



SUBJECT	<b>Science: Physics</b>		YEAR	<b>10</b>
<p>Why do we study Science? We study Science so that we can understand the physical and natural world around us and so that we can make the world a better place by working and thinking like a scientist.</p>				
What you will learn this year	What you have learned before	Where you can read more		
<p>Physics: Atomic Structure and Radioactivity</p>				
<p>The structure of atoms can change when they absorb or release energy.</p> <p>Unstable atoms can give out 4 types of radiation and the types of radiation have different properties and uses.</p> <p>Half-life can be used to predict how radioactivity will change over time.</p>	<p>Energy can be stored and shifted in and out of substances in different ways.</p> <p>Positively and negatively charged objects can repel or attract depending on how they are combined.</p> <p>Random events can be predicted using probability in mathematics.</p>	<p>Book: DK Life Stories Marie Curie: Amazing People Who Have Shaped Our World, by Nell Walker, Penelope Rawlins, et al.</p> <p>Book: The Illustrated Encyclopaedia of the Elements: The Powers, Uses, and Histories of Every Atom in the Universe: 1, by Lisa Congdon.</p>		
<p>Conservation and Dissipation of Energy</p>				
<p>The Law of Conservation of Energy can be used to describe energy changes within open and closed systems.</p> <p>Calculating the size of energy stores and the physical effects of shifting energy.</p> <p>Investigative methods for reducing wasted energy.</p>	<p>Energy is conserved.</p> <p>Energy stored can be shifted and transferred in different ways.</p> <p>How different energy resources work to provide energy.</p> <p>How to calculate the energy needed to move something.</p>	<p>Book: <i>Seventeen Equations that Changed the World</i>, by Professor Ian Stewart</p> <p>Website: BBC Bitesize, GCSE AQA Trilogy, Combined Science, Changes in energy stores - AQA</p>		
<p>The Particle Model of Matter</p>				
<p>Changing the internal energy of a substance can cause changes in temperature and state.</p> <p>The properties of substances relate to the forces, arrangement and motion of their particles.</p> <p>Pressure caused by gas particles is dependent on temperature and volume.</p>	<p>The particle model can be used to describe the structure of solids liquids and gasses.</p> <p>The properties of different states of matter are linked to the motion and arrangement of particles.</p> <p>Heat energy can move in three ways and the rate of transfer can vary for different materials.</p>	<p>Book: <i>The Physics Book: Big Ideas Simply Explained</i>, by DK</p>		
<p>Electricity (Current and Domestic)</p>				
<p>The relationship between charge, current, potential difference and resistance.</p> <p>Series and Parallel circuit rules.</p> <p>Charged particles are surrounded by electric fields (triple only)</p> <p>How electricity gets to our homes and how it can be used safely.</p> <p>Current can be alternating or direct.</p>	<p>Electrical components can be combined to make circuits that have particular functions e.g. lighting.</p> <p>Models for understanding voltage and current.</p> <p>Resistance can affect current and voltage.</p> <p>Static electricity can produce forces between objects.</p>	<p>Book: <i>Electricity for Beginners</i>, by Trevor Wrightson</p> <p>Book: <i>A Life Electric: A Story of Nikola Tesla: The Story of Nikola Tesla</i>, by Azadeh Westergaard</p>		