



## Vigo Primary - Progression of Skills In Science

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Scientific Methods</b>	<ul style="list-style-type: none"> <li>*What a scientific question is</li> <li>*Variables in practical work (change &amp; measure)</li> <li>*Comparing objects</li> </ul>	<ul style="list-style-type: none"> <li>*How scientific question can be answered</li> <li>*Variables in practical work (change &amp; measure)</li> <li>*Identify patterns</li> </ul>	<ul style="list-style-type: none"> <li>*Scientific hypotheses</li> <li>*Scientific models</li> <li>*Control variables- (keep the same)</li> <li>*Observing</li> <li>*Classifying</li> <li>*Scientific drawing including labels</li> </ul>	<ul style="list-style-type: none"> <li>*Scientific hypotheses</li> <li>*Scientific theories</li> <li>*Variables in science-change and measure</li> <li>*Observing</li> <li>*Classifying</li> <li>*Identify patterns and relationships</li> <li>*Identifying similarities and differences</li> </ul>	<ul style="list-style-type: none"> <li>*Scientific hypotheses</li> <li>*Developing Scientific models</li> <li>*Control variables- (keep the same)</li> <li>*Classifying</li> <li>*Scientific drawing including labels</li> </ul>	<ul style="list-style-type: none"> <li>*Scientific hypotheses</li> <li>*Developing Scientific models</li> <li>*Distinguishing Pseudoscience from science</li> <li>*Variables in science-change (independent) and measure (dependent)</li> <li>*Identifying patterns in nature</li> <li>*The placebo effect</li> </ul>
<b>Knowledge of apparatus and techniques</b>	<ul style="list-style-type: none"> <li>*Use of simple equipment</li> <li>*Observe changes over time</li> <li>*Identifying objects</li> </ul>	<ul style="list-style-type: none"> <li>*Observe changes over time</li> <li>*Measuring</li> <li>*Sorting objects</li> </ul>	<ul style="list-style-type: none"> <li>*Taking accurate measurements</li> <li>*Scientific drawing including labels</li> </ul>	<ul style="list-style-type: none"> <li>*Correct use of apparatus including thermometer</li> <li>*Awareness of scale and a range of units</li> <li>*Scientific drawing including labels</li> </ul>	<ul style="list-style-type: none"> <li>*Making accurate observations</li> <li>*Awareness of scale and a range of units</li> <li>*Correct use of a range of apparatus</li> <li>*Repeatability</li> <li>*Scientific drawing including labels</li> </ul>	<ul style="list-style-type: none"> <li>*Taking accurate measurements</li> <li>*Awareness of scale and a range of units</li> <li>*Correct use of a range of apparatus</li> <li>*Awareness of sources of error in investigations</li> <li>*Scientific drawing including labels</li> </ul>
<b>Knowledge of data analysis and presentation</b>	<ul style="list-style-type: none"> <li>*What data is</li> <li>*What a table is</li> <li>*How to place data into a table</li> </ul>	<ul style="list-style-type: none"> <li>*Recording of data</li> <li>*How to place data into a table</li> <li>*That data in a table can be clearer when displayed as a graph</li> </ul>	<ul style="list-style-type: none"> <li>*Table design and construction</li> <li>*Creating keys</li> <li>*presentations on findings</li> </ul>	<ul style="list-style-type: none"> <li>*Table design and construction</li> <li>*Creating bar charts from data</li> <li>*presentations on findings</li> </ul>	<ul style="list-style-type: none"> <li>*Create classification keys</li> <li>*Creating bar charts from data</li> <li>*Validity of results</li> <li>*Oral presentations on findings</li> </ul>	<ul style="list-style-type: none"> <li>*Complex table design and construction</li> <li>*Creating scatter graphs from data</li> <li>*Validity of results</li> <li>*Illustrated presentations of research, techniques/methods and findings</li> </ul>
<b>Knowledge of how science uses evidence to develop explanations</b>	<ul style="list-style-type: none"> <li>*What scientific evidence is</li> <li>*What scientific evidence is not</li> <li>*What conclusions are used for</li> </ul>	<ul style="list-style-type: none"> <li>*Using simple secondary sources</li> <li>*What scientific evidence is</li> <li>*What scientific evidence is not</li> <li>*What a scientific conclusion should include</li> </ul>	<ul style="list-style-type: none"> <li>*Use of secondary sources</li> <li>*Written explanations</li> <li>*Posing further questions based on data</li> </ul>	<ul style="list-style-type: none"> <li>*Use of secondary sources</li> <li>*Writing a scientific conclusion linking to theory</li> <li>*Improvements to procedures</li> <li>*Use substantive knowledge alongside evidence from investigations</li> </ul>	<ul style="list-style-type: none"> <li>*Use of high quality and reliable secondary sources</li> <li>*Posing further questions based on data</li> <li>*Improvements to procedures</li> <li>*Constructing a scientific conclusion linking collected evidence to substantive knowledge</li> </ul>	<ul style="list-style-type: none"> <li>*Scientific theories</li> <li>*Use of high quality and reliable secondary sources</li> <li>*Interpreting relationships from scatter graphs</li> <li>*Constructing a scientific conclusion linking collected evidence to substantive knowledge</li> <li>*Evolution of scientific ideas and models</li> </ul>



