

Science resources for learning and teaching Y7 Science Units (Each unit will have one assessed homework and an end of topic test)				
Term	Topic	Details of specification coverage	Resource location	Notes about using the resource
1	Speed	<p>If the overall, resultant force on an object is non-zero, its motion changes and it slows down, speeds up or changes direction.</p> <p>Use the formula: speed = distance (m)/time (s) or distance-time graphs, to calculate speed.</p> <p>A straight line on a distance-time graph shows constant speed, a curving line shows acceleration.</p> <p>The higher the speed of an object, the shorter the time taken for a journey.</p> <p>Illustrate a journey with changing speed on a distance-time graph, and label changes in motion.</p> <p>Describe how the speed of an object varies when measured by observers who are not moving, or moving relative to the object.</p>	<a href="https://phet.colorado.edu/en/simulation/legacy/forces-1d">https://phet.colorado.edu/en/simulation/legacy/forces-1d</a>	Resultant force simulation
			<a href="http://www.bbc.co.uk/education/guides/zwxmnb/revision">http://www.bbc.co.uk/education/guides/zwxmnb/revision</a>	Complete unit on speed including questions
			<a href="http://www.bbc.co.uk/education/guides/zttfyrd/revision/1">http://www.bbc.co.uk/education/guides/zttfyrd/revision/1</a>	Complete unit on forces. (No need to go to the end!)
			<a href="https://phet.colorado.edu/en/simulation/legacy/moving-man">https://phet.colorado.edu/en/simulation/legacy/moving-man</a>	Distance time and speed time graphs
	Gravity	<p>Mass and weight are different but related. Mass is a property of the object; weight depends upon mass but also on gravitational field strength.</p> <p>Every object exerts a gravitational force on every other object. The force increases with mass and decreases with distance. Gravity holds planets and moons in orbit around larger bodies.</p> <p>Use the formula: weight (N) = mass (kg) x gravitational field strength (N/kg).</p> <p>Explain unfamiliar observations where weight changes. Draw a force diagram for a problem involving gravity. Deduce how gravity varies for different masses and distances.</p> <p>Compare your weight on Earth with your weight on different planets using the formula.</p>	<a href="http://www.bbc.co.uk/bitesize/ks3/science/energy_electricity_forces/forces/revision/3/?scrlbybrkr=2ab29c4">http://www.bbc.co.uk/bitesize/ks3/science/energy_electricity_forces/forces/revision/3/?scrlbybrkr=2ab29c4</a>	Good, simple explanation for mass, weight and gravity.
			<a href="http://www.bbc.co.uk/education/guides/z8wx6sg/revision/3">http://www.bbc.co.uk/education/guides/z8wx6sg/revision/3</a>	Weight and gravity
	Matter	<p>Elements, compounds and mixtures. Separation of substances. Particle model, including intermolecular forces.</p>	<a href="http://www.bbc.co.uk/education/topics/z9r4jxs">http://www.bbc.co.uk/education/topics/z9r4jxs</a>	BBC bitesize activities and revision material on states of matter
			<a href="http://www.bbc.co.uk/bitesize/ks3/science/chemical_material_behaviour/compounds_mixtures/revision/1/">http://www.bbc.co.uk/bitesize/ks3/science/chemical_material_behaviour/compounds_mixtures/revision/1/</a>	BBC bitesize activities and revision material on elements, compounds and mixtures
			<a href="https://www.stem.org.uk/elibrary/resource/25707/elements-compounds-and-mixtures">https://www.stem.org.uk/elibrary/resource/25707/elements-compounds-and-mixtures</a>	A variety of interactive resources to introduce and consolidate elements, mixtures and compounds and separation techniques
	Organisms	<p>The human skeleton and how it allows movement and protection. Looking at muscles and how they bring about movement. The structure and role of animal and plant cells, and the function and adaptations of specialised cells. The organisation of the human body into cells, tissues, organs and organ systems.</p>	<a href="http://www.bbc.co.uk/schools/gcse/bitesize/pe/applied/anatomy/2_anatomy_skeleton_rev1.shtml">http://www.bbc.co.uk/schools/gcse/bitesize/pe/applied/anatomy/2_anatomy_skeleton_rev1.shtml</a>	Structure and role of the human skeleton.
			<a href="https://www.youtube.com/watch?v=3haTIC0kyxA">https://www.youtube.com/watch?v=3haTIC0kyxA</a>	Video on how the bones and muscles work.
