information more memorable.

Create a set of flashcards.

Write down keywords, questions or equations on one side of a card. On the other, write the definition or answer.

Record yourself on your phone or tablet.

Listen back and check the recording against the knowledge organiser. Can you include more information a second time?

Draw it.

Draw pictures or diagrams to represent each of the ideas in the knowledge organiser. Once you have finished, see if you can use the diagrams to write out the information. Check it against the knowledge organiser, is there anything you need to add?