Singleton C E Primary school
Progression of Skills in Scientific Enquiry

	Foundation	Class 1	Class 2	Class 3
Observing Over Time	**Plan** • I am curious about things that change • With help I ask questions about things changing • I talk about my ideas for finding out how things change **Do** • I use all my senses to observe changes • I look closely at how things change • I make simple records of how things change (with help where necessary) • I use simple equipment to observe and record changes **Review** • I talk about what I have done and what I noticed	**Plan** • I ask questions about how and why things change • With help, I identify changes to observe and measure and suggest how to do it **Do** • I use non-standard units and simple equipment to record changes • I record in words or pictures, or in simple prepared formats such as tables and charts **Review** • I identify simple changes and talk about them • I sequence the changes • I begin to use scientific language to talk about changes • I talk about whether the change was what I expected	**Plan** • I talk about things changing and decide when questions can be answered by observing over time • I decide what observations to make, how often and what equipment to use **Do** • I use a range of equipment to collect data using standard measures • I make records using tables and bar charts • I begin to use and interpret graphs produced by data loggers **Review** • I draw simple conclusions from the changes I observed • I talk about changes using some scientific language • I suggest improvements to the ways I observe	**Plan** • I recognise when observing changes over time will help to answer my questions • I decide how detailed my observations need to be, and what equipment to use, to make my measurements as accurate as possible **Do** • I use equipment accurately without support • I record data appropriately • I present data in line graphs • I interpret changes in the data • I recognise the effect of changing the time and number of observations **Review** • I draw valid conclusions from data about changes • I recognise the significance of things changing over time • I talk about and explain changes using scientific knowledge and understanding • I evaluate how well I observed over time
Identifying and Classifying	**Plan** • I am curious about similarities and differences • With help I ask questions about similarities and differences • I talk about my ideas for sorting or matching things **Do** • I use my senses to sort and match things • I match things that are the same • I find things that are similar or different • I sort or group things in my own way • I use simple equipment to help me sort things (e.g., boxes, hoops) **Review** • I talk about how I sorted or matched things	**Plan** • I ask questions about how and why things are similar or different • I decide what to observe to identify or sort things **Do** • I make comparisons between simple features of objects, materials or living things • I record my observations in words or pictures or simple tables • I sort objects by observable and behavioural features • I record my sorting in sorting circles or tables **Review** • I identify similarities and differences and talk about them • I begin to use simple scientific language to talk about how things are similar or different • I try to use my records to help sort or identify other things	**Plan** • I talk about what criteria I will use to sort and classify things • I decide what equipment to use to identify and classify things • I talk about things that can be grouped and decide when questions can be answered by sorting and classifying **Do** • I carry out simple tests to sort and classify according to properties or behaviour • I use Carroll diagrams, Venn diagrams and more complex tables to sort things • I use simple keys and branching databases to identify things • I make simple branching databases (keys) for things that have clear differences **Review** • I draw simple conclusions about the things I have sorted and classified • I talk about the similarities and differences I identified using some scientific language • I suggest improvements to the way I sort and identify things	**Plan** • I recognise when identifying and classifying will be helpful to answer my questions • I decide what equipment, tests and secondary sources of information to use to identify and classify things **Do** • I use a series of tests to sort and classify materials • I use secondary sources to identify and classify things • I make my own keys and branching databases with 4 or more items • I use more than one piece of scientific evidence to identify and classify things **Review** • I draw valid conclusions when sorting and classifying • I recognise the significance of sorting and classifying • I talk about and explain what I have done using scientific knowledge • I evaluate how well my keys worked

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Pattern Seeking	**Plan** • I am curious about patterns • With help I ask questions about patterns • I talk about my ideas for finding out about patterns **Do** • I use my senses to look closely for patterns • I observe more than one thing at a time • I make simple records of what I notice (with help where necessary) • I use simple equipment to observe and record patterns **Review** • I talk about what I have done and the patterns I noticed	**Plan** • I ask questions about why and how things are linked • With help, I decide what patterns to observe and measure and suggest how to do it **Do** • I use non-standard units and simple equipment to record events that might be related • I record in words or pictures, or in simple prepared formats such as tables, tally charts and maps **Review** • I identify simple patterns and talk about them • I make links between two sets of observations • I begin to use scientific language to talk about patterns • I talk about whether the pattern was what I expected	**Plan** • I talk about where patterns might be found and decide when questions can be investigated by pattern seeking • I decide on which sets of data to collect, what observations to make and what equipment to use **Do** • I use a range of equipment to collect data using standard measures • I make records using tables, bar charts or simple scatter graphs • I begin to use and interpret data collected through dataloggers **Review** • I draw conclusions about simple patterns between two sets of data • I talk about patterns using some scientific language • I suggest improvements to the way I looked for patterns	**Plan** • I recognise when variables cannot be controlled and when pattern seeking will help to answer my question • I decide how detailed my data needs to be, and which equipment to use, to make my measurements as accurate as possible **Do** • I use equipment accurately to collect observations • I record data appropriately and accurately • I present data in scatter graphs and frequency charts • I recognise patterns in results • I recognise the effect of sample size on reliability **Review** • I draw valid conclusions from data about patters and recognise their limitations • I recognise the significance of relationships between sets of data • I talk about and explain cause and effect patterns using scientific knowledge and understanding • I evaluate how well I looked for patterns
Research	**Plan** • I am curious about things in my surroundings • With help I ask questions that I can answer using secondary sources **Do** • I listen carefully • I know that information in books and electronic media can be used to answer questions • I find pictures of things • I talk to people about what they do and how things work **Review** • I talk about things I found out	**Plan** • I ask questions about how things are and the way they work • With help, I make suggestions about how to find things out **Do** • I use simple books and electronic media to find things out • I ask questions to find out what people do and how things work • I record in words and pictures what I found out **Review** • I begin to use scientific language to talk about what I found out • I talk about whether the information source was useful • I give an opinion about some things I found out	**Plan** • I talk about how things are and the way they work and decide when questions can be answered by research using secondary sources **Do** • I use information sources to find the information I need • I use someone else's data • I record what I found out in my own words • I present information in different ways **Review** • I draw conclusions from what I found out from different sources • I talk about what the information and data means using some scientific language • I suggest ways to improve how I find out and use information	**Plan** • I recognise when research using secondary sources will help to answer my questions • I decide which sources of information might answer my questions **Do** • I use relevant information and data from a range of secondary sources • I recognise how data has been obtained • I start to notice when information and data is biased or based on opinions rather than facts I present my findings in suitable formats **Review** • I draw valid conclusions from my research • I talk about and explain my research using scientific knowledge and understanding • I evaluate how well my research has answered my questions • I recognise that some scientific questions may not have been answered definitively