## Vigo Primary - Progression of Knowledge in Science

Biology

Chemistry

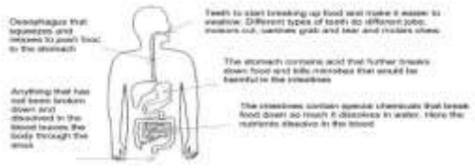
Physics

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Describing Materials</b>	<b>Habitats</b>	<b>Animals: Skeletons and movement</b>	<b>Mixtures and Separating them</b>	<b>Forces that oppose motion</b>	<b>How light behaves</b>
<p><b>The Big Idea about Materials</b></p> <ul style="list-style-type: none"> <li>There are many different <b>materials</b> that have different observable <b>properties</b>.</li> <li>Materials that have similar properties are grouped into <b>metals, rocks, fabrics, wood, plastic and ceramics</b> (including glass).</li> </ul>	<p><b>Adapted to Survive</b></p> <ul style="list-style-type: none"> <li>There is <b>variation</b> in all living things</li> <li>Animals and plants live in a variety of different places called <b>habitats</b></li> <li>Animals and plants have <b>adapted</b> to survive in different habitats</li> <li><b>Wild plants</b> such as ferns, daisies, nettles and dandelions grow randomly.</li> <li><b>Garden plants</b> such as roses, tulips, poppies, daffodils are planted intentionally.</li> </ul> <p><b>Plant adaptations for survival</b></p> <ul style="list-style-type: none"> <li>Plants have specific adaptations for survival.</li> <li>To survive they need to get water, light, and avoid being eaten</li> </ul>	<p><b>Skeletons protect vital organs</b></p> <ul style="list-style-type: none"> <li>All <b>vertebrates</b> have internal <b>skeletons</b> that protect <b>vital organs</b>.</li> <li><b>Invertebrates</b> have <b>exoskeletons</b> that protect <b>vital organs</b>.</li> </ul> <p><b>Skeletons support weight</b></p> <ul style="list-style-type: none"> <li>Skeletons support the weight of land animals.</li> <li>Stronger bones can <b>support</b> a greater <b>mass</b>.</li> </ul> <p><b>Skeletons support movement</b></p> <ul style="list-style-type: none"> <li>Bones are <b>connected</b> (but can move relative to each other) at joints.</li> <li><b>Muscles</b> connect to bones and move them when they <b>contract</b>.</li> <li>Stronger bones can <b>anchor</b> stronger muscles.</li> </ul>	<p><b>What Mixtures are</b></p> <ul style="list-style-type: none"> <li>A <b>substance</b> is an object with the same properties throughout.</li> <li>A <b>mixture</b> is when more than one substance is present in the same container</li> </ul> <p><b>What dissolving is</b></p> <ul style="list-style-type: none"> <li>When a substance is added to a liquid the substance can appear to disappear- this is called <b>dissolving</b></li> <li>A mixture of a substance that has dissolved in a liquid is called a <b>solution</b></li> <li>Not every substance can dissolve in water</li> </ul> <p><b>Separating Mixtures</b></p> <ul style="list-style-type: none"> <li>Mixtures can be separated if the substances have different properties</li> <li>This is because the substances in the mixture are still present and are unchanged</li> <li>There are different techniques for separating mixtures</li> </ul>	<p><b>Water and air resistance</b></p> <ul style="list-style-type: none"> <li>When objects move through air and water, they have to push it out of the way. The water and air push back with forces called <b>water resistance</b> and <b>air resistance</b>. The harder it is to push the material out of the way the greater the resistance.</li> <li>Gases weigh less than liquids and so water resistance is greater than air resistance.</li> </ul> <p><b>Friction</b></p> <ul style="list-style-type: none"> <li><b>Friction</b> is a <b>force against motion</b> caused by two surfaces <b>rubbing</b> against each other. It occurs because no surfaces are perfectly smooth; they have bumps and <b>undulations</b> that can <b>interlock</b> when placed on top of each other.</li> <li>To move one <b>interlocking</b> surface over another, one of three things must happen: <ol style="list-style-type: none"> <li>The surfaces must rise slightly</li> <li>The bumps on the surface must bend</li> <li>The bumps on the surface must break</li> </ol>                     All of these actions require a force, this is what causes friction                 </li> </ul> <p><b>Managing Forces</b></p> <ul style="list-style-type: none"> <li>Some objects require large forces to make them move; <b>gears, pulley</b> and <b>levers</b> can reduce the force needed to make things move.</li> <li>The use of levers can reduce the force needed to move things. The object you are lifting is called the <b>load</b>, and the force you apply to the arm to make the object move is called the <b>effort</b>.