Abbey Gates Primary School - Science - Working Scientifically progression

	F1	F2	Y1 Y2	Y3 Y4	Y5 Y6
Who am I? game Yes/ No games What's in the box? What is the object? **Asking questions**		**Ask questions to find out more and to check they understand what has been said to them**	**Asking simple questions and recognising that they can be answered in different ways** 	**Asking relevant questions and using different types of scientific enquiries to answer them** 	***Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary*** 
		Make comments about what they have heard and ask questions to clarify their understanding.	While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.	The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.	Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. • Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.
	F1	**F2**	**Y1 Y2**	**Y3 Y4**	**Y5 Y6**
Partner drawing - explaining what was seen behind a screen Hiding objects in a feely bag - describe and identify using senses Drawing with magnifying glasses Zoom in, zoom out **Observing and measuring**	**Observing and exploring with senses**	**Observing and exploring with senses**	**Observing closely, using simple equipment** 	**Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers** 	**Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate** 
	Use all their senses in hands-on exploration of natural materials. Talk about what they see, using a wide vocabulary.	Describe what they see, hear and feel whilst outside.	Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. They begin to take measurements, initially by comparisons, then using non-standard units.	The children make systematic and careful observations. They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.	The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale. During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in

Abbey Gates Primary School - Science - Working Scientifically progression

Recording data							order to get accurate data (closer to the true value).	
Links to maths-progression in measurement			Begin to use standard measures - rulers, weight and containers	choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) Measure using appropriate tools and units. Compare and use mixed units and simple equivalents. Scaling by integers.	Convert between different units of measure	Convert between different units of measure	solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places
	F1	F2	Y1	Y2	Y3	Y4	Y5	Y6
Setting up simple tests	**Plan and think ahead about how they will explore or play with objects.**	**Plan and think ahead about how they will explore or play with objects.**	**Performing simple tests** **Identifying and classifying**		**Setting up simple practical enquiries, comparative and fair tests**		**Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**	
	Talk about what they see, using a wide vocabulary.	Make comments about what they have heard and ask questions to clarify their understanding.	The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. Children use their observations and testing to compare objects, materials and living things. They sort		The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking. Explanatory note		The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.	

Abbey Gates Primary School - Science - Working Scientifically progression

			and group these things, identifying their own criteria for sorting. They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.		A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.			
	F1	F2	Y1	Y2	Y3	Y4	Y5	Y6
Recording data Interpreting data	**Sort materials**	**Sort materials**	**Gathering and recording data to help in answering questions**		**Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions** **Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables**		**Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**	
	Make comparisons between objects relating to size, length, weight and capacity.	Compare length, weight and capacity.	The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. They classify using simple prepared tables and sorting rings.		The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. Children are supported to present the same data in different ways in order to help with answering the question.		The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. Children present the same data in different ways in order to help with answering the question.	
Links and progression in maths - statistics	Create 2 groups of items e.g. heavy, light, tall, short Experiment with their own symbols and marks as well as numerals	Order items by length, weight and capacity	Pictograms Tally charts Venn diagrams (2 criteria) Completing a table of results	Pictograms Tally charts Block diagrams Venn diagrams (3 criteria) Completing a table of results Carroll diagrams	Creating a table of results Bar charts Pictograms Create tally charts Understand and use simple scales. Carroll diagrams	Bar charts (various increments) Completing Line graphs Carroll diagrams Classification key Scatter graph	Creating Line graphs Completing two way tables Decide which representation of data is most appropriate Scatter graph	Pie chart Line graph and line of best fit Mean and range of a set of data Scatter graph Bar charts (various increments) Classification key

Abbey Gates Primary School - Science - Working Scientifically progression

					Venn diagrams		Calculating the range within a data set Creating a table of results Bar charts (various increments)	Creating a table of results
	F1	F2	Y1	Y2	Y3	Y4	Y5	Y6
Accuracy and reliability statements linked to a previous investigation. Rank from most effective to least effective and choose. Mind maps **Interpreting results** **Evaluating**	**Begin to correct their mistakes themselves.** **Know more, so feel confident about coming up with their own ideas.** **Make more links between those ideas.**	**Begin to correct their mistakes themselves.** **Know more, so feel confident about coming up with their own ideas.** **Make more links between those ideas.**	**Using their observations and ideas to suggest answers to questions**		**Using straightforward scientific evidence to answer questions or to support their findings**		**Identifying scientific evidence that has been used to support or refute ideas or arguments**	
	Talk about what they see, using a wide vocabulary Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"	Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use new vocabulary in different contexts.	Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. The children recognise 'biggest and smallest', 'best and worst' etc. from their data.		Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence.		Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer. • They talk about how their scientific ideas change due to new evidence that they have gathered. • They talk about how new discoveries change scientific understanding.	
					Identifying differences, similarities or changes related to simple scientific ideas and processes		**Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations**	

Abbey Gates Primary School - Science - Working Scientifically progression

					Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. *Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions* They draw conclusions based on their evidence and current subject knowledge.	In their conclusions, children: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge.
	F1	F2	Y1	Y2	Y3 / Y4	Y5 / Y6
					Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 	**Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations** 
					They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.	They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. They identify any limitations that reduce the trust they have in their data.
					Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	**Using test results to make predictions to set up further comparative and fair tests** 
					Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. Following a scientific experience, the children ask further questions which can	Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.

Abbey Gates Primary School - Science - Working Scientifically progression

					be answered by extending the same enquiry.			
	F1	F2	Y1	Y2	Y3	Y4	Y5	Y6
					Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 		**Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations**	
					They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.		They communicate their findings to an audience using relevant scientific language and illustrations.	