			<a href="http://hwb.wales.gov.uk/Resources/resource/2848dca0-300f-4b05-858c-46c0db47083f/en">http://hwb.wales.gov.uk/Resources/resource/2848dca0-300f-4b05-858c-46c0db47083f/en</a>	PPT; Cells and cell processes. Introduction to plant and animal cells, slides 1- 15
<a href="http://resource.download.wjec.co.uk.s3.amazonaws.com/vtc/2013-14/science/biology/wjec-01/eng/cell-and-cell-processes/virtual-">http://resource.download.wjec.co.uk.s3.amazonaws.com/vtc/2013-14/science/biology/wjec-01/eng/cell-and-cell-processes/virtual-</a>			Virtual Microscopy game - This is a digital resource and combines knowledge acquired during lessons on cells using	
<a href="http://www.bbc.co.uk/bitesize/ks3/science/organisms_behaviour_health/cells_systems/revision/3/">http://www.bbc.co.uk/bitesize/ks3/science/organisms_behaviour_health/cells_systems/revision/3/</a>			Cells to systems activity	
<a href="http://www.bbc.co.uk/schools/gcse/bitesize/science/add_aqa_pre_2011/cells/cells2.shtml">http://www.bbc.co.uk/schools/gcse/bitesize/science/add_aqa_pre_2011/cells/cells2.shtml</a>			PPT on specialised cells and their adaptations.	
Voltage and Resistance	<p>We can model voltage as an electrical push from the battery, or the amount of energy per unit of charge transferred through the electrical pathway.</p> <p>In a series circuit, voltage is shared between each component. In a parallel circuit, voltage is the same across each loop.</p> <p>Components with resistance reduce the current flowing and shift energy to the surroundings.</p> <p>Calculate resistance using the formula: resistance (<math>\Omega</math>) = potential difference (V) <math>\div</math> current (A). Draw a circuit diagram to show how voltage can be measured in a simple circuit.</p> <p>Use the idea of energy to explain how voltage and resistance affect the way components work.</p> <p>Given a table of voltage against current. Use the ratio of voltage to current to determine the resistance.</p> <p>Use an analogy like water in pipes to explain why part of a circuit has higher resistance.</p>	<a href="http://www.bbc.co.uk/schools/gcse/bitesize/science/add_aqa/electricity/circuitsrev1.shtml">http://www.bbc.co.uk/schools/gcse/bitesize/science/add_aqa/electricity/circuitsrev1.shtml</a>	Basic circuit work.	
		<a href="https://www.stem.org.uk/elibrary/resource/26276/episode-114-components-in-series-and-parallel">https://www.stem.org.uk/elibrary/resource/26276/episode-114-components-in-series-and-parallel</a>	Teaching and practical work on series and parallel circuits	
		<a href="https://www.tes.com/teaching-resource/current-in-parallel-circuits-and-calculations-6073372">https://www.tes.com/teaching-resource/current-in-parallel-circuits-and-calculations-6073372</a>	PPT and exercises in series and parallel	
		<a href="http://www.bbc.co.uk/education/topics/zgy39j6">http://www.bbc.co.uk/education/topics/zgy39j6</a>	Notes on static electricity and circuits.	
		<a href="https://phet.colorado.edu/en/simulation/legacy/circuit-construction-kit-dc">https://phet.colorado.edu/en/simulation/legacy/circuit-construction-kit-dc</a>	Make your own model circuits	
Current	<p>Current is a movement of electrons and is the same everywhere in a series circuit. Current divides between loops in a parallel circuit, combines when loops meet, lights up bulbs and makes components work.</p> <p>Around a charged object, the electric field affects other charged objects, causing them to be attracted or repelled. The field strength decreases with distance.</p> <p>Fact</p> <p>Two similarly charged objects repel, two differently charged objects attract. Describe how current changes in series and parallel circuits when components are changed. Turn circuit diagrams into real series and parallel circuits, and vice versa.</p> <p>Describe what happens when charged objects are placed near to each other or touching.</p> <p>Use a sketch to describe how an object charged positively or negatively became charged up.</p>	<a href="https://www.youtube.com/watch?v=WcwCtjJtI">https://www.youtube.com/watch?v=WcwCtjJtI</a>	current and circuits	
		<a href="https://www.youtube.com/watch?v=zx2yq5QsW5">https://www.youtube.com/watch?v=zx2yq5QsW5</a>		
		<a href="https://www.youtube.com/watch?v=js7Q-r7G9ug">https://www.youtube.com/watch?v=js7Q-r7G9ug</a>	simple circuits explained	
		<a href="https://www.youtube.com/watch?v=ywHcssUjXD0">https://www.youtube.com/watch?v=ywHcssUjXD0</a>	Bill Nye electricity	
