

St. Andrew's Science - Working Scientifically - Progression Ladder

	Year 3	Year 4	Year 5	Year 6
	Health and Movement	Eating and Digestion	Changes and Reproduction	Healthy Bodies
Animals including humans	I can classify a variety of foods into different food groups.	• I can classify a wide variety of animals to show whether they are herbivores, carnivores or omnivores.	I can create a bar chart to show the gestation period of a range of animals, and use this to answer questions.	• I can plan an experiment, as James Lind, to see whether eating different foods can cure scurvy.
	• I can carry out my own research to find out what foods different animals eat, and record my findings.	• I can present information about how to keep teeth healthy.	• I can compare gestation periods in animals with the female animal's weight, and use this to draw conclusions.	• I can suggest ways in which James Lind could have expanded his clinical trial.
	• I can generate questions to investigate to find out what pets eat.	• I can draw a diagram to show what I think the digestive system looks like and how it works.	• I can write a report about the development of children from age 0 to 11.	• I can plan a clinical trial to explore the effects of different foods on our bodies, explaining how I will make it a fair test and what I expect the results to show.
	• I can gather data in a tally chart and convert the results into a pictogram.	• I can ask a variety of questions about the digestive system and use different sources to find out the answers.	• I can label diagrams of boys and girls to show the changes that take place during puberty.	• I can allocate a variety of foods to their correct food group.
	• I can use data to draw conclusions and find the answer to my question.	• I can label a diagram of the digestive system and describe how it works.		• I can assess a variety of food labels to assess which of a group of foods has e.g. the most and least fat, or the most and least carbohydrate.
	• I can label a diagram of the human skeleton.	• I can plan and carry out an experiment (making sure it is a fair test) to explore how acid affects the food in our stomachs		• I can use a diagram of the human heart to suggest how it works.
	• I can use a variety of sources of information to find out how invertebrates protect themselves and report my findings.			• I can write a detailed report about how the circulatory system works.
	• I can ask and answer questions about muscles.			• I can dissect a heart to explore the heart's chambers, veins and arteries, writing a recount of my findings.
	• I can make different movements with my body and explain which muscles I am using.			• I can take my own pulse before and after exercise, recording the differences.
				• I can design an investigation to explore how exercise affects our heart rate and draw conclusions from my results.
			• I can label muscle groups on a diagram of the human body.	

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				<ul style="list-style-type: none"> • I can suggest some exercise that would train different muscle groups.
				<ul style="list-style-type: none"> • I can create a presentation to answer a particular question about drugs, using my own research to find answers.
Materials and states of matter	Rocks, fossils and soils	States of Matter		
	I can classify rocks that are natural and those that are man-made.	<ul style="list-style-type: none"> • I can compare and classify materials according to whether they are solids or liquids. 		
	<ul style="list-style-type: none"> • I can identify a variety of natural and manmade rocks in my local environment. 	<ul style="list-style-type: none"> • I can carry out an investigation to see if air weighs anything and report on my findings. 		
	<ul style="list-style-type: none"> • I can suggest which criterion has been used to sort rocks into two groups. 	<ul style="list-style-type: none"> • I can draw diagrams to show how the particles in solids, liquids and gases behave differently. 		
	<ul style="list-style-type: none"> • I can sort rocks into Venn diagrams and Carroll diagrams based on specific criteria. 	<ul style="list-style-type: none"> • I can experiment with pneumatics and make observations about what I'm doing. 		
	<ul style="list-style-type: none"> • I can use my own criteria for sorting rocks into a Carroll diagram. 	<ul style="list-style-type: none"> • I can research the melting points of a variety of materials. 		
	<ul style="list-style-type: none"> • I can generate ideas for an experiment to test different rocks to see how much they erode. 	<ul style="list-style-type: none"> • I can plan and carry out an experiment to see the different melting points of chocolate and evaluate the fairness of my experiment. 		
	<ul style="list-style-type: none"> • I can carry out an experiment to test the erosion rate of different rocks, making predictions and recording my findings appropriately. 	<ul style="list-style-type: none"> • I can give different everyday processes which involve melting and freezing. 		
	<ul style="list-style-type: none"> • I can use a variety of sources of information to help me find out about specific rocks and their uses. 	<ul style="list-style-type: none"> • I can draw diagrams and use written examples to show the processes of evaporation and condensation. 		
	<ul style="list-style-type: none"> • I can use observation to explore different soil samples and rank them according to different criteria. 	<ul style="list-style-type: none"> • I can label a diagram of the water cycle to show what is happening. 		
	<ul style="list-style-type: none"> • I can classify fossil samples according to various criteria. 	<ul style="list-style-type: none"> • I can mix a variety of materials with water to see whether they will dissolve, float, sink or react, recording the results in a table. 		
		<ul style="list-style-type: none"> • I can classify materials depending on whether they dissolve, float, sink or react 		

