



## St. Andrew's - Science Knowledge - Progression Ladder

	Year 3	Year 4	Year 5	Year 6
<b>Plants</b>	<b>How plants grow</b>			
	identify and describe the functions of the roots, stem, leaf and flower of flowering plants.			
	that the root is the first part of the plant to grow from the seed and that the young root absorbs water and minerals from the soil to help the seed sprout.			
	<ul style="list-style-type: none"> <li>describe each step in the growth of roots.</li> </ul>			
	<ul style="list-style-type: none"> <li>describe the process of water transportation in plants.</li> </ul>			
	<ul style="list-style-type: none"> <li>explain what the process of photosynthesis is.</li> </ul>			
	<ul style="list-style-type: none"> <li>that the plant uses minerals from the soil to make chlorophyll in its leaves.</li> </ul>			
	<ul style="list-style-type: none"> <li>explain what the process of pollination is.</li> </ul>			
	<ul style="list-style-type: none"> <li>explain some of the ways pollen grains get from the male stamen to the female part of the plant.</li> </ul>			
	<ul style="list-style-type: none"> <li>order the stages in the life cycle of flowering plants.</li> </ul>			
	<ul style="list-style-type: none"> <li>identify the ways in which a variety of different plants disperse their seeds.</li> </ul>			
	<ul style="list-style-type: none"> <li>that seeds have an outer coat to protect them that starts to absorb water and soften when it lands in soil.</li> </ul>			
	<ul style="list-style-type: none"> <li>that seeds can have one, two or three seed leaves that store food.</li> </ul>			
	<ul style="list-style-type: none"> <li>that seeds are an important source of food for animals.</li> </ul>			

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	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
	<b>Health and Movement</b>	<b>Eating and Digestion</b>	<b>Changes and Reproduction</b>	<b>Healthy Bodies</b>
<b>Animals including humans</b>	<ul style="list-style-type: none"> <li>I know that animals, including humans, get the nutrition they need from what they eat.</li> </ul>	<ul style="list-style-type: none"> <li>I can suggest similarities and differences in the diets of a variety of different animals.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe some of the ways our bodies change as we grow.</li> </ul>	<ul style="list-style-type: none"> <li>I know that people have not always known that disease and illnesses were often related to diet, such as scurvy.</li> </ul>
	<ul style="list-style-type: none"> <li>I know that the two main reasons humans need food is for growth and energy.</li> </ul>	<ul style="list-style-type: none"> <li>I can identify herbivores, carnivores and omnivores in a variety of different habitats.</li> </ul>	<ul style="list-style-type: none"> <li>I know that our rate of growth is dependent on many different factors.</li> </ul>	<ul style="list-style-type: none"> <li>I know that James Lind is credited as being the scientist who conducted the world's first clinical trial to explore the effects of diet on scurvy.</li> </ul>
	<ul style="list-style-type: none"> <li>I know that we need proteins for growth and to help repair our bodies when we are ill or injured.</li> <li>I know that starches, fats and sugars are good foods for energy.</li> </ul>	<ul style="list-style-type: none"> <li>I can interpret and construct a variety of food chains with both producers and consumers.</li> </ul>	<ul style="list-style-type: none"> <li>I can name the different stages in the human life cycle and put them in order.</li> </ul>	<ul style="list-style-type: none"> <li>I know that there are two groups of carbohydrates: sugars and starches.</li> </ul>
	<ul style="list-style-type: none"> <li>I can explain how to eat a healthy, balanced diet.</li> </ul>	<ul style="list-style-type: none"> <li>I can suggest what might happen if one or more organisms was taken out of a food chain.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the stages in the gestation period of humans and compare this to other animals.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the importance of the different food groups and why each one is important for keeping our bodies healthy.</li> </ul>
	<ul style="list-style-type: none"> <li>I can design healthy, balanced meals for people who have dietary restrictions, e.g. vegetarians or people with wheat/dairy allergies</li> </ul>	<ul style="list-style-type: none"> <li>I can identify where canines, incisors and molars are in the human mouth.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the growth and development of children from age 0 to 11.</li> </ul>	<ul style="list-style-type: none"> <li>I can name some different minerals and why they are important for our bodies.</li> </ul>
	<ul style="list-style-type: none"> <li>I know that we have skeletons to support our bodies, protect our internal organs and to help us move.</li> </ul>	<ul style="list-style-type: none"> <li>I can explain the function of canines, incisors and molars.</li> </ul>	<ul style="list-style-type: none"> <li>I understand the role of hormones in puberty.</li> </ul>	<ul style="list-style-type: none"> <li>I can use food labels to match foods to their nutritional values.</li> </ul>
	<ul style="list-style-type: none"> <li>I can name and locate some of the major bones in the human body.</li> </ul>	<ul style="list-style-type: none"> <li>I know that teeth have roots that hold the teeth in place in the gums.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the changes that occur to both boys and girls during puberty.</li> </ul>	<ul style="list-style-type: none"> <li>I can use food labels to assess how healthy a food is, explaining reasons for my choices.</li> </ul>
	<ul style="list-style-type: none"> <li>I can describe similarities and differences between human and animal skeletons.</li> </ul>	<ul style="list-style-type: none"> <li>I can suggest why different animals have different types of teeth.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe some of the ways teenagers can keep fit and healthy during all the changes that take place during puberty.</li> </ul>	<ul style="list-style-type: none"> <li>I know that it is our circulatory system that transports nutrients around our bodies, and that the two organs associated with the circulatory system are the heart and lungs.</li> </ul>
	<ul style="list-style-type: none"> <li>I know that all vertebrates have a backbone.</li> </ul>	<ul style="list-style-type: none"> <li>I know that young children have 20 milk teeth that start growing through when they are around six months old.</li> </ul>	<ul style="list-style-type: none"> <li>I know that a human is fully grown by the time they reach the age of around 20.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the functions of the heart and lungs.</li> </ul>
	<ul style="list-style-type: none"> <li>I can explain how invertebrates without an internal skeleton protect themselves.</li> </ul>	<ul style="list-style-type: none"> <li>I know that milk teeth fall out and are replaced by 32 adult teeth, which are permanent.</li> </ul>	<ul style="list-style-type: none"> <li>I know that the human body starts to deteriorate as it enters old age.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe how the circulatory system works.</li> </ul>

