

Disciplinary Scientific Progression

Year 1	To ask scientific questions	To make a prediction	To plan an enquiry	To observe closely	To take measurements	To gather /record data	To present results	To interpret results	To draw conclusions	To evaluate an enquiry
										
National Curriculum statement	Asking simple questions and recognising they can be answered in different ways.	Children in KS1 are not expected to make scientific predictions as they do not have the subject	Performing simple tests.	Observe closely using simple equipment.	Use simple measurements and equipment to gather data – egg timers/ hand lenses.	Gathering and recording data to help in answering questions.	With help they should record and communicate their findings in a range of ways.	Using their observations and ideas to suggest answers to questions.	Children in KS1 are not expected to draw conclusions. They are expected to make observations which will help them to answer questions. They do not have the subject knowledge to give reasons for what they observe so they cannot draw scientific conclusions.	Children in KS1 are not expected to evaluate. However, children should be encouraged to consider their method and adapt this where necessary.
Identifying, grouping and classifying 	To begin to ask yes/ no questions to aid sorting.	knowledge to do this. That does not mean that you should not ask children what they think may happen, but this will be based on experience or may simply be a guess	To identify the headings for two groups with support.	To begin to compare objects based on obvious, observable features e.g. size, shape, colour, texture etc.		To begin to classify using simple prepared tables and sorting rings.	To begin to sort objects and living things into two groups using a basic Venn diagram or simple table.	To begin to talk about the number of objects in each group i.e. which has more or less		
Researching 	To begin to ask one or two simple questions linked to a topic						To present what they have learnt verbally or using pictures with support.	To answer questions using simple sentences with support.		

Comparative /fair testing 	To identify the question to investigate from a scenario or choose a question from a range provided with support.		To begin to choose equipment to use and decide what to do/ what to observe or measure in order to answer the question.	To begin to make observations linked to answering the question.	To begin to take measurements, initially by comparisons then using non-standard units.	To begin to record data in simple prepared tables, pictorially or by taking photographs.	To present what they learnt verbally, using pictures or block diagrams with support.	To answer their question in simple sentences using their observations or measurements with support.		
Observing over time 	To ask a question about what might happen in the future based on an observation with support.						To present what they learnt verbally or using pictures with support.			
Pattern seeking 	To ask a question that is looking for a pattern based on observations with support.					To begin to record data in simple, prepared tables and tally charts.	To present what they learnt verbally with support.			

Year 2	To ask scientific questions	To make a prediction	To plan an enquiry	To observe closely	To take measurements	To gather /record data	To present results	To interpret results	To draw conclusions	To evaluate an enquiry
										
National Curriculum statement	Asking simple questions and recognising they can be answered in different ways.	Children in KS1 are not expected to make scientific predictions as they do not have the subject	Performing simple tests.	Observe closely using simple equipment.	Use simple measurements and equipment to gather data – egg timers/ hand lenses.	Gathering and recording data to help in answering questions.	With help they should record and communicate their findings in a range of ways.	Using their observations and ideas to suggest answers to questions.	Children in KS1 are not expected to draw conclusions. They are expected to make observations which will help them to answer questions. They do not have the subject knowledge to give reasons for what they observe so they cannot draw scientific conclusions.	Children in KS1 are not expected to evaluate. However, children should be encouraged to consider their method and adapt this where necessary.
Identifying, grouping and classifying 	To ask yes/no questions to aid sorting.	knowledge to do this. That does not mean that you should not ask children what they think may happen, but this will be based on experience or may simply be a guess	To identify the headings for two groups.	To compare objects based on obvious, observable features e.g. size, shape, colour, texture etc.		To classify using simple prepared tables and sorting rings.	To sort objects and living things into two groups using a basic Venn diagram or simple table.	To talk about the number of objects in each group i.e. which has more or less		
Researching 	To ask one or two simple questions linked to a topic						To present what they have learnt verbally or using pictures.	To answer questions using simple sentences.		

Comparative /fair testing 	To identify the question to investigate from a scenario or choose a question from a range provided.		To choose equipment to use and decide what to do/ what to observe or measure in order to answer the question.	To make observations linked to answering the question.	To take measurements, initially by comparisons then using non-standard units.	To record data in simple prepared tables, pictorially or by taking photographs.	To present what they learnt verbally, using pictures or block diagrams.	To answer their question in simple sentences using their observations or measurements.		
Observing over time 	To ask a question about what might happen in the future based on an observation.						To present what they learnt verbally or using pictures.			
Pattern seeking 	To ask a question that is looking for a pattern based on observation.					To record data in simple, prepared tables and tally charts.	To present what they learnt verbally.			

