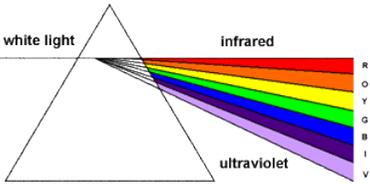
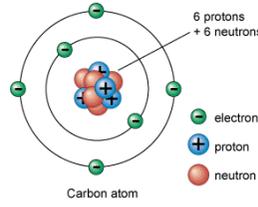
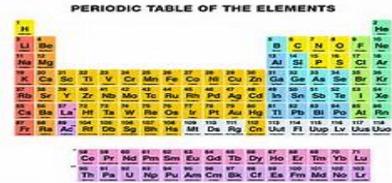
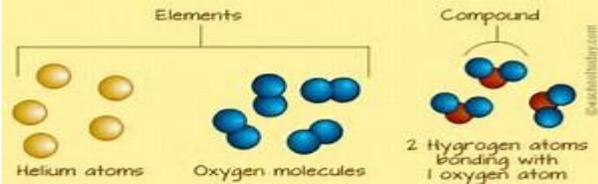


## Year 8 Knowledge Companion

Subject/Topic:	Subject/Topic:	Subject/Topic:
<p><b>Key ideas:</b></p> <p>We can see because the eye refracts light rays and focusses them on the <b>retina</b> at the back of our eye. Different colours of light have different wavelengths. Objects appear a certain colour because they reflect these wavelengths. White light is made up of all the colours (wavelengths), this is called the light <b>spectrum</b>. A triangular prism can separate the light into its colours.</p> 	<p><b>Key ideas:</b></p> <p>Atoms are much too small to see, even with the most powerful microscope. Everything is built from atoms even cells and proteins. Science's 'model of the atom' has changed over time as our technology has advanced.</p> 	<p><b>Key ideas:</b></p> <p><b>The Periodic table</b> is a grid that contains the chemical elements arranged in order of atomic number, in rows, so that elements with similar atomic structure and hence similar chemical properties appear in vertical columns or groups.</p> 
<p><b>Keywords /Key Language:</b></p>	<p><b>Keywords /Key Language:</b></p>	<p><b>Keywords /Key Language:</b></p>
<p><b>Wavelength</b> the length of one cycle of a wave  <b>Spectrum</b> a range of wavelength sof different colours of light. Together these make up white light.  <b>Retina</b> part of the eye, which contains light sensitive cells which can convert light signals into nerve impulses, which are then passed to the brain.</p>	<p><b>Atoms:</b> are the basic units of matter.  <b>Subatomic particle:</b> <i>particles</i> that are smaller than the atom, they make up the <b>atom</b>. Examples are protons, neutrons and electrons. All <b>atoms</b> are made of different numbers of protons, neutrons and electrons and that is this that gives them different properties.  <b>Nucleus:</b> The centre of the atom, this is made of <b>protons</b> and <b>neutrons</b>  <b>Shell</b> or <b>orbital:</b> These are the energy levels that the electrons occupy.  <b>Element:</b> A pure substance containing only one type of <b>atom</b>.  <b>Chemical symbol:</b> Each <b>element</b> has its own symbol, which is used as an abbreviation for its name. The symbols are 1-2 letters long and are recognised worldwide. e.g. Cu, Fe, S, O</p>	<p><b>Metal:</b> A <b>metal</b> is a material that is typically hard, opaque, shiny, and has good electrical and thermal conductivity. Metals are listed on the left hand side of the periodic table.  <b>Non-metal:</b> is a material that is typically brittle, dull and has poor electrical and thermal conductivity. Many <b>non-metal elements</b> are gases, often colourless. <b>Non-metals</b> are found on the right hand side of the <b>periodic table</b>.  <b>Alkali metal:</b> reactive metals found in group 1 of the <b>periodic table</b>.  <b>Transition metals:</b> are found in the middle of the periodic table. They are generally hard and dense, and less reactive than the alkali metals. Iron, copper, silver and gold are important transition metals.  <b>Noble gases:</b> very unreactive gases found in group 0 of the <b>periodic table</b>.</p>

<b>Subject/Topic:</b>	<b>Subject/Topic:</b>	<b>Subject/Topic:</b>
<b>Key ideas:</b>	<b>Key ideas:</b>	<b>Key ideas:</b>
<p>Atoms are rearranged in a chemical reaction. Compounds are formed when two or more different kinds of atoms join together.</p> 	<p>Compounds are made when elements react and get chemically joined together to make a new substance in which the atoms have been rearranged. There are signs we can observe to show that a chemical reaction is taking place.</p> 	<p>It is relatively easy to separate the substances in a mixture because the different substances are not chemically joined to each other. Different types of mixture need to be separated by different methods.</p> 
<b>Keywords /Key Language:</b>	<b>Keywords /Key Language:</b>	<b>Keywords /Key Language:</b>
<p><b>Compound:</b> Two or more different elements that are chemically bonded together e.g. <math>\text{CuSO}_4</math>, <math>\text{FeS}</math>, <math>\text{H}_2\text{O}</math></p> <p><b>Molecule:</b> a particle made of atoms chemically bonded (joined) together, they can be the same or different types of atom. If the atoms are all the same then the substance is an element. If the atoms joined together are different, the substance is a molecule of a compound.</p> <p><b>Chemical formula:</b> these are made up of <b>chemical symbols</b> and sometimes numbers. The <b>chemical formula</b> of a compound tells you how many atoms of each element the molecule contains. e.g. <math>\text{H}_2\text{O}</math> tells us that the molecule contains two hydrogen atoms and one oxygen atom chemically joined together.</p>	<p><b>Reactants:</b> The substances that react together during a chemical reaction.</p> <p><b>Products:</b> The new substances produced from a chemical reaction.</p> <p>We can write chemical reactions in this format:</p> <p>1) <b>Copper + Sulphur → Copper sulphide</b></p> <p style="text-align: center;"><math>\text{Cu} + \text{S} \rightarrow \text{CuS}</math></p> <p>1) Is a <b>word equation</b>. 2) is a <b>symbol equation</b></p> <p><b>Thermal decomposition:</b> when a compound splits into two smaller compounds when you heat them.</p> <p><b>Arrow --&gt; :</b> The arrow symbol is used between the reactants and the products in chemical equations.</p> <p><b>Properties:</b> the characteristics of a material.</p>	<p><b>Mixture:</b> a material made up of two or more different substances which are mixed but are not combined chemically.</p> <p><b>Filtration:</b> a separation technique that is used to separate a solid that has not dissolved in a liquid.</p> <p><b>Evaporation (as a separation technique):</b> is used to separate a soluble solid from a liquid. E.g. when copper sulfate solution is heated, water evaporates from it leaving the solid copper sulfate crystals behind.</p> <p><b>Distillation:</b> a process that can be used to separate a pure liquid from a mixture of liquids.</p> <p><b>Chromatography:</b> a method of separating a mixture of soluble substances, e.g. it can be used to work out what colours make up different inks.</p> <p><b>Chromatogram:</b> The visual result of chromatography – where the soluble substances produce a pattern as they separate.</p>