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		Living in Environments	Lifecycles	Classifying Organisms
Living things and their habitats		<ul style="list-style-type: none"> I can explore my local area to see how many different habitats there are. 	<ul style="list-style-type: none"> I can label the parts of a flowering plant correctly using their scientific names. 	<ul style="list-style-type: none"> I can classify a variety of organisms into groups according to their features.
		<ul style="list-style-type: none"> I can use a variety of clues in riddles to help me identify different animals. 	<ul style="list-style-type: none"> I can dissect a flower to explore the male and female parts of the plant. 	<ul style="list-style-type: none"> I can use a classification key to help me identify which group unfamiliar animals belong to.
		<ul style="list-style-type: none"> I can classify a variety of organisms using my own and given criteria, sorting the results into tables and Carroll diagrams. 	<ul style="list-style-type: none"> I can write scientifically accurate descriptions of asexual reproductions in plants using 100 words or less. 	<ul style="list-style-type: none"> I can create a presentation with labelled diagrams to show the features of each group of animals.
		<ul style="list-style-type: none"> I can use a classification key to identify which group an animal belongs to. 	<ul style="list-style-type: none"> I can follow instructions to grow a new plant from cuttings. 	<ul style="list-style-type: none"> I can use a variety of criteria to classify animals that belong to the same group, e.g. mammals.
		<ul style="list-style-type: none"> I can use a classification key to identify unfamiliar organisms. 	<ul style="list-style-type: none"> I can classify a variety of animals according to how they reproduce. 	<ul style="list-style-type: none"> I can create a classification key to help identify a variety of flowering and nonflowering plants.
			<ul style="list-style-type: none"> I can create a scatter graph to show animal gestation and incubation periods, using the information to generate statements and answer questions. 	<ul style="list-style-type: none"> I can gather plant samples (or photographs of plants) from the local area, then create a classification key to identify them.
			<ul style="list-style-type: none"> I can research and present data and information about the organisms living in a variety of environments around the world. 	<ul style="list-style-type: none"> I can find a variety of different ways to classify different plants.
			<ul style="list-style-type: none"> I can compare the life cycles of a variety of animals. 	<ul style="list-style-type: none"> I can use the Linnaeus classification system to identify the kingdom, phylum, class, order, family, genus and species of a variety of organisms.
			<ul style="list-style-type: none"> I can carry out independent research to find out about the life and achievements of a famous naturalist. 	<ul style="list-style-type: none"> I can use the Linnaeus classification system to answer questions about different organisms.
				<ul style="list-style-type: none"> I can carry out my own research to create a report about a particular family of animals, including pictures, diagrams and information.
				<ul style="list-style-type: none"> I can ask questions about micro-organisms and use my own research to answer them.

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				<ul style="list-style-type: none"> • I can carry out a fair test to explore which foods yeast most likes to eat, recording the results and drawing conclusions.
				<ul style="list-style-type: none"> • I can gather samples of organisms in the local area (or take photos) to identify and classify organisms found in the local area.
				<ul style="list-style-type: none"> • I can create a fact file about Charles Darwin, using known facts and my own research.
				<ul style="list-style-type: none"> • I can read statements and write persuasive arguments to show whether I agree or disagree, drawing on my knowledge.
				<ul style="list-style-type: none"> • I can carry out my own research to find out about different groups of organisms in a different part of the world, presenting my findings appropriately.
				Evolution and Inheritance
				<ul style="list-style-type: none"> • I can identify features I have inherited from my parents and note variations.
				<ul style="list-style-type: none"> • As a class, we can arrange ourselves in different ways according to our inherited characteristics.
				<ul style="list-style-type: none"> • I can carry out my own research to find animals that live in a particular environment around the world, recording the features that make it advantageous for its habitat.
				<ul style="list-style-type: none"> • I can compare and contrast the features of two animals living in the same environment, explaining why each of their features are advantageous for that particular species.
				<ul style="list-style-type: none"> • I understand that scientists are always refining, changing and developing the ideas of other scientists, and that ideas can be refuted when further evidence is uncovered.
				<ul style="list-style-type: none"> • I can ask questions about evolution and use my own research to find the answers,

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	Year 3	Year 4	Year 5	Year 6
				presenting my findings.
				<ul style="list-style-type: none"> I can create a fact file about Charles Darwin, using known facts and my own research.
				<ul style="list-style-type: none"> I can read statements and write persuasive arguments to show whether I agree or disagree, drawing on my knowledge.