## St. Andrew's - Science Knowledge - Progression Ladder

	Year 3	Year 4	Year 5	Year 6
<b>Animals including humans</b>	<ul style="list-style-type: none"> <li>• I know that we need muscles to help us move.</li> </ul>	<ul style="list-style-type: none"> <li>• I know that tooth decay can cause teeth to rot and fall out.</li> </ul>	<ul style="list-style-type: none"> <li>• I can describe some of the ways in which humans can make sure they stay fit and healthy as they get older</li> </ul>	<ul style="list-style-type: none"> <li>• I know that it is important to keep our hearts healthy and that exercise is a crucial part of this.</li> </ul>
	<ul style="list-style-type: none"> <li>• I can explain the difference between smooth muscles, cardiac muscles and skeletal muscles.</li> </ul>	<ul style="list-style-type: none"> <li>• I can suggest some ways of making sure my teeth stay healthy.</li> </ul>		<ul style="list-style-type: none"> <li>• I know that it is the muscles in our bodies that allow us to move.</li> </ul>
	<ul style="list-style-type: none"> <li>• I can explain the role of flexors and extensors in making our bones move.</li> </ul>	<ul style="list-style-type: none"> <li>• I can name the organs associated with the digestive system.</li> </ul>		<ul style="list-style-type: none"> <li>• I can explain the difference between smooth muscles, cardiac muscles and skeletal muscles.</li> </ul>
		<ul style="list-style-type: none"> <li>• I can describe the functions of the basic parts of the digestive system.</li> </ul>		<ul style="list-style-type: none"> <li>• I can name some of the different muscle groups in the human body.</li> </ul>
				<ul style="list-style-type: none"> <li>• I can explain which muscles we use for a variety of different physical activities.</li> </ul>
				<ul style="list-style-type: none"> <li>• I can explain what happens to our muscles and the rest of our body when we exercise.</li> </ul>
				<ul style="list-style-type: none"> <li>• I can define what a drug is.</li> </ul>
				<ul style="list-style-type: none"> <li>• I know that some drugs are very beneficial and others are very harmful, and that some drugs are legal and some are illegal.</li> </ul>
				<ul style="list-style-type: none"> <li>• I can describe the short-term and long-term effects of drugs such as tobacco and alcohol.</li> </ul>
				<ul style="list-style-type: none"> <li>• I can make suggestions about the ways in which given characters can change their lifestyles to make them healthier.</li> </ul>