</li> </ul>	<p><b>How light travels</b></p> <ul style="list-style-type: none"> <li>When light is emitted from a light source, it travels in straight lines until it hits an object. This can be represented by an arrow.</li> <li><b>Shadows</b> form when light hits an <b>opaque</b> object, the area behind is in darkness because light can only travel in straight lines.</li> <li>Shadows have the same shape as the objects that cast them.</li> </ul> <p><b>How light behaves when it hits objects</b></p> <ul style="list-style-type: none"> <li>When light hits a <b>transparent</b> object, it goes through it in a straight line so we can see a clear image through it.</li> <li>When light hits a <b>translucent</b> material, it goes through it but is scattered, this means light can pass through, but we can't see an image through it.</li> <li>When light hits a mirrored surface, it reflects off it in straight lines, so we can see an image in the reflective material.</li> <li>Sometimes when light hits a material it <b>reflects</b> off it in many different directions (it is scattered). In this case light will be reflected but no image will be seen in the material.</li> <li>Shiny surfaces are better reflectors and rough surfaces scatter light more. Opaque objects don't allow any light to pass through them.</li> </ul> <p><b>How we see</b></p> <ul style="list-style-type: none"> <li>Animals see objects when light is reflected off the object and enters the eye through the <b>pupil</b>.</li> </ul>



				<ul style="list-style-type: none"> <li>The use of pulleys can reduce the force needed to move things</li> </ul>	<ul style="list-style-type: none"> <li>The pupil changes its size to allow enough, but not too much light into the eye.</li> <li>Too much light damages the eye and too little results in poor quality images.</li> </ul>
<b>Pushes and Pulls</b>	<b>Animal Lifecycles</b>	<b>Solids, Liquids and Gases</b>	<b>Digestion</b>	<b>Fossils and Geological time and classification</b>	<b>Classification and Evolution</b>
<p><b>How things move</b> -Objects can move (be in <b>Motion</b>) in various ways-roll, slide and bounce</p> <p><b>Forces change how objects move</b></p> <ul style="list-style-type: none"> <li>The <b>pushing</b> or <b>pulling</b> of an object can affect its motion.</li> <li>Pushing or pulling can do three things, <b>slow down</b>, <b>speed up</b> or <b>change the direction</b> of an object.</li> </ul> <p><b>Making forces bigger</b></p> <ul style="list-style-type: none"> <li>The larger the push/pull the bigger the effect on motion</li> </ul>	<p><b>Animal timelines</b></p> <ul style="list-style-type: none"> <li>Animals grow until they reach <b>maturity</b> and then don't grow any larger</li> <li>Animals <b>reproduce</b> when they reach maturity (adulthood).</li> <li>All animals eventually, <b>die</b></li> <li>Different animals live to different ages</li> <li>Different animals reach different sizes before they are able to reproduce</li> <li>Different animals reproduce at different ages</li> <li>Animals, including humans, have <b>offspring</b> which grow into adults</li> </ul> <p><b>How animals get their food</b></p> <ul style="list-style-type: none"> <li>Habitats are places where animals and plants live (from Year 1)</li> <li>Animals live in habitats in which they are suited.</li> <li>Different kinds of animals and plants depend on each other within <b>habitat</b>.</li> <li>Animals get their food from plants and other animals. This can be shown in a <b>food chain</b>.</li> <li>A food chain begins with a <b>producer</b>. This is often a green plant because plants can make their own food.</li> <li>A living thing that eats other plants is called a <b>consumer</b>.</li> </ul>	<p><b>Properties of solids, liquids and gases.</b></p> <ul style="list-style-type: none"> <li>Materials can be divided into solids, liquids and gases.</li> <li><b>Solids</b> hold their shape unless forced to change.</li> <li><b>Liquids</b> flow easily but stay in their container because of <b>gravity</b>. The more <b>viscous</b> a liquid the less runny it is.</li> <li><b>Gases</b> move everywhere and are not held in containers by <b>gravity</b>.</li> </ul> <p><b>Changing state.</b></p> <ul style="list-style-type: none"> <li><b>Heating</b> causes solids to <b>melt</b> into liquids and liquids to <b>evaporate</b> to gases.</li> <li><b>Cooling</b> causes gases to <b>condense</b> to liquids and liquids to <b>freeze</b> to solids.</li> </ul> <p><b>Melting, freezing, boiling and condensation temperatures.</b></p> <ul style="list-style-type: none"> <li>Different substances change <b>state</b> at different temperatures but the temperatures at which given substances changes state is always the same.