Reactions	<p>Properties of metals and non-metals. Types of reactions - including representing them using equations and particle diagrams. Acids, alkalis and indicators - the uses of acids and alkalis, their importance and their identification.</p>	<a href="http://www.bbc.co.uk/bitesize/ks3/science/chemical_material_behaviour/atoms_elements/revision/7/">http://www.bbc.co.uk/bitesize/ks3/science/chemical_material_behaviour/atoms_elements/revision/7/</a>	BBC bitesize activities and revision material on metals and non metals	
		<a href="http://hwb.wales.gov.uk/Resources/resource/e2257f5a-0158-4e7b-93f2-a95edca1a4ea">http://hwb.wales.gov.uk/Resources/resource/e2257f5a-0158-4e7b-93f2-a95edca1a4ea</a>	PowerPoint slides to summarise and explore g and h -	
		<a href="http://hwb.wales.gov.uk/Resources/resource/7e588a69-1749-423b-bee9-c1a769c1a0ae/en">http://hwb.wales.gov.uk/Resources/resource/7e588a69-1749-423b-bee9-c1a769c1a0ae/en</a>	Periodic table and element properties and groupings	

	Reactions of acids and alkalis.	<a href="http://www.bbc.co.uk/education/topics/zn6hvcw">http://www.bbc.co.uk/education/topics/zn6hvcw</a>	BBC bitesize activities and revision material on acids and alkalis
		<a href="https://www.youtube.com/watch?v=0YR62F_QNKA">https://www.youtube.com/watch?v=0YR62F_QNKA</a>	Videos on reactions of metals, acids and alkalis
Ecosystems	Food chains and webs, and factors that affect plant and animal populations. The effect of toxins in the environment. The structure of flowering plants, pollination and fertilisation.	<a href="http://www.bbc.co.uk/education/guides/z2m39j6/revision">http://www.bbc.co.uk/education/guides/z2m39j6/revision</a>	Food chains, food webs and toxic materials in the environment - revision, activities and test.
		<a href="http://www.bbc.co.uk/bitesize/ks3/science/organisms_behaviour_health/food_chains/revision/1/">http://www.bbc.co.uk/bitesize/ks3/science/organisms_behaviour_health/food_chains/revision/1/</a>	Food chains, food webs and toxic materials in the environment - revision, activities and test.
		<a href="http://www.bbc.co.uk/education/guides/zs7thyc/revision">http://www.bbc.co.uk/education/guides/zs7thyc/revision</a>	Revision and activity on plant structure, pollination, fruit and seeds.
		<a href="https://www.youtube.com/watch?v=TzK6vcmlcKw">https://www.youtube.com/watch?v=TzK6vcmlcKw</a>	Video explaining effect of toxins on environment.
		<a href="https://www.youtube.com/watch?v=E5P-UoKxLdA">https://www.youtube.com/watch?v=E5P-UoKxLdA</a>	Interactive resource to demonstrate the relationship between predator and prey.
Energy Costs	We pay for our domestic electricity usage based on the amount of energy transferred. Electricity is generated by a combination of resources which each have advantages and disadvantages. Calculate the cost of home energy usage, using the formula: cost = power (kW) x time (hours) x price (per kWh). Fact Food labels list the energy content of food in kilojoules (kJ). Compare the amounts of energy transferred by different foods and activities. Compare the energy usage and cost of running different home devices. Explain the advantages and disadvantages of different energy resources. Represent the energy transfers from a renewable or non-renewable resource to an electrical device in the home.	<a href="http://www.bbc.co.uk/education/guides/zyfgr82/revision/1">http://www.bbc.co.uk/education/guides/zyfgr82/revision/1</a>	Complete unit of work including tests.
		<a href="https://www.youtube.com/watch?v=r49jASvUA&amp;list=PLUpOLr9nAYyQ2i7j-Hi4QhgGiqoSNIMyC">https://www.youtube.com/watch?v=r49jASvUA&amp;list=PLUpOLr9nAYyQ2i7j-Hi4QhgGiqoSNIMyC</a>	Video explaining the energy in food
		<a href="https://www.youtube.com/watch?v=HRn4eM8lg0Q&amp;index=17&amp;list=PLUpOLr9nAYyQ2i7j-Hi4QhgGiqoSNIMyC">https://www.youtube.com/watch?v=HRn4eM8lg0Q&amp;index=17&amp;list=PLUpOLr9nAYyQ2i7j-Hi4QhgGiqoSNIMyC</a>	video explaining how our body uses food
Energy Transfer	We can describe how jobs get done using an energy model where energy is transferred from one store at the start to another at the end. When energy is transferred, the total is conserved, but some energy is dissipated, reducing the useful energy. Describe how the energy of an object depends on its speed, temperature, height or whether it is stretched or compressed. Show how energy is transferred between energy stores in a range of real-life examples. Calculate the useful energy and the amount dissipated, given values of input and output energy. Explain how energy is dissipated in a range of situations.	<a href="https://www.youtube.com/watch?v=z-BPpmFet8&amp;list=PLUpOLr9nAYyQ2i7j-Hi4QhgGiqoSNIMyC&amp;index=5">https://www.youtube.com/watch?v=z-BPpmFet8&amp;list=PLUpOLr9nAYyQ2i7j-Hi4QhgGiqoSNIMyC&amp;index=5</a>	