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	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
	<b>Rocks, fossils and soils</b>	<b>States of Matter</b>		
Materials and states of matter	I know that most of our planet is made up of rock and that rocks are made up of a mixture of minerals that are pressed tightly together.	I know the difference between a liquid and a solid.		
	• I can distinguish between rocks that are naturally occurring and those that are not.	• I know how to tell if a material is a liquid or a solid.		
	• I know that erosion is the process when something is worn away by water, wind or other natural materials over time.	• I know that gases have mass.		
	• I know that a pedologist is a scientist that studies soil.	• I can describe the properties of a solid, liquid and gas.		
	• I can explain why soil is so important to our planet.	• I can explain what would happen if a solid, liquid and gas were poured into a container.		
	• I know that there are different layers of soil and that each layer is known as a horizon.	• I know that solids, liquids and gases behave differently because the particles of each behave differently.		
	• I can describe the features of each different soil horizon.	• I know that water turns from a liquid to a solid at 0°C and from a liquid to a gas at 100°C.		
	• I know that the three main types of soil are clay, sand and silt.	• I know that metals all have different melting points and that these are usually very high temperatures.		
	• I know that scientists split rocks into three main groups: igneous rock, sedimentary rock and metamorphic rock.	• I know that the process of a liquid turning into a gas is called evaporation.		
	• I know that igneous, sedimentary and metamorphic rock can change over millions of years in a process known as the rock cycle.	• I know that the process of a gas cooling and turning into a liquid is called condensation.		
	• I know that a fossil is the petrified remains of plants and animals from more than 10,000 years ago.	• I can explain how evaporation and condensation are part of the water cycle.		
	• I can explain how fossils are formed.	• I know that some materials will dissolve in water to form a solution.		

## St. Andrew's - Science Knowledge - Progression Ladder

	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
	<ul style="list-style-type: none"> <li>• I know that a palaeontology is a scientist who studies fossils.</li> </ul>	<ul style="list-style-type: none"> <li>• I know that not all materials react the same way when mixed with water; some will float, sink, dissolve or react.</li> </ul>		
	<ul style="list-style-type: none"> <li>• I know that some fossils are common and some fossils are very rare.</li> </ul>	<ul style="list-style-type: none"> <li>• I know that dissolving is a reversible change.</li> </ul>		
	<ul style="list-style-type: none"> <li>• I can identify some organisms from their fossils.</li> </ul>	<ul style="list-style-type: none"> <li>• I know that soluble materials, such as sugar, are able to be separated from water through evaporation.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I know that filtering is a good way to separate water from insoluble materials, such as sand.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I can identify a range of mixing processes, dissolving processes or changes of state that are reversible.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I know that an irreversible change occurs when two materials react with each other to form a new substance.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I can explain what would happen to a variety of materials when they were heated and cooled, and explain whether these are reversible or irreversible changes.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I know that some materials change state when they are heated or cooled.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I know that when a material is burned, it produces a new product (e.g. gas or ash), which makes burning an irreversible change.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I can identify the properties of a variety of everyday materials, such as whether it is magnetic, conductive, soluble, flexible, etc.</li> </ul>		

