Year Group Expectations: Year 6

6	▪ Use correct scientific knowledge and understanding and relevant scientific language to discuss their observations and explorations (linked to Y6 PoS) ▪ Identify changes that have occurred over a very long period of time (evolution) and discuss how changes have impacted the world ▪ Explore more abstract systems / functions /changes / behaviours and record their understanding of these *(e.g. the relationship between diet, exercise, drugs, lifestyle and health; evolutionary changes; how light travels)*	▪ Recognise the importance of classification to the scientific world and form a conclusion from their sorting and classifying ▪ Compare and contrast more complex processes, systems, functions (e.g. sexual and asexual reproduction) ▪ Construct a classification key / branching database using more than two items ▪ Compare and contrast things beyond their locality and discuss advantages/disadvantages, pros/cons of the similarities and differences ▪ Use *research** to identify and classify things ▪ Use classification systems, keys and other information records [databases] to help classify or identify things.	▪ Recognise scientific questions that do not yet have definitive answers (linked to Y6 PoS) ▪ Refine a scientific question to make it testable i.e. Ask a testable question which includes the change and measure variables - *e.g. what would happen to ... if we changed ...? e.g. What affect would we have on ... if we ...?* *e.g. How would exercise affect the pulse rate?* ▪ Use observations to suggest a further (testable or research) question. ▪ Independently ask a variety of scientific questions and decide the type of enquiry needed to answer them	▪ Research how scientific ideas have developed over time and had an impact on our lives. ▪ Use evidence from a variety of sources to justify their ideas ▪ Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact. ▪ Interview people to find out information	▪ Make / perform and use their own versions of simple models to describe and explain scientific ideas (e.g. circulatory system drama, periscopes to explain how light travels, burglar alarm to explain components in a circuit)	▪ Propose their own ideas and make decisions with agreement in a group ▪ Support, listen to and acknowledge others in the group ▪ Check the clarity of each other's suggestions ▪ Build on / add to someone else's idea to improve a plan or suggestion ▪ Understand that it is okay to disagree with their peers and offer a reasons for their opinion
5	▪ Use their developing scientific knowledge and understanding and relevant scientific language and terminology to discuss, communicate and explain their observations (incl. more abstract ideas from Y5 PoS (e.g. friction, air resistance, forces, Earth and space, reversible and irreversible changes). ▪ Evaluate their observations and suggest a further test, offer another question or make a **prediction** ▪ Observe (including changes over time) and suggest a reason for what they notice	▪ Suggest reasons for similarities and differences ▪ Compare and contrast things beyond their locality and use these similarities and differences to help to classify *(e.g. features of animals, life cycles of different living things, melting compared with dissolving, etc).* ▪ Use secondary sources of information to identify and classify. ▪ Decide which sources of information (and/or equipment and/or test) to help identify and classify	▪ Recognise scientific questions that do not yet have definitive answers. (linked to Y5 PoS) ▪ Refine a scientific question so that it can be tested e.g. 'What would happen to... if we changed...?' ▪ Decide whether their questions can be answered by researching or by testing ▪ Independently ask their own scientific questions taking some ownership for finding out the answers	▪ Find out how scientific ideas have changed/developed over time (linked to Y5 PoS) ▪ Articulate and explain findings from their research using scientific knowledge and understanding (see 'Communicating' box below re vocabulary) ▪ Make decisions about which information to use from a wide range of sources	▪ Perform / create simple models to exemplify scientific ideas using scientific terminology where appropriate *(e.g. spheres to represent movements of the Sun and Earth, solar system models, shadow clocks, a simple lever or mechanism).*	▪ Propose their own ideas and make decisions with agreement in a group ▪ Support, listen to and acknowledge others in the group e.g. Yes. I prefer that one too ▪ Check the clarity of each other's suggestions e.g. are you saying you think this one is a herbivore? ▪ Build on / add to someone else's idea to improve a plan or suggestion ▪ Understand that it is okay to disagree with their peers and offer a reasons for their opinion