		<a href="https://www.youtube.com/watch?v=LEMK_y-p70Q&amp;t=18s">https://www.youtube.com/watch?v=LEMK_y-p70Q&amp;t=18s</a>	
		<a href="https://www.youtube.com/watch?v=xYbo9Uwpp0">https://www.youtube.com/watch?v=xYbo9Uwpp0</a>	
Earth	Earth structure and universe The rock cycle and the different way fossils can form. Movement of Earth's crust and the structures and functions of volcanoes. The earth in the universe, this includes the units used to measure the planets and the position of the earth within the galaxy and the solar system. The movement of light within the universe. The movement of objects in space.	<a href="http://www.bbc.co.uk/bitesize/ks3/science/environment_earth_universe/">http://www.bbc.co.uk/bitesize/ks3/science/environment_earth_universe/</a>	BBC bitesize activities and revision material on the earth and the universe
		<a href="https://www.youtube.com/watch?v=Qd6nLM2QJWw">https://www.youtube.com/watch?v=Qd6nLM2QJWw</a>	Video exploring our solar system
		<a href="https://www.youtube.com/watch?v=OnY-Sk8_y78">https://www.youtube.com/watch?v=OnY-Sk8_y78</a>	Video on solar system and wider universe
		<a href="https://www.youtube.com/watch?v=XxoSUGlqQF0">https://www.youtube.com/watch?v=XxoSUGlqQF0</a>	Video explaining rock cycle
Genes	Exploring variation- the different types, the causes and why it is important to the survival of a species. Structure of the male and female reproductive system, fertilisation and development of an embryo. Research into the different factors that can affect the development of a foetus.	<a href="http://www.bbc.co.uk/education/guides/z9gk87h/revision">http://www.bbc.co.uk/education/guides/z9gk87h/revision</a>	Revision and test on variation.
		<a href="https://www.youtube.com/watch?v=sNU30T2EmQ8">https://www.youtube.com/watch?v=sNU30T2EmQ8</a>	Revision on reproduction as well as a revision activity.
		<a href="http://www.bbc.co.uk/bitesize/ks3/science/organisms_behaviour_health/reproduction/revision/1/">http://www.bbc.co.uk/bitesize/ks3/science/organisms_behaviour_health/reproduction/revision/1/</a>	Test on reproduction.
		<a href="http://www.bbc.co.uk/bitesize/quiz/q47607571">http://www.bbc.co.uk/bitesize/quiz/q47607571</a>	Text book pages.
Sound	Sound consists of vibrations which travel as a longitudinal wave through substances. The denser the medium, the faster sound travels. The greater the amplitude of the waveform, the louder the sound. The greater the frequency (and therefore the shorter the wavelength), the higher the pitch. Facts Sound does not travel through a vacuum. The speed of sound in air is 330 m/s, a million times slower than light. Explain observations where sound is reflected, transmitted or absorbed by different media. Explain observations of how sound travels using the idea of a longitudinal wave. Describe the amplitude and frequency of a wave from a diagram or oscilloscope picture. Use drawings of waves to describe how sound waves change with volume or pitch.	<a href="http://www.bbc.co.uk/education/guides/z8d2mp3/revision/1">http://www.bbc.co.uk/education/guides/z8d2mp3/revision/1</a>	Full unit on sound waves
		<a href="https://www.youtube.com/watch?v=xH8mT2IQz7Y&amp;t=39s">https://www.youtube.com/watch?v=xH8mT2IQz7Y&amp;t=39s</a>	fun science sound
Light	When a light ray meets a different medium, some of it is absorbed and some reflected. For a mirror, the angle of incidence equals the angle of reflection. The ray model can describe the formation of an image in a mirror and how objects appear different colours. When light enters a denser medium it bends towards the normal; when it enters a less dense medium it bends away from the normal. Refraction through lenses and prisms can be described using a ray diagram as a model. Use ray diagrams of eclipses to describe what is seen by observers in different places. Explain observations where coloured lights are mixed or objects are viewed in different lights. Use ray diagrams to describe how light passes through lenses and transparent materials. Describe how lenses may be used to correct vision.	<a href="http://www.bbc.co.uk/education/guides/zq7thyc/revision/1">http://www.bbc.co.uk/education/guides/zq7thyc/revision/1</a>	Full unit on light waves including questions
		<a href="https://www.youtube.com/watch?v=C9NIDtFNVc0">https://www.youtube.com/watch?v=C9NIDtFNVc0</a>	Light and sound information
		<a href="https://www.youtube.com/watch?v=CPfj9u2D0&amp;t=422s">https://www.youtube.com/watch?v=CPfj9u2D0&amp;t=422s</a>	colours and filters explained
		<a href="https://www.youtube.com/watch?v=7aU8sX8cFNs">https://www.youtube.com/watch?v=7aU8sX8cFNs</a>	using prisms and refraction