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Fair Testing	**Plan** • I am curious about how things behave • With help, I ask questions about things I can test • I talk about my ideas for testing how things behave **Do** • I use my senses to look closely at how things behave • I carry out simple tests • I make simple records of what I notice (with help where necessary) • I use simple equipment to observe and record **Review** • I talk about what I have done and what I noticed • I talk about whether something makes a difference	**Plan** • I ask questions about why and how • With help, I notice links between cause and effect • With help, I identify simple variables to change and measure **Do** • I use non-standard units and simple equipment to record data • I record in words or pictures, or in simple prepared formats such as tables and tally charts **Review** • I interpret and talk about my data • I begin to use simple scientific language to identify and describe simple causal relationships • With help, I can say if my test was fair • I say if the relationship was what I expected	**Plan** • I talk about links between cause and effect and (with help) pose a fair test question • I help to plan a fair test • I decide what data to collect • I decide what equipment to use and how to make observations **Do** • I use a range of equipment to collect data using standard measures • I make records using tables and bar charts • I begin to use and interpret data through dataloggers **Review** • I draw simple conclusions from my fair tests • I talk about, and explain, simple causal relationships using some scientific language • I suggest ways that I can improve my fair tests	**Plan** • I recognise when variables need to be controlled and when a fair test is the best way to answer my question • I plan a fair test, selecting the most suitable variables to measure, change and keep the same • I decide what equipment to use to make my measurements as accurate as possible **Do** • I use equipment accurately to collect observations • I record data appropriately and accurately • I present data in line graphs • I identify causal relationships **Review** • I draw valid conclusions based on the data • I recognise the significance of the results of fair tests • I talk about and explain causal relationships using scientific knowledge and understanding • I evaluate the effectiveness of my fair testing, recognising variables that were difficult to control
YEAR A	**OBSERVATION/FAIR TEST PLANTS** **Will seeds grow by the sea? (salt water germination)** **FAIR TEST AMIMALS Can worms sense?** **PATTERN SEEKING PLANTS** **Do pine cones knows it's raining?** **SIMPLE TEST** **What makes us dry? – materials** **OBSERVING OVER TIME** **How does the woodland change**	**OBSERVATION/PATTERN SEEKING** **Do all mini-beast live in the same habitats?** **CLASSIFICATION** **How have some animals adapted to their environment?** **CLASSIFICATION** **Are all leaves the same?** **CLASSIFICATION/FAIR TEST How do germs spread?** **CLASSIFICATION/FAIR TEST** **Which stuff is stickier – materials** **OBSERVATION** **Refraction of light – can I see round corners?**	**CLASSIFICATION living things and their habitats To identify and classify invertebrates in the local environment** **ANIMALS INCLUDING HUMANS** **OBSERVING OVER TIME** **Can worms sense danger** **STATES OF MATTER** **FAIRT TEST/CLASSIFY** **Are all liquids runny?** **SOUND** **PATTEN SEEKING** **Can we change sound?**	**FAIR TESTING:** **Impact of exercise on circulatory system** **OBSERVATION** **How light changes direction in water** **How can we tell light is made up of a spectrum of colours?** **What conditions do micro-organisms need to grow?** **CLASSIFICATION** **Identifying the adaptive traits of living things** **To classify living things using the linnean system** **PATTERN SEEKING** **Do larger animals have slower heart rates?**

Year B		**OBSERVATION/pattern seeking** **Do taller plants have longer roots?** **FAIR TEST** **How do worms move?** **PATTERN SEEKING** **Why do magnets attract and repel?** **OBSERVING OVER TIME** **How do fossils form?**	**OBSERVATION** **To dissect the parts of a flower At** **what temp will chocolate burn?** **CLASSIFICATION** **Classify animals by type of reproduction** **PATTERN SEEKING** **Relationship between gender and weight** **Relationship between age and size** **Relationship between gestation period and type of animal** **What is the relationship between the length of the instrument and its pitch?** **FAIR TEST** **How heavy is the gas in a can of fizzy drink?**	