## St. Andrew's - Science Knowledge - Progression Ladder

	Year 3	Year 4	Year 5	Year 6
		<b>Living in Environments</b>	<b>Lifecycles</b>	<b>Classifying Organisms</b>
Living things and their Habitats		<ul style="list-style-type: none"> <li>I can give a definition for the term 'habitat'.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the process of sexual reproduction in flowering plants, using each of these terms: petal, anther, carpel, filament, ovary, stamen, stigma, sepal and style.</li> </ul>	<ul style="list-style-type: none"> <li>I can match organisms to their correct group (plant, mammal, amphibian, reptile, bird, fish, insect, crustacean, arachnid or mollusc, as well as echinoderm, myriapod and annelid) using what I know about the features of each group.</li> </ul>
		<ul style="list-style-type: none"> <li>I can suggest in which habitat you would find a variety of animals.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the process of asexual reproduction in plants, giving some examples of plants that reproduce asexually.</li> </ul>	<ul style="list-style-type: none"> <li>I can explain why it is important to be able to classify organisms.</li> </ul>
		<ul style="list-style-type: none"> <li>I can explain why it is important to be able to classify organisms.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe how and why humans clone plants.</li> </ul>	<ul style="list-style-type: none"> <li>I know the difference between vascular and non-vascular plants.</li> </ul>
		<ul style="list-style-type: none"> <li>I can identify animals that are vertebrates, invertebrates, mammals, birds, insects, fish, reptiles, amphibians, insects, annelids, crustaceans, arachnids, echinoderms and molluscs.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the process of sexual reproduction in animals.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe the difference between flowering and non-flowering plants.</li> </ul>
		<ul style="list-style-type: none"> <li>I can identify and classify a variety of British plants.</li> </ul>	<ul style="list-style-type: none"> <li>I know that some animals reproduce externally and others reproduce internally, giving examples for each.</li> </ul>	<ul style="list-style-type: none"> <li>I know that Carl Linnaeus is known as the Father of Taxonomy because of the system he developed to help classify organisms.</li> </ul>
		<ul style="list-style-type: none"> <li>I know that changing just one thing in a habitat can have a big impact on all the organisms living there.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe how the environment in which an animal lives affects the way it reproduces.</li> </ul>	<ul style="list-style-type: none"> <li>I know that the Linnaeus system uses Latin names for organisms so that there was a globally recognised naming system.</li> </ul>
		<ul style="list-style-type: none"> <li>I can describe what deforestation is and why it is causing a big problem around the world.</li> </ul>	<ul style="list-style-type: none"> <li>I know that hermaphrodites are animals that have both male and female reproductive organs, such as snails.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe what each of the seven levels on the classification system are: kingdom, phylum, class, order, family, genus and species</li> </ul>
		<ul style="list-style-type: none"> <li>I can describe some of the ways in which humans can both help sustain environments and ways in which they harm environments.</li> </ul>	<ul style="list-style-type: none"> <li>I can identify animals that live in a British woodland environment.</li> </ul>	<ul style="list-style-type: none"> <li>I can describe what a micro-organism is.</li> </ul>
		<ul style="list-style-type: none"> <li>I can explain the negative impact draining a pond would have on the local environment, stating my case through a letter.</li> </ul>	<ul style="list-style-type: none"> <li>I can compare different habitats around the world with a British woodland environment and suggest ways in which the living conditions may be more or less challenging for the organisms living there.</li> </ul>	<ul style="list-style-type: none"> <li>I know that micro-organisms can be classified into the kingdoms of protists, bacteria and fungi.</li> </ul>