	Year 3	Year 4	Year 5	Year 6
	Forces and Magnets		Forces in action	
Forces	I can carry out a fair test to explore whether objects need the same force to move them across different surfaces.		<ul style="list-style-type: none"> I can carry out an investigation to explore the effect of gravity on falling objects, taking careful measurements and observations to draw conclusions. 	
	<ul style="list-style-type: none"> I can make predictions about the results of my investigation. 		<ul style="list-style-type: none"> I can carry out independent research to find out about the roles Newton and Galileo played in helping our understanding of gravity, presenting my findings appropriately. 	
	<ul style="list-style-type: none"> I can use my results to draw conclusions. 		<ul style="list-style-type: none"> I can suggest ways to plan an experiment to find out which surface has the most friction when an object is moved across it. 	
	<ul style="list-style-type: none"> I can explore whether magnets attract or repel when north poles and south poles are put together. 		<ul style="list-style-type: none"> I can carry out a fair test to explore the friction of different surfaces, recording my results accurately and using them to draw conclusions. 	
	<ul style="list-style-type: none"> I can draw diagrams to show the results of my findings. 		<ul style="list-style-type: none"> I can analyse a variety of statements, explaining which I agree with and why. 	
	<ul style="list-style-type: none"> I can predict which materials will be magnetic and which will not, then test my hypothesis. 		<ul style="list-style-type: none"> I can plan, set up and carry out an investigation to explore how the size of a parachute affects the speed at which it falls to the ground, recording my results appropriately and using them to draw 	

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	Year 3	Year 4	Year 5	Year 6
			conclusions.	
	• I can carry out my own research to find out about uses for magnets and report my findings.		• I can make predictions about which shape of plasticine would fall quickest in a pot of water, giving scientific explanations for my choices.	
			• I can carry out an experiment to test my predictions, recording my results using a stopwatch and using evidence to draw conclusions.	
			• I can create some simple pulleys, exploring the different forces needed to pull the same object and drawing conclusions from my findings.	
			• I can use card or construction toys to create different transmissions, exploring the movement and torque of the driver and follower gears.	

	Year 3	Year 4	Year 5	Year 6
	Light and Shadow	Changing Sound		Seeing Light
Light and sound	I can identify a variety of light sources around my school.	• I can investigate a range of objects that show visible vibrations to help me understand how sound waves work		• I can draw on my previous knowledge of light and shadow to answer a variety of questions.
	• I can predict which light sources would be strongest, comparing my predictions with a partner and discussing any differences.	• I can predict how well sound will travel through a variety of different materials.		• I can use careful observation to identify the pupil, cornea, iris and sclera of the human eye.
	• I can explain in my own words why we have night and day, using appropriate vocabulary.	• I can plan, set up and carry out an experiment to answer the question, 'Do sound waves travel through all materials equally?'		• I can use arrows to draw the direction light travels.
	• I can test whether an object is transparent, translucent or opaque by testing what kind of shadow it casts.	• I can generate questions to investigate what happens to a sound as you get further away from it.		• I can label a cross-section diagram of the human eye, explaining the function of each part.