</li> </ul> <p><b>All about the water cycle</b></p> <ul style="list-style-type: none"> <li>The temperature at which a substance <b>melts</b> from a solid to a liquid is the same at which it <b>freezes</b> from a liquid to a solid.</li> <li>The temperature at which a substance <b>boils</b> from a liquid to a gas is the same at which it <b>condenses</b> from a gas to a liquid.</li> <li>Liquids <b>evaporate</b> slowly, even below their boiling temperatures.</li> </ul>	<p><b>Food groups</b></p> <ul style="list-style-type: none"> <li>Animals need a variety of foods to help them grow and survive. The main food groups are:</li> <li><b>Meat, dairy</b> and pulses provide <b>protein</b> for muscles.</li> <li><b>Grains</b> and <b>root vegetables</b> provide <b>carbohydrates</b> for energy.</li> <li><b>Fat</b> for <b>insulation</b> and energy.</li> <li><b>Fruit</b> and <b>vegetables</b> for <b>minerals, vitamins and fibre</b>. These are essential to keep our bodies working well and protect us from illnesses.</li> </ul> <p><b>Teeth</b></p> <ul style="list-style-type: none"> <li>The teeth are the first part of human and animal food digestion.</li> <li>Different types of teeth do different jobs</li> <li>incisors a narrow-edged tooth at the front of the mouth used for cutting food into smaller pieces</li> <li>canines- to rip and tear food</li> <li>pre-molars – to begin grinding food and send it back to the molars</li> <li>molars- flat teeth at the back of the mouth used to grind.</li> </ul> <p><b>The Digestive System</b></p> <ul style="list-style-type: none"> <li>The <b>nutrients</b> in food have to get to every part of the body. The <b>blood</b> transports them.</li> <li>The role of <b>digestion</b> is to get the nutrients in food to dissolve in the blood, if it doesn't dissolve it can't enter the blood and be transported.</li> </ul>	<p><b>Geological time</b></p> <ul style="list-style-type: none"> <li>The Earth is very old. Around 4.2 <b>billion</b> years. We know this from dating rocks</li> <li>Life first appeared on Earth around 3.8 billion years ago.</li> <li>Life was, at first, very simple but over <b>millions</b> and millions of years life became more complex through the process of <b>evolution</b></li> </ul> <p><b>Evidence for evolution</b></p> <ul style="list-style-type: none"> <li>There are many sources of evidence for evolution</li> <li><b>Fossils</b> are one of the main sources of evidence for evolution. They show when new organisms appear and when they go <b>extinct</b>.</li> <li>Due to the nature of fossil formation and discovery, fossils only provide an incomplete record of evolution.</li> <li>Scientists use fossils along with other pieces of evidence (<i>DNA, Embryology, comparative anatomy, artificial selection</i>) to work out how organisms have evolved</li> <li>Fossils form when dead organisms are rapidly buried or leave an imprint and are turned to stone over a long period of time. If they survive in the Earth, they then have to be found by a <b>palaeontologist</b> who will study them.</li> </ul> <p><b>Classification of life</b></p> <ul style="list-style-type: none"> <li>All living (and <b>extinct</b>) <b>organisms</b> are classified into groups based upon their physical features.</li> </ul>	<p><b>Natural selection</b></p> <ul style="list-style-type: none"> <li><b>Evolution</b> is the change of physical form in a population over a long-time span</li> <li><b>Natural selection</b> is the process which controls that change.</li> <li>In any <b>population</b> there is <b>variation</b> and <b>competition</b> for resources (food, water, mates).</li> <li>Within that variation, organisms that have features which make them better <b>adapted</b> at securing food, water, and mates, are more likely to survive and produce <b>offspring</b> which have <b>inherited</b> those same successful features. Those that are not well adapted will eventually go <b>extinct</b>.</li> <li>Over a long enough timeline all organisms in a population will have those successful features.</li> <li>This is known as the <i>Theory of Evolution by Natural Selection</i> and was developed by <b>Charles Darwin</b> in 1859</li> </ul> <p><b>How Charles Darwin discovered the process of Evolution by Natural selection</b></p> <ul style="list-style-type: none"> <li>Before Darwin, <b>Lamarck's</b> Idea of acquired characteristics was proposed. (Giraffes stretch their necks in life, which made their children have longer necks).</li> <li>Darwin as a young man travelled around the world on the <b>HMS Beagle</b>. On this 5-year voyage he saw lots of things and recorded down lots of evidence which allowed him to work out how organisms change over time by a different mechanism of Natural selection</li> </ul>