		<a href="https://www.youtube.com/watch?v=fm_GAlrBUQ">https://www.youtube.com/watch?v=fm_GAlrBUQ</a>	how does light travel
		<a href="https://www.youtube.com/watch?v=LlvVzJ6KZpk">https://www.youtube.com/watch?v=LlvVzJ6KZpk</a>	Fun science light and sound
		<a href="https://www.youtube.com/watch?v=xH8mT2IQz7Y">https://www.youtube.com/watch?v=xH8mT2IQz7Y</a>	

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**Science resources for learning and teaching Y8 Science Units  
(Each unit will have one assessed homework and an end of topic test)**

Term	Topic	Details of specification coverage	Resource location	Notes about using the resource
1	Contact Forces	When the resultant force on an object is zero, it is in equilibrium and does not move, or remains at constant speed in a straight line. One effect of a force is to change an object's form, causing it to be stretched or compressed. In some materials, the change is proportional to the force applied. Sketch the forces acting on an object, and label their size and direction. Explain whether an object in an unfamiliar situation is in equilibrium. Describe factors which affect the size of frictional and drag forces. Describe how materials behave as they are stretched or squashed. Describe what happens to the length of a spring when the force on it changes.	<a href="https://phet.colorado.edu/en/simulation/hooks-law">https://phet.colorado.edu/en/simulation/hooks-law</a>	Stretching springs simulation.
			<a href="http://www.bbc.co.uk/education/guides/zttfvr/revision">http://www.bbc.co.uk/education/guides/zttfvr/revision</a>	Forces revision guide.
	Pressure	Pressure acts in a fluid in all directions. It increases with depth due to the increased weight of fluid, and results in an upthrust. Objects sink or float depending on whether the weight of the object is bigger or smaller than the upthrust. Different stresses on a solid object can be used to explain observations where objects scratch, sink into or break surfaces. Skill Use the formula: fluid pressure, or stress on a surface = force (N)/area (m <sup>2</sup> ). Use diagrams to explain observations of fluids in terms of unequal pressure. Explain why objects either sink or float depending upon their weight and the upthrust acting on them. Explain observations where the effects of forces are different because of differences in the area over which they apply. Given unfamiliar situations, use the formula to calculate fluid pressure or stress on a surface.	<a href="http://www.bbc.co.uk/education/guides/zssbqk7/revision/2">http://www.bbc.co.uk/education/guides/zssbqk7/revision/2</a>	Floating and sinking notes and explanation
			<a href="http://www.eduplace.com/kids/hmsc/activities/simulations/gr1/unite.html">http://www.eduplace.com/kids/hmsc/activities/simulations/gr1/unite.html</a>	Floating and sinking simulations, first one cover the basics, the second has measurements to be used.
			<a href="https://phet.colorado.edu/sims/density-and-buoyancy/buoyancy_en.html">https://phet.colorado.edu/sims/density-and-buoyancy/buoyancy_en.html</a>	
	Matter	Periodic Table; trends in properties of elements. Elements and compounds. Using simple models to demonstrate chemicals. Special materials e.g. polymers and composites.	<a href="https://www.youtube.com/watch?v=vGvOKCcfwnU">https://www.youtube.com/watch?v=vGvOKCcfwnU</a>	Videos of periodic table songs to be used to familiarise students with the table
			<a href="https://www.youtube.com/watch?v=2GM-w5KFBp0">https://www.youtube.com/watch?v=2GM-w5KFBp0</a>	PowerPoint slides to summarise and explore g and h - Periodic table and element properties and groupings
			<a href="http://hwb.wales.gov.uk/Resources/resource/e2257f5a-0158-4e7b-93f2-a95edca1a4ea/en">http://hwb.wales.gov.uk/Resources/resource/e2257f5a-0158-4e7b-93f2-a95edca1a4ea/en</a>	
			<a href="http://hwb.wales.gov.uk/Resources/resource/e2257f5a-0158-4e7b-93f2-a95edca1a4ea">http://hwb.wales.gov.uk/Resources/resource/e2257f5a-0158-4e7b-93f2-a95edca1a4ea</a>	Interactive summary of chemical analysis observations including flame tests and common tests/reactions to determine elements and compounds
			<a href="http://hwb.wales.gov.uk/Resources/resource/7e588a69-1749-423b-bee9-c1a769c1a0ae/en">http://hwb.wales.gov.uk/Resources/resource/7e588a69-1749-423b-bee9-c1a769c1a0ae/en</a>	Interactive summary of chemical analysis observations including flame tests and common tests/reactions to determine elements and compounds
