Observation and Measurement

	Observation	Measurement
6	Children answer their own and others' questions on observations they have made. Their answers are based on evidence. Observe and raise questions about animals and how they are adapted to their environment. Observe properties of materials to group and classify based on their characteristics and properties.	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. When collecting measurements, the decide whether they need to increase sample size for validity and reliability. Can record measurements to 3dp. Can use protractors and rulers and force metres to measure accurately choosing correct units.
5	Observe and compare the life cycles of plants and animals in their local environment with other plants and animals around the world. Observe changes over a period of time. (e.g. animals) Make own decisions about what to observe.	Take repeat measurements where appropriate. Can choose the middle value or finds mean average. Select measuring equipment to give most precise results e.g., ruler, tape measure, trundle wheels, force metres with suitable scales. Can explain advantages and disadvantages of different measuring equipment. Children make quantitative measurements about conductivity and insulation.
4	Make systematic and careful observations to identify plants and animals in their habitats and how the habitat changes throughout the year. Use observations to ask questions and group objects using classification keys. Observe closely and describe processes such as changes of state. Observe and record evaporation over a period of time. Identify differences, similarities or changes related to simple scientific ideas or processes.	Uses a range of scales. Takes and records accurate measurements using standard units. Can record measurements to 2dp. Use thermometers to explore the effects of temperature on substances. Use data loggers to record sound in decibels and notice patterns. Use volt metres to measure voltage in a circuit to observe patterns and answer questions. Begin to gather repeat readings to increase accuracy.
3	Make systematic and careful observations. Look for naturally occurring patterns and relationships. Collect data from their own observations and measurements. Closely observe stages of plant lifecycle over a period of time, noting patterns. Observe how water is transported in plants. Observe patterns in the way magnets behave in relation to each other. Can make observations and decide how to record them to answer a question.	Take accurate measurements using standard units, can measure and compare. (e.g., amount of liquid and height of a plant to nearest ½ cm) Use a range of equipment for measuring time, length, capacity and temperature. Begin to use a range of scales. Can read digital measurements from data loggers appropriately.
2	Observe closely, using simple equipment. Can identify a variety of plants and animals using observations. Observe how different plants grow and record findings including similar plants at different stages of growth and notice similarities and differences. Use their observations and ideas to suggest answers to questions. Observe through video, first-hand observations and measurement how different animals including humans grow and offer explanations. Compare objects based on observable features.	Use standard units to estimate and measure length, height, temperature, and capacity. Can use rulers, scales, thermometers and measuring vessels with some degree of accuracy. Make decisions about what measurements to use and how long to make them for.
1	Uses appropriate senses aided by equipment such as magnifying glasses and digital microscopes to make observations. With help and prompting, observe changes over time and can describe the changes. Can identify and group, compare and contrast using observations, video and photographs.	Use discrete e.g., counting and continuous data e.g. liquid to manageable common standard units. Can use simple measurements and equipment such as hand lenses and egg timers to gather data. Can use non-standard measures to compare.
F.	Explore the natural world making observations (e.g seasons) Explore different equipment and finding out what its uses are. Know similarities and differences between the natural world around them. Observe and describe what they see using everyday language.	Take measurements initially by comparisons then begin to use non-standard units. Make links and notice patterns in their experiences.