4	▪ Suggest their own ideas on a concept and compare these with what they observe / find out. ▪ Use observations to suggest what to do next ▪ Discuss ideas and develop descriptions from their observations using relevant scientific language and vocabulary (from Y4 PoS) ▪ Observe and record relationships between structure and function or between different parts of a processes (linked to Y4 PoS) ▪ Observe and record changes /stages over time (linked to Y4 PoS)	▪ Make a simple guide to local living things. ▪ Use guides or simple keys to classify / identify [animals, flowering plants and non-flowering plants]. ▪ Use their observations to identify and classify ▪ Begin to give reasons for these similarities and differences. ▪ Record similarities as well as differences and/or changes related to simple scientific ideas or processes or more complex groups of objects/living things/events *(e.g. evaporation and condensation, different food chains, different electrical circuits)*	▪ Ask/raise their own relevant questions with increasing confidence and independence that can be explored, observed, tested or investigated further ▪ Ask questions such as 'What will happen if...?" or 'What if we changed...? (linked with Y4 PoS) ▪ Choose/select a relevant question that can be answered [by research or experiment / test].	▪ Make decisions about which information to use from a wide range of sources and make decisions about how to present their research ▪ Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.	▪ Make a visual representation or a model of something to represent something they have seen or a process that is difficult to see. ▪ Suggest their own ideas on a concept and compare these with models or images.	▪ Make some decisions about an idea within a group *(e.g. I think we should find out by testing...)* ▪ Increasingly support, listen to and acknowledge others in the group ▪ Build on / add to someone else's idea to improve a plan. ▪ Understand that it is okay to disagree with their peers and offer reasons for their opinion
	EXPLORING / OBSERVING ***UKS2 - developing a deeper understanding of a wide range of scientific ideas and encountering more abstract ideas*** ***LKS2 - developing their own ideas and their understanding of the world around them***	**GROUPING AND CLASSIFYING** ***UKS2 - Compare and contrast a variety of examples linked to UKS2 PoS*** ***LKS2 - Compare and contrast a variety of examples linked to LKS2 PoS***	**QUESTIONING** ***UKS2 - asking their own questions about scientific phenomena*** ***LKS2 - asking relevant questions***	**RESEARCH** ***UKS2 – summarise research from a wide variety of sources and recognising that scientific ideas change and develop over time*** ***LKS2 - finding things out using a wide range of secondary sources of information***	**MODELLING** ***using dance, drama or a visual aid to represent science in the real world***	**COLLABORATING** ***interacting effectively as part of a group***

Year Group Expectations: Year 6

6	▪ Predict what a graph might look like before collecting results ▪ Make a hypothesis where they say how one thing will affect another and give a reason for their suggestion with a developing understanding of the scientific concept ▪ Identify **variables** to change, measure and keep the same in order for a test to be **fair** ▪ Independently plan investigations and explain planning decisions ▪ Decide when it is appropriate to carry out a **fair test** investigation, comparative test or alternative	▪ Decide whether to **repeat** any **readings** and justify the reason for doing so ▪ Make their own decisions about what measurements to take (and begin to identify the ranges used). ▪ Make, and act on, suggestions to control/reduce risks to themselves & others ▪ Use equipment fit for purpose to take measurements which are increasingly **accurate** and precise ▪ Decide the most appropriate equipment to use to collect data	▪ Articulate understanding of the concept using scientific language and terminology when describing abstract ideas, observations and findings (linked to the Y6 PoS) ▪ Record data and results of increasing complexity using scientific diagrams and labels, recognised symbols, classification keys, tables, bar and line graphs, and models. ▪ Make decisions about how to present and explain their findings through talk, in written forms or in other ways (e.g. using technology)	▪ Spot unexpected results that do not fit the pattern (anomalies) ▪ Identify patterns in results collected and describe them using the **change and measure variables** (causal relationships) (e.g. as we *increased the number of batteries* the *brightness the bulb increased*	▪ Identify **evidence** that refutes or **supports** their ideas ▪ Independently form a conclusion which draws on the **evidence** from the test (linked to Y6 PoS) ▪ Use scientific language and terminology (linked to Y6 PoS) to explain why something happened	▪ Be able to suggest reasons for unexpected results (anomalies) ▪ Describe how to improve planning to produce more **reliable** results ▪ Say how confident they are that their results are **reliable** and give a reason
5	▪ Carry our **fair tests** and other investigations with increasing independence ▪ Suggest more than one possible prediction and begin to suggest which is the most likely. Justify their reason with some knowledge and understanding of the scientific concept ▪ Make decisions about which **variable**s to change, measure and keep the same (linked to the appropriate units in the Y5 PoS) ▪ Make most of the planning decisions for an investigation. ▪ Recognise when it is appropriate to carry out a **fair test**.	