<a href="http://hwb.wales.gov.uk/Resources/resource/7e588a69-1749-423b-bee9-c1a769c1a0ae/cv">http://hwb.wales.gov.uk/Resources/resource/7e588a69-1749-423b-bee9-c1a769c1a0ae/cv</a>			Wide variety of classroom resources including games, video, notes, activities to introduce the periodic table	
Organisms	Structure of the respiratory system and how it is adapted to get gases in and out of the body. Diseases that affect the respiratory system. The importance of a healthy balanced diet, and the role of each organ of the digestive system in the digestion of food. The role of enzymes in digestion.	<a href="https://www.stem.org.uk/elibrary/list/12562/periodic-table">https://www.stem.org.uk/elibrary/list/12562/periodic-table</a>	RSC Interactive periodic table; videos; games; podcast; trends	
		<a href="http://resources.hwb.wales.gov.uk/VTC/2010-11/science/science-5/sci-5-breathing/breathing-eng/index.html">http://resources.hwb.wales.gov.uk/VTC/2010-11/science/science-5/sci-5-breathing/breathing-eng/index.html</a>	PPT: breathing and respiration; including models	
		<a href="http://www.bbc.co.uk/education/clips/zby7tfr">http://www.bbc.co.uk/education/clips/zby7tfr</a>	Video on mechanism of breathing	
		<a href="http://www.nhs.uk/video/pages/asthmaanimation.aspx">http://www.nhs.uk/video/pages/asthmaanimation.aspx</a>	NHS video on asthma	
		<a href="http://www.foodafactoflife.org.uk/Activity.aspx?siteId=148&amp;sectionId=61&amp;contentId=55">http://www.foodafactoflife.org.uk/Activity.aspx?siteId=148&amp;sectionId=61&amp;contentId=55</a>	Interactive resource of balanced diet	
Electromagnets	An electromagnet uses the principle that a current through a wire causes a magnetic field. Its strength depends on the current, the core and the number of coils in the solenoid. Fact The magnetic field of an electromagnet decreases in strength with distance. Use a diagram to explain how an electromagnet can be made and how to change its strength. Explain the choice of electromagnets or permanent magnets for a device in terms of their properties.	<a href="http://static.lawrencehallofscience.org/kidsite/portfolio/virtual-electromagnet/">http://static.lawrencehallofscience.org/kidsite/portfolio/virtual-electromagnet/</a>	Equip a virtual electromagnet to pick up the most iron filings. What wire material, voltage, type of current and other characteristics work best?	
		<a href="http://www.bbc.co.uk/education/topics/zrvbkqt">http://www.bbc.co.uk/education/topics/zrvbkqt</a>	Full revision section on electromagnetism and magnetism	
Magnetism	Magnetic materials, electromagnets and the Earth create magnetic fields which can be described by drawing field lines to show the strength and direction. The stronger the magnet, and the smaller the distance from it, the greater the force a magnetic object in the field experiences. Facts Two 'like' magnetic poles repel and two 'unlike' magnetic poles attract. Field lines flow from the north-seeking pole to the south-seeking pole. Use the idea of field lines to show how the direction or strength of the field around a magnet varies. Explain observations about navigation using Earth's magnetic field.	<a href="http://interactivesites.weebly.com/magnets-and-compass.html">http://interactivesites.weebly.com/magnets-and-compass.html</a>	A variety of simulations to try, choose the area you need to practice.	
		<a href="https://phet.colorado.edu/en/simulation/legacy/magnet-and-compass">https://phet.colorado.edu/en/simulation/legacy/magnet-and-compass</a>	Magnetic Fields demonstration	
Reactions - chemical energy and types of reactions	Reaction energy and catalysts - how reactions transfer or absorb energy from the environment and how these can be defined as exothermic and endothermic reactions. Catalysts - what they are and their uses. Combustion and thermal decomposition, learning to understand how we can control combustion and the implications of global warming caused by pollution. Chemical reactions - what they are and how we measure them.	<a href="https://www.stem.org.uk/elibrary/resource/30036/how-science-works-clip-bank-energetic-reactions">https://www.stem.org.uk/elibrary/resource/30036/how-science-works-clip-bank-energetic-reactions</a>	Video explaining energy profiles for reactions	
		<a href="http://www.bbc.co.uk/education/topics/zvpsqk7">http://www.bbc.co.uk/education/topics/zvpsqk7</a>	BBC bitesize topic with revision and activities	
		<a href="https://www.stem.org.uk/elibrary/resource/33784/exothermic-or-endothermic">https://www.stem.org.uk/elibrary/resource/33784/exothermic-or-endothermic</a>	teacher and student notes to outline a series of experiments from RSC to consider reactions as being exo or endothermic. Practical measurement of temperature changes also.	