		<ul style="list-style-type: none"> <li>The water cycle is the process by which water is continuously transferred between the surface of the earth and the atmosphere.</li> <li>Liquid water evaporates into water vapor, condenses to form clouds, and precipitates back to earth in the form of rain and snow.</li> </ul>	<p>Humans achieve this as below:</p> 	<ul style="list-style-type: none"> <li>This includes animals, plants, fungi, and <b>microorganisms</b> like <b>bacteria</b>.</li> <li>Within each of these broad groups, organisms are classified into small subgroups. Animals- invertebrates, mammals, birds, amphibians, reptiles and fish, Plants- flowering plants, ferns, conifers, moss.</li> <li>Bacteria are a group of organisms that are not visible to the naked eye but are very abundant and have distinct physical features we can only see under powerful <b>microscopes</b>.</li> </ul>	
Seasons	Changing Materials	Light	Living Things	Making New Substances	Sound
<p><b>Surviving the changing seasons.</b></p> <ul style="list-style-type: none"> <li>There are four <b>seasons</b>, <b>Spring</b>, <b>summer</b>, <b>autumn</b> and <b>winter</b></li> <li>Each season is about three months long</li> <li>Spring = young animals born and the weather starts to become warmer.</li> <li>Autumn = leaves fall off the trees</li> <li>Winter = shortest amount of daylight and the weather is at its coldest.</li> <li>Summer = the trees are full of green leaves and the weather is at its warmest.</li> <li>Animals and plants have adapted ways of surviving the changing seasons.</li> <li>These include <b>hibernating</b>, storing food, fattening up, <b>migration</b>, loss of leaves</li> </ul>	<p><b>How materials can change</b></p> <ul style="list-style-type: none"> <li>Materials can be <b>changed</b> by <b>physical force</b> (twisting, bending, squashing and stretching).</li> <li>The properties of a material determine whether they are suitable for a purpose.</li> </ul>	<p><b>Light and sight</b></p> <ul style="list-style-type: none"> <li>There must be light for us to see.</li> <li>Light comes from a <b>source</b>.</li> <li>We need light to see things, even <b>shiny</b> things.</li> <li>Light from the sun can be dangerous and that there are ways to protect their eyes</li> </ul> <p><b>What light does when it hits materials</b></p> <ul style="list-style-type: none"> <li>If an object is <b>transparent</b> light will go through it and we will be able to see through it.</li> <li>If an object is <b>opaque</b>, it will block the light and no light will get through.</li> <li>If an object is perfectly <b>reflective</b> light will bounce back off it and we will see reflections of objects.</li> <li>If the material is <b>translucent</b>, it will allow light through, but we won't be able to see through it.</li> </ul>	<p><b>Classifying living things</b></p> <ul style="list-style-type: none"> <li>Living things can be divided into groups based upon their characteristics</li> <li><b>Classification keys</b> help group, identify and name living things</li> <li>Animals can be classified as <b>vertebrates</b> (having a spine) or <b>invertebrates</b> (lacking a spine)</li> <li>In any habitat there are <b>food chains</b> and webs where <b>nutrients</b> are passed from one <b>organism</b> to another when it is eaten</li> </ul> <p>If the population of one organism in the chain or web is affected, it has a knock-on effect to all the others</p> <p><b>Life cycles</b></p> <ul style="list-style-type: none"> <li>Mammals, amphibians, insects and birds have different life cycles</li> <li>Lifecycles vary in time depending on the species of animal- it can be as short as just a few weeks for insects, to up to 200 years for sea urchins. Larger animals often have longer life cycles but not always.</li> <li>All animal life cycles begin with growth and development followed by reproduction</li> </ul> <p><b>Environmental change</b></p> <ul style="list-style-type: none"> <li><b>Environmental change</b> affects different habitats differently</li> <li>Human activity significantly affects the environment</li> </ul>	<p><b>Reversible and irreversible changes</b></p> <ul style="list-style-type: none"> <li>All matter, including gas, has <b>mass</b>.</li> <li>Sometimes, mixed substances <b>react</b> to make a new substance. These changes are usually <b>irreversible</b>.</li> <li>Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are not reversible.</li> <li>Indicators that something new has been made are the properties of the material are different (colour, state, texture, hardness, smell, temperature)</li> <li>If it is not possible to get the material back easily it is likely that it is not there anymore and something new has been made (irreversible change)</li> </ul>	<p><b>Describing Sound</b></p> <ul style="list-style-type: none"> <li>Sounds can be produced in a variety of ways.</li> <li>Sounds have the properties of <b>pitch</b> and <b>volume</b>.</li> <li>When a sound is produced it spreads out from its source in all directions</li> </ul> <p><b>How sound is made and travels</b></p> <ul style="list-style-type: none"> <li>Sound is caused by <b>vibration</b> (objects move rapidly back and forth or up and down)</li> <li>When objects vibrate it makes the objects in contact with it also vibrate. This includes the air.