## St. Andrew's - Science Knowledge - Progression Ladder

	Year 3	Year 4	Year 5	Year 6
			<ul style="list-style-type: none"> <li>• I can suggest ways in which the life cycles of different animals might vary in different environments around the world.</li> </ul>	<ul style="list-style-type: none"> <li>• I can describe some examples of micro-organisms, such as in food production and illnesses.</li> </ul>
			<ul style="list-style-type: none"> <li>• I can describe and compare the life cycles of a variety of mammals, reptiles, fish and other animals.</li> </ul>	<b>Evolution and Inheritance</b>
			<ul style="list-style-type: none"> <li>• I can describe what a naturalist does.</li> </ul>	<ul style="list-style-type: none"> <li>I know that living things produce offspring of the same kind, but that normally offspring vary and are not identical to their parents.</li> </ul>
			<ul style="list-style-type: none"> <li>• I can explain the contribution of some famous naturalists to our understanding of nature and the importance of humans looking after the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• I can suggest some common inherited characteristics, e.g. hair colour, eye colour, height, etc.</li> </ul>
				<ul style="list-style-type: none"> <li>• I know that 'variation' occurs from generation to generation in a species.</li> </ul>
				<ul style="list-style-type: none"> <li>• I can identify examples of variation in animals that are cross-bred.</li> </ul>
				<ul style="list-style-type: none"> <li>• I can identify the features of the environment an animal lives in and can explain some of the ways in which the animal has adapted to suit its environment.</li> </ul>
				<ul style="list-style-type: none"> <li>• I know that some inherited features are advantageous and some are not.</li> </ul>
				<ul style="list-style-type: none"> <li>• I know that, over many generations, advantageous features may be spread across a whole species, making them better adapted to their environment.</li> </ul>
				<ul style="list-style-type: none"> <li>• I understand how the adaptation of plants and animals to suit their environment may lead to evolution.</li> </ul>
				<ul style="list-style-type: none"> <li>• I can explain Darwin's theory of evolution and the process of natural selection.</li> </ul>
				<ul style="list-style-type: none"> <li>• I know that Darwin explained each step in the Linnaeus classification system to show where part of a population developed a new</li> </ul>

## St. Andrew's - Science Knowledge - Progression Ladder

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				variation and eventually formed a new species.
				<ul style="list-style-type: none"> <li>I know that some variations are caused by mutations, and that some of these are harmless, some are advantageous and some are disadvantageous.</li> </ul>
				<ul style="list-style-type: none"> <li>I know that changes to an environment can affect the evolutionary process.</li> </ul>
				<ul style="list-style-type: none"> <li>I know that palaeontologists study fossils to explore how species have evolved over time.</li> </ul>
				<ul style="list-style-type: none"> <li>I understand how humans have evolved over time, and how human behaviour can affect changes in other species over time.</li> </ul>

	Year 3	Year 4	Year 5	Year 6
<b>Forces</b>	<b>Forces and Magnets</b>		<b>Forces in Action</b>	
	I know that a force is a push or a pull on an object, and that a force needs two objects where one pushes or pulls the other to make it move.		I know that the Earth's gravitational force causes objects to have weight, and that gravity pulls objects towards the centre of the Earth.	
	<ul style="list-style-type: none"> <li>I can describe whether a push or a pull is being used to move an object, and describe which direction the forces are acting in.</li> </ul>		<ul style="list-style-type: none"> <li>I know that friction is the force that acts as resistance between two objects when moving over one another.</li> </ul>	
	<ul style="list-style-type: none"> <li>I know what a force meter is and can use one to measure forces in newtons.</li> </ul>		<ul style="list-style-type: none"> <li>I can explain examples of friction using photographs.</li> </ul>	
	<ul style="list-style-type: none"> <li>I know that some forces, like gravity and magnetism, do not need contact between two objects to make things move.</li> </ul>		<ul style="list-style-type: none"> <li>I know that air resistance is the force that occurs when air pushes against a moving object, making it slow down</li> </ul>	