Year 3	To ask scientific questions 	To make a prediction 	To plan an enquiry 	To observe closely 	To take measurements 	To gather /record data 	To present results 	To interpret results 	To draw conclusions 	To evaluate an enquiry 
National Curriculum statement	Asking relevant questions and using different types of scientific enquiries to answer them.	Marking predictions for new values within or beyond the data they have collected.	Setting up simple practical enquiries, comparative and fair tests.	Making systematic and careful observations.	Taking accurate measurements using standard units, using a range of equipment, including thermometer and dataloggers.	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.	Reporting on findings on enquiries including oral and written explanations, displays or presentation of results and conclusions	Using results to draw simple conclusions. Using straightforward scientific evidence to answer questions or to support findings.	Identifying differences, similarities or changes related to simple scientific ideas and processes.
Identifying, grouping and classifying 	To begin to ask a range of yes/no questions to aid sorting.		To put appropriate headings onto intersecting Venn and Carroll diagrams with support.	To begin to compare objects based on more sophisticated, observable features.			To begin to sort objects and living things into groups using intersecting Venn and Carroll diagrams.	To begin to spot patterns in the data particularly two criteria with no examples e.g. there are no living things with wings and no legs	To begin to draw simple conclusions, when appropriate, for patterns.	To begin to suggest improvement To begin to suggest new questions arising from the investigation.
Researching 	To begin to recognise when secondary sources can be used to answer questions that cannot be answered through practical work.		To choose a source from a range provided with support.				To present what they learnt verbally or using labelled diagrams with support.	To begin to answer their questions using simple scientific language.		To begin to suggest limitations e.g. only had one book. To begin to suggest new questions arising from the investigation.

Comparative/ fair testing 	To begin to ask a range of questions linked to a topic.	To use results from an investigation to make a prediction about a further result with support.	To begin to decide what to change and what to measure or observe.	To begin to make systematic and careful observations linked to answering the question.	To begin to measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary	To prepare own tables to record data with support.	To begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	To begin to refer directly to their evidence when answering their question.	Where appropriate use subject knowledge to provide oral or written explanations for their findings with support.	To begin to suggest improvements e.g. to method of taking measurements . To begin to suggest new questions arising from the investigation. To begin to suggest similarities and differences.
Observing over time 			To begin to decide what to measure or observe and to decide how often to take a measurement.	To begin to make a range of relevant observations.	To begin to measure using standard units where not all the numbers are marked on the scale. To begin to use dataloggers to measure over time.					
Pattern seeking 			To decide what to measure or observe.	To begin to make systematic and careful observations linked to answering the question.	To begin to measure using standard units where not all the numbers are marked on the scale.					

Year 4	To ask scientific questions 	To make a prediction 	To plan an enquiry 	To observe closely 	To take measurements 	To gather /record data 	To present results 	To interpret results 	To draw conclusions 	To evaluate an enquiry 
National Curriculum statement	Asking relevant questions and using different types of scientific enquiries to answer them.	Marking predictions for new values within or beyond the data they have collected.	Setting up simple practical enquiries, comparative and fair tests.	Making systematic and careful observations.	Taking accurate measurements using standard units, using a range of equipment, including thermometer and dataloggers.	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.	Reporting on findings on enquiries including oral and written explanations, displays or presentation of results and conclusions	Using results to draw simple conclusions. Using straightforward scientific evidence to answer questions or to support findings.	Identifying differences, similarities or changes related to simple scientific ideas and processes.
Identifying, grouping and classifying 	To ask a range of yes/ no questions to aid sorting.		To put appropriate headings onto intersecting Venn and Carroll diagrams.	To compare objects based on more sophisticated, observable features.			To sort objects and living things into groups using intersecting Venn and Carroll diagrams.	To spot patterns in the data particularly two criteria with no examples e.g. there are no living things with wings and no legs	To draw simple conclusions, when appropriate, for patterns.	To suggest improvement To begin to suggest new questions arising from the investigation.
Researching 	To recognise when secondary sources can be used to answer questions that cannot be answered through practical work.		To choose a source from a range provided.				To present what they learnt verbally or using labelled diagrams.	To answer their questions using simple scientific language.		To suggest limitations e.g. only had one book. To begin to suggest new questions arising from the investigation.

Comparative/ fair testing 	To ask a range of questions linked to a topic.	To use results from an investigation to make a prediction about a further result.	To decide what to change and what to measure or observe.	To make systematic and careful observations linked to answering the question.	To measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary	To prepare own tables to record data.	To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	To refer directly to their evidence when answering their question.	Where appropriate use subject knowledge to provide oral or written explanations for their findings.	To suggest improvements e.g. to method of taking measurements . To suggest new questions arising from the investigation. To suggest similarities and differences.
Observing over time 			To decide what to measure or observe and to decide how often to take a measurement.	To make a range of relevant observations.	To measure using standard units where not all the numbers are marked on the scale. To begin to use dataloggers to measure over time.					
Pattern seeking 			To decide what to measure or observe.	To make systematic and careful observations linked to answering the question	To measure using standard units where not all the numbers are marked on the scale.					

