

Working scientifically progression

<b>KS1</b>	<b>To ask scientific questions</b>	<b>To plan an enquiry</b>	<b>To observe closely</b>	<b>To take measurements</b>	<b>To gather/record results</b>	<b>To present results</b>	<b>To interpret results</b>	<b>To draw conclusions</b>	<b>To make a prediction</b>	<b>To evaluate an enquiry</b>
Classification	Be able to ask a yes/no questions to aid sorting	Identify the headings for the two groups (it is ....., it is not.....)	Be able to compare objects based on obvious, observable features e.g. size, shape, colour, texture etc.			Sort objects and living things into two group using a basic Venn diagram or simple table	Talk about the number of objects in each group i.e. which has more or less	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 make scientific predictions as they do not have the subject 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.	Children in KS1 are not expected to evaluate however children should be encouraged to consider their method and adapt this where necessary.
Research	Ask one or two simple questions linked to a topic				Present what they have learnt verbally or using pictures	Be able to answer their questions using simple sentences				
Comparative/fair test	Identify the question to investigate from a scenario or choose a question from a range provided	Choose equipment to use, decide what to do and what to observe or measure in order to answer the question	Make observations linked to answering the question	When appropriate, measure using standard units where all the numbers are marked on the scale	Record data in simple prepared tables, pictorially or by taking photographs	Present what they learnt verbally, using pictures or block diagrams	Answer their question in simple sentences using their observations or measurements			
Observation over time	Ask a question about what might happen in the future based on an observation				Record data in simple prepared tables, pictorially or by taking photographs	Present what they learnt verbally or using pictures				
Pattern seeking	Ask a question that is looking for a pattern based on observations				Record data in simple, prepared tables and tally charts	Present what they learnt verbally				

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<b>LKS 2</b>	<b>To ask scientific questions</b>	<b>To plan an enquiry</b>	<b>To observe closely</b>	<b>To take measurements</b>	<b>To gather/record results</b>	<b>To present results</b>	<b>To interpret results</b>	<b>To draw conclusions</b>	<b>To make a prediction</b>	<b>To evaluate an enquiry</b>
Classification	Be able to ask a range of yes/no questions to aid sorting	Be able to put appropriate headings onto intersecting Venn and Carroll diagrams	Be able to compare objects based on more sophisticated, observable features. Present observations in labelled diagrams			Sort objects and living things into groups using intersecting Venn and Carroll diagrams	Spot patterns in the data particularly two criteria with no examples e.g. there are no living things with wings and no legs	Draw simple conclusions when appropriate for patterns e.g. a flying insect with no legs might always crash land		Suggest improvement e.g. a wider range of objects – only looked at British trees. Suggest new questions arising from the investigation.
Research	Ask a range of questions linked to a topic	Choose a source from a range provided				Present what they learnt verbally or using labelled diagrams	Be able to answer their questions using simple scientific language			Suggest limitations e.g. only had one book. Suggest new questions arising from the investigation.
Comparative/fair test		Decide what to change and what to measure or observe	As for KS1	Measure using standard units where not all the numbers are marked on the scale, take repeat readings where necessary	Prepare own tables to record data	Present data in bar charts	Refer directly to their evidence when answering their question	Where appropriate provide oral or written explanations for their findings	Use results from an investigation to make a prediction about a further result	Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation.
Observation over time		Decide what to measure or observe. Decide how often to take a measurement	Make a range of relevant observations	Measure using standard units where not all the numbers are marked on the scale. Use dataloggers to measure over time						
Pattern seeking		Decide what to measure or observe	As for KS1	Measure using standard units where not all the numbers are marked on the scale.		Use ICT package to present data as a scattergram				

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<b>UKS 2</b>	<b>To ask scientific questions</b>	<b>To plan an enquiry</b>	<b>To observe closely</b>	<b>To take measurements</b>	<b>To gather/record results</b>	<b>To present results</b>	<b>To interpret results</b>	<b>To draw conclusions</b>	<b>To make a prediction</b>	<b>To evaluate an enquiry</b>
Classification	Be able to ask a range of yes/no questions to aid sorting and decide which ways of sorting will give useful information	Identify specific clear questions that will help to sort without ambiguity	Be able to compare not only based on physical properties but also on knowledge gained through previous enquiry			Create branching databases (tree diagrams) and keys to enable others to name living things and objects	Be able to talk about the features that objects and living things share and do not share based on the information in the key etc	Be able 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		Be able to explain using evidence that the branching database or classification key will only work for the living things or materials it was created for
Research	Ask a range of questions recognising that some can be answered through research and others may not	Choose suitable sources to use				Present what they learnt in a range of ways e.g. different graphic organisers	Be able to answer their questions using scientific evidence gained from a range of sources			Be able to talk about their degree of trust in the sources they used
Comparative/fair test	Ask a range of questions and identify the type of enquiry that will help to answer the questions. Ask further questions based on results	Recognise and control variables where necessary.	As for KS1	Measure using standard units using equipment that has scales involving decimals	Prepare own tables to record data, including columns for taking repeat readings	Choose an appropriate form of presentation including line graphs and time graphs	Be able to answer their question, describing causal relationships	Provide oral or written explanations for their findings	Use test results to make predictions for further investigations	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
Observation over time							As for LKS2			
Pattern seeking						Choose an appropriate form of presentation including scatter graphs	Be able to answer their questions identifying patterns			