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	<ul style="list-style-type: none"> <li>I know that magnets have a north pole and a south pole.</li> </ul>		<ul style="list-style-type: none"> <li>I can explain examples of how air resistance is used.</li> </ul>	
	<ul style="list-style-type: none"> <li>I can describe lots of different uses for magnets.</li> </ul>		<ul style="list-style-type: none"> <li>I know that water resistance is the force that pushes against objects as they pass through the water.</li> </ul>	
			<ul style="list-style-type: none"> <li>I know that the shape of an object dictates how much water resistance it will meet as it moves through the water.</li> </ul>	
			<ul style="list-style-type: none"> <li>I know that pulleys and levers make heavy objects easier to lift and can explain why.</li> </ul>	
			<ul style="list-style-type: none"> <li>I know that gears allow a smaller force to have a greater effect.</li> </ul>	
			<ul style="list-style-type: none"> <li>I know that two or more gears working together are called a transmission.</li> </ul>	
			<ul style="list-style-type: none"> <li>I can explain which direction a follower gear will turn based on the movement of the driver gear when two or more gears are used in a transmission.</li> </ul>	
			<ul style="list-style-type: none"> <li>I know that the force transmitted by gears in a transmission is called torque.</li> </ul>	
			<ul style="list-style-type: none"> <li>I can give some examples of how gears and transmissions are used in everyday life.</li> </ul>	
			<ul style="list-style-type: none"> <li>I can recognise some different types of gears, such as worm gears, rack gears and bevel gears.</li> </ul>	

## St. Andrew's - Science Knowledge - Progression Ladder

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Light and Sound	Light and Shadow	Changing Sound		Seeing Light
	<ul style="list-style-type: none"> <li>• I know that we need light in order to see.</li> </ul>	<ul style="list-style-type: none"> <li>• I know that sound travels through the air in waves and that sound waves are caused by vibrations in the air.</li> </ul>		<ul style="list-style-type: none"> <li>• I can name the different parts of the eye and describe their function.</li> </ul>
	<ul style="list-style-type: none"> <li>• I can name a variety of natural and man-made light sources.</li> </ul>	<ul style="list-style-type: none"> <li>• I know that sound waves pass through some materials more easily than others.</li> </ul>		<ul style="list-style-type: none"> <li>• I know that light can only travel in a straight line.</li> </ul>
	<ul style="list-style-type: none"> <li>• I know that the Sun is the most powerful light source.</li> </ul>	<ul style="list-style-type: none"> <li>• I know that sometimes sound needs to be muffled for safety or convenience.</li> </ul>		<ul style="list-style-type: none"> <li>• I can explain how mirrors can be used to reflect light.</li> </ul>
	<ul style="list-style-type: none"> <li>• I know that we have night and day because the Earth rotates on its axis once every 24 hours.</li> </ul>	<ul style="list-style-type: none"> <li>• I can name a variety of musical instruments, describe what they sound like and explain how the sound is made.</li> </ul>		<ul style="list-style-type: none"> <li>• I can explain how objects such as periscopes and rear-view mirrors work and why they are useful.</li> </ul>
	<ul style="list-style-type: none"> <li>• I can describe the difference between dawn and dusk.</li> </ul>	<ul style="list-style-type: none"> <li>• I know what the terms 'pitch' and 'volume' mean.</li> </ul>		<ul style="list-style-type: none"> <li>• I know that the angle the light lands on the mirror will affect which angle the light changes direction to, and I know that this is called the angle of reflection.</li> </ul>
	<ul style="list-style-type: none"> <li>• I know that shadows are formed when light is blocked by an object.</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify when the pitch and volume of a sound changes, and explain what has happened.</li> </ul>		<ul style="list-style-type: none"> <li>• I know that some surfaces reflect more light than others.</li> </ul>
	<ul style="list-style-type: none"> <li>• I know that we have more shadows on a sunny day than on a cloudy day and can explain why.</li> </ul>	<ul style="list-style-type: none"> <li>• I can explain how the length, thickness and tightness of a string affects its pitch.</li> </ul>		<ul style="list-style-type: none"> <li>• I can explain the difference between a shadow and a reflection.</li> </ul>
	<ul style="list-style-type: none"> <li>I know the difference between transparent, translucent and opaque objects.</li> </ul>	<ul style="list-style-type: none"> <li>• I can explain how the length of the air column in wind instruments changes the pitch.</li> </ul>		<ul style="list-style-type: none"> <li>• I can explain how a mirror could make a shadow and a reflection at the same time.</li> </ul>
	<ul style="list-style-type: none"> <li>• I know that opaque objects will cast a shadow, translucent objects will cast a faint shadow, and transparent objects will not cast a shadow.</li> </ul>			
<ul style="list-style-type: none"> <li>• I know that we can see objects because light is reflected from their surfaces; light travels in a straight line from the source to the objects, then bounces off the object to our eyes.</li> </ul>				