</li> <li>The vibration travels through the air and makes other objects it is in contact with vibrate including your <b>ear drum</b>.</li> </ul> <p><b>Pitch and Volume changes</b></p> <ul style="list-style-type: none"> <li>Pitch and volume are caused by how the material vibrates</li> <li>The pitch of a sound is caused by how fast an object vibrates. This is called the <b>frequency</b> of vibration. Higher the frequency, higher the pitch</li> <li>Smaller objects or tighter strings tend to vibrate with a higher frequency</li> <li>The volume of sound is caused by how big each vibration is. This is called the <b>amplitude</b> of vibration.</li> </ul>



			<ul style="list-style-type: none"> <li>Different organisms are affected differently by environmental change</li> </ul> <p><b>Gravity and its effects</b></p> <ul style="list-style-type: none"> <li><b>Gravity</b> is force of attraction between two objects with <b>mass</b> (a quantity of matter)</li> <li>The bigger the mass the bigger force it exerts</li> <li>Gravity works over distance but gets weaker as distance increases</li> <li>Stars, planets, moons have a very large amount of mass. They exert a gravitational attraction on each other</li> <li>Differences in gravity result in smaller mass objects orbiting around larger mass objects, e.g., planets around stars and moons around planets</li> </ul>		<p>The bigger the amplitude the higher the volume.</p> <ul style="list-style-type: none"> <li>Sounds get fainter as the distance from the sound source increases.</li> </ul>
<b>Animal Survival (1.5 blocks)</b>	<b>Magnets</b>	<b>Rocks and Soils</b>	<b>Making Electrical Circuits Work</b>	<b>Space and Gravity</b>	<b>Controlling Electrical Circuits</b>
<p><b>Feeding for survival</b></p> <ul style="list-style-type: none"> <li>Animals are groups of <b>organisms</b> that need to consume food to survive.</li> <li>Food provides <b>energy</b> and the building blocks of <b>growth</b>.</li> <li>There are many different groups of animals including <b>fish, amphibians, reptiles, birds and mammals</b>. They have different structures, and they eat different types of foods.</li> <li>Some eat other animals (<b>carnivores</b>), and others only eat vegetables (<b>herbivores</b>), and some like to eat both plants and meat (<b>omnivores</b>)</li> <li>Common animals that are <b>carnivores</b> include lions, cats, sharks and snakes</li> <li>Common animals that are <b>herbivores</b> include cows, horses, sheep, elephants and deer</li> <li>Common animals that are <b>omnivores</b> include humans, bears, monkeys and seagulls</li> </ul> <p><b>Moving for Survival</b></p> <ul style="list-style-type: none"> <li>Animals must move to get their</li> </ul>	<p><b>What magnets do</b></p> <ul style="list-style-type: none"> <li>Magnets exert <b>attractive forces</b> on some <b>metals</b></li> </ul> <p><b>Magnets don't need to touch</b></p> <ul style="list-style-type: none"> <li>Magnetic forces work through other materials including air, so magnets don't need to be touching to <b>exert</b> their force. It is called a <b>non-contact force</b>.</li> </ul> <p><b>Magnets attract and repel</b></p> <ul style="list-style-type: none"> <li>Each end of a magnet is called a <b>pole</b>, opposite poles are called north and south.</li> <li>Magnets exert <b>attractive</b> forces on each other when the poles facing each other are north and south (opposites).</li> <li>Magnets exert <b>repulsive</b> forces on each other when the poles facing each other are the same.</li> </ul>	<p><b>The different types of rocks</b></p> <ul style="list-style-type: none"> <li>A <b>rock</b> is a solid material made up of <b>minerals</b> forming part of the surface of the Earth</li> <li>Rocks are exposed on the surface at cliffs, hills and mountains but are also under the surface.</li> <li>Some rocks, called <b>ores</b> contain metals</li> <li>Some rocks are made of <b>grains</b> squashed together and can contain the remains of long-dead organisms, called <b>fossils</b>. This type of rock is called <b>sedimentary</b> rock, an example would be <b>limestone, sandstone</b> or <b>mudstone</b></li> <li>-Some rocks are made of <b>crystals</b> that are locked tightly together. These are called <b>igneous</b> and <b>metamorphic</b> rocks; an example of igneous rock is <b>granite</b>, and an example of metamorphic rock is <b>slate</b></li> </ul> <p><b>The properties of rocks</b></p> <ul style="list-style-type: none"> <li>These three types of rocks all have different properties to each other, including <b>porosity, hardness</b>, reaction to chemicals</li> </ul>	<p><b>Electricity as a power source</b></p> <ul style="list-style-type: none"> <li>Lots of <b>devices</b> are powered by <b>electricity</b></li> <li>Electricity comes from a source</li> <li>There are two main sources- <b>batteries and mains</b></li> </ul> <p><b>What batteries do</b></p> <ul style="list-style-type: none"> <li>A battery pushes electricity to the device.