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	<ul style="list-style-type: none"> I can explain which shadow diagram is correct, using what I know about how shadows are formed. 	<ul style="list-style-type: none"> I can plan, set up and carry out an experiment to see which materials are best for soundproofing. 		<ul style="list-style-type: none"> I can present information about how the eye works in a variety of different ways.
	<ul style="list-style-type: none"> I can investigate how shadows behave, finding ways to make shadows move and make them longer and shorter. 	<ul style="list-style-type: none"> I can draw conclusions from my investigations to answer a question. 		<ul style="list-style-type: none"> I can use what I know about the angle of reflection to draw the angle light will reflect off a mirror.
	<ul style="list-style-type: none"> I can record results from my shadow experiments using diagrams. 	<ul style="list-style-type: none"> I can make predictions about the pitch and volume an instrument will produce, using my knowledge of how sound works. 		<ul style="list-style-type: none"> I can use what I know about the angle of reflection to shine a light beam to a goal using mirrors.
	<ul style="list-style-type: none"> I can predict what I think will happen to a shadow throughout the day. 	<ul style="list-style-type: none"> I can draw a diagram to show how and why the pitch changes on a glockenspiel. 		<ul style="list-style-type: none"> I can make predictions about which surfaces will reflect a lot of light and which won't.
	<ul style="list-style-type: none"> I can carry out an experiment to find out what happens to shadows throughout the day, recording my results in a table. 	<ul style="list-style-type: none"> I can investigate a variety of stringed instruments to explore how the pitch changes according to the length, thickness and tightness of the string, and record my findings. 		<ul style="list-style-type: none"> I can investigate a variety of surfaces to see which reflect a lot of light and which don't, noting similarities and differences between the two groups.
	<ul style="list-style-type: none"> I can draw conclusions from my shadow investigation to say what I have found out. 	<ul style="list-style-type: none"> I can predict which bottle would produce the highest pitch when different amounts of water are inside, then test my prediction and record my results. 		<ul style="list-style-type: none"> I can suggest a variety of investigations to explore how shadows behave.
	<ul style="list-style-type: none"> I can experiment with using mirrors to see around corners. 			<ul style="list-style-type: none"> I can carry out an investigation to explore what happens to the size and shape of a shadow when an object is moved further away from a light source, recording my results in graphs and tables.

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		Circuits and Conductors		Changing Circuits
Electricity		<ul style="list-style-type: none"> I can test different materials using a simple circuit to see whether they are conductors or insulators. 		I can work independently to create a series and a parallel circuit.
		<ul style="list-style-type: none"> I can use what I found out about conductors and insulators to draw conclusions. 		<ul style="list-style-type: none"> I can create series and parallel circuits to match a circuit diagram.
		<ul style="list-style-type: none"> I can classify objects into those that are conductors and those that are insulators. 		<ul style="list-style-type: none"> I can use what I know about voltage to predict the brightness of a bulb or bulbs in a variety of different circuits.
		<ul style="list-style-type: none"> I can draw diagrams to show appliances that have conductors on the inside and insulators on the outside. 		<ul style="list-style-type: none"> I can experiment with the best way to make the bulb in a circuit as bright as possible, recording my results on a scale.
		<ul style="list-style-type: none"> I can experiment with a variety of objects and materials in a simple circuit to create a working switch. 		<ul style="list-style-type: none"> I can draw a circuit diagram that includes conventional circuit symbols.
		<ul style="list-style-type: none"> I can incorporate a buzzer into a circuit that makes a sound when the switch is on. 		<ul style="list-style-type: none"> I can create series and parallel circuits to match a circuit diagram that uses conventional circuit symbols.
		<ul style="list-style-type: none"> I can plan, set up and carry out an investigation to find out how you can change the brightness of a bulb, making sure it is a fair test. 		<ul style="list-style-type: none"> I can plan, set up and carry out a fair test to see how changing the wire in a circuit affects the brightness of a bulb.
				<ul style="list-style-type: none"> I can use the results of my experiment to answer questions.
				<ul style="list-style-type: none"> I can ask questions about circuits I would like to find the answer to, and decide how to find the answers.
				<ul style="list-style-type: none"> I can design and create a circuit for a particular purpose.

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	Year 3	Year 4	Year 5	Year 6
Earth and space			Earth and Space	
			I can draw a labelled diagram of the Sun, Earth and Moon to show how they are related to one another.	
			• I can create a moving model of the Sun, Earth and Moon, and write a description to describe what is happening.	
			• I can make a simple sundial and set it up to observe how shadows change throughout the day.	
			• I can record my observations and use these to draw conclusions.	
			• I can use the internet to research which time zones different cities around the world are in.	
			• I can label diagrams to show which season both the Northern and Southern Hemispheres will be experiencing depending on the Earth's position and tilt.	
			• I can create a graph to show the average day length by month, and use the data to answer questions.	
			• I can create a labelled diagram of the phases of the moon.	
			• I can sort fact cards to show which apply to the geocentric and which apply to the heliocentric explanations of the solar system.	
			• I can use the internet to explore the night sky, stating which planets and constellations will be visible on a given day.	
			• I can carry out my own research to find out key facts about each planet in the solar system.	
		• I can create a 3D model of the solar system.		