## St. Andrew's - Science Knowledge - Progression Ladder

	Year 3	Year 4	Year 5	Year 6
	<ul style="list-style-type: none"> <li>• I know that some objects reflect more light than others.</li> </ul>			
	<ul style="list-style-type: none"> <li>• I know that when a surface is very smooth, like a mirror, it reflects a lot of light which is why we can see a reflection.</li> </ul>			
Electricity		<b>Circuits and Conductors</b>		<b>Changing Circuits</b>
		<ul style="list-style-type: none"> <li>• I know that atoms generate electricity when they are rubbed together.</li> </ul>		I can define each of these terms: circuit, current, conductor, insulator, volt, component, battery, motor.
		<ul style="list-style-type: none"> <li>• I can explain the difference between static electricity and current electricity.</li> </ul>		<ul style="list-style-type: none"> <li>• I know the difference between a series circuit and a parallel circuit.</li> </ul>
		<ul style="list-style-type: none"> <li>• I know that current electricity needs a complete circuit in order to work properly.</li> </ul>		<ul style="list-style-type: none"> <li>• I know that if there are too many volts running through a circuit, it will blow the component.</li> </ul>
		<ul style="list-style-type: none"> <li>• I can use diagrams to explain which circuits will and won't work.</li> </ul>		<ul style="list-style-type: none"> <li>• I can recognise and use conventional symbols used in circuit diagrams.</li> </ul>
		<ul style="list-style-type: none"> <li>• I can explain the difference between mains and battery powered electricity.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I can distinguish between objects that use mains electricity and those that use battery-powered electricity.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I can write a definition for the words 'conductor' and 'insulator'.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I can explain why some appliances are made with conductors on the inside and insulators on the outside.</li> </ul>		
		<ul style="list-style-type: none"> <li>• I can explain how switches work to complete a circuit.</li> </ul>		
	Year 3	Year 4	Year 5	Year 6

## St. Andrew's - Science Knowledge - Progression Ladder

	Year 3	Year 4	Year 5	Year 6
Earth and Space			<b>Earth and Space</b>	
			• I know that the Sun, Earth and Moon are roughly spherical in shape.	
			• I can describe what the Sun, Earth and Moon are using appropriate vocabulary.	
			• I know that Earth orbits the Sun and the Moon orbits the Earth.	
			• I can describe how the rotation of the Earth creates night and day.	
			• I know that as well as orbiting the Sun, the Earth rotates on its axis, and that it takes one full day (24 hours) for a complete rotation.	
			• I understand why there are different time zones in the world.	
			• I can describe why the length of daylight changes throughout the year.	
			• I know that the tilt of the Earth's axis is what causes the four seasons of the year.	
			• I know that the Northern and Southern Hemispheres experience seasons at different times of year and can explain the reason for this.	
			• I can describe why the Moon appears to change shape throughout a lunar month.	
			• I can describe the different phases of the Moon using appropriate vocabulary.	
			• I can describe what a solar eclipse is and why it occurs.	
			• I can describe how theories about our solar system have changed over time, explaining the difference between geocentric and heliocentric models.	
			• I know that we are in a galaxy called the Milky Way.	

## St. Andrew's - Science Knowledge - Progression Ladder

	Year 3	Year 4	Year 5	Year 6
			<ul style="list-style-type: none"><li>• I know that there are three main types of planets in our solar system and can describe the difference between terrestrial, gas giant and ice giant planets.</li></ul>	
			<ul style="list-style-type: none"><li>• I can name the planets in our solar system and order them by their distance from the Sun.</li></ul>	
			<ul style="list-style-type: none"><li>• I know that the length of a year is different on each planet because of the time it takes each one to orbit the Sun.</li></ul>	