</li> <li>To be able to push electricity the battery must be connected to the device using <b>wires</b></li> <li>This is called a <b>circuit</b></li> </ul> <p><b>Making devices work harder</b></p> <ul style="list-style-type: none"> <li>If there are more batteries added to a circuit this provides a bigger push on the electricity</li> <li>This will make the device work harder e.g., brighter bulbs, faster spinning motor, louder buzzer</li> </ul> <p><b>Insulators and Conductors</b></p> <ul style="list-style-type: none"> <li>Some materials will allow electricity to flow through them- <b>Conductors</b></li> <li>Other materials will not allow electricity to flow through them- <b>Insulators</b></li> </ul>	<p><b>Our Solar system</b></p> <ul style="list-style-type: none"> <li>A <b>Solar system</b> is a collection of <b>planets</b>, which <b>orbit</b> (a curved path) a <b>star</b>.</li> <li>There are huge number of stars in space and therefore a huge number of solar systems</li> <li>Our solar system consists of 8 planets, many of those planets have <b>moons</b> which orbit around them.</li> <li>Our solar system can be represented with a model (see diagram), but it isn't possible to draw it to scale.</li> <li>The planets and moons are <b>rotating</b> (spinning)</li> <li>The time it takes one planet to rotate is called a <b>day</b>. On Earth this is 24 hours</li> <li>The time it takes a planet to complete one orbit around its star is called a <b>year</b>. On Earth this is 365.25 days</li> <li>The solar system is with a massive collection of stars called the <b>galaxy</b> (called the Milky way)</li> <li>The Milky way is one of billions of galaxies in the <b>Universe</b>.</li> </ul>	<p><b>Pushing electrical current</b></p> <ul style="list-style-type: none"> <li><b>Current</b> is the flow of electricity around a circuit.</li> <li>The power supply in a circuit pushes the current round the circuit</li> <li>The <b>voltage</b> of the power supply is a measure of this push</li> <li>Voltage is measure in <b>volts</b></li> <li>Batteries have a limited store of energy and when this is gone, they can no longer push the current</li> </ul> <p><b>Electrical Current</b></p> <ul style="list-style-type: none"> <li>Current is the flow of electricity through a <b>conductor</b></li> <li>When current passes through a device it makes it work</li> <li>Increasing the voltage (the number of cells in the battery) increases the current. The larger the flow of current, the harder the device works</li> </ul> <p><b>Electrical resistance</b></p> <ul style="list-style-type: none"> <li>All parts of a circuit offer <b>resistance</b> to electrical current including the wires.</li> <li>Resistance is the slowing down of electrical current</li> </ul>



<p>food</p> <ul style="list-style-type: none"> <li>• They will move in different ways to get their food</li> <li>• Animals that eat other animals are called <b>predators</b></li> <li>• Animals that are eaten by other animals are called <b>prey</b></li> <li>• Animals feeding relationships can be illustrated in a <b>food chain</b></li> </ul> <p><b>Sensing for survival</b></p> <ul style="list-style-type: none"> <li>• The five sense organs are the eyes (for seeing), nose (for smelling), ears (for hearing), tongue (for tasting), and skin (for touching or feeling).</li> <li>• Animals have <b>senses</b> to help them survive</li> <li>• Animals have developed a range of ways to find prey or avoid being eaten</li> </ul>		<ul style="list-style-type: none"> <li>• The properties of the rock depend on how the rock was formed, e.g. Some igneous rocks form from lava from volcanoes and cool very quickly leading to very small crystals</li> </ul> <p><b>The structure of soils</b></p> <ul style="list-style-type: none"> <li>• <b>Soil</b> is made up of small broken-down pieces of rock.</li> <li>• Soil contains a range of different size rock pieces, e.g., sand grains or stones.</li> <li>• Soil also contains <b>humus</b> (rotted plant material)</li> <li>• Soil made of very fine rock is called <b>silt</b> or <b>clay</b>.</li> </ul>		<p><b>What else is in the solar system?</b></p> <ul style="list-style-type: none"> <li>• Stars are huge balls of gas that produce vast amounts of light and heat.</li> <li>• <b>Asteroids</b> are lumps of rock that orbit a star (there are millions in between Mars and Jupiter)</li> </ul> <p><b>Comets</b> are objects that are made of ice, which melts when they get closer to the sun leaving a tail.</p>	<ul style="list-style-type: none"> <li>• The more devices added into a circuit the greater the resistance</li> <li>• This means less current flows around the circuit</li> </ul>