		<a href="https://www.youtube.com/watch?v=Z8esUEAjeGc">https://www.youtube.com/watch?v=Z8esUEAjeGc</a>	Videos of reactions	
		<a href="http://hwb.wales.gov.uk/Resources/resource/8905a187-5e53-48ab-b91b-ba406fb8581a/en">http://hwb.wales.gov.uk/Resources/resource/8905a187-5e53-48ab-b91b-ba406fb8581a/en</a>	DBT: respiration: Aerobic and Anaerobic	

2	Respiration & Photosynthesis	Aerobic and anaerobic respiration and the release of energy. Photosynthesis and how it is affected by various factors. Transport of water in plants.	<a href="http://hwb.wales.gov.uk/Resources/resource/8905a187-5e53-48ab-b91b-ba406fb8581a/cy">http://hwb.wales.gov.uk/Resources/resource/8905a187-5e53-48ab-b91b-ba406fb8581a/cy</a> <a href="http://xtlearn.net/S/4083?header=false&amp;visit=false&amp;source=http://resource.download.wjec.co.uk.s3.amazonaws.com/vtc/2013-14/science/biology/wjec-01/eng/Respiration/virtau%20bean%20experiment/index.html">http://xtlearn.net/S/4083?header=false&amp;visit=false&amp;source=http://resource.download.wjec.co.uk.s3.amazonaws.com/vtc/2013-14/science/biology/wjec-01/eng/Respiration/virtau%20bean%20experiment/index.html</a> <a href="http://resource.download.wjec.co.uk.s3.amazonaws.com/vtc/2013-14/science/biology/wjec-01/eng/Respiration/3.%20Plenary/Respiratory%20system%20BPM.pdf">http://resource.download.wjec.co.uk.s3.amazonaws.com/vtc/2013-14/science/biology/wjec-01/eng/Respiration/3.%20Plenary/Respiratory%20system%20BPM.pdf</a> <a href="http://www.bbc.co.uk/schools/gcsebiteize/pe/appliedanatomy/respiratory/1_anatomy_respiratorysys_act.shtml">http://www.bbc.co.uk/schools/gcsebiteize/pe/appliedanatomy/respiratory/1_anatomy_respiratorysys_act.shtml</a>	<p>Covers respiration; aerobic and anaerobic</p> <p>Virtual experiment: Virtual bean experiment</p> <p>Respiration and smoking "big picture" mats</p> <p>PE: Respiration Activities</p>
	Work	Work is done and energy transferred when a force moves an object. The bigger the force or distance, the greater the work. Machines make work easier by reducing the force needed. Levers and pulleys do this by increasing the distance moved, and wheels reduce friction. Draw a diagram to explain how a lever makes a job easier. Compare the work needed to move objects different distances.	<a href="https://www.youtube.com/watch?v=HP_Ky_wRe4">https://www.youtube.com/watch?v=HP_Ky_wRe4</a> <a href="http://www.harcourtschool.com/activity/science_up_close/617/depoy/interface.swf">http://www.harcourtschool.com/activity/science_up_close/617/depoy/interface.swf</a>	<p>Video about how simple machines work.</p> <p>Examples and descriptions of simple machines.</p>
	Heating and Cooling	The thermal energy of an object depends upon its mass, temperature and what it's made of. When there is a temperature difference, energy transfers from the hotter to the cooler object. Thermal energy is transferred through different pathways, by particles in conduction and convection, and by radiation. Explain observations about changing temperature in terms of energy transfer. Describe how an object's temperature changes over time when heated or cooled. Explain how a method of thermal insulation works in terms of conduction, convection and radiation. Sketch diagrams to show convection currents in unfamiliar situations.	<a href="http://www.bbc.co.uk/schools/gcsebiteize/science/aqa_pre_2011/energy/heatrev1.shtml?scrlybrkr=2ab229c4">http://www.bbc.co.uk/schools/gcsebiteize/science/aqa_pre_2011/energy/heatrev1.shtml?scrlybrkr=2ab229c4</a> <a href="http://www.bbc.co.uk/education/guides/ztrd2p/revision?scrlybrkr=2ab229c4">http://www.bbc.co.uk/education/guides/ztrd2p/revision?scrlybrkr=2ab229c4</a>	<p>How energy is transferred via conduction, convection and radiation</p> <p>More in depth look at the above</p>