▪ Make their own decisions about what observations to make or measurements to use and how long to take them for (recognising the need for repeat readings on some occasions). ▪ Take measurements using a range of scientific equipment with increasing accuracy and using more complex scales / **units** ▪ Identify possible risks to themselves and others and suggest ways of reducing these ▪ Choose the most appropriate equipment and make **accurate** measurements	▪ Use their developing scientific knowledge and understanding and relevant scientific language and terminology to communicate more abstract concepts (linked to Y5 PoS) ▪ Present and explain their findings through talk, in written forms or in other ways (e.g. using technology) for a range of audiences / purposes ▪ Record data and results of increasing complexity using different formats e.g. tables, annotated scientific diagrams, classification keys, graphs and models ▪ Make decisions about the most appropriate way of recording data	▪ Describe straightforward patterns in results linking cause and effect e.g. using er…er or the word 'more' *(e.g. the longer, thinner shapes move through the water more quickly OR the larger the wings, the longer it takes the spinner to fall)* ▪ Look for / notice relationships between things and begin to describe these. ▪ Comment on the results and whether they **support** the initial **prediction**	▪ Use their scientific K&U and appropriate scientific language and terminology (linked to Y5 PoS) to explain their findings and data and answer their initial question ▪ Draw a valid **conclusion** (explain *why* it happened) based on their data and observations (from Y5 PoS)	▪ Begin to recognise how repeated readings improve the **reliability** of results ▪ Compare results with others and comment on how **reliable** they are
4	▪ Carry out simple **fair tests** with increasing confidence investigating the effect of something on something else (linked to Y4 PoS). ▪ Start to make their own decisions about the most appropriate type of science enquiry they might use to answer scientific questions *(is a fair test the best way to investigate their question?).* ▪ Make a **prediction** based on the knowledge acquired from previous explorations /observations and apply it to a new situation ▪ Explain their planning decisions and choices ▪ Make some of the planning decisions about what to change and measure/observe. ▪ Begin to recognise when a **fair test** is necessary.	▪ Begin to identify where patterns might be found and use this to begin to identify what data to collect ▪ Make more of the decisions about what observations to make, how long to make them for and the type of equipment that might be used. ▪ Recognise obvious risks and how to keep themselves and others safe ▪ Learn how to use new equipment, such as data loggers & measure temperature in degrees Celsius (°C) using a thermometer. ▪ Collect data from their own observations and measurements, using notes/simple tables/standard **units** ▪ Make **accurate** measurements using standard **units** [and more complex units and parts of units] using a range of equipment and scales	▪ Record findings using relevant scientific language and vocabulary (from Y4 PoS), including discussions, oral and written explanations, notes, drawings (annotated), pictorial representations, labelled diagrams, tables and bar charts [where intervals and ranges agreed through discussion], displays or presentations ▪ Begin to select the most useful ways to collect, record, classify and present data from a range of choices ▪ Make decisions on how best to communicate their findings in ways that are appropriate for different audiences	▪ Notice/find patterns in their observations and data. (Describe the effect of something on something else) *(e.g. as I lengthen the ruler I notice that the pitch gets lower)* ▪ With some independence, analyse results / observations by writing a sentence that matches the **evidence** ▪ i.e. deciding the important aspect of the result and summarising in a **conclusion** *(e.g. metals tend to be good conductors of electricity)*	▪ Begin to develop their ideas about relationships and interactions between things and explain them ▪ Use relevant scientific language and vocabulary (from Y4 PoS) to begin to say/explain *why* something happened	▪ Use results to suggest improvements, new questions and/or predictions for setting up further tests ▪ Compare their results with others and give reasons why results might be different
	PLANNING AND TESTING ***UKS2 - using different types of scientific enquiry making decisions about and explaining choices for testing*** ***LKS2 - making decisions about and setting up simple practical enquiries, comparative tests and fair tests***	**USING EQUIPMENT AND MEASURES** ***UKS2 - increasing complexity and increasing accuracy and precision make their own decisions about the data to collect*** ***LKS2 - making accurate measurements and gathering data***	**COMMUNICATING** ***Reporting findings, recording data, presenting findings*** ***Read, spell and pronounce scientific vocabulary correctly linked to the relevant Yr Grp***	**CONSIDERING THE RESULTS OF AN INVESTIGATION / WRITING A CONCLUSION** **DESCRIBING RESULTS / LOOKING FOR PATTERNS** ***UKS2 - Looking for patterns analysing functions, relationships and interactions more systematically*** ***LKS2 - Describing their findings/ results***		**EXPLAINING RESULTS** ***UKS2 - draw conclusions based on / supported by evidence*** ***LKS2 - reporting on findings saying why something happened***	**TRUSTING RESULTS** ***UKS2 - comment on how reliable the data is*** ***LKS2 - suggest improvements for further tests***