Year 5	To ask scientific questions 	To make a prediction 	To plan an enquiry 	To observe closely 	To take measurements 	To gather /record data 	To present results 	To interpret results 	To draw conclusions 	To evaluate an enquiry 
National Curriculum statement	Use scientific experiences to explore ideas and raise different kinds of questions.	Using test results to make predictions to set up further comparative and fair tests.	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	Make their own decisions about what observations to make, what measurements to use and how long to make them for.	Taking measurements , using a range of scientific equipment, with increasing accuracy and precision, taking repeat reading when appropriate.	Recording data and results of increasing complexity.	Using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs to present results.	Looking for different causal relationships in their data and explanations of.	Identifying scientific evidence that has been used to support or refute ideas or arguments.	Using results to identify when further tests and observations might be needed and evaluate the degree of trust in results.
Identifying, grouping and classifying 	To begin to ask a range of Yes/No questions to aid sorting and decide which ways of sorting will give useful information.		To begin to identify specific clear questions that will help to sort without ambiguity	To begin to compare not only based on physical properties but also on knowledge gained through previous enquiry.			To create branching databases (tree diagrams) and keys to enable others to name living things and objects with support.	To begin to talk about the features that objects and living things share and do not share based on the information in the key.	To begin to use data to show that living things and materials that are grouped together have more things in common than with things in other groups.	To begin to explain using evidence that the branching database or classification key will only work for the living things or materials it was created for.
Researching 	To begin to ask a range of questions recognising that some can be answered through research and others may not.		To choose suitable sources to use with support.				To begin to present what they have learnt in a range of ways.	To begin to answer their questions using scientific evidence gained from a range of sources and separate opinion from fact.		To begin to talk about their degree of trust in the sources they used.

Comparative/fair testing 	To begin to ask a range of questions and identify the type of enquiry that will help to answer the questions, justifying their choice.	To begin to use test results to make predictions for further investigations.	To begin to recognise and control variables where necessary.	To begin to make systematic and careful observations, deciding whether they need to take repeat readings.	To begin to select measuring equipment to give the most precise results. To measure using standard units using equipment that has scales involving decimals with support.	To prepare own tables to record data, including columns for taking repeat readings with support.	To begin to present the same data in different ways in order to help with answering the question. To choose an appropriate form of presentation, including line graphs with support.	To begin to answer their questions, describing causal relationships	To begin to 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.	To begin to explain their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results.
Observing over time 	Begin to ask further questions based on results.			To begin to make a range of relevant observations, adjusting the observation period and frequency when needed.		To prepare own tables to record data with support.		To begin to answer their questions, describing the change over time		
Pattern seeking 				To begin to make systematic and careful observations, deciding whether increasing sample size is required.		To prepare own tables to record data with support.	To choose an appropriate form of presentation, including scatter graphs with support.	To begin to answer their questions identifying patterns.		

Year 6	To ask scientific questions 	To make a prediction 	To plan an enquiry 	To observe closely 	To take measurements 	To gather /record data 	To present results 	To interpret results 	To draw conclusions 	To evaluate an enquiry 
National Curriculum statement	Use scientific experiences to explore ideas and raise different kinds of questions.	Using test results to make predictions to set up further comparative and fair tests.	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	Make their own decisions about what observations to make, what measurements to use and how long to make them for.	Taking measurements , using a range of scientific equipment, with increasing accuracy and precision, taking repeat reading when appropriate.	Recording data and results of increasing complexity.	Using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs to present results.	Looking for different causal relationships in their data and explanations of.	Identifying scientific evidence that has been used to support or refute ideas or arguments.	Using results to identify when further tests and observations might be needed and evaluate the degree of trust in results.
Identifying, grouping and classifying 	To ask a range of Yes/No questions to aid sorting and decide which ways of sorting will give useful information.		To identify specific clear questions that will help to sort without ambiguity	To compare not only based on physical properties but also on knowledge gained through previous enquiry.			To create branching databases (tree diagrams) and keys to enable others to name living things and objects.	To talk about the features that objects and living things share and do not share based on the information in the key.	To use data to show that living things and materials that are grouped together have more things in common than with things in other groups.	To explain using evidence that the branching database or classification key will only work for the living things or materials it was created for.
Researching 	To ask a range of questions recognising that some can be answered through research and others may not.		To choose suitable sources to use.				To present what they have learnt in a range of ways.	To answer their questions using scientific evidence gained from a range of sources and separate opinion from fact.		To talk about their degree of trust in the sources they used.

Comparative/fair testing 	To ask a range of questions and identify the type of enquiry that will help to answer the questions, justifying their choice.	To use test results to make predictions for further investigations.	To recognise and control variables where necessary.	To make systematic and careful observations, deciding whether they need to take repeat readings.	To select measuring equipment to give the most precise results. To measure using standard units using equipment that has scales involving decimals.	To prepare own tables to record data, including columns for taking repeat readings.	To present the same data in different ways in order to help with answering the question. To choose an appropriate form of presentation, including line graphs.	To answer their questions, describing causal relationships	To 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.	To explain their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results.
Observing over time 	To ask further questions based on results.			To make a range of relevant observations, adjusting the observation period and frequency when needed.		To prepare own tables to record data.		To answer their questions, describing the change over time		
Pattern seeking 				To make systematic and careful observations, deciding whether increasing sample size is required.		To prepare own tables to record data.	To choose an appropriate form of presentation, including scatter graphs.	To answer their questions identifying patterns.		