3	Climate & Earth Resources	Structure of the Earth and the composition of the atmosphere, looking at changes in both over time. Understand how a balance of processes maintains the composition of the atmosphere and the effects upon this of human activity.	<a href="http://phet.colorado.edu/en/simulation/legacy/plate-tectonics">http://phet.colorado.edu/en/simulation/legacy/plate-tectonics</a> <a href="http://phet.colorado.edu/en/simulation/legacy/greenhouse">http://phet.colorado.edu/en/simulation/legacy/greenhouse</a> <a href="http://www.ucmp.berkeley.edu/geology/tectonics.html">http://www.ucmp.berkeley.edu/geology/tectonics.html</a> <a href="http://www.bbc.co.uk/schools/gcsebiteize/science/edexcel_pre_2011/oneearth/damagetothenevironmentrev1.shtml">http://www.bbc.co.uk/schools/gcsebiteize/science/edexcel_pre_2011/oneearth/damagetothenevironmentrev1.shtml</a> <a href="http://resources.hwb.wales.gov.uk/NTC/ngft/2007-08/science/chemistry/G_Warming/index.html">http://resources.hwb.wales.gov.uk/NTC/ngft/2007-08/science/chemistry/G_Warming/index.html</a> <a href="http://hwb.wales.gov.uk/Resources/resource/049e7e6e-5ba4-4b24-9e55-b34e01456e27/cy">http://hwb.wales.gov.uk/Resources/resource/049e7e6e-5ba4-4b24-9e55-b34e01456e27/cy</a>	<p>Interactive simulation and modelling of plate tectonics to allow learners to explore processes occurring at tectonic plate boundaries</p> <p>Interactive simulation and modelling for learners to explore how the composition of atmosphere affects temperature (d, e, g, h)</p> <p>animation of plate tectonics and continental drift (b, c)</p> <p>Evolution of the earth's atmosphere; data; activities; tests. Damage to the environment from waste; recycling</p> <p>Teacher notes for a series of activities including debate and role play to discuss the carbon cycle and global warming and how human activity are affecting both.</p>
	Evolution & Inheritance	Natural selection and how it is driven by competition within a species. Darwin's Theory of Evolution. Biodiversity and how it is measured. The discovery of DNA and its structure.	<a href="http://resources.hwb.wales.gov.uk/NTC/2012-13/biology/echalk/genes-and-variety/eng/startHere.html">http://resources.hwb.wales.gov.uk/NTC/2012-13/biology/echalk/genes-and-variety/eng/startHere.html</a> <a href="https://www.youtube.com/results?search_query=importance+of+biodiversity">https://www.youtube.com/results?search_query=importance+of+biodiversity</a> <a href="http://www.bbc.co.uk/schools/gcsebiteize/science/21c/life_on_earth/biodiversityrev2.shtml">http://www.bbc.co.uk/schools/gcsebiteize/science/21c/life_on_earth/biodiversityrev2.shtml</a> <a href="http://www.bbc.co.uk/schools/gcsebiteize/science/add_edexcel/cells/dnarev3.shtml">http://www.bbc.co.uk/schools/gcsebiteize/science/add_edexcel/cells/dnarev3.shtml</a> <a href="http://www.ducksters.com/biography/scientists/watson_and_crick.php">http://www.ducksters.com/biography/scientists/watson_and_crick.php</a>	<p>Comprehensive resource including Interactive power point; games; animations on evolution. Click on 'Jumo Menu' to look at Darwin's Theory and Evolution.</p> <p>Video on the importance of biodiversity.</p> <p>BBC Bitesize revision biodiversity</p> <p>BBC Bitesize The discovery of DNA</p> <p>Information about Watson &amp; Crick</p>
	Wave Effects	When a wave travels through a substance, particles move to and fro. Energy is transferred in the direction of movement of the wave. Waves of higher amplitude or higher frequency transfer more energy. Explain differences in the damage done to living cells by light and other waves, in terms of their frequency. Explain how audio equipment converts sound into a changing pattern of electric current.	<a href="https://www.youtube.com/watch?v=YklnspauXaM&amp;scrlybrkr=b8d29784">https://www.youtube.com/watch?v=YklnspauXaM&amp;scrlybrkr=b8d29784</a> <a href="http://www.bbc.co.uk/education/clips/zqf65g">http://www.bbc.co.uk/education/clips/zqf65g</a>	<p>Video on how energy is transferred by waves</p> <p>Video on amplitude and frequency</p>
	Wave Properties	A physical model of a transverse wave demonstrates it moves from place to place, while the material it travels through does not, and describes the properties of speed, wavelength and reflection. Describe the properties of different longitudinal and transverse waves. Use the wave model to explain observations of the reflection, absorption and transmission of a wave.	<a href="http://www.bbc.co.uk/education/clips/zqj34wx">http://www.bbc.co.uk/education/clips/zqj34wx</a> <a href="http://www.bbc.co.uk/education/guides/zq7ycdm/revision">http://www.bbc.co.uk/education/guides/zq7ycdm/revision</a>	<p>Video explaining transverse and longitudinal waves</p> <p>Explanation of types of waves with questions</p>