<b>Plants</b>	<b>Making New Plants (1.5 blocks)</b>	<b>Plants and their food production</b>	<b>Plant Reproduction</b>	<b>Circulation</b>	
<p><b>Where do plants come from?</b></p> <ul style="list-style-type: none"> <li>• A <b>seed</b> contains a miniature plant that can develop into a fully grown plant.</li> <li>• A <b>bulb</b> has underground vertical shoots which already has modified <b>leaves</b></li> <li>• Seeds and bulbs need water to grow but most do not need light (<b>germination</b>)</li> <li>• Seeds and bulbs have food stores inside them to help the plant start to grow.</li> </ul> <p><b>Plant survival</b></p> <ul style="list-style-type: none"> <li>• To survive plants, need to get water, light, and avoid being eaten</li> </ul> <p><b>How plants get what they need to survive</b></p> <ul style="list-style-type: none"> <li>• A seed produces <b>roots</b> to allow water to get into the plant.</li> <li>• A seed produces <b>shoots</b> to produce leaves to collect the sunlight.</li> </ul>	<p><b>What flowers are for?</b></p> <ul style="list-style-type: none"> <li>• All <b>flowering plants</b> make seeds (<b>reproduction</b>) that can grow (<b>germinate</b>) into new plants</li> <li>• Plants need water, light and a suitable temperature to grow and stay healthy</li> <li>• There are two main groups of seed plants – plants with cones and plants with flowers.</li> </ul> <p><b>What happens after a plant has produced seeds?</b></p> <ul style="list-style-type: none"> <li>• Some plants die after it has produced its seed (annual) and sometimes the plant lives for many <b>generations</b> producing seeds each year (perennial)</li> </ul>	<p><b>Plants don't go to McDonalds</b></p> <ul style="list-style-type: none"> <li>• Plants do not eat food so have to make their own.</li> <li>• This food provides them with energy, and materials to grow</li> <li>• To make the food (sugar) plants need water from the ground, <b>carbon dioxide</b> from the air and light from the sun. The water is taken up through the <b>roots</b> from the <b>soil</b> The carbon dioxide is taken in through the <b>leaves</b> #</li> </ul> <p>As well as food, plants also make <b>oxygen</b> which is given out back into the air through the leaves</p>	<p><b>The reproductive parts of a flowering plant</b></p> <ul style="list-style-type: none"> <li>• Flowering plants <b>reproduce</b> by the process of <b>pollination</b></li> <li>• Pollination leads to the formation of a <b>seed</b> which can grow into a new plant</li> <li>• Flowering plants have evolved specific parts to carry out pollination and seed growth</li> <li>• Those parts are <b>stamen</b> where pollen is produced, <b>stigma</b> where pollen is collected, and the <b>ovaries</b> which contains the eggs that become a seed when the pollen travels down the stigma and meets the egg</li> <li>• Flowers have <b>petals</b> also are a range of colours, patterns, and smells to attract insects</li> </ul> <p><b>All flowers are similar but different.</b></p> <ul style="list-style-type: none"> <li>• Plants and flowers look different because they pollinate in different ways.</li> <li>• There are two types of pollination Insect and wind</li> <li>• Insect pollinated flowers are usually bright coloured and strong scents</li> </ul>	<p><b>Getting oxygen into the blood</b></p> <ul style="list-style-type: none"> <li>• All animals need <b>oxygen</b> to survive.</li> <li>• Air is breathed into the <b>lungs</b> where the oxygen in the air is passed into the blood.</li> <li>• Every part of animals' bodies need oxygen, especially <b>muscles</b>.</li> <li>• Muscles need a supply of oxygen and <b>sugar (glucose)</b> to make them work, they are supplied by the blood.</li> </ul> <p><b>The blood circulation model</b></p> <ul style="list-style-type: none"> <li>• The blood <b>circulates</b> around the body in a way that ensures all muscles in the body get a supply of oxygen and sugar.</li> <li>• The <b>heart</b> pumps blood to every muscle in the body. The circulatory route must allow the blood to collect oxygen from the lungs, sugar from the intestines and visit muscles.</li> <li>• The blood then returns to the heart where it is pumped again.</li> </ul>	



			<ul style="list-style-type: none"><li>• Wind pollinated flowers have less colourful petals and much less scent</li></ul> <p><b>Seed dispersal</b></p> <ul style="list-style-type: none"><li>• Plants have evolved many different ways to <b>disperse</b> their seeds</li><li>• Seed dispersal increases the chances of seeds <b>germinating</b> and growing into a mature plant</li></ul> <p><b>What a seed does</b></p> <ul style="list-style-type: none"><li>• A seed contains a miniature, undeveloped version of the plant</li><li>• They contain a food store for the first stage of growth (until the plant can make its own food)</li><li>• They are surrounded with a protective coat.</li></ul>		
--	--	--	--	--	--